MINISTRY OF HIGER AND SECONDARY SPECIAL EDUCATION OF REPUBLIC OF UZBEKISTAN

SAMARKAND STATE UNIVERSITY OF VETERINARY MEDICINE LIVESTOCK AND BIOTECHNOLOGIES

FACULTY OF VETERINARY PREVENTION AND TREATMENT

Department of Veterinary Surgery and Obstetrics

"APPROVED"
Vice Rector for Academic Affairs
professor_____ A.A. Elmurodov
"___" _____2022

EDUCATIONAL-METHODOLOGICAL COMPLEX
by subject

OPERATIV SURGERY AND TOPOGRAFIC ANATOMY

Area of expertise:	-	400000-agriculture and water management
Field of education:	-	410000 - Agriculture, forestry and fisheries
The direction of education	-	5440100-Veterinary medicine (by type of activity)

Samarkand – 2022

The educational-methodological complex is developed based on the curriculum of the subject.

Compilers:

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This educational-methodological complex is developed based on the curriculum of the subject was discussed at a meeting of the Department of Veterinary Surgery and Obstetrics No. ___ dated ___ ____ 2022 and recommended for approval to the Faculty Council.

Head of the chair, Associate Professor _____ Narziev B.D.

This educational-methodological complex was discussed and approved by the Council of the Faculty of Veterinary Prevention and Treatment and recommended for use (Protocol No. ___ dated "____" _____ 2022).

Head of faculty coyncil, professor _____ Niyazov Kh.B.

Agreed:
Head of educational and methodical departament, associate professor _____ Ruzikulov R.F.

CONTENT

I. Curriculum

O‘ZBEKISTON RESPUBLIKASI
OLIY VA O‘RTA MAXSUS TA’LIM VAZIRLIGI
SAMARQAND VETERINARIYA MEDITSINASI INSTITUTI

"TASDIQLAYMAN"
Samarqand veterinariya meditsinasi instituti rektori
_____
2021 yil "05" 08

"KELISHILDI"
Oliy va o‘rta maxsus ta’lim vazirligi
_____
2021 yil "18" 08
Ro‘yxatga olindi: № BD-5440100-2.13
2021 yil "17" 08

OPERATIV XIRURGIYA VA TOPOGRAFIK ANATOMIYA

FAN DASTURI

Bilim sohasi:	400000 – Qishloq va suv xo‘jaligi
Ta’lim sohasi:	440000 – Veterinariya
Ta’lim yo‘nalishi:	5440100 – Veterinariya meditsinasi (faoliyat turlari bo‘yicha)

Toshkent – 2021

Fan/modul kodi OXTAM3306		O‘quv yili 2022 - 2023	Semestr 5	ECTS – Kreditlar 6	
Fan modul turi Majburiy		Ta’lim tili O‘zbek-rus		Haftadagi dars soatlari	
1.	Fanning nomi	Auditoriya mashg‘ulotlari (soat)		Mustaqil ta’lim (soat)	Jami yuklama (soat)
	Operativ xirurgiya va topografik anatomiya	90		90	180

2. I. Fanning mazmuni

Fanni o‘qitishdan maqsad – talabalarda chorvachilik xo‘jaliklari va amaliy veterinariyada bajariladigan xirurgik operatsiyalarni o‘tkazish qoida va usullaribo‘yicha bilimlarni o‘zlashtirish hamda ko‘nikma va malaka shakllantirishdir.

Fanning vazifasi - talabalarni nazariy bilimlar, amaliy ko‘nikmalar, hayvonlarni fiksatsiya qilsish va og‘riqsizlantirish usullari, hayvonlarda operatsiya o‘tkazish bo‘yicha nazariy bilimlar berish va amaliy ko‘nikmalar hosil qilish, kasal va sog‘lom hayvonlarda operatsiyalar o‘tkazish va operativ usullarni bajarishning samarali usullarini ishlab chiqishgi slubiy yondoshuv va dunyoqarashni shakllantirish vazifasini bajaradi.

II. Asosiy nazariy qism (ma’ruza mashg‘ulotlari)

II.I. Fan tarkibiga quyidagi mavzular kiradi:

1-Modul. Kirish. Operatsiya to‘g‘risida ta’limot

1-mavzu: Kirish. Xirurgik operatsiya haqida ta’limot

Topografik anatomiya operativ, umumiy, xususiy xirurgiya va boshqa klinik fanlarning asosi. Topografik anatomiyaning rivojlantirishda N.I. Pirogovning o‘rni. Veterinariyada operativ xirurgiyaning tarixi va asoschilari. Xirurgik operatsiya haqida ta’limot. Xirurgik operatsiya tushunchasi va uning maqsadi. Chorvachilik fermer xo‘jaliklari sharoitlarida operatsiyalarni o‘tkazish xususiyati. Operatsiya o‘tkazish uchun ko‘rsatma va unga qarshi ko‘rsatma. Operatsiyaning tasniflanishi.

2-mavzu: Xirurgik infeksiya to‘g‘risida ta’limot

Operatsiya jarohatiga infeksiyani kirish yo‘llari. Antiseptika va aseptika to‘g‘risida ta’limot. Xirurgik asboblarni operatsiyaga va undan keyin sterilizasiya va

dezinfeksiya qilish usullari va ularni saqlash. Tikuv materiallarini xarakteristikasi va sterilizasiya qilish usullari. Kiyim-kechak, bog'lov materiallarini sterelizatsiya qilish usullari.

3-mavzu: Xirurgik infeksiyaning oldini olish

Qo'llar terisining tuzilishi va biologik xususiyatlari to'g'risida qisqacha ma'lumot. Qo'lni operatsiyaga tayyorlash asoslari mexanik tozalash, kimyoviy dezinfeksiya va qotirish. Xirurgik qo'lqoplardan foydalanish. Operatsiya maydonchasini tayyorlash asoslari va shilliq pardalarni dezinfeksiyasi. Hayvonlarni operatsiyaga tayyorlash va ishlab chiqarish sharoitida xirurgik ishlarni tashqil qilish.

2-Modul. Og'riqsizlantirish

4-mavzu: Anesteziologiya. Narkoz va uni xirurgiya amaliyotida qo'llash

Hayvonlarni operatsiya qilishda og'riqsizlantirishning ahamiyati. Narkoz (umumiy og'riqsizlantirish) tushunchasini aniqlash va uni qo'llash yoki qo'llamaslikka ko'rsatma. Predimikasiya - umumiy og'riqsizlantirishga farmakologik tayyorlash. Narkozning tasniflanishi va narkotik moddalarni yuborish usullari. Har xil turdagi hayvonlar narkozi.

5-mavzu: Mahalliy og'riqsizlantirish ahamiyati va qo'llash usullari

Mahalliy og'riqsizlantirish tushunchasi va uni qo'llash yoki qo'llamaslikka ko'rsatma. Mahalliy og'riqsizlantirishda premedikasiyani qo'llash. Mahalliy og'riqsizlantirishning turlari. Mahaliy og'riqsizlantirishning diagnostik ahamiyati.

6-mavzu: Xirurgik operatsiya elementlari va to'qimalarni ajratish. Qon oqishini to'xtatish

Yumshoq to'qimalarni ajratish qoida va usullari. To'qimalarni ajratish uchun qo'llaniladigan asboblar, ratsional kesim haqida tushuncha. To'qimalarni ajratishning shakliga, yo'nalshiga va chuqurligiga qarab turlarga bo'linishi. Qon oqishi turlari. Qon oqishini oldini olish. Qon oqishini vaqtinchalik to'xtatish. Qon oqishini batamom to'xtatish mexanik usullari, Tomirlarni bog'lash. Qon to'xtashini fizikaviy usuli: mahalliy gipotermiyani (sovuq suv, muz, xlor etil) va gipertermiyani (termokauterezasiya, quydirish)ni qo'llash. Kimyoviy usullar: qon to'xtatish maqsadida moddalarni umumiy va mahalliy qullash. Biologik usullar: to'qimalar, ketgut va qon to'xtatish, gubkalar yordamida tamponada qilish.

7-mavzu: To'qimalarni birlashtirishning umumiy prinsiplari.

Xirurgik chok turlari: uzlikli choklar, uziliksiz choklar. Qo'llanilishi bo'yicha choklarning xarakteristikasi (yaqinlashtiruvchi, birlashtiruvchi, vaqtinchalik)

holatiga qarab, ikkalamchi, kechiktirib quyilishi mumkin bo‘lgan cho‘kma choklar. Teri choklarini olib tashlash. Maxsus choklar: ichaklarga qo‘llaniladigan (qo‘llash xususiyatlari, prinsiplari va turlari). Pay, nerv, qon tomirlarni birlashtiruvchi choklar. Sintetik yelimlar yordamida to‘qimalarni birlashtirish.Suyaklarni birlashtirish asoslari.

3-Modul. Bosh, bo‘yin va ko‘krak sohasidagi operatsiyalar

8-mavzu: Bosh sohasining anatomo-topografik tuzilishi. Burun, shox va miyada o‘tkaziladigan operatsiyalar

Boshning anatomo-topografik tuzilishi, qismlarga bo‘linishi, chegaralari. Shoxda o‘tkaziladigan operatsiyalar. Buzoqlarning shoxlarini o‘sishini oldini olish usullari. Mayda va yirik shoxli hayvonlar shoxini olib tashlash usullari. Bosh miyada o‘tkaziladigan operatsiyalar: anatomo-topografik ma’lumotlar. Qorako‘l qo‘ylarda senuroz kasalligini operatsiya yo‘li bilan davolash.

9-mavzu: Tish, til va ko‘zda o‘tkaziladigan operatsiyalar

Tishlarda o‘tkaziladigan operatsiyalar. Tishni sug‘urib olish va ildizini urib chiqarish. Ko‘z oblastidagi operatsiyalar: anatomo-topggrafik ma’lumot. Ko‘z qovog‘ining buralib chiqishi va qaytishini operatsiya usulida davolash. Ko‘z soqqasini eksterpasiya qilish. Itlar tashqi quloq oblastidagi operatsiyalar: anatomo-topografik ma’lumot. Turli zotdagi itlar quloq suprasining amputasiyasi.

10-mavzu: Bo‘yinning ventral qismida o‘tkaziladigan operatsiyalar

Anatomo-topografik ma’lumotlar. Otlarda va yirik shoxli qoramollarda kranial, kaudal, simpatik va vagonosimpatik tugunlari blokadasi. Kekirdak ichki inyeksiyasi. Kekirdakni kesish texnikasi. Bo‘yinturuq venasi va uyqu arteriyasini bog‘lash. Qizilo‘ngachni yorish. Cho‘chqalar oldingi kovak venasini inyeksiyasi.

11-mavzu: Ko‘krak sohasidagi operatsiyalar

Ko‘krak devori va ko‘krak qafasida joylashgan organlarning anatomo-topografik ma’lumoti. Ko‘krak devoridagi nervlarni o‘tkazuvchan og‘riqsizlantirish. Yulduzsimon nerv tugunining blokadasi. Chegara simpatik tarmog‘ini va qorin nervlarining plevra usti novokain blokadasi. Plevrosentez. Qovurg‘ani kesish texnikasi. Aortaning punksiyasi.

4-Modul. Qorin sohasi, jinsiy va ayirish organlari hamda oyoqlardagi operatsiyalar

12-mavzu: Qorin sohasi anatomo-topografik tuzilishi. Qismlarga

bo‘linishi. Nervlarni og‘riqsizlantirish. Laporatomiya va ruminotomiya

Qorinning yonbosh va ventral devorini anatomo-topografik tuzilishi. Yirik shohli mollar va otlarda paranefral novokain blokadasi. Qorinning yonbosh devorini teshish. Aortani punksiyasi. Laparotomiya texnikasi. Kavshovchi hayvonlarda oshqozon va oshqozonoldi bo‘lmalardagi operatsiyalar, anatomo-topografik ma’lumot. Operatsiya o‘tkazishga ko‘rsatma. Katta qorinni teshish. Ruminotomiya (katta qorinni yorish).

13-mavzu: Itlarda gastrotomiya, enterotomiya va ichaklarni kesish texnikasi. To‘g‘ri ichakda o‘tkaziladigan operatsiyalar. Dabbalarni jarrohlik yo‘li bilan davolash

Ichaklardagi operatsiyalar: anatomo-topografik ma’lumot. Katta va mayda hayvonlar enterotomiyasi. Ichak rezeksiyasi (olib tashlanishi). Dabbani operativ yo‘l bilan davolash. To‘g‘ri bo‘ladigan, to‘g‘ri bo‘lmaydigan, qisilgan. Kindik, qorin yonbosh devoridagi dabbalarni operatsiya qilish. To‘g‘ri ichak va anus (orqa chiqaruv teshigi) dagi operatsiyalar. Anatomo-topografik ma’lumot. To‘g‘ri ichak rezeksiyasi Sun’iy yo‘l bilan orqa chiqaruv teshigini yaratish (kolostomiya). Dabba turlari va ularni jarrohlik yo‘li bilan davolash. To‘g‘ri bo‘ladigan, to‘g‘ri bo‘lmaydigan, qisilgan. Kindik, qorin yonbosh devoridagi dabbalarni operatsiya qilish.

14-mavzu: Jinsiy a’zolaridagi operatsiyalar

Erkak hayvonlarni jinsiy a’zosida o‘tkaziladigan operatsiyalar. Anatomo-topografik ma’lumotlar. Cho‘chqalarda, qo‘chqorlarda, buqalarda jinsiy a’zo nervlarining og‘riqsizlantirilishi. Ayg‘irlar jinsiy a’zosini amputasiyasi. Erkak hayvonlarni axtalash. Iqtisodiy ahamiyati va maqsadi. Chov kanalining anatomo-topografik tuzilishi. Hayvonlarni axtalashga tayyorlash va tekshirish. Og‘riqsilantirish va fiksasiya (mustahkamlash). Fermer xo‘jaliklarida ommaviy axtalash texnologiyasi. Operatsiya yo‘li bilan sinovchi buqa va qo‘chqorlar urug‘don tizmachasini kesib tayyorlash. Urg‘ochi hayvonlar ovarioektomiyasi. Chot oblasti va tos bo‘shlig‘i organlarida o‘tkaziladigan operatsiyalar, jinsiy a’zoni bosh qismi falajida fiksasiya qilish.

15-mavzu: Oyoqlarning anatomo-topografik tuzilishi. Nervlarni og‘riqsizlantirish

Oldingi oyoqning otlar va yirik shohli qoramollarda anatomo-topografik tuzilishi: chegaralari, oblastlarga bo‘linishi, oblastlar topografiyasi. Sinovial tuzilmalardagi operatsiyalar. Bo‘g‘im kapsulasi, shilimshiq xaltachalar va pay

qinlarining tuzilishi. Otlarda tirsak, teri osti bursani (olib tashlashini) va yirik shohli hayvonlarda bilakuzuk oldi bursasining eksterpasiyasi.Paylarda o'tkaziladigan operatsiyalar. Anatomo-topografik ma'lumotlar. Barmoqlarni bukuvchi chuqur muskulli payining tenotomiyasi (kesilishi). Orqa oyoq. Anatomo-topografik ma'lumotlar, chegaralari, oblastlarga bo'linishi, tashqi oriyentirlari. Punksiyalar: tizza, boldir bo'g'imlari va tarzal pay qinining paylardagi operatsiyalar. Oyoq amputasiyasi va ekzartikuyasiyasi operasiya texnikasi. Operatsiya ko'rsatma va qarshi ko'rsatmalar. Oyoq amputasiyasi operasiya texnikasi. ekzartikuyasiyasi operasiya texnikasi va bajarilish tartibi.

III. Amaliy mashg'ulotlari bo'yicha ko'rsatma va tavsiyalar

III.I. Amaliy mashg'ulotlar uchun quyidagi mavzular tavsiya etiladi:

1. Xirurgik klinika bilan tanishish va unda xirurgik ishlarni tashkil etish. Hayvonlarni fiksatsiya qilish prinsiplari.
2. Xirurgik asboblarni operatsiyaga tayyorlash va operatsiyadan keyin sterilizatsiya qilish va saqlash.
3. Bog'lov tikuv materiallari va oqliklarni sterilizasiya qilish.
4. Qo'lni operatsiyaga tayyorlash va usullarini taqqoslab baholash.
5. Operatsiya maydonchasi va hayvonlarni operatsiyaga tayyorlash.
6. Inyeksiya, infuziya va qon chiqarish texnikasi.
7. Qishloq xo'jalik hayvonlarida narkoz va narkotik moddalarni yuborish usullari.
8. Mahalliy og'riqsizlantirish va uning turlari.
9. Xirurgik operatsiya elementlari: To'qimalarni ajratish va qon oqishini to'xtatish.
10. To'qimalarni biriktirish va xirurgik choklash texnikasi.
11. Desmurgiya. Yumshoq bog'lamlarning qo'yish texnikasi.
12. Qattiq bog'lamlarni qo'yish texnikasi.
13. Boshning anatomo-topografik tuzilishi. Bosh nervlarini og'riqsizlantirish.
14. Quloq suprasi amputasiyasi texnikasi.
15. Bo'yinning ventral qismi anatomo-topografik tuzilishi. Nervlarini og'riqsizlantirish.
16. Bo'yinturuq venasi rezeksiyasi texnikasi.
17. Ko'krak devorining anatomo-topografik tuzilishi. Nervlarini og'riqsizlantirish
18. Qovurg'ani kesish texnikasi.
19. Qorinning anatomo-topografik tuzilishi, nervlarni og'riqsizlantirish
20. Hayvonlarda laporatomiya texnikasi.
21. Itlarda gastrotomiya texnikasi.
22. Ichaklarni kesish texnikasi.
23. Sun'iy orqa chiqaruv teshigini hosil qilish texnikasi.
24. Dabbalar va ularni xirurgik usulda davolash.
25. Jinsiy va ayirish a'zolari anatomo-topografik tuzilishi, nervlarni

	og‘riqsizlantirish. 26.Har xil turdagi hayvonlarni axtalash. 27.Urg‘ochi hayvonlar jinsiy organlarida o‘tkaziladigan operatsiyalar. 28.Oldingi oyoqlarning anatomo-topografik tuzilishi, nervlarni og‘riqsizlantirish. 29.Orqa oyoqlarning anatomo-topografik tuzilishi, nervlarni og‘riqsizlantirish. 30.Barmoq amputasiyasi va ekzartikulyatsiyasi. Amaliy mashg‘ulotlar zarur asbob-uskunalar, preparatlar bilan jihozlangan auditoriyada bir akademik guruhga bir professor-o‘qituvchi tomonidan o‘tkazilishi zarur. Mashg‘ulotlar faol va interfaol usullar yordamida o‘tilishi, mos ravishda munosib pedagogik va axborot texnologiyalar qo‘llanilishi maqsadga muvofiq. **V. Mustaqil ta’lim va mustaqil ishlar** Mustaqil ta’lim uchun tavsiya etiladigan mavzular: 1. Plastik operasiya elementlari. 2. Kuydirish (termokauterizasiya). 3. Burun qo‘shimcha bo‘shliqlari trepanasiyasi. 4. So‘lak bezlari yo‘llarida va havo yo‘li xaltasida o‘tkaziladigan operatsiyalar. 5. Hiqildoqda o‘tkaziladigan operasiyalar. 6. Shirdonda o‘tkaziladigan operatsiyalar. 7. Kriptorxidlarni axtalash. 8. Sut bezlarida o‘tkaziladigan operatsiyalar. 9. Siydik-jinsiy organlarda operasiyalar. 10.Jinsiy a’zo va prepusiyadagi operasiyalar. 11.Erkak hayvonlar chot sohasidagi operasiyalar. 12.Nervlarda o‘tkaziladigan operatsiyalar. 13.Oldingi oyoqda sinovial xaltacha, pay qinlari va bo‘g‘imlarda o‘tkaziladigan operasiyalar. 14.Bo‘g‘im va bo‘g‘im apparatlarida operatsiyalar o‘tkazish. 15.Oyoq nervlari blokadasi. Mustaqil o‘zlashtirilgan mavzular bo‘yicha talabalar tomonidan fanning xususiyatlarini hisobga olgan holda internet tarmoqlaridan foydalanib referat va uning taqdimoti, inyeksiyalar va operatisiyalar o‘tkazish texnikasi bo‘yicha videolavhalar, fotosuratlar va ma’lumotlar tayorlash, xorijiy tillardagi adabiyotlardan foydalanishi, keys-stadi, vaziyatli masalalar to‘plami ishlab chiqishi tavsiya etiladi.
3.	**VI. Fan o‘qitilishining natijalari (shakllanadigan kompetensiyalar)** Fanni o‘zlashtirish natijasida talaba: • hayvonlarni fiksatsiya qilsish va og‘riqsizlantirish usullari, xirurgik muolajalarni o‘tkazish; operatsiya elementlari va hayvonlar a’zolarini topografik joylashishi ***haqida tasavvurga ega bo‘lishi;***

	• xirurgik operasiyalarni o‘tkazish tartib-qoidalari va asbob-uskunalardan to‘g‘ri foydalanishni, operasiyalarning tavsiflanishini, ommaviy operasiyalarni tashkil etish va o‘tkazish texnologiyasini, fiksatsiya usullarini, antiseptika va aseptika qoidalarini, xirurgik asboblar, tikish va bog‘lash materiallarini, anesteziologiya texnikasini; nerv tugunlar qamali, shoxsizlantirish, traxeotomiya, traxeostomiya, rezeksiya, rumenosentez, rumenotomiya, enterotomiya, gastrotomiya o‘tkazishni, axtalash, amputasiya, uretrotomiya, uretrostomiya, sistotomiya usullarini, muolaja jarayonida qulay kesim, qon ketishni to‘xtatish, biriktiruvchi va maxsus choklash usullarini ***bilishi va ulardan foydalana olishi;*** • hayvon a’zolarining topografiyasiga asoslanib, har xil turdagi hayvonlarda xirurgik operatsiyalar o‘tkazish texnikasini bajarish ***ko‘nikmalariga ega bo‘lishi*;** • Chorvachilik fermer xo‘jaliklari va veterinariya kliniklari sharoitida xirurgik ishlarni tashkil qilish va uni boshqarish, har bir o‘tkaziladigan operatsiyalarning hayvon salomatligi uchun xavf ekanligi va uni oldini olish ***malakalariga ega bo‘lishi kerak.***
4.	**VII. Ta’lim texnologiyalari va metodlari:** • ma’ruzalar; • interfaol keys-stadilar; • seminarlar (mantiqiy fikrlash, tezkor savol-javoblar); • guruhlarda ishlash; • taqdimotlarni qilish; • individual loyihalar; • jamoa bo‘lib ishlash va himoya qilish uchun loyihalar.
5.	**VIII. Kreditlarni olish uchun talablar:** Fanga oid nazariy va uslubiy tushunchalarni to‘la o‘zlashtirish, tahlil natijalarini to‘g‘ri aks ettira olish, o‘rganilayotgan jarayonlar haqida mustaqil mushohada yuritish va joriy, oraliq nazorat shakllarida berilgan vazifa va topshiriqlarni bajarish, yakuniy nazorat bo‘yicha yozma ishni topshirish.
6.	**Asosiy adabiyotlar** 1. Тимофеев С.В., А.Н. Квочко, ВВ. Слинько. Оперативная хирургия с основами топографической анатомии.Учебное пособие. Ставрополь, Изд. «АГРУС» 2012, 60 С. 2. Веремей Э.И., Семёнов Б.С. и др. Оперативная хирургия с основами топографической анатомии животных, Москва, Изд. Квадро, 2013. 3. Niyozov X.B., “Umumiy va xususiy xirurgiya”. O‘quv qo‘llanma. Toshkent,

	"O‘zbekiston", 2015 yil. **Xorijiy adabiyotlar** 1. Hendrickson Dean A., Baird A.N. Techniques in large animal surgery 4th ed. - John Wiley & Sons, 2013. 2. Mann F.A., Constantinescu G.M. Fundamentals of Small Animal Surgery 1st. ed. - Wiley-Blackwell, 2011. 3. Jorg A. Auer Dr Med Vet MS , John A. Stick DVM Equine Surgery, 4e 4th, 2011. 4. Theresa Welch Fossum, Small Animal Surgery, 5th Edition, Wiley-Blackwell, ISBN-13: 978-0323443449, 2021 5.Jorg A. Auer, John A. Stick, Equine Surgery, 5th Edition, Wiley-Blackwell, ISBN-13: 978-0323484206, 2021 6. Шебц Х, Брас В. Хирургия собак и кошек, Москва, "Аквариум", 2015 **Qo‘shimcha adabiyotlar** 1. Mirziyoyev Sh.M. Erkin va farovon demokratik O‘zbekiston davlatini birgalikda barpo etamiz. Toshkent, "O‘zbekiston" NMIU, 2017 yil. – 29 bet. 2. Mirziyoyev Sh.M. Qonun ustuvorligi va inson manfaatlarini ta’minlash yurt taraqqiyoti va xalq farovonligining garovi. "O‘zbekiston" NMIU, 2017 yil. – 47 bet. 3. Mirziyoyev Sh.M. Buyuk kelajagimizni mard va olijanob xalqimiz bilan birga quramiz. "O‘zbekiston" NMIU, 2017 yil. – 485 bet. 4. Mirziyoyev Sh.M. "O‘zbekiston Respublikasini yanada rivojlantirish bo‘yicha harakatlar strategiyasi to‘g‘risida"gi 2017 yil 7 fevral, PF-4947-son Farmoni. Toshkent, 2017. 5. Mirziyoyev Sh.M. "Oliy ta’lim tizimini yanada rivojlantirish chora –tadbirlari to‘g‘risida" gi 2017 yil 20 apreldagi PQ-2909-sonli Qarori. Toshkent, 2017 yil. 6. Dilmurodov N.B., Eshmatov G.X. «Hayvonlar anatomiyasi» fanidan amaliy laboratoriya mashg‘ulotlar bo‘yicha o‘quv qo‘llanma. Toshkent, 2018 yil. **Axborot manbaalari** 1. www. ziyonet.uz 2. www. Wikipedia.org 3. www. animalsurgery.com 4. www. animalmedical.net
7.	Fan dasturi Oliy va o‘rta maxsus, professional ta’limi yo‘nalishlari bo‘yicha o‘quv-uslubiy birlashmalar faoliyatini Muvofiqlashtiruvchi Kengashning 2021 yil "17" 08 dagi 3 -sonli bayonnomasi bilan ma’qullangan.

	O‘zbekiston Respublikasi Oliy va o‘rta maxsus ta’lim vazirligining 2021 yil “18” dagi 08 356 - sonli buyrug‘i bilan ma’qullangan. Fan dasturlarini tayanch oliy ta’lim muassasasi tomonidan tasdiqlashga rozilik berilgan.
8.	**Fan/modul uchun mas’ullar:** Narziyev B.D. – SamVMI, “Veterinariya jarrohligi va akusherlik” kafedrasi dotsenti, kafedrasi mudiri, veterinariya fanlari nomzodi, dotsent. Yulchiyev J.B.– SamVMI, “Veterinariya jarrohligi va akusherlik” kafedrasi assistenti, PhD.
9.	**Taqrizchilar:** A.A.Raimov – Samarqand shahar Hayvonlar kasalliklari tashxisi va oziq-ovqat mahsulotlari xavfsizligi davlat markazi direktori. N.B.Dilmurodov– SamVMI, “Hayvonlar anatomiyasi, gistologiya va patologik anatomiya” kafedrasi mudiri, professor, veterinariya fanlari doktori.

II. Working program

MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF THE REPUBLIC OF UZBEKISTAN

SAMARKAND STATE UNIVERSITY OF VETERINARY MEDICINE, LIVESTOCK AND BIOTECHNOLOGIES

Registered
№ PB-5440100-2.13
«30» 08. 2022 year

«APPROVED»
Vice-rector for academic affairs, associate professor
Elmurodov A.A
«30» 08. 2022 year

CURRICULUM BY SUBJECT "OPERATIVE SURGERY AND TOPOGRAPHIC ANATOMY" (SYLLABUS)

Area of education:	400000 - Agriculture and Water Management
Field of education:	440000 – Veterinary
The direction of education:	5440100 - Veterinary medicine (by type of activity)

Samarkand – 2022

The curriculum is developed based on the curriculum and curriculum of the subject.

Compilers:

1. Narziev B.D. - Associate Professor of the Department of Veterinary Surgery and Obstetrics, Candidate of Veterinary Sciences.

2. Yulchiev Zh.B. -Assistant of the Department of Veterinary Surgery and Obstetrics, Phd

3. Yuldasheva M.K. - Assistant of the Department of Veterinary Surgery and Obstetrics

Reviewers:

1. Khakimov B. - Deputy Head of the Veterinary Department and development of animal husbandry in the city of Samarkand, candidate of veterinary sciences.

2.Dilmurodov N.B. - Head of the Department, "Anatomy, histology and pathological anatomy animals ", Doctor of Veterinary Sciences,Professor

This curriculum was discussed at a meeting of the Department of Veterinary Surgery and Obstetrics No. 1 dated 25.08. 2022 and recommended for approval to the Faculty Council.

Head of the chair, Associate Professor _____ **Narziev B.D.**

The educational work program in Russian was discussed and approved by the Council of the Faculty of Veterinary Prevention and Treatment and recommended for use (Protocol No. 1 dated "26" 08 2022).

Head of faculty coyncil, professor _____ **Niyazov Kh.B.**

Agreed:
Head of educational and methodical departament, associate professor _____ **Ruzikulov R.F.**

Syllabus of subject

SAMARKAND STATE UNIVERSITY OF VETERINARY MEDICINE, ANIMAL HUSBANDRY AND BIOTECHNOLOGY

Information about science:

Fan password: **OXTAM3306**

Subject name: **Operativ xirurgiya va topografik anatomiya**

Semester/year: **5-semestr/2022-2023 o‘quv yili**

Department: Veterinary Surgery and Obstetrics

Hours/credits: **6.0 ECTS (90 classroom hours, 90 independent study hours)**

Lecture	Practical training	Independent education	Total
30	**60**	**90**	**180**

Location of science classes:

Auditorium time: according to the class schedule

Requirements:

Department responsible for science: **Veterinary surgery and obstetrics**

Information about the instructor:

Associate Professor, Ph.D. Yulchiyev J.B.

Email:narziyev.54@mail.ru Working hours: By appointment
Department location: SamDVMCHBU, 3rd educational building, room 341

Phone: +99891-298-95-09 business phone; mobile: +99891-298-95-09

Email:jasur_vet@mail.ru Working hours: By appointment

I. The purpose of teaching the subject - the purpose of teaching the subject "Operative surgery and topographical anatomy" - is to acquire knowledge and skills and competences in students on the rules and methods of surgical operations performed in livestock farms and practical veterinary medicine.

II. The task of the subject- is to provide students with theoretical knowledge, practical skills, methods of fixing and anesthetizing animals, providing theoretical knowledge and practical skills on animal surgery, performing

operations on sick and healthy animals. and forming a methodological approach and worldview to the development of effective methods of performing operational methods.

III. A student as a result of mastering science:

- methods of fixing and anesthetizing animals, carrying out surgical procedures; to have an idea about the topographical location of operational elements and animal organs;
- procedures for conducting surgical operations and the correct use of equipment, descriptions of operations, the technology of organizing and conducting mass operations, methods of fixation, antiseptic and aseptic rules, surgical instruments, sutures and bandages , anesthesiology; nerve ganglion entrapment, debranching, tracheotomy, tracheostomy, resection, rumenocentesis, rumenotomy, enterotomy, gastrotomy, excision, amputation, urethrotomy, urethrostomy, cystotomy, convenient incision during treatment, stopping bleeding, suture and special suturing methods know and be able to use them;
- based on the topography of animal organs, to have the skills to perform surgical operations on various types of animals;
- In the conditions of livestock farms and veterinary clinics, the organization and management of surgical work, the awareness of the danger to the animal's health and the prevention of it should be acquired.

IV. Teaching methods:

In the process of teaching science, it is necessary to use modern methods, connect problems in the field with mass forms of education, and strengthen students' theoretical knowledge through practical training. Wide use of technical means of teaching visual aids, dry and wet preparations of animal organs, operative surgery and topographical anatomy, introduction of student knowledge assessment system for effective mastering of educational materials by students. Advanced pedagogical technologies are used in lectures.

The following main conceptual approaches are used in designing the course "Operative surgery and topographical anatomy":

- Personalized education.
- Systematic approach.
- An action-oriented approach.
- Dialogic approach.
- Organization of cooperative education.
- Problematic education.

V. Structural structure of science:

5.1. Calendar thematic plan of planned lectures on "Operative surgery and topographical anatomy".

Lecture sessions:

№	topics	plan	hour
Module-1. Introduction. The concept of a surgical operation			
1.1	Introduction. Teaching about surgical operation.	1.1.1. Understanding of the science of operative surgery and its relationship with other sciences. 1.1.2. Objectives and tasks of operative surgery. 1.1.3. A brief history of operative surgery.	2
1.2	Learning about surgical infection.	1.2.1. Brief information about the structure and biological properties of the skin of the hands. 1.2.2. The basics of hand preparation for surgery are mechanical cleaning, chemical disinfection and hardening. Use of surgical gloves. 1.2.3. Basics of surgical site preparation and disinfection of mucous membranes.	2
1.3	Prevention of surgical infections.	1.3.1. Ways of infection entering the surgical wound. Teaching about antiseptics and aseptics. 1.3.2. Methods of sterilization and disinfection of surgical instruments before and after surgery and their storage. 1.3.3. Characterization and sterilization of suture, bandage materials methods.	2
Module 2. Anesthesiology.			
2.1	Anesthesiology. Anesthesia and its use in surgical practice.	2.1.1. The importance of anesthetizing animals during surgery, the effect of pain on the body. 2.1.2. A brief history of anesthesia. 2.1.3. Definition of narcosis and guidance on whether to use it or not.	2
2.2	The value of local anesthesia and how it is used.	2.2.1. Defining the concept of local anesthesia and its indications and contraindications. 2.2.2. Application of pre-designation in local anesthesia.	2

		2.2.3. Types of local anesthesia. Diagnostic value of local anesthesia.	
2.3	Elements of a surgical operation and tissue erosion. Stopping bleeding.	2.3.1. Corrosion of soft tissues (rules and methods). The use of instruments for tissue erosion, the concept of rational separation. 2.3.2. Types of erosion: by structure, direction and depth of tissues. 2.3.3. Types of bleeding. Prevention of bleeding. Temporary stop of bleeding. Complete stop of bleeding, mechanical stop, ligation of blood vessels.	2
2.4	General principles of tissue joining.	2.4.1. Types of surgical sutures: discontinuous and continuous sutures. 2.4.2. Characteristics of the application of the seam. Removal of the seam. 2.4.3. Special sutures: applied to the wall of the hollow organs of the digestive tract (esophagus, stomach, small and large intestines), (principles and types).	2
Module-3. Operations in the area of the head, neck and chest wall			
3.1	Anatomical and topographic structure of the head area. Operations of the nose, horns and brain.	3.1.1. Anatomical and topographic structure of the head, division into parts and boundaries. for removing horns in small and large animals. Brain operations: anatomical and topographic data. n of coenurosis in karakul sheep.	2
3.2	Operations of the tongue, eyes and teeth.	3.2.1. Operations on the teeth. Extraction of the tooth together with the root. ns in the eye area: anatomical and topographic data. 3.2.3. Surgery for turning the eyelids. Extension of the eyeball.	2
3.3	Ventral neck surgery.	3.3.1. Anatomical and topographic data. 3.3.2. Blockade of the cranial, caudal,	2

		sympathetic and vagosympathetic node in horses and large animals. 3.3.3. Conductive anesthesia of the ventral neck	
3.4	Operations in the chest area.	3.4.1. Anatomical and topographic data of the chest wall and located organs in the chest. 3.4.2. Conductive anesthesia in the chest wall. Star node blockade. Novocaine blockade of the peripheral sympathetic trunk and suprapleural nerve of the abdominal cavity 3.4.3. Pleurosynthesis technique. Rib resection technique. Puncture of the aorta.	2
Module-4. Operations of the abdominal cavity, organs of the genitourinary system and extremities			
4.1	Anatomical and topographic structure of the abdominal cavity. Technique of laparotomy and ruminotomy.	4.1.1. Anatomical and topographic structure and division into parts of the iliac and abdominal wall of the abdomen. 4.1.2. Technique of laparotomy. 4.1.3. Operations of the stomach and pancreas of ruminants, anatomical and topographic information. Indications for the operation. Scar puncture. Ruminotomy.	2
4.2	Technique of gastrotomy, enterotomy of dogs. Rectum operations.	4.2.1. Surgical treatment of hernias. Bowel operations: anatomical and topographic data. 4.2.2. Enterotomy of small and large animals. Bowel resection. Surgical treatment of hernias. 4.2.3. Reducible, incorrigible, restrained. Technique of umbilical, peritoneal hernia surgery.	2
4.3	Urinary - genital operations.	4.4.1. Urine - anatomo-topographic data of genital organs.	2

		4.4.2. Operations in Chot region: anatomo-topographic information, urethrotomy, urethrostomy. 4.4.3. Identify different types of animals.	
4.4	Topographic structure of the limbs. Nerve pain relief.	4.5.1. Technique of exarticulation and amputation of limbs. 4.5.2. Anatomical and topographic structure of the forelimb of horses and cattle: boundaries, division into regions, topography of regions. 4.5.3. Indications and contraindications for surgery. Limb amputation technique. Technique and procedure for carrying out disarticulation.	2
Total:			**30**

5.2. Calendar-thematic plan of practical classes on the subject "Operative surgery and topographic anatomy"

Practical topics			
№	**topics**	**plan**	**hour**
1.	Acquaintance with the surgical clinic and the organization of surgical work. Principles of animal fixation	1.1 Acquaintance with surgical instruments and the office. Operating rules. 1.2. Fixation of animals and their meanings. 1.3. Methods for fixing and dropping animals.	2
2.	Preparation of surgical instruments for surgery and their postoperative sterilization and storage.	2.1. Types of surgical instruments. 2.2. Hot sterilization: boiling, thermocauterization. 2.3. Cold sterilization.	2
3.	Sterilization of dressings, sutures and linen.	3.1. Characteristics of suture materials.	2

		3.2. Methods for sterilization of suture materials. 3.3. Sterilization of linen and dressings: a) Autoclave; b) Steam; c) Iron	
4.	Preparing hands for surgery.	4.1. The importance of preparing hands for surgery. 4.2. Principles of preparing hands for surgery: a) mechanical cleaning; b) Chemical disinfection; c) Tanning. 4.3. Assessment and methods of preparing hands for surgery.	2
5.	Preparation of the animal and the operating field.	5.1. The importance of preparing the operating field. 5.2. Principles of preparation of the operating field. 5.3. Methods for preparing the operating field. Disinfection of mucous membranes.	2
6.	Injection, infusion and bloodletting technique.	6.1. Injection methods. 6.2. Infusion technique. 6.3. Bloodletting, indications and techniques.	2
7.	Methods of introducing anesthesia and narcotic substances to farm animals.	7.1. The concept of anesthesia and its meaning. 7.2. Routes of drug administration: a) Inhalation; b) Non-inhalation. 7.3. Instruments for the administration of anesthesia.	2
8.	Types of local anesthesia.	8.1. The concept of local anesthesia. 8.2. Types of local anesthesia: a) Superficial; b) infiltration; c) conductor; d) epidural. 8.3. The importance of local anesthesia.	2
9.	Elements of a surgical operation. Methods for	9.1. Performing the tissue separation technique.	2

	separating tissues.	9.2. Temporary stop of bleeding.	
10.	Ways to stop bleeding.	10.1. Bleeding and its types. 10.2. Temporary stoppage of bleeding. 10.3. Methods for stopping bleeding: a) mechanical; b) Physical; c) chemical; d) biological.	2
11.	Suturing technique and tissue connecting.	11.1. The value of the tissue connection and the tools used. 11.2. Discontinuous seam technique. 11.3. Continuous seam technique and their types. Types of intestinal sutures.	2
12.	Desmurgy. The technique of applying a soft bandage.	12.1. Types of dressings. Classification of dressings. 12.2. The technique of applying bandages. 12.3. Immobilizing dressings.	2
13.	The technique of applying solid bandages.	13.1. Types of hard dressings. 13.2. Technique of preparation and application of plaster casts.	2
14.	Anatomical and topographic structure of the head. Pain relief of the head nerves.	14.1. Anatomo-topographical structure of the head. 14.2. Conductive anesthesia of the head nerves (superocular, infraorbital, chin nerve, etc.).	2
15.	Auricle amputation technique.	15.1. Technique of coenurosis operation in karakul sheep. 15.2. Outer ear surgery in dogs. 15.3. Anatomical and topographic structure of the ear. Ear amputation.	2
16.	Brain surgery.	16.1. Technique of coenurosis operation in karakul sheep. 16.2. Applied pedagogical technologies: brainstorming, blitz-survey	2
17.	Anatomical and topographic structure of the ventral part of the neck. Nerve pain relief.	17.1. Anatomical and topographic data. 17.2. Conductive anesthesia of the nerves of the ventral part of the neck.	2
18.	Jugular vein resection	18.1. Anatomical and topographic data.	2

	technique.	18.2. The structure and location of the vein. 18.3. Resection technique.	
19.	Anatomical and topographic data of the chest wall. Nerve pain relief.	19.1. Anatomical and topographic data. 19.2. Conductive anesthesia of the nerves of the thoracic region. 19.3. Novocaine pleural block according to Mosin. Rib cutting technique.	2
20.	Rib resection technique.	20.1. Anatomical and topographic data. 20.2. The technique of the operation.	2
21.	Anatomical and topographic structure of the abdomen and nerve pain relief.	21.1. Anatomical and topographic data. Conductive anesthesia of the abdominal nerves. 21.2. Surgery in the abdomen. Laparatomy and indications. Incisions in the ventral abdomen. 21.3. Incisions in the side of the abdomen. Laparotomy technique.	2
22.	Ruminotomy technique for ruminants.	22.1. Anatomical and topographic data. 22.2. Operation technique.	2
23.	Gastrotomy technique in dogs.	23.1. Anatomical and topographic data. 23.2. Operation technique. 23.3. Technique of operations.	2
24.	Bowel resection technique.	24.1. Bowel resection Rectum and anus surgery. 24.2. Anatomical and topographic data. 24.3. Rectum resection. Artificial opening of the anus (colostomy).	2
25.	Hernias and their surgical treatment.	25.1. Hernia classification. 25.2. The anatomical structure of the hernia.	2

		25.3. Technique of operations of umbilical, inguinal, testicular hernias.	
26.	Operations of the genitourinary organs, anatomical and topographic structure, nerve pain relief.	26.1. Anatomical and topographic data. 26.2. Castration of animals. Anatomical and topographic structure of the scrotum and groin area. 26.3. The technique of castration of different types of animals.	2
27.	Operations performed on the female genital organs.	27.1. Ovariectomy technique in dogs and cats. 27.2. Operations in the uterus.	2
28.	Anatomo-topographical structure of the front legs, anesthetization of nerves	28.1. Anatomo-topographic structure, boundaries and division of the forefoot. 28.2. Anesthetizing the nerves of the front legs. 28.3. Operations on synovial structures.	2
29.	Anatomo-topographical structure of hind legs, pain relief of nerves	29.1. Anatomo-topographic structure, boundaries and division of the hind leg. 29.2. Anesthetizing the nerves of the hind legs. 29.3. Puncture of the joints of the hind legs.	2
30.	Finger amputation.	30.1. Anatomical and topographic structure of the finger. 30.2. Operation technique.	2
Total:			**60**

VI. Calendar thematic plan of planned independent education of students in "Operative surgery and topographical anatomy".

№	Subjects of independent education	Implementation mechanism	Due date	Size (per hour)

1	Plastic operation elements.	Writing a report	September	6
2	Burning (thermocauterization)	Writing a report	September	6
3	Trepanation of paranasal sinuses.	Writing a report	September	6
4	Operations on salivary glands and airways.	Prepare from the literature and complete assignments	October	6
5	Operations carried out in Larynx.	Prepare from the literature and complete assignments	October	6
6	Operations in Omasum.	Prepare from the literature and complete assignments	October	6
7	Investigating cryptorchids.	Prepare from the literature and complete assignments	November	6
8	Mammary gland operations.	Prepare from the literature and complete assignments	November	6
9	Operations on genitourinary organs.	Prepare from the literature and complete assignments	November	6
10	Operations on the penis and prepuce.	Writing a report	December	6
11	Operations in the field of male animal chat.	Writing a report	December	6
12	Nerve operations.	Prepare from the literature and complete assignments	December	6
13	Operations on the synovial sac, tendon sheaths and joints of the front leg.	Prepare from the literature and complete assignments	January	6

14	Performing operations on joints and joint apparatus.	Prepare from the literature and complete assignments	January	6
15	Leg nerve block.	Prepare from the literature and complete assignments	January	6
Total:				**90**

VII. Lists of suggested literature

Main literature:

1. Rustamov Kh.K., Akhbutaev Ya.A., Narziev B.D. "Operative surgery", Textbook, 1997.

2.Magda I.I. and others. Operative surgery and anesthesiology. Textbook, Moscow, 1991.

Foreign literature:

1. Guy St Jean Adrian Steiner A., David Weaver “Bovine Surgery and Lameness”, Text book, USA, 2005

2. Weaver, Adrian Steiner and GuySt Jean. Bovine Surgery and Lameness, Second Edition / © 2005 year / Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ, UK.

Additional literature:

1. Mirziyoyev Sh.M. Erkin VA Farovon Deocratic Uzbekiston Davlatini Birgalikda Barpo Etamiz. Toshkent. "Uzbekiston" NMIU, 2017-29b

2. Mirziyoyev Sh.M. Konun ustuvorligi va inson manfaatlarini ta'minlash yurt taragieti va khalk farovonligining garovi. "Uzbekiston" NMIU, 2017-47 beta.

3. Mirziyoyev Sh.M. Buyuk kelazhagimizni mard va olizhanob kalkimiz bilan birga kramiz. "Uzbekiston" NMIU, 2017-485 b.

4. Uzbekiston Respubliksining Presidency 2017 yil 7 februarydagi “Uzbekiston Respubliksini yanada rivozhlantirish buyicha karakatlar strategistsi trisidagi PF-4947- sonli Farmoni. Ўzbekiston Respubliki қonun ujjatlari tўplami, 2017, 6 sleep, 70 modda.

5. Dilmurodov N.B. "Anatomy of animals". Samarkand, 2015

Internet sites:

1. www.ziyo.net.uz
2. www.lex.uz
3. www.vetgov.uz
4. www.vetjurnal.uz
5. www.veterinariy.actavis
6. www. animalsurgery.com
7. www. Animalmedical.net

VIII. Evaluation.

Students' learning of subjects is evaluated on a 5-point scale

.

5 (excellent) grades:

Conclusion and decision-making;

Ability to think creatively;

Ability to conduct independent observation;

Being able to apply the acquired knowledge in practice;

Understanding the essence;

To know, to tell;

Having an imagination;

4 (good) grades:

Ability to conduct independent observation;

Being able to apply the acquired knowledge in practice;

Understanding the essence;

To know, to tell;

Having an imagination;

3 (satisfactory) grade;

Understanding the essence;

To know, to tell;

Having an imagination;

2 (unsatisfied) rating:

Failure to master the program;

Ignorance of the essence of science;

Not having a clear vision;

Inability to think independently.

III. Basic teaching materials:

3.1 teaching materials for lectures

1- Lecture. **CONCEPT OF OPERATION. DETERMINATION OF THE CONCEPT OF VETERINARY OPERATIONAL SURGERY, HER GOALS AND OBJECTIVES**

Lecture plan.

1. The value of the subject Operative surgery and communication with other clinical disciplines.
2. The task and purpose of the subject.
3. A short history of operative surgery
4. Values of topographic anatomy in surgery
5. The concept of surgery
6. Meaning and methods of fixing animals

OPERATIVE SURGERY is a science that learns the rules and methods of performing surgical operations. As an academic discipline it gives students theoretical foundations and instills technical animal surgery skills. These skills are developed in the process of systematic exercises on corpses and secured during operations on training and experienced and sick animals.

Thus, the training conditions for veterinary surgery in unlike medical have their own specifics before proceeding to work in a surgical clinic, the student not only takes part, but even independently performs instructional surgery on experimental animals of those species that upon further passage clinical training will be his patients.

By aiming at training in surgical operations, veterinary surgery using methods and techniques surgical interventions, improving them and charting ways to reasonable development of new operations, solves specific economic tasks: a) recovery in the shortest possible time lost or decreased animal productivity and its further boost; b) improvement or restoration of working qualities an animal; c) facilitating the rapid reproduction of the herd; d) qualitative and quantitative improvement of meat, wool and milk productivity.

Operative surgery along with other academic disciplines contributes to the training and education of future veterinarians wide profile.

TEACHING ABOUT SURGICAL OPERATION

Surgery (lat. Opera — action, work, labor) —the combination of mechanical effects on the organs and tissues of an animal, mainly for therapeutic and diagnostic purposes. On the basis of economic considerations, separate operations are carried out on healthy animals: first of all, castration of males and females. An operation is expedient only if, as a result of its implementation, the animal recovers

or increases productivity and economic value. Exceptions are cases of operating with humane considerations (animal pets), for the purpose of a physiological experiment, as well as to decorate animals. Indications and contraindications for surgery. Each operation is preceded by a diagnosis that is made on the basis of thorough clinical and sometimes radiological, laboratory and other special studies.

Indications for surgery can be absolute - indi- catio vitalis, for example, a beginning malignant neoplasm, prolapse of the viscera, displacement and infringement of internal organs, acute obstruction of the respiratory tract, bleeding, pneumothorax, scarring of the scar, rennet, cecum, obstruction of the urinary tract, etc. and relative, when you cannot operate, without causing significant damage to the health of the animal, and, therefore, without the risk of reducing its productivity (benign neoplasm, undiminished hernia, etc.)

Contraindications to surgery are determined by the general state of the animal at the moment: exhaustion, age, exacerbation of the process, inoperability due to large lesions, large pregnancies or the state of sex hunting. Operations cannot be performed until the quarantine is removed on the premises if it has acute infectious diseases typical of an animal of this species (erysipelas and swine fever, horse washes, anthrax, etc.). The only exceptions are urgent cases requiring emergency intervention in which the operation must be done in compliance all personal protection rules and warnings to further spread of the disease. Mass operations cannot be performed in farms that do not have the proper conditions for postoperative keeping animals. Do not operate animals before the haul or in the period of mass prophylactic vaccinations, operate not earlier as 2 weeks before and after the end of vaccinations.

Any operation involving a risk to the animal must be carried out with the consent of the legal owner of the animal or its representative (collective farm chairman, director of state farm or other trustee, private owner of the animal). If it is about an animal that is socialist property, then a doctor, imagining the whole need of the operation, must insist on its performance, and in case of urgency to operate, without waiting for consent. In all doubtful and difficult cases, it is necessary to resort to consilium.

Classification of operations. All operations are divided into two main groups: bloody, accompanied by a violation of the skin, mucous membranes cover and bleeding from the passing vessels, and not blood, at which integrity of the outer cover is not broken: reposition dislocation, sensing, catheterization, dressing, etc.

Depending on the focus of the operation, there are therapeutic and diagnostic, they make up the majority; economic perform solely on economic indicators (castration);

experimental produce to create models of diseases with a view physiological experiments in the study of life organism or the functions of its individual organs.

Among therapeutic operations, depending on the degree of urgency of their Executions distinguish emergency, urgent and non-urgent.

Emergency operations are done immediately with threatening life phenomena (asphyxiation, bleeding, infringement, loss of viscera or their perforation, rumen timpany, etc.). Urgent operations are performed in those cases, if postponing them for a long time term can lead to the rapid development of the disease. This applies to first malignant neoplasms, as their development can cause appearance of metastases. Non-urgent (planned) operations are usually carried out in terms when it does not damage either health or economic animal values.

By their nature, operations can be radical (lat. Radix - root), the purpose of which is to completely eliminate the cause of the disease, and palliative (lat. palliatus - dressed in a cloak, hidden): task the latter - temporarily alleviate the patient's condition by eliminating or reduce a dangerous or severe symptom of the disease to extend the life and economic value of the animal. To such operations include tracheotomy "nerectomy, fluid removal during dropsy and others If operated on uninfected organs and tissues, the operation called aseptic or "pure -" - , in other cases they talk about purulent operation. There are also plastic surgeries — for correction of shape, restoration of length and function damaged organs and tissues and cosmetic for decoration animals (amputation of auricles and tail in dogs, etc.).

Most operations are performed in one step, but with weakness animal, the threat of severe bleeding, the possibility of development of shock and other complications sometimes operate in 2 doses - two-moment operations.

The contents of the surgery. The operation consists of three consecutive actions: online access, operational reception and the final stage of the operation.
Access is the part of the operation in which expose the affected organ and pathological focus by breaking the integrity of the integument, the walls of the cavities. Access must be rational so that with minimal damage to the tissue produced incision provided the best condition for viewing and action needed on the organ. Most operations involve a certain position and nature of online access. However, in some cases (with displaced internal organs, the presence of pathological foci in the field of approach to the affected organ) the choice of rational access is often faced with significant difficulties that require taking into account all conditions, modified anatomical and topographic relations in areas of operation (displacement of abomasum when it swells, adhesion of the membranes sperm sac, extensive neoplasms or adhesions in abdominal cavity). The choice of online access is decided in general plan of operation.

The first step — proper intervention on the affected the body. It is necessary to observe the maximum care relation to the body in order to exclude serious violations his life and the body as a whole.

This requires the surgeon to think physiologically, and to operate anatomically. S aculement of the operation is the stitching, dressings, the introduction of drainage, sometimes a special shoeing, etc. Often, the first 2 stages of the operation cannot distinguish one from another (opening an abscess, fistula, wound enlargement).

Performed surgeries have their own names, which most often composed of Latin or Greek names operating organ and the term denoting used prompt reception. From here: rumenotomy (rumen - scar, tome - incision) —opening of the scar; urethrostomy (urethra – urinary canal, stoma - hole) - creating an artificial fistula urethra; enterctomy (enteron - gut, ectome - excision, excision) —the excision of the intestine; colpotomy (colpos - sinus, vagina, tome - incision) —the vaginal wall dissection; hysterectomy (hyste- ga - uterus, ectome - excision) - excision of the uterus. Besides, The following terms are widely used in operative surgery. denoting a particular operation, for example: resection (hectare - partial excision), extirpation (extirpatio - husking), amputation (amputo - cutting off) - removal of the peripheral part of the organ and etc.

TOPOGRAPHIC ANATOMY. The study and performance of surgical operations are inextricably linked to using anatomy data. In this regard, great value for operative surgery acquires topographic anatomy - science, studying the relative position of organs of animals by regions and definition of projections of organs on the skin. Topographic knowledge anatomy allows you to comprehend and justify the operation anatomically, then there is in each case find out the anatomical and topographical conditions, with which it is possible or impossible to perform operational intervention. Accurate knowledge of topographic anatomy allows confidently and freely navigate the operational field and clearly distinguish the necessary organs and tissues. In this way, topographic anatomy is one with operative surgery. The eminent Russian Surgeon N. I. Pirogov first pointed to the importance of topographic anatomy for operative surgery; he was its first teacher and creator of a single operational discipline surgery and topographic anatomy.

ANIMAL FIXATION AT OPERATIONS. The main thing when fixing animals is to apply the desired technique, soothing and immobilizing them, create a condition for safe research and operation. For each animal species use special methods of fixation, the diversity of which also depends on the patient’s condition and nature of surgical intervention. Special difficulties present fixation of large animals.

Usually animals are fixed in a standing or lying position. Since the fixation in the supine position represents a violent and sometimes a very rude action, then, being applied on large animals, it carries the risk of causing a different animal injury: bone fractures, internal organ breaks, overheating of the body, degeneration of the heart muscle, shock, etc. Therefore, when fumbling, you should apply such actions, from which due to the arising necessity, the animal would take a bedridden position without much resistance. When fixing it is necessary to take into account the habits of the animal, its character

Fixing the horse in a standing position. With some research and small operations, as a rule, resort to fixation of the thoracic limbs that the assistant lifts and holds with his hands or rope fortified in the area of the put. To do this, use special or improvised putts.

Ways of felling horses. Fells are used to fix the animal. in a recumbent position where you can give it proper position Resorted to felling in the absence of the operating table and at the provision of emergency assistance in the conditions of the economy. Before felling it is necessary to prepare the site by covering it with a soft straw or grassy litter to avoid dust and to avoid damage to the animal. For this purpose, also use special mattresses The prepared place is covered with a tarpaulin. Exist a variety of ways horses knocks.

R u with s to and y with p about with about b about o and a and is carried out only by one belt (with the skill it can be performed even by one person). For this use standard long (7-10 m) leather or cotton belt with a metal ring at the end (diameter 8-10 cm). Passing the free end of the belt through the ring twice form a loop. It is thrown over the horse's neck so that the ring accounted for about the level of the elbow mound, opposite that the side on which the animal is being felled. Then the belt is encircled from the inside. outward around the putus fold of the opposite pelvic limb and its end is again passed through the ring; free end of belt throws over the back and croup of the animal on the other side (Fig. 4).

The helper becomes at the horse’s croup on the side where it is supposed to be dumped, and with a quick movement, without throwing the free end. belt, tightens the pelvic limb to the belly of a horse. Then the assistant with his left hand pulls the reason from the headdress, and the great Fig. 5. Fixation of limbs in the Russian way the howl is a rope belt, elbows on the horse’s croup and its effort knocks the animal. Have a speed horse immediately fix head, and also entangled the pectoral limbs, connect them with the lower pelvic. Upper pelvic limb tightened to the stomach belt and strengthen the belt hock (Fig. 5). More often Russian method of felling is used in castration of stallions.

P about in a l p about with p about with a about b at V. WITH . R esshe N and A (with co-authors) performed by three assistants using a single belt (rope), folded in half and looped pa pas way pelvic limbs, on the side of which the animal is falling. Skipping both ends the belt between the pectoral limbs on top of the rope that binds them, one end is thrown behind the withers of the horse (Fig. 6). Two assistant pull the ends of the belts in opposite directions. Third the assistant fixes the horse's head, moving it away from the direction of the felling.

The horse falls smoothly. To strengthen the pelvic limbs, for example during castration, use a belt with a loop that is thrown on neck, and then do with it the way it is done with Russian fallen.

Bearl and N with to and And and N of a with with to and And methods and felling perform with the use of collapsible putty belts with buckles and rings.

One main belt, fixed on it by means of a screw chain from the ropes. Strengthen it on the chest limb, the opposite of that on which the animal is felled. When the straps are worn, through the torso throw the rope passing between the pectoral limbs. AT

Four people are involved in the camp: one stands at the tail, head and torso, and the fourth pulls for the rope, bringing the limbs together. To strengthen them, about the main of the strap in one of the chain links insert the handle of the lock.

The animal can easily be given a dorsal position, and any limb as necessary to fix in the required position after unfastening the put belt and overlap the ropes.

Fixing cattle in a standing position requires first strengthen the head to avoid damage by horns. To do this, squeeze the nasal septum with your fingers or nasal forceps and simultaneously capture one horn. Bulls usually for life insert the nasal rings, fixation for which either hand or special wooden or metal drove. For greater strength, the head is tied to post using the techniques shown in the figure.
Ways down of cattle. The most common is the situation. Take a long soft and durable rope and rub it with soap or talcum powder for better gliding and less skin injury. The rope is fixed on the horns, then it covers torso of the animal twice, making loops in the chest and at the level hungry fossa. Depending on the side on which the animal is being felled, the rope is crossed on the trunk on the left or on the right (Fig. 11). Wherein udder or penis should not be slighted. Two assistants pull the rope and tail in the direction where they want to throw the animal, and the helper standing by the head throws back the last one, helping to give the animal the desired position. Rope weakened only after the limbs are firmly strengthened. In the lateral position, they are tied together and stretched. For free access to the scrotum area corresponding pelvic limb tightened to the chest with a rope, missed under the neck and tied on the road The strength of this mount should be flawless because in case of breaking the rope or weakening it an animal can strike a fatal blow with its foot. To strengthen in the dorsal position stretched up limbs pairwise tied to a strong and long pole, held by either helpers, or it is attached to the ceiling of the room.

And t and l i n with to and y with p of about with b. The middle of a long rope throw on the neck of the animal, the ends are passed between the pectoral limbs and,

having crossed on a waist, deduce back between pelvic extremities. The technique of felling is basically the same as in the previous method (Fig. 13).

To and in with and with with and and with s about with about b applies only for small animals and performed by one assistant. To do this, use two ropes. A 2.5 m long rope is thrown over the back of the body. so that it takes place depending on the side on which it is being felled, in front of the left and behind the right makloka, or, on the contrary, its tight knotted. Another rope is fixed on the horn and twisted around it. jaws of an animal. Then the end of it is passed under the previous and thrown over the back to the opposite side. Pulling up head back and pulling the rope down, the assistant forces the animal to lie down The free end of the rope is tightened and fastened to the horns.
Fixation of small ruminants produce two ropes fixed on limbs. Pulling on the ropes the animal is carefully tipped over. After felling all the limbs tie together
Fell and fixing pigs.
On the area pasterns and metatarsus impose rope loops with rings; through them

halved folded long rope passing through his own loop. Pig dumped, bringing together the legs and bending his head the second rope, a loop which is tightened on the upper jaw (Fig. 18, a).

In a standing position, the pig can be strengthened by pulling it up. head to the floor. To do this, made at the end of a long rope the mobile loop is tightened on the upper jaw behind the canines.

The free end of the rope is tied at the base dug into the ground. pillar or to the ring fitted into the floor. With such a fix, the pig does not may lie down (b). With short: manipulation assistants hold the animal by the tail and the rope is reinforced on top jaws. Good fixation of pigs is achieved by grabbing the top jaws with special forceps (in).

Strengthening dogs and cats requires extreme care in self-defense against bites, scratches and the associated threat possible infection with rabies. Dogs close jaws overlaying them with a loop of tape: first make one node under jaws, and the end of the braid is tied on the back of your neck knot (fig. 19).

The cat is taken with the hand by the skin folds of the neck and lower back and placed in Special leather bag or wrapped in thick fabric. At long and painful manipulations: these animals are administered general and narcotic drugs.

2-Lecture. **STUDY SURGICAL INFECTIOUS**

Lecture plans:

1. Access infection to operating wounds. The doctrine of asepsis and antisepsis.
2. Disinfection of a surgical instrument.

The concept of infection. **Infection** is the sum total of animal body phenomena as a result of active interaction with microorganisms embedded in it. Extreme form of it complex biological process is expressed by the development infectious disease. The most favorable conditions for infection development occurs when sharply weakened defensive forces organism as a result of violation of zoohygienic rules: feeding, housing, care and exploitation of animals.

The causative agents of infection can be both aerobic and anaerobic microbes that penetrate from the external environment into the body various ways, including through an operational wound (exogenous source). In addition, microorganisms can get into various parts of the body by hematogenous and lymphogenous pathways from foci located in its tissues, sometimes very far from wounds (endogenous source). For operative surgery acquires practical importance microbial contamination operating wounds that may arise through contact – from touching hands, non-sterile instruments, dressing and suture materials. Significantly less threatening drip (penetration of microbes with drops of sweat, saliva and mucus during coughing and sneezing) and airborne (with dust) infection.

The development of the theory of antisepsis and asepsis. Wound infection operating and accidental wounds were a constant scourge of surgery and caused severe and even fatal complications of the wound process. Essentially until the

middle of the nineteenth century in surgery there was no correct idea of the reasons for these permanent complications. True, at that time, scientists already assumed that the reason wounds infection is found in the environment and mainly in ambient air.

The Hungarian doctor I. Semmelweis was one of the first to indicate that the contaminated hands of a doctor are the cause of complications of the postpartum period in women (1861). Therefore, he strongly recommended washing his hands with bleach solution before examining the birth canal. This was able to dramatically reduce the percentage of mortality and complications in patients. At about the same time, the Russian surgeon N. I. Pirogov successfully used a solution of bleach, alcohol iodine solution, etc. However, all these empirical attempts prevent and eliminate complications while healing wounds explained their true reasons. Only thanks to research L. Pasteur in the 50's and 60's of the last century was set to microbes "the process of fermentation and rotting protein bodies.

Based on the discoveries of L. Pasteur, the English surgeon Lister developed (1867) method of combating wound infection. He recommended apply a 5% solution of carbolic acid (phenol) on the wound, objects, instruments, hands in contact with a wound "and spray it in the operating room. He also proposed a special multilayer impenetrable bandage. In Russia, this method was first used (1868) P.P. Palekhin and found his numerous supporters.

This discovery, which gave excellent results at that time, laid the foundation for the method of and n g septic tanks (anti-rotten: Greek anti - against, sepsis - rot), the essence of which is to combat infection with chemicals used in the wound and beyond her.

However, as experience gained, it turned out that good results are achieved by maintaining thorough purity surgeries and application of suction bandages on wounds. These observations have spurred the development of a new method of combating infection of wounds, called a c e p tik and (without putrid:

Greek a - denial, sepsis-rotting). This method is the basis modern surgery. The development of asepsis contributed a lot to the student NI Pirogov E. Bergman (1891). The asepsis method is that all surgical objects (instruments, suture and dressings, dishes) are subject to physical treatment - high temperature, which results in their full depletion Along with this are the hands of the surgeon and the surgical field the patient to eliminate and suppress the microflora on the skin treated with antiseptic substances. Thus, both methods developed over the last century, although they carry the main features of asepsis, are combined into one complex method.

Of paramount importance in the prevention and control of wound infection acquire certain effects on the organism of the animal as a whole, raising his defenses. To do this with certain indications the animal is transfused, specific sera, tissue preparations, antibiotics, apply novocaine blockade, etc. The entire set of local and

the total impact on the body, aimed at the destruction pathogens in and outside the wound while simultaneously mobilizing defensive forces of the body, is modern a c e p t and k o -a nt and c e p t i c e c i y m e t o d

Sterilize surgical instruments

Sterilization is the elimination of all microorganisms on medical instruments that come into contact with open wounds, bodily fluids, and mucous membranes. It goes without saying that surgical instruments are the type of devices that will require regular sterilization.

Prior to sterilization, instruments must go through several preliminary stages of cleaning and disinfection. High level disinfection is achieved by boiling or by applying a chemical treatment.

Autoclaving is probably the most common, quick, and safe sterilization method. Another thermal processing method is dry heat sterilization. In dry environments, bacterial spores can withstand higher temperatures for longer. This means that more time and higher temperatures are required to achieve sterilization with this method as compared to autoclaving.

Glass bead sterilizing is used as a secondary heat sterilization method for quick treatment of instrument tips or solid metal parts. Infrared sterilization is sometimes used for dental and micro-surgery instruments. This process subjects the instruments to short-term, powerful infrared thermal exposure.

Proper sterilization and reprocessing protects your instruments as much as possible. However, normal wear and tear will still occur. Surgical instrument repair companies like US Medical Systems will help you keep your instruments in good shape. Your patients will get the highest quality of care and you'll be able to extend the service life of your instruments. Call us today to learn about our biomedical repair service for surgical instruments.

Other methods of sterilization are used depending on the circumstances and type of tools. In emergency cases allow flaming of metal instruments; they are placed in a basin doused with alcohol and burned. However, cutting and piercing tools from burning stupidly and lose shine. Rubber items: tubes, bouges, drains, catheters, syringes and others are sterilized by boiling in distilled water for 30 minutes. Leather-lined probes, wicker catheters are sterilized in formalin vapors. To do this, after washing and drying, they are suspended for 24-48 hours in hermetically sealed boxes or boxes, on the bottom of which they place open, wide vessels with formalin.

Storage tools. All tools after surgery carefully washed, sterilized and dried. They are then laid out in a dry closet, there also put a vessel with calcium chloride. Other medicines especially iodide preparations stored in a cabinet with tools not permitted. Injection needles after washing stored with inserted into them by mandrels in a closed vessel filled with alcohol in half with ether. Rubber items are placed separately from metal tools. With a loss of elasticity, they soften. immersion for 15 minutes in a warm 5% solution of ammonia, and then for the same period in a 5% solution of glycerin. Syringes stored disassembled. In case of piston pinching

in the syringe mobility is restored by placing the syringe in anti-formin (7.5% NaOH and 6% NaCl in distilled water).

3-Lecture Prevention SURGICAL INFECTIOUS

Lecture plans:

1. **Sterilization of suture material in veterinary medicine**
2. **Sterilization of bandages**
3. **Preparing hand**
4. **Preparing surgical areas**

Surgical suture is a medical device used to hold body tissues compound after an injury or surgery. Application generally involves using a needle with an attached length of thread. A number of different shapes, sizes, and thread materials have been developed over its millennia of history. Surgeons, physicians, dentists, podiatrists, eye doctors, registered nurses and other trained nursing personnel, medics, and clinical pharmacists typically engage in suturing. Surgical knots are used to secure the sutures.

Suture thread is made from numerous materials. The original sutures were made from biological materials, such as catgut suture and silk. These absorbed bodily fluids and could be foci of infection. Founder of gynecology J. Marion Sims invented the use of silver wire, which is anti-bacterial, for a suture. Most modern sutures are synthetic, including the absorbables polyglycolic acid, polylactic acid, Monocryl and polydioxanone as well as the non-absorbables nylon, polyester, PVDF and polypropylene. The FDA first approved triclosan-coated sutures in 2002; they have been shown to reduce the chances of wound infection.[4] Sutures come in very specific sizes and may be either absorbable (naturally biodegradable in the body) or non-absorbable. Sutures must be strong enough to hold tissue securely but flexible enough to be knotted. They must be hypoallergenic and avoid the "wick effect" that would allow fluids and thus infection to penetrate the body along the suture tract.

Absorbability[edit]

All sutures are classified as either absorbable or non-absorbable depending on whether the body will naturally degrade and absorb the suture material over time. *Absorbable* suture materials include the original catgut as well as the newer synthetics polyglycolic acid, polylactic acid, polydioxanone, and caprolactone. Absorbable (or resorbable) medical devices such as sutures are made of polymers. The polymer materials are based on one or more of five cyclic monomers: glycolide, l-lactide, p-dioxanone, trimethylene carbonate and ε-caprolactone.[5]

They are broken down by various processes including hydrolysis (polyglycolic acid) and proteolytic enzymatic degradation. Depending on the material, the process can be from ten days to eight weeks. They are used in patients who cannot return for suture removal, or in internal body tissues.[6] In both cases, they will hold the body tissues together long enough to allow healing, but will disintegrate so that they do not leave foreign material or require further procedures. Initially, there is a foreign body reaction to the material, which is transient. After complete resorption

only connective tissue will remain.[7][8][9][10] Occasionally, absorbable sutures can cause inflammation and be rejected by the body rather than absorbed.

Non-absorbable sutures are made of special silk or the synthetics polypropylene, polyester or nylon. Stainless steel wires are commonly used in orthopedic surgery and for sternal closure in cardiac surgery. These may or may not have coatings to enhance their performance characteristics. Non-absorbable sutures are used either on skin wound closure, where the sutures can be removed after a few weeks, or in stressful internal environments where absorbable sutures will not suffice. Examples include the heart (with its constant pressure and movement) or the bladder (with adverse chemical conditions). Non-absorbable sutures often cause less scarringbecause they provoke less immune response, and thus are used where cosmetic outcome is important. They may be removed after a certain time, or left permanently.

Suture sizes are defined by the United States Pharmacopeia (U.S.P.). Sutures were originally manufactured ranging in size from #1 to #6, with #1 being the smallest. A #4 suture would be roughly the diameter of a tennis racquet string. The manufacturing techniques, derived at the beginning from the production of musical strings, did not allow thinner diameters. As the procedures improved, #0 was added to the suture diameters, and later, thinner and thinner threads were manufactured, which were identified as #00 (#2-0 or #2/0) to #000000 (#6-0 or #6/0).

Modern sutures range from #5 (heavy braided suture for orthopedics) to #11-0 (fine monofilament suture for ophthalmics). Atraumatic needles are manufactured in all shapes for most sizes. The actual diameter of thread for a given U.S.P. size differs depending on the suture material class.

USP designation	Collagen diameter (mm)	Synthetic absorbable diameter (mm)	Non-absorbable diameter (mm)	American wire gauge
11-0			0.01	
10-0	0.02	0.02	0.02	
9-0	0.03	0.03	0.03	
8-0	0.05	0.04	0.04	
7-0	0.07	0.05	0.05	
6-0	0.1	0.07	0.07	38–40
5-0	0.15	0.1	0.1	35–38
4-0	0.2	0.15	0.15	32–34
3-0	0.3	0.2	0.2	29–32
2-0	0.35	0.3	0.3	28
0	0.4	0.35	0.35	26–27

1	0.5	0.4	0.4	25–26
2	0.6	0.5	0.5	23–24
3	0.7	0.6	0.6	22
4	0.8	0.6	0.6	21–22
5		0.7	0.7	20–21
6			0.8	19–20
7				18

Silk is used for surgical suture and ligatures linen, cotton and synthetic threads, as well as catgut.

Sterilization of silk. Silk threads are made either in 8 lengths m of various thickness - 13 numbers: from number 000 to number 10 (non-sterile), or in ampoules (sterile).

The way Sadowski. Skeins of silk are washed first in hot water and soap for 2 minutes, then rinsed, wound onto coils and immersed for 15 minutes in a 0.5% solution of ammonia, and then for 15 minutes in a 2% formalin solution. at 70% alcohol.

Sterilization of cotton and linen thread. These threads have less strength than silk. Usually used threads number 10-20, which sew up skin defects; with a seam on Internal organs use thinner numbers. Sterilized cotton and linen yarn according to the Sadovsky method or immersed for 24 hours in a 4% formalin solution.

Sterilization of catgut requires special care, since it is made from the submucosal layer of the intestine of small cattle and therefore it may contain spores of pathogenic microorganisms. Catgut has the property to dissolve in the tissues of the animal body in the period from 7 to 30 days. It is used for immersion joints. Processing by boiling or otherwise using high temperature is excluded. The presence of a thrombokinetic substance in the catgut gives it a hemostatic properties. Release catgut or in hanks requiring sterilization, or sterile in sealed ampoules.

The way Pokotilo most simple and fast. Catgut is placed on 72 h in 4% aqueous formalin solution. "They keep it there.

Gubarev way. Catgut is degreased for 12 hours in gasoline, then dried and immersed for 14 days in a 1% alcohol solution of iodine and potassium iodide. Iodine is taken in relation to potassium iodide as 1: 2. In that the solution is stored.

The way Sadowski - Kotylev. Catgut is placed on 30 minutes in 0.5%

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liquid solution of ammonia, then transferred over 30 minutes to 2% formalin solution on 65% alcohol, in which it is stored until use.

Sterilization of synthetic threads. These threads possess very great strength, easily tolerate boiling and other ways processing; their disadvantage is

some difficulty of tying in strong knot. They widely use kapron threads; externally and according to they resemble twisted silk in their basic properties.

Sterilize these threads by boiling. They lose their strength when temperature above 100 ° C. Currently widely used thread from Dacron, well tolerate thermal sterilization.

PREPARATION OF ANIMAL FOR OPERATION

Preparing an animal for surgery is an essential measure, from which often depends on the favorable outcome of surgery. Before the operation, the state of the animal is examined first.

vital organs: heart, lungs, kidneys, liver. In the study should be excluded infectious diseases, and at the slightest suspicion of their presence take measures to the final and possible rapid diagnosis, for what use appropriate allergic, serological and other special studies. If the operation is not performed urgently order, then in front of her animal reduce the cottage feed or do not give at all. It is not recommended to use laxatives; they are replaced appropriate diet that limits intestinal activity microflora; give easily digestible food, enveloping, disinfectant and anti fermentation agents - phenyl salicylate (salol), sulfonamides, etc. With a decrease in the overall reactivity and the body's resistance to the patient take measures for their enhancements (blood transfusions, antibiotics, sulfonamides,

autohemotherapy, giving of vitamins, etc.). When performing operations on a pregnant animal, it is necessary to keep in mind the possibility of an abortion associated with the use of anesthesia and fixation. In cases where it is impossible to postpone the operation, they operate using local anesthesia, and large animals are also fixed in a standing position. It has been established, for example, that performing an operation with local anesthesia in any period pregnancy does not affect both its normal course and development of the fetus. At the same time, the use of anesthesia when performing caesarean section can cost the life of the fruit or they are born in in a state of severe apnea or asphyxia due to the toxic effect of a narcotic substance. To avoid contamination of the surgical field and possible ruptures of the intestine and bladder at the time of felling, they must be freed from the contents. In preparation for the operation include cleaning and general or partial washing of the animal. Places of constant pollution (crotch, thighs, distal extremities, etc.) are washed with a brush and soap, and where possible, a 2% creolin or lysol bath is applied and a protective bandage is applied. Especially carefully treated areas with fistulous passages, open abscesses, etc. After proper toilet cleaning, they are also cover with bandages, which are removed before the operation begins when preparing the surgical field.

PRE-OPERATIONAL PREPARATION OF HANDS AND OPERATING FIELD

human hands are the most important tools for caring. Hands feel, diagnose, cure, prod, and provoke as they are placed upon each patient who is hoping for

answers, understanding, and healing remedies. The hands can also be a portal and transmitter of infection. While handwashing may be the simplest way to control infection, it is often not practiced where warranted.

Surgical site infections greatly contribute to nosocomial infections. Some of the risk factors for nosocomial infections include the behavior of OR personnel regarding decontamination practices, hand hygiene/antisepsis, and compliance with universal precautions. Most surgical professionals agree on the importance of good surgical hand-washing practices in infection prevention. Hand transmission is a critical factor in the spread of bacteria, pathogens, viruses that cause disease, and nosocomial infections in general.

The purpose of surgical hand scrub is to:

- Remove debris and transient microorganisms from the nails, hands, and forearms
- Reduce the resident microbial count to a minimum, and
- Inhibit rapid rebound growth of microorganisms.[1]

Surgical Scrub Techniques

All sterile team members should perform the hand and arm scrub before entering the surgical suite. The basic principle of the scrub is to wash the hands thoroughly, and then to wash from a clean area (the hand) to a less clean area (the arm). A systematic approach to the scrub is an efficient way to ensure proper technique.

There are two methods of scrub procedure. One is a numbered stroke method, in which a certain number of brush strokes are designated for each finger, palm, back of hand, and arm. The alternative method is the timed scrub, and each scrub should last from three to five minutes, depending on facility protocol.

The procedure for the timed five minute scrub consists of:

- Remove all jewelry (rings, watches, bracelets).
- Wash hands and arms with anitmicrobial soap. Excessively hot water is harder on the skin, dries the skin, and is too uncomfortable to wash with for the recommended amount of time. However, because cold water prevents soap from lathering properly, soil and germs may not be washed away.
- Clean subungual areas with a nail file.
- Start timing. Scrub each side of each finger, between the fingers, and the back and front of the hand for two minutes.
- Proceed to scrub the arms, keeping the hand higher than the arm at all times. This prevents bacteria-laden soap and water from contaminating the hand.
- Wash each side of the arm to three inches above the elbow for one minute.
- Repeat the process on the other hand and arm, keeping hands above elbows at all times. If the hand touches anything except the brush at any time, the scrub must be lengthened by one minute for the area that has been contaminated.
- Rinse hands and arms by passing them through the water in one direction only, from fingertips to elbow. Do not move the arm back and forth through the water.
- Proceed to the operating room suite holding hands above elbows.[2]
- If the hands and arms are grossly soiled, the scrub time should be lengthened. However, vigorous scrubbing that causes the skin to become abraded should be avoided.

- At all times during the scrub procedure care should be taken not to splash water onto surgical attire.[2]
- Once in the operating room suite, hands and arms should be dried using a sterile towel and aseptic technique. You are now ready to don your gown and sterile gloves.

  When gowning oneself, grasp the gown firmly and bring it away from the table. It has already been folded so that the outside faces away. Holding the gown at the shoulders, allow it to unfold gently. Do not shake the gown.

  Place hands inside the armholes and guide each arm through the sleeves by raising and spreading the arms. Do not allow hands to slide outside the gown cuff. The circulator will assist by pulling the gown up over the shoulders and tying it.

  To glove, lay the glove palm down over the cuff of the gown. The fingers of the glove face toward you. Working through the gown sleeve, grasp the cuff of the glove and bring it over the open cuff of the sleeve. Unroll the glove cuff so that it covers the sleeve cuff. Proceed with the opposite hand, using the same technique. Never allow the bare hand to contact the gown cuff edge or outside of glove.

  The scrubbed technologist or nurse gowns the surgeon after he or she has performed the hand and arm scrub. After handing the surgeon a towel for drying, the technologist or nurse allows the gown to unfold gently, making sure that there is enough room to prevent contamination by nonsterile equipment. To glove another person, the rules of asepsis must be observed. One person's sterile hands should not touch the nonsterile surface of the person being gloved.
- Pick up the right glove and place the palm away from you. Slide the fingers under the glove cuff and spread them so that a wide opening is created. Keep thumbs under the cuff.
- The surgeon will thrust his or her hand into the glove. Do not release the glove yet.
- Gently release the cuff (do not allow the cuff to snap sharply) while unrolling it over the wrist. Proceed with the left glove, using the same technique.

  Formal guidelines and recommended practices for hand washing have been published by professional organizations (*e.g.*, Association for Professionals in Infection Control (APIC), Association of periOperative Registered Nurses, Inc. (AORN). AORN recommends the use of a traditional standardized anatomical timed scrub or counted stroke method for surgical hand scrub and encourages institutions to follow the scrub agent manufacturer's written recommendations when establishing policies and procedures for scrub times. On this basis, for example, the typical scrub procedure for a PVPI-containing product based on manufacturer's labeling would require the use of a scrub brush and two applications of five minutes each, whereas the typical procedure for a CHG-based product would require a three-minute scrub followed by a three-minute wash. In actual practice, however, variations in surgical hand scrubbing times may be of shorter duration than manufacturer's recommendations for a number of reasons:
- Staff time constraints.
- Desire to reduce poor hand health.

- Acceptance of data from other sources suggesting those scrub times shorter than those recommended by manufactures are adequate.[3]

Hand condition is emerging as an increasingly important factor in personnel compliance and infection control. Frequent surgical scrubbing can cause dermatitis of the hands and arms. Most antimicrobial agents are drying to the skin, especially when coupled with a scrub brush.

Characteristics of a Surgical Scrub

Performance characteristics for a surgical scrub agent generally fall into four categories:

1. *Antimicrobial Action*--an ideal agent would have a broad spectrum of antimicrobial activity against pathogenic organisms. This agent would have to work rapidly. An agent that does not work rapidly may not provide adequate bacterial reduction before being rinsed off.

2. *Persistent Activity*--an agent offering persistent activity keeps the bacterial count low under the gloves. It is not unusual for a surgery to last in excess of two hours. Studies have shown the rate of glove failures (non-visible holes) increases with the duration of surgery.[4]In addition, studies show bacteria grow faster under gloved than ungloved hands.[5,6,7]

3. *Safety*--the ideal agent would be non-irritating and non-sensitizing. It must have no appreciable ocular or ototoxicity, be safe for use on the body, and not be damaging to the skin or environment.

4. *Acceptance*--probably most important to achieving compliance in using a new product is its acceptance by the healthcare worker. A product that has ideal antimicrobial action and an excellent safety profile is of little value to good infection control if the user population fails to support its use. Although each is important in its own right, all four characteristics should be present for a complete package.

Surgical scrub agents come in many forms. Not all forms meet all characteristics.

1. *Liquid or foam soaps*. These are the most common products for surgical scrubs and are used in conjunction with water and dry scrub brushes or sponges. The most common antimicrobial agents in these products are CHG (chlorhexidine gluconate), iodophor, or PCMX (parachlorometaxylenol). These agents are very drying and with repeated scrubbing with the scrub brush can cause skin damage.

2. *Impregnated scrub brushes/sponges*. Scrub brushes/sponges are preloaded with CHG, iodophor, or PCMX and are water-aided products.

3. *Brush-free surgical scrub*. These products use an antimicrobial agent and water but no scrub brush.

The most important measure ensuring the conditions of aseptic operation is the achievement of practical sterility of the hands and the surgical field. The skin of any part of the animal's body, especially in the distal extremities, near the anus, genitals, contains a huge number of microbes that are not only on the surface, but also settle in various folds, cracks, in scales of the rejected epithelium, in the ducts of sebaceous and sweat glands in hair follicles. Constant contamination of the hands of veterinary workers with pathogenic microorganisms during bandaging,

opening of ulcers and animal carcasses represents a significant obstacle to compliance with the rules of asepsis. Especially with coarse, corpus callosum and with abrasions, the task of appropriate treatment presents great difficulties. A significant number of microbes is in the area of the nail cushion, under the nail spaces, etc.

Skin treatment with various antiseptic substances is unreliable, as weak solutions of antiseptics do not destroy microorganisms, and the strong cause irritation and inflammatory skin phenomena. On the other hand, no matter how potent there were antiseptics they cannot affect microbes' located deep in the skin. Therefore modern methods of preparing hands for surgery are based on the use of tanning properties of antiseptics that seal the upper layers of the skin and most close the skin openings of the ducts of the glands, blocking for a term the operation of the exit of these microorganisms. There are three main taking modern hands preparation for surgery: a) mechanical cleaning, b) chemical disinfection and c) tanning of the skin. Some antiseptic substances often combine the properties bactericidal and tanning (iodine alcohol solution, solution brilliant green, etc.), thus representing a bactericidal tanning agent or tanning antiseptic. Hand processing lead from tips of fingers and further to elbows. The most common and suitable for veterinary practice the following methods.

The Spasokukotsky - Kochergin method is one of the most popular. For mechanical cleaning and deep degreasing of the skin, a freshly prepared 0.5% solution of ammonia in hot water is used. Hands are washed alternately in two basins for 2.5 minutes or under flowing jet with a gauze napkin. After re-washing the liquid in the pelvis should remain clear. If not, wash your hands again. Disinfection and tanning of the skin is as follows: dry hands are treated for 3-5 minutes with gauze soaked in ethyl alcohol napkin, and fingertips, sub nail space and nail bed lubricated with 5% alcohol solution of iodine. During surgery when hands are contaminated, they are washed again and repeated tanning with alcohol.

The way Ќiishova. Hands mechanically clean and defat 0.5% - nym solution of ammonia for 5 minutes alternately in two basins or under the stream, and then treated for 3 min under the stream of 3% zinc sulfate solution, which has a tanning and bactericidal action at the same time. Finger tips smeared with iodine solution.

This method for simplicity, reliability and low cost is the most affordable for veterinary practice.

Olivkov method. After washing and machining in one of the ways, the hands are wiped twice with a tampon soaked in iodized alcohol 1: 3000 or 1: 1000. Concentration 1: 1000 apply after work, especially heavily contaminating hands.

The use of gloves greatly improves conditions aseptic operation. However, gloves often deteriorate from the most slight and imperceptible damage caused by needle pricks, the infringement of instruments, etc. This circumstance is not only not eliminates the special training of hands, but sometimes is aggravated by the fact that through the unnoticed defects of the gloves, the excreted penetrates into the wound skin sweat (“glove juice”) containing a large amount of microbes.

Therefore, the integrity of the gloves should be carefully checked. At operations in terms of tissue infection use of gloves required Gloves worn on the hands, additionally wipe with a swab with alcohol, iodized alcohol, chloramine, etc. If gloves contaminated during surgery, they are disinfected without being removed from hands.

After surgery, heavily soiled gloves are washed in a 2% solution. lysol. Sterilize gloves by boiling in distilled water. 15-30 minutes, pre-wrapped them in a gauze napkin (each in separately). After that, the gloves are dried, powder talcum powder, turn and store in boxes. Processing of the surgical field includes four main points: hair removal, mechanical cleaning with degreasing, disinfection (asepticization) of the surface with tanning and isolation from the surrounding body parts.

In most operations, the operative field is isolated. sterile sheets or towels that attach one to the other with special terminals, and to the skin with hoes (Fig. 26). AT in some cases, rubberized material is used. As a rule, center of the insulating sheet makes a hole that should coincide and strengthen in accordance with the place of the intended tissue incision. The rest of the sheets as wide as possible.
cover the body of the animal, protecting the site of operation from accidental contamination by wool, dust, etc.

Mucous membranes are treated a little differently. The conjunctiva of the eye is washed with a solution of ethacridine (rivanol) 1: 1000; mucous membranes the membranes of the oral and nasal cavities are washed with the same solution and then lubricated with 5% alcohol. A hoody-dock with a solution of iodine to the skin in the circumference of the entrance to these cavities. The mucous membranes of the gums are smeared with the same solution of iodine. The cavity of the vagina is treated with a 1% solution of lactic acid, ethacridine 1: 1000 or 2% lysol: in this case, the skin of the labia "smeared with 3% iodine solution. A 1% solution of potassium permanganate or 2% lysol is injected into the cavity of the rectum from the Esmarch circle; the circumference of the anus is treated with iodine solution.

4 lecture. ANESTHESIOLOGY

Lecture plan.

1. The effect of pain into the body. The value of anesthesia.
2. A brief history of pain relief.
3. The concept of anesthesia.
4. Classification of anesthesia
5. Stages of anesthesia
6. Anesthesia of different animals.

WHAT IS PAIN?

Essential to any discussion of how to avoid or minimize pain in animals is a clear understanding and definition of pain and related terms. What exactly is pain? How does it differ from “nociception”? How does pain vary? And what dimensions of pain are most relevant to animal welfare?

The International Association for the Study of Pain (IASP; www.iasp-pain.org) defines pain in humans as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (IASP 1979). Pain typically involves a noxious stimulus or event that activates nociceptors in the body's tissues that convey signals to the central nervous system, where they are processed and generate multiple responses, including the "unpleasant sensory and emotional experience" central to the IASP definition. The anatomy and biology of pain are covered in more detail in Chapter 2. Some key issues and important terms are addressed below to highlight some of the challenges in understanding animal pain.

The basic evolutionary functions of pain and ways of relieving it

4.11 In evolutionary terms, pain has evolved from nociception as an aversive sensory mechanism that warns of harmful experiences. Pain has three main functions: First, it allows animals and humans to avoid dangerous situations, as painful experiences usually prompt an immediate impulse to withdraw and escape from situations that cause harm, usually in the form of tissue damage. Secondly, as pain is associated closely with the environmental context in which it occurred, its experience can help to prevent repeated damage. Pain-causing experiences will be avoided through learning when a similar environment is encountered again. Thirdly, pain promotes the healing of injuries, as affected body parts are not used in normal activities, as far as possible.

Clinical signs such as body weight and temperature, respiration and heart rates can be measured in objective ways. Others, such as the quality of respiration (deep, shallow, laboured), posture, appearance (closed eyes, ruffled coats, fur or feathers), diarrhoea, coughing and convulsions are more difficult to quantify. Nonetheless, in veterinary clinical practice, it is possible to grade them in a standardised way. For example, an animal may be 'hopping lame', or bear some weight and be limping. More formal and defined assessments of clinical signs, normal behaviours and particularly abnormal behaviours also enable more objective measurements of pain and suffering.

Anesthesia

Anesthesia or **anaesthesia** (from Greek "without sensation") is a state of controlled, temporary loss of sensation or awareness that is induced for medical purposes. It may include analgesia (relief from or prevention of pain), paralysis(muscle relaxation), amnesia (loss of memory), or unconsciousness. A patient under the effects of anesthetic drugs is referred to as being **anesthetized**.

Anesthesia enables the painless performance of medical procedures that would otherwise cause severe or intolerable pain to an unanesthetized patient. Three broad categories of anaesthesia exist:

- General anesthesia suppresses central nervous system activity and results in unconsciousness and total lack of sensation.

- Sedation suppresses the central nervous system to a lesser degree, inhibiting both anxiety and creation of long-term memories without resulting in unconsciousness.
- Regional anesthesia and local anesthesia, which block transmission of nerve impulses from a specific part of the body, causing loss of sensation in the targeted body part only. Depending on the situation, this may be used either on its own (in which case the patient remains conscious), or in combination with general anaesthesia or sedation. There are two broad forms:
- Peripheral blockade inhibits sensory perception in an isolated part of the body, such as numbing a tooth for dental work, or using a nerve block to inhibit sensation in an entire limb.
- Central, or neuraxial, blockade administers the anesthetic in the region of the central nervous system itself, suppressing incoming sensation from nerves outside the area of the block. Examples include epidural anaesthesia and spinal anaesthesia.

In preparing for a medical procedure, the health care provider giving anesthesia chooses and determines the doses of one or more drugs to achieve the types and degree of anesthesia characteristics appropriate for the type of procedure and the particular patient. The types of drugs used include general anesthetics, local anesthetics, hypnotics, sedatives, neuromuscular-blocking drugs, narcotics, and analgesics.

There are both major and minor risks of anesthesia. Examples of major risks include death, heart attack and pulmonary embolism whereas minor risks can include postoperative nausea and vomiting and hospital readmission.

About Anesthesia

Anesthesia is broken down into three main categories: local, regional, and general, all of which affect the nervous system in some way and can be administered using various methods and different medications.

Here's a basic look at each kind:

- **Local anesthesia.** An anesthetic drug (which can be given as a shot, spray, or ointment) numbs only a small, specific area of the body (for example, a foot, hand, or patch of skin). With local anesthesia, a person is awake or sedated, depending on what is needed. Local anesthesia lasts for a short period of time and is often used for minor outpatient procedures (when patients come in for surgery and can go home that same day). For someone having outpatient surgery in a clinic or doctor's office (such as the dentist or dermatologist), this is probably the type of anesthetic used. The medicine used can numb the area during the procedure and for a short time afterwards to help control post-surgery discomfort.
- **Regional anesthesia.** An anesthetic drug is injected near a cluster of nerves, numbing a larger area of the body (such as below the waist, like epidurals given to women in labor). Regional anesthesia is generally used to make a person more comfortable during and after the surgical procedure. Regional and general anesthesia are often combined.

- **General anesthesia.** The goal is to make and keep a person completely unconscious (or "asleep") during the operation, with no awareness or memory of the surgery. General anesthesia can be given through an IV (which requires sticking a needle into a vein, usually in the arm) or by inhaling gases or vapors by breathing into a mask or tube.

  The anesthesiologist will be there before, during, and after the operation to monitor the anesthetic and ensure you constantly receive the right dose. With general anesthesia, the anesthesiologist uses a combination of various medications to do things like:
- relieve anxiety
- keep you asleep
- minimize pain during surgery and relieve pain afterward (using drugs called analgesics)
- relax the muscles, which helps to keep you still
- block out the memory of the surgery

  eneral anesthesia is, essentially, a medically induced coma, not sleep. Drugs render a patient unresponsive and unconscious. They are normally administered intravenously (IV) or inhaled. Under general anesthesia, the patient is unable to feel pain and may also have amnesia. The drugs will be administered by an anesthesiologist or nurse anesthetist, a specially trained doctor or nurse who will also monitor a patient's vital signs and rate of breathing during the procedure.

  General anesthetics have been widely used in surgery since 1842, when Crawford Long administered diethyl ether to a patient and performed the first painless operation.

  In this article, we will cover a number of topics, including the potential side effects of general anesthesia, associated risks and some theories regarding their mode of action.

  Fast facts on general anesthesia. Here are some key points about general anesthesia. More detail and supporting information is in the main article.
- An anesthesiologist or anesthetist normally administers the general anesthetic prior to an operation
- There are some risks associated with taking general anesthetics, but they are relatively safe when administered correctly.

  Very rarely, a patient may experience unintended intraoperative awareness Side effects of general anesthesia can include dizziness and nauseaThe mechanisms by which anesthesia works are still only partially understood.

Classification of anesthesia. Anesthesia is deep and superficial. Depending on the route of administration, that is, the method of practical application of the selected narcotic substance, anesthesia can be divided into two main groups - inhalation and non-inhalation (parapulmonary). In the first case, volatile liquids (chloroform, ether, etc.) or gaseous substances (nitrous oxide, cyclopropane, etc.) allow animals to inhale or blow them into respiratory tract (insufflation anesthesia). In the second, the so-called non-inhalation drugs (alcohols and aldehydes - chloral hydrate, ethyl alcohol, etc .; barbiturates — pentothal sodium,

thiopental sodium, etc.) are introduced into the body, bypassing the respiratory tract. Most common method of introducing drugs - intravenous. A certain depth of anesthesia can be caused by the introduction some narcotic substances in the stomach, rectum, intraperitoneally, intraosseous and even intratiscularly, etc.

Accordingly, anesthesia distinguishes intravenous, oral,

rectal, intraperitoneal, intraosseous (type

intravenous), etc. In addition, anesthesia may be one-component (one substance is used for anesthesia) —chloroform, ether, chloral hydrate, pentothalic, etc., and mixed (prescribe a mixture two or more substances), for example inhalation chloroform ether anesthesia. Often drugs are injected into the body.

consistently (in various ways); then it will be a combined anesthesia (pentothal-ether). In this case, sometimes they talk about introductory and basic anesthesia. First apply one any substance (pentothal sodium), causing short sleep and drastically reducing sensitivity of the animal (introductory anesthesia), and then against the background of the action

This narcotic substance is administered a longer drug. deep action (ether, chloroform), with short often and further anesthesia proceeds (basic) and the operation. The term “basic anesthesia” is not entirely accurate. In medicine, where it was first introduced, there is no unity of views on the explanation of this term. We believe that the basic anesthesia, against the background of which the operation takes place, should be given the name “basic”, and not vice versa, as is customary. In the future, we will adhere to the term "basic" in the stated sense.

One of the most important moments of modern anesthesia is pre anesthetic pharmacological preparation of the animal - **Premedication** It allows you to: a) facilitate the technical implementation of anesthesia and its course; b) eliminate the side effect of the drug; c) reduce or eliminate dangerous vegetative reflexes. For predication means are used which, not being drugs, contribute to the improvement and deepening of anesthesia. They differ from drug high selectivity of action on different departments central and peripheral nervous system - pain centers (thalamic region), reticular formation, ganglionic synapses and etc. By exerting their effect, they allow not to use large doses.

narcotic substances. The use of superficial anesthesia caused by small doses of the drug, therefore devoid of ordinary toxic properties, is typical of modern narcosis of large animals. Groups of premedication tools are as follows.

1. Means of sedative sedation, the so-called antipsychotics (tranquilizers: lat. tranquillare - soothe). These include mainly drugs phenothiazine series - aminazine, etc.

The reticular formation of the brain stem is a place effects of phenothiazine derivatives. It blocks impulses non-specific sensitivity that causes sedative

Effect. It should be borne in mind that these substances can sometimes from

their use on standing animals due to their inherent antihypertensive properties to lower blood pressure, cause anemia brain and the sudden fall of the animal (orthostatic collapse). So It is better for animals to eat yutrimishchechno. One of the very active means of sedation is rompun (xylazine), used for most pets

intramuscularly or intravenously. Its action comes quickly and lasts up to several hours. Rompun most strongly affects cattle, causing a sedative-hypnotic state with symptoms of muscle relaxation and a sharp decrease in the response to pain stimulation (anesthesia). Rompun cattle are used in four dosages for every 100 kg of weight: 0.25 ml; 0.50; 1.0; 1.5 ml. Especially for pigs, a neuroleptic butyrophenol series — azaperone (stresnil), manufactured in the USSR, is used. Him Injected intramuscularly in the available 4% concentration.

Normal sedation is achieved with an injection of 1-2 ml / 10 kg. Azaperone can be widely used to eliminate the aggressiveness of pigs, for calming down and losing animals their mass during transportation to meat processing plant, etc. For young pigs, up to 4 ml per 20 kg is prescribed mass, which allows without the subsequent use of anesthesia to perform painful diagnostic studies to operate on prolapse of the rectum, with herniotomy. Due to these properties azaperone after its injection operation can be continued under local anesthesia.

2. Anticholinergic agents. The main representative of this group is atropine sulfate. It limits the secretion of glands, reduces laryngoes, bronchospasm, reduces the inhibitory effect of the vagus on the heart and stimulates breathing, which prevents collapse, cardiac arrest and breathing.

Analgesic drugs. These include mainly morphine and his substitutes. They operate throughout the central transfer feelings of pain, reduce it without disturbing consciousness. Overdose of these substances may cause

3. general arousal, in usual doses, respiratory depression is noted. Of the substitutes in the USSR, promedol is used.

4. Hypnotic drugs. Use barbiturates before inhalation anesthesia or chloral hydrate.

5. Muscle relaxants as a means of sedation at the present time used for anesthesia with controlled breathing. An exception it is only the so-called mianzine group of muscle relaxants, for example, guaiacol-glycerol ether.

6. Antihistamines. In the process of operations and applied tissue injuries release a significant amount of histamine. Getting into the bloodstream, it causes a number of disorders that burden the course of anesthesia and the operation itself (spasms of the bronchioles, bowel, bladder, uterus, paresis of capillaries, causing a drop in blood pressure, permeability membranes with subsequent blood effusion in the tissue, etc.). Similar changes are of paramount importance in the pathogenesis of developing this shock. One of the most active antihistamines. medications is diphenhydramine.

Anesthesia course. Inhalation anesthesia proceeds most typically, in which four stages are established. The first stage (analgesic) is characterized by some anxiety of the animal, pain and other types of sensitivity are somewhat reduced, breathing is deep and uniform, the pulse is frequent and full, the pupil is dilated, eye movements apples are arbitrary. Reflexes and muscle tone saved.

The second stage (arousal) is accompanied by loss of consciousness in the result of inhibition of the centers of association (pharmacological decortication) and movement. Along with this, reflexes and increases muscle tone. There is

anxiety, breathing uneven and occasionally rapid, pupil enlarged. Have a horse and cattle nystagmus appears, secretion increases salivary, bronchial and lacrimal glands, dramatically increased swallowing reflex, vomiting appears. Pulse full, accelerated and arrhythmic, blood pressure increased.

The third stage (surgical, or tolerant) is divided into four period. In the first period, anesthesia becomes deep, breathing even reflexes, although still preserved, but significantly weakened, glandular secretion and muscle tone begin to decrease.

In the second period, muscle tone decreases sharply, reflexes start to fade, except for the eyes; pupil narrowed to the limit, ocular apple turned down. In the third period comes full, reflex-free anesthesia (other than the cornea) with even but shallow breathing which is becoming increasingly superficial and can only be regulated by inhalation of carbon dioxide. Pupil somewhat enlarged, the corneal reflex begins to weaken, sharply the secretion of glands is limited, it remains only a few ruminants. Muscle tone disappears, the tongue sinks. In the fourth, most dangerous period, breathing becomes shallow and jerky, mucosal cyanosis occurs, blood pressure drops. The rotation of the eyeball disappears and it takes normal position, the cornea is dry, the pupil is enlarged. Are advancing life threatening phenomena. The fourth stage depends on the continuation of the drug or its termination. In the first case, breathing stops (it can be restored artificially) with the observed work of the heart, which soon stops and death occurs. In the second case, after stopping the supply of anesthesia, reverse development begins.

stages up to the stage of arousal and full awakening.

Recently, a special type of general has begun to be applied in veterinary medicine, anesthesia - anesthesia without drugs. He received the name neuroleptic algesia, or neuroleptichesia. This refers to the use of two substances - fentanyl (a strong analgesic) and droperidol (neuroleptic), usually used on dogs. Inject intramuscularly from a single syringe or separately. The effect appears after 10 minutes. Animals quite calmly endure very painful operations. Introduction to clinical practice of rompun (xylazine), which has a strong an anesthetic effect, gave reason to believe that in this case the **neuroleptanalgesi**a syndrome occurs (V. S. Portnov).

Horse Anesthesia Chloralhydrate Anesthesia. Chloral hydrate can be administered to the body in various ways - intravenously, orally and through the rectum. The first of them is the most rapid and rational, since the effect of the drug comes at the time of the end of the introduction. A special property of chloral hydrate is the possibility of its use on a standing horse.

when performing small operations in combination with local anesthesia. The disadvantage of this anesthesia is that to achieve its sufficient depth, doses close to toxic are required. In addition, chloral hydrate does not completely relax the abdominal muscles, which requires the additional use of other means.

Premedication 20 ml before anesthesia, intramuscular injection of 5 ml of 1% atropine solution. To enhance anesthesia intramuscularly inject the lytic mixture of the following composition: Sol. aminazini 2.5% - 10.0; Sol. Promedoli

2% and Sol. Dimedroli 1% - n o 5.0; Sol. Novocaini 0.5% —20.0. This number is calculated on a horse weighing 500 kg.

Intravenous narcosis. A solution of chloral hydrate is injected into the vein. very slowly, taking all precautions so that the liquid does not fell under the skin, or perivascular, which may cause necrosis of perivascular tissues, para- and thrombophlebitis.

Horses
Rp: Chlorali hydratis 50.0
Aquae destillatae ad 500.0
M. f. solutio Sterilisata!
D. S. For intravenous anesthesia
Horses
Rp. Clorali hydratis
Magnesii sulfatis aa 50.0
Aquae destillatae 500.0
M. f. solutio Sterilisata!
D.S. For intravenous
anesthesia
Horses
Rp: Chlorali hydratis 55.0
Natrii citras 27,5
Sol. Natrii chloridi 0.8% —275.0
M. f. solutio Sterilisata! D. S. For intravenous anesthesia
In addition, the following mixture proposed by
Millenbrook and Walinga in the United States called Equithesin:
Horses
Rp: Chlorali hydratis 28.0
Magnesii sulfatis 14.0
Nembutali 7.0
Aquae destillatae 1000.0
M. f. solutio Sterilisata!
D. S. For intravenous anesthesia of a horse weighing 500 kg enter
325 ml.

In addition, horses are injected and other solutions. 1. Intravenous inject 3-5 ml per 100 kg of mass of rompun. His action begins manifest immediately - comes analgesia and muscle relaxation, allowing you to perform on a standing animal painful research, treatment of wounds, shoeing and transportation to the car. The males have a penis. Using local anesthesia, you can successfully castrate stallions without resorting to knock down 2. 4 ml of romiun and 8 g of chloral hydrate per 100 kg of animal weight are injected intravenously. Immediately begin to tumble down to the prepared place with soft bedding. At the same time, in order to avoid damage to the head, the animal is kept in a halter. 3. A similar type of anesthesia is used, injecting intravenously per 100 kg of a mixture of 5 ml of ompun and 6-8 mg

/ kg of thiopentotal sodium. Action mixture comes immediately after the end of the injection, so immediately start to fallen down.

Anesthesia of cattle. During anesthesia, cattle often have scarring of timpani, vomiting, increased salivation and secretion of mucus by the bronchial glands, which can lead to obstruction of the respiratory tract. The combination of these phenomena creates an extremely threatening background for anesthesia. Therefore, practically anesthetized cattle are usually not brought to deep degree, and combine it with local anesthesia.

Premedication - 10 minutes before the start of anesthesia to cattle 5-10 ml of a 1% solution of atropine, which is It will have a beneficial effect on the further course of anesthesia. It improves the work of the heart due to the removal of vagal inhibition, expands bronchi, improves breathing and limits the secretion of salivary and mucous glands. Following this, intravenously or intramuscularly

A 2.5% solution of aminazine is injected — 2 ml per 100 kg of weight.

However, it is not used for barbiturate anesthesia. After intramuscular injection action occurs after 30 minutes, and after intravenous - in 5-7 minutes. This calms the animal and the effect of anesthesia is enhanced. For cattle, chloral hydrate, alcohol and thiopental (pentothal) -sodium are used. In order to avoid aspiration of food masses, the animal is not given food and water 12 hours before anesthesia. This protects animals from aspiration pneumonia and tympania. The latter is also warned by the low position of the head of the animal during the operation.

intravenous chloral hydrate anesthesia. AT cow's jugular vein (possible in the saphenous vein of the abdomen) with the same precautions, like the horse, injected 10% solution chloral hydrate at the rate of 0.1 per 1 kg of mass of the animal. Due to insufficient depth of anesthesia is combined with local anesthesia. At the beginning of time and in a NI and a l to about golnyy and N and r to about h. After sedation, ethyl alcohol with glucose and sodium chloride is injected intravenously. Apply the following recipe:

Cow
Rp: Spiritus aethylicus rectificati 445.0
Natrii chloridi 6.0
Glucosi 68.0
Aquae destillatae 930.0
M. f. solutio Sterilisata!
D. S. For intravenous anesthesia to a cow weighing 450—
500 kg to enter half the dose.

Narcosis of small ruminants. Premedication is not required. For anesthesia, a 5% solution of pentotal or sodium thiopental is used at the rate of 15 mg per 1 kg of animal weight. The solution is injected into the saphenous vein of the forearm or into the small latent vein. The first quarter of the dose of the solution is administered quickly, and the rest is much slower, before the onset of full anesthesia, which lasts 15-20 minutes. If anesthesia needs to be extended, an

additional third part of the dose is injected. For anesthetized deer (premedication is the same as in cattle), a 10% solution of chloral hydrate is administered intravenously. In the summer, the dose of the drug for an adult deer will be higher (25-30 g), and in winter it will be 5 times less (5-6 g). This is due to seasonal variability in the body of a deer, due to nutrition and climatic conditions. Pig Anesthesia Pigs tolerate barbiturate anesthesia well. Usually, barbiturate solutions are injected intravenously (into the large ear vein, into the saphenous vein of the abdomen), intravenously or intraperitoneally (and during neutering of old boars, intratuscularly).

Premedication 15 minutes before anesthesia to calm the animal It is desirable to prescribe intramuscularly azaperone in a dose of 1 mg / 10 kg body.

Complications during anesthesia, their prevention and elimination Complications arise as a result of errors in the technique of anesthesia, in case of drug overdose, individual the sensitivity of animals to them, etc. With anesthesia, vomiting is possible, respiratory arrest, collapse and peri- or thrombophlebitis (with intravenous injection).

Vomiting warn starvation diet. With the urge to vomit anesthesia increase (if possible). If vomiting has occurred, the head is given a more comfortable position for release from the vomit and is cleaned by swabs in the mouth.

Respiratory arrest can be reflex and due to intoxication in case of drug overdose (pentothal sodium ,thiopental sodium, etc.). When you stop breathing anesthesia is stopped, remove entanglement belts and other fixation devices, under skin or intravenous injection of lobelin, caffeine and immediately proceed to artificial respiration (it is easiest to perform in small animals). To do this, pull out of the mouth tongue, the pectoral limbs are first moved forward and then brought to the chest, thereby rhythmically expanding and squeezing it. You can also put aside one limb, then press it to the body and press on the side chest wall with the palm of your hand (Fig. 28). Sometimes rhythmic palm slapping on the chest can be effective wall. If during the operation the abdominal cavity was opened, it is injected arm and massage the diaphragm, pressing it lightly and patting it with your fingers.

Collapse occurs more often in small animals with chloroform anesthesia and

in horses with chloral hydrate, especially if the animal has an anesthesia was noted feverish, as well as long there were no movements. In horses, it sometimes arises from the use chlorpromazine. With collapse, a sudden weakening of the heart is observed. activity, cyanosis, dilated pupils, weak pulse and cessation of bleeding from the cut vessels. In this case, anesthesia is stopped immediately, caffeine and camphor are injected subcutaneously, or intravenous adrenaline is injected. If possible, make a blood transfusion or injected with saline. Light rhythmic strokes of the palm on the chest massages the heart. During operations in the abdominal cavity, the arm is brought directly to the diaphragm, and through it, it is slightly struck and stroked over the heart. An extreme measure for collapse is intracardial injection of adrenaline in the first 5 minutes after palpitations; small animals are injected with 0.25-1 ml, and large animals - 10 ml. Peri- and

thrombophlebitis occurs when errors in the technique intravenous administration. This is warned by the immediate infiltration of a 0.25–0.5% solution of novocaine into the tissue where chloral hydrate has got.

5th lecture. LOCAL ANESTHESIA.

Lecture plan:

1. The concept of local anesthesia. Indications and contraindications.
2. Medication using local anesthesia.
3. Types of local anesthesia.
4. The diagnostic value of local anesthesia.
5. Pathogenetic action of novocaine.

Local anesthesia - temporary elimination of sensitivity in the area of the operated area of the body exposure to local anesthetic substances. These substances, by their specific and reversible action, change the excitability (conductivity) of the elements of the peripheral nervous system, without causing deep destructive changes in them. As a rule, this not only causes pain sensitivity, but along with it the tactile, temperature and other types of pain disappear.

The loss of pain sensitivity alone is called analgesia, and loss of all types of sensitivity - anesthesia, which arises from the use of all methods of local anesthesia. Injection of anesthetic solutions in the field of somatic and vegetative nerve trunks

The nervous system, spinal roots, nerve plexuses and nerve endings are called blockade. Depending on the location and method of application of local anesthesia, its following types are distinguished: superficial, infiltration, conduction, intravascular, epidural. In addition, local anesthesia is used as a diagnostic tool for horses with lameness, as well as a means of pathogenetic therapy.

surface anesthesia. Use for anesthesia of conjunctiva, mucous, serous and synovial shells. Artificial respiration in a pig. For anesthesia of the conjunctiva, the eye is applied to it with a pipette. a few drops of 5-10% aqueous solution of novocaine. Duration anesthesia up to 20 min. When anesthetizing the mucous membranes of the mouth, nose, larynx, genitals, etc., use the same solutions with tampons. Large amounts of high-concentration solutions should be used carefully, for example, in anesthesia of the mucous membrane. Bladder; after emptying it is filled through the catheter 0,25—0.5% solution of novocaine.

Synovial membranes of the joints, tendon sheaths and bursa analgesic 4-6% solutions of novocaine after pre-puncture their walls with a needle and extract the synovial fluid. Depending on the volume of the cavity, 5 to 20 ml is injected solution, and in very large cavities (parts of the knee joint) - up to 50 ml.

Anesthesia of the peritoneum is carried out by pouring a solution into its cavity. through a puncture of the abdominal wall with a needle or by inserting directly from syringe without needle into the open abdominal cavity during laparotomy.

Usually this type of anesthesia is used in small animals, introducing 2% solution of novocaine in an amount of not more than 20 ml. The surface of the skin does not absorb water solutions, so its it is better to anesthetize by cooling (freezing) quickly evaporating liquid. Ethyl chloride is most suitable for this purpose. which is produced in special ampoules supplied with either sealed capillary or special valve that closes the hole in the ampoule. Take the ampoule in the palm, break off the tip of the capillary or open the valve and direct the opened hole at an angle to corresponding skin area devoid of hair. because of the warmth of the hand liquid from the ampoule is discharged and sprayed on the surface of the skin. The distance from the ampoule to the skin should be 50 cm.

As a result of the rapid evaporation of the liquid, the skin temperature sharply decreases, its surface reddens first, and then turns pale and becomes insensitive. It usually lasts 1-2 minutes. For such time you can make a puncture, incision, open the abscess center, extirpate a small neoplasm, etc. For complete cooling needs 10-30 ml of liquid. Freezing apply in small animals, as well as during manipulation of the udder in cows and others.

Infiltration anesthesia. With this method 0.25–0.5% solutions of novocaine are used, and for large infiltration rollers of animals sometimes 1% are used. They are injected in layers with thin and long needles. At first, a needle is injected into the skin almost parallel to its surface and 2-3 ml of solution are injected to the appearance of a slight swelling; pushing the needle further, continue injection to the formation of an infiltration roller of the required length. Then the needle tip is moved under the skin and injected again. solution - linear infiltration anesthesia. With thick and rough skin infiltration begins directly from the subcutaneous tissue.

In this case, the insensitivity of the skin comes a little later. The solution can also be entered from two opposite sides intended line of cut. After dissection of the surface layers continue to infiltrate deeper tissues, alternating needle and knife. In large areas, circular infiltration is used. The solution is injected from two points lying one against the other, initially outlined by infiltration channel. From these points, tissues are impregnated at an angle, giving the injection direction a diamond shape, the sides of which surround the lesion. In the depths of the tissues, the ends of the needles are brought together in such a way that, in total, the character of the entire infiltration takes the form of a pyramid or a cone. Injected also from different points. This method of infiltration is used for extirpation neoplasms, fistulas, ulcers, etc. Circular anesthesia is performed on the extremities in the case of amputation, removal of foreign bodies, as well as in the surgical treatment of extensive injuries, etc. for this from several points (1–4) above the point of damage circular infiltrate the subcutaneous tissue, and then, deepening the needle, impregnate all tissues to the periosteum - anesthesia cross section (B) Sometimes tissues infiltrate over their entire thickness in the shape of the letter “G”, crossing these nerve branches running in parallel what is possible on chest or abdominal wall. In addition, infiltration anesthesia is used in reposition of fractures: a 2% solution of novocaine (10 ml of small and 20–50 ml of large animals) is injected into the fracture site. There is a relaxation of reflex muscle

spasm, so reposition broken bones and dressings are easy and painlessly (Beller's method). Normally insensitive tissue occurs within a few minutes. Before raising the animal after setting the fracture and dressing, you must wait for at least 1.5 hours until the anesthesia has passed. Otherwise the animal unaffected, will rest on a sore limb and may violate the corrections made.

Local anesthesia using the method of creeping infiltration according to A.V. Vishnevsky. Usually in connective tissue spaces, as in cases, pass the neurovascular bundles. Injected under pressure the solution, for example under the fascia, is relatively free to move (“Spreading out”), filling all the space under it, and comes in contact with the nerve trunks, their end branching: nerves, as it were immersed in a Novocainic bath. Anesthesia begin with the infiltration of the thickness of the skin and subcutaneous tissue and this mark the points for deeper penetration of the needle under the appropriate cases, where the solution is injected. Anesthesia comes almost instantly. For injection, use a 0.25% solution of novocaine, prepared in Ringer's fluid according to the following recipe:

Rp: Natrii chloridi purissimi 5,0
Kalii chloridi 0,75
Calcii chloride 0,125
Novocaini 2,5
Aquae destillatae 1000,0
Sol. Adrenalini 1 : 1000 — 2,0 M. f. solutio. Sterilisata!

Large animals are usually injected in large quantities. solution (500-1000 ml and more), but part of it when the cuts flows out and removed with tampons. Consequently, and also thanks low concentrations of novocaine risk of intoxication is excluded. Along with this, the neurovascular bundles contour very well to background infiltrated fiber ("hydraulic preparation"). It facilitates anatomical and topographical orientation during surgery.

Conductive (regional) anesthesia. Solution injected in close proximity to one or more nerves innervating the corresponding region. Thereby the sensitivity of a more or less extensive area of the body is turned off.

In performing this non-aesthesia, it is necessary to very clearly represent the course the location of the nerves. To determine the location of the nerves there are special indicative points: protrusions of bones, the contours of the muscles, tendons, or deepening between them.

Landmarks facilitate the establishment of the location of the injections. Injections in the area of a nerve can be performed either in an accessible place along the nerve, or near it formation. In this regard, in the first case they talk about peripheral and in the second about the central conduction anesthesia.

Methods of conduction anesthesia are distinguished by anatomical injection site. Nerve blockade at the exit of the intervertebral openings are defined as paravertebral anesthesia. Nerve blockade in ventral sacral foramina called parasacral anesthesia, and at the level of the free ends of the transverse rib processes lumbar vertebrae - paralyumbal anesthesia; finally, an injection along the

intercostal nerves is known as an intercostal (interkostal) conduction anesthesia, etc. In order for the anesthetic solution to better penetrate loose connective and fatty tissues that surround the nerve trunks, use a solution of a higher concentration (2-3% - nym) than with infiltration anesthesia. Depending on the thickness nerve trunk and its depth in the area of each nerve in large animals are injected with 5 to 20 ml of solution. Dose of solution it is always necessary to increase a little if there is no confidence in the exact location of the needle tip near the nerve. Since the nerves are accompanied by vascular trunks, with injections, you must first make sure that the needle end is outside the vessel's lumen, which is determined by aspiration a syringe.

Epidural analgesia

Epidural analgesia is commonly used in large animals. It is an easy, cheap, and effective technique used to prevent or control pain during surgeries involving the tail, anus, vulva, perineum, caudal udder, scrotum, and upper hind limbs.

Ruminants are poor candidates for general anesthesia because of the increased risk of complications such as regurgitation, bloating, and muscle damage [1]. Therefore, surgical interventions under local anesthesia in standing animals are preferred [1]. Paravertebral nerve block, local infiltration of anesthetic agents, intravenous regional limb perfusion, and epidural anesthesia are commonly used in ruminant surgery [1]. Various obstetrical operations, surgical procedures of the anus, vulva, perineum, caudal udder, and scrotum are performed under epidural analgesia. Epidural analgesia is also used as an adjunct for the treatment and control of tenesmus [1,2].

Caudal epidural analgesia has received plenty of research over the last 10 years. Many anesthetic drugs and combinations thereof have been experimented in ruminants with variable successful results. By searching the current literature, however, no comprehensive review articles that summarize published findings regarding epidural analgesia in cattle, camels, and buffalos can be found.

Caudal epidural anaesthesia involves injection of local anaesthetic and/or other appropriate drugs into the epidural space at the sacro-coccygeal or first intercoccygeal junction in order to produce analgesia of the tail, perineum, genitalia and pelvic viscera.

- Locate the first intercoccygeal space by either:
    - Raising and lowering the tail and palpating the depression and movement between the first and second coccygeal vertebrae: the first intercoccygeal space is the first obvious articulation caudal to the sacrum. or
    - Standing to one side of the animal, along the line of the croup observe the prominence of the sacrum and caudal to this the next prominence which is the spine of the first coccygeal vertebra; the first intervertebral space is the depression immediately behind this prominence. or

    - Palpate the caudal prominence of the tuberosity of the ischium and move about 10-11 cm forwards in a medium sized cow. A line drawn over the animal at this point will pass through the depression between the first and second coccygeal spines.
- Disinfect the skin over the first intercoccygeal space.
- Inject a small amount of local anaesthetic to desensitise the skin over the injection site and minimise reaction during insertion of the needle.
- Directly over the midline insert a 3.75 to 5cm long 18 gauge needle, directed at about 10 degrees to the vertical (right angles to the general plane of the croup), over the first intercoccygeal space.
    - At about 15 degrees to the vertical, advancing the needle ventrally and cranially until the needle touches the floor of the spinal canal.
        - Be prepared for sudden movement of the animal which may occur if the needle touches a cranial nerve.
    - A 5 cm 18 gauge spinal needle with stylet may be used to avoid potential plugging of the needle with tissue which may then be transferred to the spinal canal on injection.
- When the needle contacts the floor of the vertebral canal, withdraw about 0.5 cm; the needle tip should then be in the epidural space of the neural canal.
- Aspiration of a few drops of anaesthetic solution from the hub into the needle (hanging drop technique), and minimal resistance to injection indicate correct placement.
    - Suction with a syringe will not produce CSF or blood when the needle is placed correctly.
    - Injection of 1 ml of air may be used to confirm low resistance to injection.
- Connect the syringe and inject slowly: 15 ml should take about 10-15 seconds.
    - If attempted injection is met with resistance due to penetration of the needle into the intervertebral disc, withdraw slightly and attempt injection again.
    - If blood appears at the needle hub due to penetration of a vein it should still be possible to make the injection, or the needle may be withdrawn, cleaned of blood clot and reinserted.
- 1.0 ml of 2% lidocaine hydrochloride per 100 kg bodyweight should produce anaesthesia extending cranially to the middle of the sacrum and ventrally over the perineum to the inner aspect of the thigh, without affecting hind limb motor coordination.
    - Five to 10ml of 2% lidocaine (depending on the size of the animal) provides sensory analgesia
    - 2-3 ml of 2% lidocaine or 1.5-2ml of 3% is sufficient in a small cow.

    - 2 ml of 2% plain lidocaine (no adrenaline) for a 75 kg ewe provides about two hours of anaesthesia of the perineal area and posterior reproductive tract.
- Onset of paralysis of the tail 60 to 90 seconds after injection confirms correct injection. With 2% lidocaine analgesia persists for about 60 minutes with complete recovery after two hours the effects may last for 30 to 150 minutes
- Maximum analgesia is reached after 5 to 10 minutes using 2% lidocaine after 10 -20 minutes.
    - If lidocaine with adrenaline (0.0125 ml of 1:80,000 adrenaline per ml of 2% lidocaine) is used, tail tone and motility are suppressed for more than 60 minutes.

6th lecture. ELEMENTS OF SURGICAL OPERATIONS.

Lecture plan:

1. Separation of tissues.
2. Bleeding and stopping

Every bloody operation is inevitable integrity of tissues, that is, with their dissection. The main condition for this is respect for the fabric that the best way characterizes a good surgical training of the doctor. Than Careful handling of dissected tissues is better and faster their healing takes place. Damage should be especially avoided.

large vessels or nerves. In most cases, the muscles disconnect along the fibers; true if you need to get wide access to the affected organ or create the most favorable conditions for the discharge of discharge, sometimes neglected by this rule. Therefore, only after the operating person has a clear idea of the length, shape and cutting direction.

The length of the incision depends not only on the length of the lesion site, but also on the depth of penetration into the tissues: the deeper the organ is located, the longer the incision of the epithelial tissues will be. Generally, starting to cut, you should never forget general rule of surgery: the incision should be. The area of anesthesia with low sacred anesthesia in cattle is as large as necessary and as small as possible.

The shape of the incision is often rectilinear. However, during extirpation of tumors, excision of ulcers and fistulas, cuts make spindles. In addition, to create the best conditions for outflow of discharge, wide access to deeper-lying tissues, patchwork cuts of the most diverse forms are used: angular, horseshoe-shaped, T-shaped, cruciform, etc.

The direction of the incision is determined by the course of the skin folds,

growth of hair and (most importantly) the location of the deeper neurovascular bundles, tendons, ligaments, tendon sheaths and other organs, the accidental damage of which may

adversely affect the outcome of the operation. Tools, technique of cuts. The main instrument in surgery is a surgical knife (scalpel), which, depending on the blade and the cutting, can have a different shape and purpose. The most common are the abdominal and spiky scalpels. The first is used for cuts of any shape, of various lengths and depths; with a pointed scalpel, with a small cautious separating movement, its tip separates the elements of the neurovascular bundle, dissects the ducts, fascia, etc.

With a scalloped scalpel, tissue is dissected through his abdomen. When they want to make a superficial, long, but shallow incision, the scalpel is held in the hand in the bow position; if it is necessary to penetrate deeper through dense or elastic tissues, an index finger is placed on the back of the knife and pressed as if on a table knife. The pointed scalpel is kept, as a rule, in the position of a writing pen, which allows for small, precise cuts. Used to open it abscesses, shallow punctures, dissection, etc.

Dissecting the skin, first of all you need to eliminate its mobility and displacement. Capacity, for which the surgeon himself with the fingers of his left hand or his assistant fix it. For a uniform incision of a thick skin, the abdominal scalpel is set vertically at the beginning of the incision and, puncture the skin, tilt it and then act with the abdomen of the scalpel.

The incision is completed by placing the scalpel again vertically. When cut above the site where the vital organs are located, in order to avoid their damage, the skin is grasped with fingers or tweezers in fold (with the help of an assistant) and cut it in the transverse direction. In this way, cut through the peritoneum and hernial sacs. To protect the viscera from accidental damage when dissecting the peritoneum, as well as to cut the fascias, having made a small hole in them, they first insert a grooved probe and make further dissection with a scalpel or scissors, passing them along the probe. The peritoneum can be cut with scissors between two fingers inserted into the abdominal cavity through a small hole. For all cuts, it is necessary to strive to adhere to the stratified separation of tissues.

In addition to scalpels, they use scissors to separate tissues, which, depending on the purpose, also have a different shape. The most common straight scissors, sometimes with one blunt branch, and curves, curved along the plane. Very necessary tools are tweezers: surgical (with teeth) and anatomical (with notches on the ends). They are captured move and hold tissue during operations. For squeezing or squeezing the tissues use a chain ekzazer. For pushing apart and stretching the edges of the wound, wound hooks of various shapes and sizes are used. For dense fabrics use sharp hooks; blunt and lamellar wound hooks injure tissues less, therefore they widen wounds of easily damaged tissues. In addition to hooks, use binders with articulated devices and locks, which facilitates not only the expansion of wounds, but also the self-retention of tools in them.

Separation of bones and other dense tissues. For a complete dissection of the bones, various saws are used: sheet, arc, wire, etc. Bone scissors resect the ribs. The periosteum is separated with a raspator, curettes, and bone

marrow, fistula walls are scraped out with sharp spoons, sequestra, etc. are removed.

Trepanation (Greek. Trypao - drilling) is a special type of separation of tissues by sawing holes in bones with cylindrical saws (trepan) or spherical mills. Trepanation is also done with bone chisels. Using a special wooden or metal hammer, they hammer out the desired bone area with a chisel. Bone holes widen with bone forceps - nippers

Dahlgren. To perform trepanation, first make an angular incision of the skin and other tissues; after exposing the bone to the shape of the wound, cut through the periosteum and spread it with a rasp to the base of the skin flap.

Amputation (lat. Amputare - cut off) - complete separation of tissues with removal of the peripheral part of the organ; performed on organs consisting of soft tissues and based on bone. If a the organ is cut off at the joint, then such an amputation is called exarticularization — articulation (lat. ex - from, to the outside, articulus — joint). Amputation is performed according to four main indications: a) with a medical purpose for preserving the life and economic value of the animal (amputation of the tongue, uterus, udder, penis, phalanges of the pedigree, limbs of small animals, etc.); b) for economic and zoohygienic reasons (amputation of tails in lambs of fine-fleeced breeds of sheep, as well as fattened gobies); c) to facilitate the care and maintenance of animals (amputation of horns in cattle and wings in park birds); d) to decorate animals (amputation of ears and tails in dogs).

Opening of abscesses. Small abscesses open end pointed scalpel; the tool is quickly injected into the cent) fluctuations. With the opening of large abscesses after a puncture with a scalpel make another blade cutting movement downwards or at the lowest point abscess cavities form a contraperture (counter-perception) for

better runoff of pus. If the abscess is deep and wide open it is also impossible to produce contraception, its cavity is drained (loosely filled with gauze or a rubber tube is inserted, which fix seams to the skin). You must strive to make a cut like this.

values so that it does not close earlier than the abscess cavity is completed granulations. The pus released from the abscess is collected in a vessel.

Removal of tumors. Benign tumors are removed as usually with a scalpel and scissors. Around the tumor make two connecting semicircular or sickle-shaped incision of integumentary tissues and, capturing with tweezers, lift the tumor from the wound, separate it folded or opened scissors. Meeting vessels torso or ligated. Narrow stem tumors are successfully removed using ligatures. The latter can be stitched, that is the ligature is carried out with a needle through the leg of the tumor, and then dissected and the ends of each half of the ligature tightly tied, separating the leg in half, and then the tumor is cut off. If the tumor is deep and it is impossible to impose a ligature on it, then they use an ecrase, the chain loop of which is applied to the leg of the tumor and slowly narrowing the lumen loops, crush her. Malignant neoplasms excised as much as possible within healthy tissue. To prevent the dispersion of tumor cells, as well as reduce bleeding,

extirpation is performed electrocoagulation, using electric power. Last is an accessory of surgical diathermy working with using high frequency currents.

BLEEDING AND METHODS OF HIS STOP

Bleeding is constantly encountered in the operative surgery, since no surgery, accompanied by a violation tissue integrity, does not pass without damage to the blood vessels and blood vessels.

The larger the vessels, the greater the threat of bleeding and its consequences. more adverse effects on the body. Depending on the source of the occurrence, the bleeding may be arterial (the scarlet blood flows out in the form of a pulsating jet, which stops after pressing the central end of the vessel); venous (jet color dark cherry, sometimes intermittently flowing synchronously breathing, decreases after pressing the peripheral portion of the vessel), capillary (blood flows evenly from the entire surface of the wound) and parenchymal (occurs when lung, liver, spleen, kidneys damage, characterized by abundant blood flow ; like capillary, it is mixed). In addition, there are external bleeding - if the integrity of the integument is damaged and the inside - with the outpouring of blood in the internal closed cavity of the body; finally, the accumulation of blood in the interstitial spaces qualify as interstitial (interstitial) bleeding; if at the same time in interstitial spaces there is a cavity, then a hematoma is formed.

By the time of occurrence of bleeding is primary, arising immediately after damage to the vessel, and secondary if it develops in the result of the weakening and sliding of the ligature or the collapse of a thrombus.

Bleeding that can occur due to the erosion of the wall vessel with the collapse of the surrounding tissue, called arrozionnym. With long and tight application of a hemostat can damage to the vasoconstrictor; the developing bleeding after removal of a plait is called paralytic.

Prevention of bleeding can be carried out using means of general action, increasing blood clotting, and local impact on vessels of the operated area. To improve blood coagulability, a good means is an early transfusion of compatible blood: large animals 500-1000 ml, small to 300 ml. Blood coagulability increases, in addition, from intravenous injection of 10% calcium chloride solution in the amount of 100-150 ml to large and 2-4 ml to small animals, normal horse serum, administered subcutaneously or intravenously to horses (100-150 ml). The bleeding of the operated area is achieved with a hemostat - a rubber tube or rubber band with a hook at one end and a chain at the other. It is easiest to apply on the limbs. Immediately before the operation, a cord is twisted around the limb several times above the site of the operation, where the neurovascular bundles are located among the muscles and cannot be damaged as a result of pressure. The best places for applying a tourniquet are the areas directly above the carpal and tarsus joints. The harness can be successfully replaced with a linen bandage, towel, etc. When applying the harness, monitor the pulse distally from the harness and stop tightening it as soon as the pulsation disappears. Plait impose on 1-2 hours (in winter, reduce by half). If this period is necessary to extend, then for some time the

tourniquet is loosened, and then tightened and fastened again. Remove the tourniquet while slowly loosening. The plentiful postoperative bleeding arising after removal of a plait is stopped its repeated imposing for 5 - 10 min. A temporary stop of bleeding. They also use a bubble with ice water. As heat in the veterinary practice, it is possible to widely use hot metal, which burns the bleeding area. The scab from the charring of tissues that results in this contributes to the formation and retention of blood clots (see the cautery section). Bleeding on small surfaces is stopped by an electrocautery. Sometimes on bleeding surfaces apply hot water tampons.

Chemical methods are based on the use of pharmacological substances of local action. For example, tampons cause on a wounded surface 3% hydrogen peroxide solution, turpentine (Caution! Burn the skin!) And others. During operations in the nasal cavity and paranasal sinuses, on the larynx and perechatimatous organs use tampons impregnated with adrenaline 1: 2000 or 10-20% - Nym solution of antipyrine.

Biological methods primarily have a common action, increasing blood clotting. For this use in mostly horse serum. Use it topically with tampons. In addition, due to the presence of thrombokinase pieces of the omentum, adipose tissue, muscles transferred to the bleeding surfaces also have a hemostatic effect, fascia. To strengthen them hemmed with catgut. In addition, he himself currently, catgut due to the thrombokinetic substance contained in it is an effective means of stopping bleeding. His skeins are placed on bleeding areas, in wounds, anatomical cavities, where their hold by approaching (seam) edges of wounds or walls of cavities. Hemostatic sponges have been proposed to stop bleeding containing thromboplastic substance and penicillin (biological antiseptic tampon).

7-Lecture. CONNECTING TISSUES

Lecture plan:

1. Suturing principles of tissues.
2. The methods of suturing

For closure of operating and occasional skin or wall wounds cavities in order to restore their integrity and create conditions for favorable course of the healing process elect one of existing methods of joining living tissues. Fabrics connect by applying thread and staple stitches (bloody methods) or same bloodless methods without the use of suture material.

Wounds with signs of a developing wound are not subject to closure. infections, in the presence of foreign bodies, dead tissue scraps and mechanical pollution. Materials and tools for connecting fabrics. To connect soft tissues do not use absorbable threads (silk, linen, Mylar, Dacron) and absorbable (catgut, threads from oktselona), and also metal brackets and surgical glue cyacrine. Suture threads are mono- and polyfilamentary. Surgical needles are used to hold the suture through the tissues.

Surgical needles. They are straight and curved, round and triangular, have springy forked ear. Circular needles are used for internal operations. organs, and triangular,

when suturing the skin, muscles, fascia. For holding filaments around vessels and other organs. there are ligature needles with a massive handle and an extended tip, in the center of which the ear is located. A. Kovacs offered a needle, in the handle of which is mounted a reel with suture material that allows stitching on the skin with a single needle charging thread. Currently used for one-time use needles with threads mounted in them, the thickness of which does not exceed the diameter of the needle itself.

Needle holders are designed to fix the needle in the moment of its holding through the tissue and the transfer of movement of the surgeon's hand on the needle. The most common needle holders are Troyanov, Mathieu, Gegara, different design frame. Needle clamped branches of the needle holder in its middle flattened part. With inserting the needle into the needle, the needle holder is held in the right hand,
pressing the end of the thread with your thumb, and holding it under your left hand needle. Then, throwing the thread through the end of the needle holder, hold her through the eyelet needle slot. The needle is charged so that its one end was shorter than the other by 6-8 cm.

Surgical tweezers are used for fixing the edges of the wound when passing through them with a needle suture material.

Types of knots and their tying technique. Stitching is completed by tying a knot. The quality of this step depends on the strength of the seam and the course of the wound healing process. The knot should be small and able to fix the ends of the suture so that it does not.

The following intermittent sutures are applied to the skin:

A simple knotted suture is applied with separate threads 15-25 in length.
see each. The edges of the wound is fixed with surgical tweezers; the needle clamped by needle holder, injected. Types of nodes: a - surgical: b - sea. Tying a knot with hemostatic forceps
standing 0.5-1.5 cm from the edges of the wound, and acting simultaneously with tweezers and needle in opposite directions, lay the fabric on one side of the wound; on the other side in the same way spend needle from inside the wound out. Stitches are applied at a distance of 0.75-1.5 see one from the other. After each stitch is applied, the threads are knotted, providing accurate matching of wound edges without undue effort.

Nodes should be placed on the side of the wound, on the side of the needle.

Situational suture is used when suturing a long wound with non-linear edges. The first stitch is placed in the middle. wounds, then in each part of the wound impose one more stitch, then sew separate sections. The looped seam is able to prevent tissue eruption. Him put on patchwork wounds of the skin, muscle defects, aponeuroses, under high voltage. The seam with rollers is designed to close strongly gaping wounds with significant voltage edges. Thick, durable silk threads impose in the eye of the needle so that both ends of the thread were the same length.

Having a loop on the opposite side of the wound, release it from needles through a springy cutting ear. In the loop of all stitches, wounds located on one side and between the ends of the threads on the other side is placed pieces of rubber tubing or gauze rollers, the ends of the threads are knotted.

The seam with the formation of skin fold is advisable after performing operations for umbilical hernia. After applying a knotted suture to the skin over the last two parallel folds of skin are pulled together, stitch them individual stitches knotted seam, located under the folds gauze layer. Michel's brackets in veterinary practice impose in smallanimals, as well as on the skin of the eyelids and nipples of the udder in large animals. Each bracket with sharp curved ends is superimposed when using special tweezers dissolved, and the suture material would not cut through the tissue and did not squeeze the latter. These requirements are best met. marine and surgical nodes. When imposing the sea knot the ends of threads in the first and second loop are held in opposite directions. Surgical knot differs from sea knot by double twisting of the first loop. Proposed several techniques of tying knots. The figure shows the stages of the most common way of tying knots with the index finger according to N. V. Sadovsky: A is the way of tying the first loop; B - the method of tying the second loop. They also use the technique of tying a sea knot with two hands according to K. Amman and a method of tying knots in the depth of a wound using hemostatic tweezers.

The following intermittent sutures are applied to the skin: A simple knotted suture is applied with separate threads 15-25 in length. see each. The edges of the wound is fixed with surgical tweezers; the needle clamped by needle holder, injected. Types of nodes: a - surgical: b - sea. Tying a knot with hemostatic forceps standing 0.5-1.5 cm from the edges of the wound, and acting simultaneously with tweezers and needle in opposite directions, lay the fabric on one side of the wound; on the other side in the same way spend needle from inside the wound out. Stitches are applied at a distance of 0.75-1.5 see one from the other. After each stitch is applied, the threads are knotted, providing accurate matching of wound edges without undue effort. Nodes should be placed on the side of the wound, on the side of the needle.

Situational suture is used when suturing a long wound with non-linear edges. The first stitch is placed in the middle. wounds, then in each part of the wound impose one more stitch, then sew separate sections. The looped seam is able to prevent tissue eruption. Him put on patchwork wounds of the skin, muscle defects, aponeuroses, under high voltage. The seam with rollers is designed to close strongly gaping wounds with significant voltage edges. Thick, durable silk threads impose in the eye of the needle so that both ends of the thread were the same length. Having a loop on the opposite side of the wound, release it from needles through a springy cutting ear. In the loop of all stitches, wounds located on one side and between the ends of the threads on the other side is placed pieces of rubber tubing or gauze rollers, the ends of the threads are knotted. The seam with the formation of skin fold is advisable after performing operations for umbilical hernia. After applying a knotted suture to the skin over the last two parallel folds of

skin are pulled together, stitch them individual stitches knotted seam, located under the folds gauze layer. Michel's brackets in veterinary practice impose in small animals, as well as on the skin of the eyelids and nipples of the udder in large animals. Each bracket with sharp curved ends is superimposed when using special tweezers Technique removal of stitches. During the healing of the primary tension seams are removed on the 7-8th day, with a strong tension of the edges wounds - on the 10-12th day. Surgical forceps lightly lift the knot, cut the thread with scissors near the skin and extract it. With a continuous seam, each stitch is crossed and removed separately. Intestinal sutures are applied to hollow organs covered serous membrane. The principle of intestinal suture is based on fast gluing contiguous serous membranes with precipitated fibrin and their fusion, which leads to a high tightness of the seam. Process healing at the level of muscular and mucous membranes proceeds slower The prototype of the modern intestinal suture is a suture. Lambert used: in the form of a knotted or continuous seam as alone or in combination with other seams. For suturing the needle is inserted from the side of the serous membrane at a distance of 5-8 mm and removed at a distance of 1-2 mm from the edge of the wound of the intestinal wall, the other the edge of the wound is seized in the reverse order. Needle and thread, while pass in the thickness of the muscle shell. When tying the ends of the thread serous membranes touch, and wound edges are rolled. Double row suture of Pirogov - Cherni impose on the urinary wall the bubble. When imposing the first row of a needle injected from the side of the serous membrane, and bring it into the lumen of the wound between mucous and muscular membranes, then injected it between these shells of the other edge of the wound, and punctured on the serous surface. After tying knots impose a second row of seam on Lambert Schmieden's seam is used in operations on the rumen, rennet, large intestine. This is a continuous seam, the imposition of which begins with tying the first knot, as in the furrier seam. The remaining stitches of the seam are performed by vcol from the mucosal side. shell and piercing all layers of the wall of the body. Assistant supports thread in tension, which contributes to the screwing of the wound edges and contact serous membranes. In this case, the sero-muscular suture along the Lambur is applied as the second row, ensuring a high level of wound tightness. The horse has a groove absent, and this hole is at the level of the medial edge of the orbit. Head tissue. The skin in animals of different species and in different areas of unequal thickness: in a horse 2-4 mm, in cattle 4-6 mm. In the parietal and frontal areas, it is thicker than in other areas. There is a thin layer of loose connective tissue under the skin. The subcutaneous tissue contains cutaneous nerves, blood and lymphatic vessels.

The superficial fascia of the head (fascia superficialis) is thin, connected to the subcutaneous tissue. Weak bundles of the subcutaneous muscle pass between the leaves of the fascia, and under it there is a well-defined loose connective tissue. The vessels and nerves lie in the superficial fascia.

The deep fascia (fascia profunda) is firmly connected to the muscles of the head, forming fascial beds for them, and in the area where there are no muscles, it is poorly expressed.

The chewing muscle (i.e. masseter) is located in the chewing area. Its upper edge is fixed with a thick tendon on the zygomatic arch and facial crest. The anterior margin protrudes markedly along a line extending from the anterior end of the facial crest to the vascular notch. The posterior and lower edges reach the free edge of the lower jaw. The muscle is penetrated by a mass of tendon fibers and consists of superficial and deep layers. It is thickest (3-4 cm) at the level of the molars. The muscle bundles of the superficial layer run fan-shaped from top to bottom to the free edge of the lower jaw; the bundles of the deep layer are directed from top to bottom and back.

The zygomatic muscle (t. Zygomaticus) is thin, ribbon-like. It begins with an aponeurosis from the zygomatic crest of the upper jaw, goes forward along the cheek to the corner of the lips and is lost in the circular muscle of the mouth and the adjacent portion of the buccal muscle.

The nasolabial lifter (i.e. levator nasolabialis) has the form of a thin plate located in the nasal and buccal regions. It begins with a tendon plate at the border of the frontal and nasal bones and from here goes to the upper lip and wings of the nose. In the lower third, it is split into superficial and deep parts, between which the canine muscle passes.

The canine muscle (t. Caninus) has the form of a triangular plate. It starts from the front end of the facial crest, goes between the superficial and deep parts of the nasolabial lifter and ends on the lateral wing of the nose and in the circular muscle of the mouth.

A special upper lip lifter (i.e. levator labii superioris proprius) begins on the zygomatic and lacrimal bones, near the inner corner of the eye. The rounded abdomen of the muscle gradually turns into a tendon, which goes to the top of the nose, where it connects to the same on the other side, and continues to the upper lip.

The lower lip pusher (i.e. depressor labii inferioris) is a rounded long muscle. Lies on the lateral surface of the lower jaw, along its dental edge, and ends in the circular muscle of the mouth in the lower lip.

The buccal muscle (the buccinator) is located in the buccal region between the upper and lower jaws and serves as the base of the cheek. Consists of superficial and deep layers. The first looks like a pinnate muscle. The tufts of its upper half run obliquely up and forward and are attached along the toothless edge of the upper jaw. The tufts of the lower half of the muscle go down and forward and end along the toothless edge of the lower jaw. The deep layer (i.e. molaris) begins on one side of the coronoid process and the adjacent part of the lower jaw, on the other, along the molars of the upper jaw. The abdomen of the muscle is adjacent to the buccal mucosa and ends in the circular muscle of the mouth. With its lower edge, it connects to the upper edge of the lower lip depressor.

The temporal muscle (i.e. temporalis) fills the entire temporal fossa with its mass; permeated with tendon fibers.
Blood vessels. The following arteries and veins are large and noteworthy for the surgeon.
The external jaw artery (a.maxillaris externa) is a branch of the external carotid artery. In horses and cattle, it is very thick. It is located in the intermaxillary space directly on the inner-lower edge of the lower jaw, under the deep fascia. Follows to the vascular notch of the lower jaw and extends into the buccal region. Next to the artery lie a vein and a stenonic duct.
The facial artery (a.facialis) enters the buccal region through the vascular notch and first follows the anterior edge of the masseter muscle, and then deviates from it anteriorly. In the buccal region, it gives off the lower labial artery, located near the ventral edge of the lower jaw, the upper labial, and then the lateral and dorsal nasal arteries and the artery of the corner of the eye. All of them, except for the last, go orally, breaking up into terminal branches in the tissues of the cheek, lips and nose. The veins of the same name lie next to the arteries.
The chewing artery (a. Masseterica) passes near the posterior edge of the muscle, located first on its surface, and then in the thickness.

Innervation. The facial nerve (n. Facialis) runs on the outer surface of the masseter muscle. It penetrates into this area 2.5-3 cm below the jaw joint and is divided into two branches: the dorsal buccal nerve, which runs orally 1.5-2 cm below the facial crest and branches in the buccal region to its terminal branches; the ventral buccal nerve is also directed orally to the lower cheek and lower lips. There are connecting branches between these nerves.
The maxillary nerve (n. Maxillaris) is a branch of the trigeminal nerve. It leaves the cranial cavity through a round hole that opens into the wedge-palate fossa; here it forks:
on the zygomatic nerve (n.zygomaticus), going to the lower eyelid; cuneopalatine nerve (n.sphenopalatinus), innervating the nasal mucosa, ventral turbinate, hard and soft palate;
infraorbital nerve (n. infraorbitalis) - the main and most powerful branch of the maxillary nerve. From the cuneiform fossa, it penetrates through the maxillary foramen into the infraorbital canal, giving before this rami alveolares aborales superiores to the last molar of the upper jaw. In the infraorbital canal, rami alveolares medii superiores branch off for. 1 - 3 alveolar periosteum and gums; 1 cm more aboral from the infraorbital foramen is a branch that innervates the premolars, canines and incisor teeth.

HORN OPERATIONS

Anatomical and topographic data. The cornea of the frontal bone is covered
the basis of the skin of the horn, which grows together with its periosteum. Outer layer

the base of the skin of the horn forms the papillae, covered with a producing layer epidermis; the latter produces a dense stratum corneum, which forms
horny sheath of the horn. On the frontal bone at the site of the future formation of the corneous process under the periosteum, exostosis occurs, and the horn bud is laid in the thickness of the skin covering it. All this creates the horny tubercle. Initially, exostosis and the horny bud are separated from each other by the periosteum, and then grow together. At the same time, a small cavity appears in the horny tubercle, which connects to the sinus of the frontal bone itself. As the horn grows, its cavity continues into an enlarging horny process.
The artery of the same name (a.
cornus), originating from the temporal superficial artery. She goes along external frontal ridge accompanied by the nerve of the same name and branches at the base of the horn into lateral and medial branches.
I n e rv a c and I. Primary nerve - branch of the orbital nerve - horn nerve (n. cornus). Coming out of orbit, it runs along the outer frontal ridge, being covered by skin, fascia, fronscural muscle and a layer of fat. TO the branches of the frontal and subblock nerves fit the base of the horn, which, connecting with their ramifications, they form a kind of plexus. except
In addition, the branches of the dorsal trunks of the first cervical nerves.
Indications. Forming a flock for loose housing,
fractures, abnormal growth and neoplasms of the horns, vigor.
There are two methods of dehumidification of cattle: 1) preventing the development of horns; and 2) removing the horns.
Prevention of horn development is based on the destruction of the epidermis and the basis of the skin of the horn in the area of the horny tubercles in calves 1-3 weeks old
age. There are several ways to do this.
Khimichesky with about b is more widespread. On horny
the bumps of the calves are applied with a powerful chemical: hydroxide sodium (NaOH) or potassium (KOH), nitric or trichloroacetic acid, etc.
Removal of horns (decornation) in adult animals
In adult cattle, it is recommended to partially cut the horn without damaging the bony cornea. Horns are completely removed only from especially pugnacious animals. During the operation, the animals are fixed in machines. It is also possible to carry out the operation directly on the farm by adapting a corral fence for this. To do this, two rounded wooden bars are attached vertically to the fence of the corral: one is motionless, and the other is attached only to the lower end. The upper end of the bar is shifted towards the first, securely and firmly fixing the neck of the animal. Various nasal clips are used during the operation.
The indications for removing horns are mainly: excessive aggressiveness (vivacity), abscesses in the cornea of the frontal bone, osteomyelitis of the base of the horn, purulent inflammation of the base of the skin of the horn, proliferation of

granulation tissue with hyperkeratosis on the inner surface of the horn, fractures of the horn, especially at its base. In practice, the bloody method is widely used.

Bloody way to decorate. Operation technique. Around the base of the horns, the hair is cut to the width of a palm, the skin and horns are thoroughly washed with soap, wiped dry with a clean towel, the operation site is smeared with tincture of iodine. Anesthesia is carried out according to M. V. Plakhotin and S. T. Shitov.

During the operation, it is advisable to apply a hemostatic pulp (screw clamp), which presses at once two arteries of the horn, left and right, at the frontal bone. In the absence of screw clamps, it is recommended to press the horn arteries with fingers during the operation.

For horn amputation, it is advisable to use a steel wire saw (Zhigli saw) with a thickness of 1-2 mm or a saw made of a steel cable 3-4 mm thick, as well as an electric saw. If they are not available, you can use sheet or arc surgical saws. It should be remembered that blade saws, more than wire saws, cause bleeding and anxiety to the animal during surgery. The horn should be cut off at the base of the horny capsule. During the operation, the animal's head is tilted to the side towards the horn to be amputated so that blood does not flow into the frontal sinus.

To stop bleeding, if it occurs, it is best to cauterize the bleeding surface with an electric burner. In case of profuse bleeding from the artery of the horn trunk, located subcutaneously at its base, cauterization does not help. ”In this case, after a small incision of the skin from the base of the horn, clamp the artery with a hemostatic clamp - Pean's or Kocher's forceps and apply a ligature to it. For the final stop of bleeding, it is also possible to recommend filling the vessels with a paste consisting of 10 parts of paraffin (wax), 20 parts of vaseline oil and 20 parts of tar.

It is better to close the wound opening with an antiseptic polymer adhesive composition (APCC), which seals wounds of hard and soft tissues.

An impermeable polymer bandage can be used to close a wound defect both after removal and in case of damage to the horn and at its various heights. Healing of wound defects after horn amputation lasts 1.5-2 months.

The bloodless removal of the horns is carried out by applying vacuum rubber rings to the base of the horn. A special device is used for this — a dilatator or a ring, before applying, is stretched with gauze ribbons. The operation is performed under long-term anesthesia according to S. N. Martyanov or M. V. Plakhotin. Compression of tissues with rings leads to the rejection of the horn on the 28-47th day. By this time, the entrance opening into the cavity of the frontal sinus is filled with young connective tissue. The entry of germs and other contaminants is prevented.

Decontamination, decornation (from Lat. De - cancellation, cornu - horn) - removal of the horns of an animal or hindering their growth.

Cattle are dehumidified to prevent animals from damaging each other and humans; with abnormal growth, diseases and fractures of the horns. Deer are decorated to produce antlers.

Dehydration: calves 3-5 days - rubbing strong alkalis, acids, etc. into the horny tubercle; 2-3 weeks - cauterization of the tubercle with thermocouters; 4-8 weeks - excision with a tubular knife; 3-6 months - excision with pruning shears; adults - putting on vacuum rubber rings on the base of the horn after anesthesia, the horns fall off after 4-8 weeks, or cutting with a wire or bow saw. After removing the horns, the wounds are treated with antiseptics. It is not recommended to carry out decoration in the second half of pregnancy.

Inserting the nose ring.
Indications. The ring is inserted into the nasal septum of one-year-old breeding bulls to tame and prevent their violent disposition.
Fixation and pain relief. The bull is placed in the machine and the head is firmly fixed with a rope. An antipsychotic is injected intramuscularly. The nasal septum and the tip of the nose are treated with a 0.5% solution of ammonia. Place of insertion of the ring - the upper part of the membranous part
nasal septum. The ring is placed in special tongs so that the left half ring is in the groove of the left jaw of the tongs, and the protruding pin of the movable lever of the tongs enters the intended
for him, the deepening of the half-ring. In this case, the right half-ring should
be on the platform of the movable arm. Spread the jaws of the forceps
enter them through the nostrils and squeeze the nasal septum with them in the area
perforation (fig. 98). So that the branches do not move, they are fixed
a movable clamp on the handle of the tongs. By perforating the nasal
the partitions with the left half-ring, the tongs are removed, and the free ends
restraining ring is connected with a screw using pliers.
Break off the screw head with pliers. The wound heals in 8-10 days.
In adult bulls, a restraining ring is inserted (if necessary)
after preliminary perforation of the septum with a trocar.
Option 1 according to G.N. Fomenko. After the formation of wound surfaces and excision of scar tissue on the -membranous part of the nasal septum, the latter is connected with 1-2 stitches of a knotty
seam of catgut long threads (a). The ends of the threads are cut off, and the seams inthe subsequent is not removed. Then they begin to inject into the thickness of the tissues in 6-7 coinciding with each other points of the upper and lower sections
torn nose of liquid plastic - glue BF-2 or BF-6 v pure or mixed with penicillin 1: 100. The needle is inserted into the tissue to a depth of 2-4 cm. When removing it into the piercing channel from the syringe or
the tubes squeeze out the glue so that this channel remains filled with liquid
plastic. Excess glue remaining on the wound surface and clots
blood is removed with a swab. The injected adhesive promotes the development of scar tissue, which will make the tip of the nose more durable. Wound
the surface is generously powdered with white streptocide powder and
impose on the nasolabial mirror 3-4 stitches of a loop-shaped seam,
using for this purpose threads made of nylon (lavsan) No. 4-6 (b). Threads

tied with a triple knot, and the ends are twisted and melted together
with a hot object. This prevents knots from loosening. If
after the operation there is a narrowing of the nostrils due to edema, into their lumen
dense rubber tubes are inserted for 1-2 days. The stitches are removed for 10 -
14th day. The nasal ring is inserted after 45 days.
2nd in a r and n t (I. I. Magda, E. N. Ponomarenko, O. B. Bondarenko).
After processing the surface of the defect and stopping bleeding, insert
closed restraining ring with a sawn-off screw top and, firmly
pressing against the nasal septum, fix it with braid or twine to
horns. Thus, the ring will not interfere with further manipulations (c). Then, with double threads from catgut No. 8, three strong loop-like sutures are applied to bring the refreshed edges of the wound closer together. The ends of the threads are tied in three knots. After trimming, leave the ends with a length of 2 cm. Then proceed as in the 1st option. In the process of resorption
catgut, which occurs after the wound has healed (2 weeks), its parts will be
reject on their own, therefore, the procedure for removing the stitches is excluded.
45 days after the operation, the braid is cut to fix the ring to
horns. The operation itself is performed in 15 minutes.
After the operation, in both cases, mealy are excluded from the diet of bulls.
feed, straw and chaff. Auto-chanting is replaced by manual chanting.
Frontal nerve block.
Indications. Horse forehead surgery and
upper eyelid; in cattle, it is performed in combination with a blockade
subblock nerve.
Horse blockade technique. Palpation over the orbit in the zygomatic region
process of the frontal bone, it is easy to feel the supraorbital foramen in the form
depressions the size of small lentils. Pierce with a thin needle skin and bring its tip to this hole, where 5 ml of 3% - a solution of novocaine. To anesthetize the upper eyelid with a needle, it is necessary penetrate into the supraorbital opening to a depth of 2-3 cm.
In cattle, the needle is injected through the base of the upper eyelids in the middle of the upper edge of the orbit. Injection depth 2-3 cm, injected 10 ml of a 3% solution of novocaine. After 5-10 minutes, a narrow a painless strip lying between the zones of the nerves of the subblock and the horn.
Subblock nerve block. Indications. Trepanation and other operations in
forehead and eyelids in cattle must be combined with
blockage of the frontal nerve; in a horse - operations in the area of the concha,
frontal-canal sinus and on the lower eyelid.
Blockade technique in cattle. The needle is injected at the point
lying close to the inner edge of the orbit and 2 cm dorsally from
internal commissure of the eyelids. The depth of the injection is 2 - 3 cm. 5 - 6 ml of 3% - a solution of novocaine.
In a horse, 1 cm above the inner commissure of the eyelids and medially from it

inject the needle to a depth of 2-3 cm so that it goes along the inner
bone wall of the orbit. An auxiliary landmark can be
notch present in the lacrimal bone, clearly perceptible through the soft tissues.
2-5 ml of a 3% solution of novocaine are injected.

CRANIAL SURGERY

Anatomical and topographic data. Hirurgichesk and egranitsy
c ere pn about mozg about the lane of t and uovets: back - occipital
crest; the front is subject to significant fluctuations (depending on the breed),
located within the level of the outer corner of the eye or somewhat aboral;
lateral - along the medial outline of the base of the horn and along the temporal line
comb.

The vault of the skull in sheep is outside covered with skin, subcutaneous tissue, fascia
(and in cattle, a powerful cutaneous muscle) and the periosteum. His
divided into frontal, parietal and occipital parts; the thickness depends on it
bones of the skull, which is highly variable. In sheep, it reaches
the frontal region 5-14 mm, in the parietal 4-7 mm, in the occipital 6-7 mm.
The blood supply is provided by the branches of the superficial temporal
and large auricular arteries.
Innervacy is carried out by the branches of the subblock, lacrimal and
frontal nerves.

The intracranial cavity is subdivided into the anterior section - for large
cerebral hemispheres and posterior - for the cerebellum and medulla oblongata. Front
the department has a sagittal crest (the place of attachment of the crescent fold
dura mater); perpendicular to it, at the level of the inter-parietal
bone, there is a transverse ridge (the place of attachment of the transverse fold
dura mater). At the base of the crescent fold is located
sagittal venous sinus, and at the base of the transverse - transverse sinuses.
P.P. Herzen recommends to divide the outer cranium of a sheep into quadrants
and this will facilitate the determination of the position of the parts of the brain. Must be found
point on the vault of the skull that would coincide with
the central point of the mass of the brain (1). Between
the base of the horns or their primordia is carried out directly
line (Fig. 120.9), and then from its ends as from
• bases build an equilateral triangle (2);
the top of the latter just coincides with the sought
paragraph. Through this point, two others are carried out mutually
perpendicular lines, one of which is
middle (median) head line (3, 4). Now the outer vault of the sheep's skull is divided into
four parts - quadrants: right rear (5), left rear (6), right

front (7), left front (8). The first and second of them contain
the occipital lobes of the brain and the cerebellum, in the third and fourth - the temporoparietal and frontal lobes.

OPERATIVE TREATMENT

Indications. The operation is performed when the price level bubble has reached significant value and by its development determines the manifestation
clinical signs. The main task is to clarify the location of the bladder,
that is, to determine the place for trepanation.

Tools. Scalpel, pointed tweezers, trephine with a set
cutters (in its absence, a hoof knife), styptic tweezers,
needle holder, needles, syringe, injection needles, threads, rubber tube.

Fixation and pain relief. Tranquilizers are shown. Sheep
placed in a wet bag, which is tied around the neck, and placed on
table. Shave the operating field and apply the infiltration
anesthesia.

Operation technique. In the center of the corresponding quadrant, make a corner or a lunar cut, it should be turned to the side,
providing a better drainage downward, they tend to dissect the periosteum in opposite direction and push aside. Trepanning first
A fine cutter, and then a spherical. If there is a softening of the bone,
use a hoof knife.

The dura mater is cut crosswise with a needle. If
trepanation hole exactly coincides with the localization of the price of the tier bubble, then it protrudes through it and does not present any difficulty for extraction. Otherwise, in different directions into the thickness of the brain, they are injected
a needle connected to a syringe. During the injection, the needles are aspirated up to
the appearance of a bubble liquid in the syringe, indicating the location and depth of its occurrence. The needle is removed and injected in its direction to the same depth
anatomical tweezers, which are grasped and taken out into the wound opening part of the bubble (Fig. 121, /). The extracted section of the bladder wall is fixed fingers, and then, after giving the trepanation hole a low
position by turning the sheep's head, the bubble is removed completely, removing it
with careful finger movements. If you do not grab the bubble with your fingers seems possible, then it is removed with tweezers, twisting the wall with it bubble. When the bubble ruptures, a rubber tube is inserted into the hole, put on onto the syringe, and by the movement of the piston, the sheath is pulled into the lumen of the tube (2).

After the end of trepanation, the periosteum is straightened over the trepanation hole and the skin is sutured with knotty sutures. The wound is closed with glue bandage.

With thinning of the bones of the skull, trepanning is not performed. Scull pierced with a Saykovich or Bobrov needle with a pointed stylet, which should protrude beyond the tip of the needle. Skull with a pricey the bladder is pierced with such a trocar needle and after removing the stylet remove the liquid contents of the bladder. Then, attaching a syringe to the needle with with a rubber tube, the end of the needle is in contact with the side wall of the tier bubble and the piston is removed with aspirating movements of the piston the bubble shell into the lumen of the needle (<?).

The operated animals are kept in a clean, spacious, darkened room with abundant bedding. They are monitored until removal of stitches (at least 7 days), after which the sheep are transferred to the flock. When necessary at this time, treatment is prescribed depending on the general the state of the operated.

Recovery occurs in 80% of cases (V.R.Tarasov). However, this figure subject to significant fluctuations - from 51.8% (Yakovlev) to 85% (P.P. Herzen), which often depends on the timeliness of the operation.

Topic: DENTAL, TONGUE AND EYE OPERATIONS

1. Tongue operations

a) anatomical and topographic information and analgesia of the lingual nerves.

b) amputation of the tongue

2. Dental operations.

a) anatomical and topographic information

b) tooth extraction

3. Eye operations:

A) anatomical and topographic information.

B) extermination of AYES.

Basic terms: Head, face, brain, head parts, facial nerve, trigeminal nerve, blockade, king, chemical, physical, mechanical methods, methods, fall. trepan, tongue, amputation, tooth, extraction

Linguistic operations

The tongue - Lingua is a muscular organ located in the oral cavity, at the base of which is the sublingual bone. The language of animals consists of three parts: the root, the body, and the tip. On the outside, the tongue is covered with a mucous membrane.

Blood supply. Through the double tongue and sublingual arteries.

Innervation. It is supplied by three pairs of nerves: the lingual nerve - sensory, sublingual nerve - includes 2 pairs of motor nerves, tongue - laryngeal nerve - 9 pairs of sensory and motor nerves.

Pain in the nerves of the tongue. Instructions. In language operations. Technique. In horses (Magda method) - the animal is fixed in an upright position. The needle is inserted into the space of the lower jaw 2-3 fingers before the hyoid bone to the base of the mouth. At the time of injection, 20 ml of 2% novocaine solution is injected to a depth of 5 cm. The needle is then pulled subcutaneously, and 45-60 lower jaw bones are sent to the right and left sides. Move 20 cm and inject 20 ml of novocaine solution. In cattle with large horns (Sajin method). The body of the sublingual bone is found in the cavity of the jaw (it is inserted into the outer corner of the eye in the correct position, the needle is raised 1-1.5 cm from the side of the bone and sent 15 ml of 3% novocaine solution is displayed. The needle is pulled subcutaneously and directed to the inner surface of the lower jaw bone. 15 ml of 3% novocaine solution is injected on both sides.

Amputation of the tongue Indications - for tumors and injuries Anesthesia - blockade of the nerves of the tongue in small animals - anesthesia. Technique - the animal is fixed in the supine position; the oral cavity is rinsed with an antiseptic solution. The tongue is fixed manually outside the oral cavity. The injured part is removed, the bleeding is stopped, and a suture or nodular suture is applied. The mouth is rinsed daily with a 1: 1000 solution of potassium permanganate. The seam is made of catgut.

Dental operations The tooth is located in the oral cavity and enters the digestive tract. The tooth consists of two parts: the root and the crown. The tooth consists of enamel and dentin layers. Teeth are divided into long crowns, molars, prey, small jaws, and large jaws. There are 32 teeth in cattle, 40 in dogs, 44 in pigs, 42 in dogs, and 30 in cats. The innervation is from the upper and lower jaw nerves. Tooth extraction Indications - rot, periodontitis, pulpitis, malformations, etc.

Tools - mouthpieces, toothpicks. Fixation and anesthesia - in the supine position, the nerves of the lower jaw, lower jaw, jaw are anesthetized, aminazine in dogs.

Technique - mouthwash. The gums are rubbed with iodine solution, the gums should be separated from the teeth. The teeth are irrigated by squeezing with a tongs. Large teeth can be knocked out by trepanation over the tooth. Then the mouth is washed.

Eye surgery. Anatomical and topographic data. The orbit is the bony cup where the eyeball is located. It is a periorbita surrounded on the inside by a fibrous sac. The main part of the periorbital is attached to the edge of the eyeball, and the inside is attached to the orifice and the wall of the eyeball. The periorbita is surrounded on the outside by an extraorbital fatty layer. Inside the periorbita are the fascia of the eyeball, muscles, nerves, and blood vessels. The eye is moved by 4 right and 2 right muscles. At the entrance to the orbit are the lower and upper squash. There is a third eyelid in the inner corner of the eye; The upper eyelid has eyelashes, and the lower eyelid has an eyelash. The conjunctiva is the mucous membrane on the inside of the eye.

Exfoliation of the eyelids. Indications - purulent panophthalmitis, tumors, injuries. Anesthesia - anesthesia of the optic nerve in the anterior corner of the cheekbone with a depth of 10 cm 3% novocaine 20 ml. Tools - eye scissors. Technique - open the lower and upper eyelids, cut around them with scissors and slowly remove the eyeball, at the end of which the optic nerve is cut, the eyelids are sutured.

TOPIC: OPERATIONS IN THE VENTRAL REGION

LECTURE PLAN:

1. Anatomical and topographic information, cranial, caudal sympathetic and vagosympathetic.
2. Operations in the ventral region:
    1. Tracheotomy technique (in the larynx).
    2. Inflammation of the jugular vein.
    3. Operations on erythema.
    4. Intratracheal and intracarotid injection.

Key words: Cranial sympathetic node of the neck, caudal sympathetic node, vagosympathetic network, carotid artery, yoke vein, tracheotomy, tracheostomy.

References:

1.Operative Surgery - X.K. Rustamov, Ya.A.Axbutayev, B.D.Narziyev - 1997.
2.Operativnaya khirurgiya - I.I.Magda - 1990.
3. Surgery of large rats - P.S. Kuznesov - 1974.
4.Operativnaya khirurgiya - I.K.Shomirzayev - 1987.
5.Novoye lecheniye nezaraznyx bolezney selsko-xozyaystvenyx - V.R.Mosin - 1973.
6. A. David Weaver, Guy St Jean, Adrian Steiner “Bovine surgery and Lameness” USA,
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1. Ventral region of the neck - Boundaries - anterior - posterior side of the lower jaw; posterior - entrance to the thorax: the lower part of the long neck muscles of the neck; from below - the empty edge of the neck;

This area consists of the following layers:

1. The skin is thin, mobile, well-folded, well-developed subcutaneous fat, which contains veins, lymphatic vessels and nerves.
2. Two-layered surface fascia - Subcutaneous muscle in the lower and middle part, 4-5 mm thick.

The muscle in the anterior part disappears, the layers of fascia merged.

3. Deep fascia - a two-layered, lower layer that surrounds the muscles and forms a sac.
4. Muscle layer - consists of the following muscles:
a) shoulder head muscle
b) dental jaw muscle
c) dentition muscle
These three muscles form the artery for the location of the jugular vein.
g) the sublingual muscle of the shoulder forms the lower part of the groin in horses.
x) There are two tapered muscles in the lower part of the larynx.
d) dental thyroid muscle
ye) dental musculature
They are surrounded by a visceral fascia, forming a white line at the junction.

The jugular vein contains the jugular vein, which is formed by the junction of the external and internal jugular veins. In cattle and dogs, the jugular vein joins the two external and internal, in front of the 7th cervical spine. The width of the vein is 2.5 - 3 cm.
5. The inner layer of the deep fascia - the atlas of the wing and the cervical vertebrae begin with the lateral appendages, are divided downwards into dorsal and ventral plates.
They form a sheath around the organs and tissues located there. The following organs are located in the ventral region:
The larynx is made up of 45 to 55 rings, which are connected to each other by a stake, surrounded on the inside by a mucous membrane.
When the esophagus is 65-75 cm from the neck, the larynx is placed on the dorsal surface, up to 4 cervical vertebrae, and then again on the dorsal surface.
6. Superficial layer of bone.
7. Bone - the cervical spine.

The cranial sympathetic ganglion in the neck
blockade
Indications - kerato - in conjunctivitis.
Technique - (gelikov, Shitov) - the animal should be held in an upright position, waiting for the head.

The yoke of the yoke and the wing of the atlas form a canal, the needle is sent here from the bottom to the depth of 3-4 cm 50-80 ml of 0.5% solution of novocaine.
Blockade of the vagosympathetic nerve.

Indications - bronchopneumonia, pneumonia in diseases of the chest.

Technique - (by V.G. Kulik) in large animals, lying on the ground, the needle is inserted into the middle of the neck area and sent to the upper lateral side of the larynx over the jugular vein. 10–30 ml per capita.

Large horned cattle star-shaped knot and
blockade of the caudal sympathetic node in horses.

Instructions - as mentioned above.

Technique - (Shakalov). In large horned cattle, the 7th cervical and 1 thoracic nerves join to form a star-shaped node.

Fixation in an upright position, pulling the front leg back. Find the apex of the first rib, lower the needle one centimeter, pierce the back of the needle perpendicular to the bone, move the needle and inject 150-200 ml of 0.5% novocaine solution.

In horses, 7 cervical vertebrae are found in the upright position, and the anterior side of the first rib is found. The injection site is 2.5-3.5 cm below the tumor and 3.5-4.5 cm from the front of the ribs, the needle is injected to a depth of 2.5-3 cm, 150-200 ml of 0.5% novocaine solution. It can be repeated after 4 - 5 days.

Tracheotomy (opening of the larynx)

Indication - in the case of wire, foreign body, steam and other pathological processes, when it is difficult to pass air from the external environment through the larynx.

Tools - trachea, devices that expand the trachea, except when used all the time.

Anesthesia is local infiltration.

Technique - involves fast operations. Large animals upright, small animals lying down. The operation is performed on the upper part of the neck. Cut length 5 - 7 cm. All layers are cut to the larynx. 3-4 rings are cut, and then 4 - 5 rings are cut and a trehotus is poured into the hole. The two corners of the wound are sewn.

Tracheostomy is the making of a hole.

Esophageal surgery. Instruction - when foreign bodies are sewn and red wood is worn. Tools - used all the time. Anesthesia and fixation - local infiltration, along the incision line, the folds are upright, the folds are lying down. The technique is to cut the left side between the jugular vein and the scapula, the length of which is proportional to the size of the suture. All joints are cut to red, then its wall is cut and the foreign body is removed The skin is covered with a nodular suture.

Intratracheal injection. Instruction is a method of administering liquid medications. Fixation - adults standing upright, small ones lying down Technique - The needle should be inserted into the lower part of the neck. Introcorotid injection. The guideline is to inject fluid into the carotid artery. Technique - № 1090 needles can be used Needles 5 - 7 are sent to the head, in the upper part of the jugular vein in

the cervical spine. When the needle falls, arterial blood flows and the drug is injected.

TOPIC: TORACAL SURGERY

LECTURE PLAN:
1. The chest wall and the organs located in the chest
anatomical and topographic information.
2. Anesthesia of the nerves in the chest wall.
3. Boundary sympathetic network (trunk) and abdominal nerves
pleural effusion novocaine blockade.
4. Pleurocentosis, rib cutting techniques.
5. Puncture of the aorta.

Key words: Chest wall, chest, rib nerves, pleural effusion, pleurocentesis, rib, aorta.
References:
1. Operative surgery - H.K.Rustamov, Ya.A.Akhbutayev, B.D.Narziyev-1997
2.Operativnaya khirurgiya - I.I.Magda - 1990
3. Experiment in surgery - V.Novikov - 1989
4. Surgery without miracles V.Novikov - 1981
5. Operative surgery N.X.Shomirzayev - 1989
6. A. David Weaver, Guy St Jean, Adrian Steiner “Bovine surgery and Lameness” USA,
2005

It is important to study this question, because surgery can be performed not only on the chest wall, but also on organs located in the chest.
Chest or thoracic surgery has been around since ancient times, and operations such as wound healing and pleural effusion have been performed.
Lung and heart surgeries, in particular, have played a major role in the development of this surgery.
The following surgeries are currently being developed and performed in medical practice: removal of part of the lung, replacement of the valve, artificial heart transplantation, and the highest of these is the transplantation of another heart. The operation was first performed on December 3, 1967 in Cape Town, South Africa, by a patient, Professor Christian Beriard, who underwent a heart transplant and lived for 18 days.
The operation is currently being performed in many countries, including the Shumakov Institute of Organ Transplantology, which was first performed in September 1986.

In veterinary medicine, chest wall surgeries are mainly performed to restore the productivity of animals. These include incisions in the ribs, puncture of the pleura and pericardium, and more.

To perform the operation successfully, you need to know the topography of the area. The lateral thoracic wall is divided into two parts: the anterior part from the first to the sixth rib, which is covered by the chest and the muscles in it, so it is not important to perform the operation.

Then there is the hollow part, which has boundaries on the chest: the elbow line from the front, the chest from the caudal angle to the top of the elbow. In large horned cattle, it starts below the back corner.

From the back - the last rib, from the waist - the long muscle of the spine at the bottom or from the back corner of the shoulder blade to the macula.

From the bottom - relative to the external vein. The lateral chest wall consists of the following layers.

1. The skin is of different thickness in different animals
2. The subcutaneous fat layer, which contains nerves and blood vessels
3. The two-leaf surface fascia is the subcutaneous muscle of the body between it located
4. Deep fascia - a continuation of the shoulder-lumbar fascia.
5. Muscle layer - consists of the following muscles.

a) broad shoulder muscle - starting from the small top of the humerus and ending from the third thoracic spine to the lumbar spine.

b) The dentate gyrus is divided into respiratory and expiratory muscles, the first of which is located in 5-8 ribs, and the second in the last ribs.

c) The dentate ventral muscle is located in the lower part of the ribs in horses (1-4) etc. - 1-8

g) The external carotid muscle of the corineus is directed from the 4-5 ribs to the ventro-caudo dorzal.

6. The ribs are covered with superficial tissue, between the ribs (between the ribs) there are two layers of muscle, the outer and deep outer muscle fibers are caudo-ventral, and the deep muscle fibers are cranio-ventral. On the medial surface of the deep muscle is located a network of nerves - veins, arteries, nerves.
7. Chest - internal fascia - located on the inside of the chest wall.
8. Parial pleura - connected with the internal fascia of the chest.

Mining is provided through the intercostal space and the internal thoracic arteries.

Innervation is performed by the dorsal and ventral thoracic nerves

The thoracic cavity is separated from the abdominal cavity by a diaphragm. Its location varies in different animals, e.g., it begins in the first lumbar spine and ends in the thyroid gland, and in horses it begins in the 18 ribs. The inner pleura of the scapula forms 3 turns in the thorax: the vertebral, sternal, and diaphragmatic

cavities. In the vertebral cavity are the heart, spinal cord, heart, large blood vessels, nerves (planetary, reflex and diaphragmatic).
Chest pain.
Guidance - in operations on the lateral chest wall, in combination with neuroleptics.
a) intercostal nerve block - the number of blocked nerves depends on the size of the operating area. In addition to the cut tissue, the nerve that runs outside is cut in the wrist.
The needle is inserted into the back of each rib, at the upper limit of the chest wall.
10 ml of 3% novocaine solution is injected subcutaneously, the same amount of novocaine is injected 0.5-0.75 cm by pushing the needle to the bone to block the laterial subcutaneous nerve.
b) thoracic ventral nerve block - is administered in a ratio of 6 ribs with 10 ml of 3% novocaine solution.
3. Novocaine blockade of the borderline symptomatic network (trunk) and corneal nerves over the pleura.
Pain in tissues and organs affects the central nervous system, through the elongated brain and reticular formation, and impairs its function (parabiosis). The central system reduces the effect on the body's metabolism, tissue trophic processes, and novocaine blockade of the nerves reduces severe pain, and so on. manages changes in the pathological process.
Based on this, in 1948, V, V. The frontal sympathetic network of the mosin and the abdominal nerves are developed by the suprapleural novocaine bocca.
Indications - Prevention and treatment of inflammatory processes in the organs of the abdomen and pelvis are used to relieve pain in the organs, improve blood circulation, increase the secretion of the pancreas.
Technique -№10120 or №10150 needles are used. The point of injection is in the front of the last rib in large animals and in the back of small animals. The needle is inserted at an angle of 30-35 ° to the horizontal line until it touches the bone, 3-10o is absorbed and the required amount of novocaine is injected. When the needle is inserted correctly, novocaine drips from the tip. 0.5 ml / kg of 0.5% novocaine solution for large animals and 2 ml / kg for small animals. The block is done on both sides.

Pleurocentesis technique.
Indications - used for diagnosis and treatment of pleurisy.
Tools - traocar, thick needle.
Fixation - the layers are in an upright position, the small ones are lying sideways.
Technique - puncture site, rib space, etc. - 6 on the right side, 7 on the left, 6-7 on the right side in horses, 7-8 on the outside, 7 on the left in cats and dogs, 8 on the left.

The trocar is held in the hand, with a depth of 4-6 cm in large animals, and the fluid should be expelled slowly. The wound is closed with colloid.
Rib cutting technique.
Indication - in case of fractures, inflammation, decay of the ribs.
Tools - receptors, rib scissors, wire saws, in addition to each use.
Fixation and analgesia - adults in an upright position, small ones in a lying position. Infiltration of the thoracic nerves, neuroleptics, from the incision line with 0.5% novocaine.
Technique - all the tissue is cut to the bone marrow. The superficial bone is cut lengthwise and posteriorly and separated from the bone using a reagent. The damaged bone is removed, using a saw or scissors. The sutures are then applied to the bone tissue, then to the muscles and skin.
Puncture of the aorta.
Directions - To administer liquid medications from the abdominal and pelvic cavities during diseases of the organs and legs.
Tools - jane syringe, №-33 needle.
Technique - The place where the needle is pierced by the front of the last roast. This place is anesthetized. The needle is sent in a horizontal plane at an angle of 35o to the bone free of charge, pulling 1-2 cm, and at an angle of 45o 1.5-2.5 cm inwards. At this time, 5-10 ml of novocaine is administered. When the needle touches the aortic wall, it vibrates relative to the pulse. Arterial blood flows from the tip of the needle and the required fluid is sent. The needle is then slowly inserted into the aorta, 10-15 sec. It is then completely removed.
TOPIC: ANATOMO-TOPOGRAPHIC STRUCTURE OF THE ABDOMINAL AREA. DIVISION. NERVE PAIN. LAPORATOMY AND RUMINOTOMY.

LECTURE PLAN:
1. Anatomical and topographic structure of the lateral and ventral wall of the abdomen. Paranephral novocaine blockade in cattle and horses.
2. Perforation of the lateral wall of the abdomen. Aortic puncture.
3. Laparotomy technique.
4. Operations on the stomach and pancreas, anatomical and topographic data. Instructions for surgery.
5. Perforation of the large abdomen.
6. Ruminotomy (rupture of the large abdomen).

Basic terms: gills, stomach, intestines, artificial hole, dabba.

References:
1.Operative Surgery - X.K. Rustamov, Ya.A.Axbutayev, B.D.Narziyev - 1997.
2.Operativnaya khirurgiya - I.I.Magda - 1990.

3. Surgery of large rats - P.S. Kuznesov - 1974.
4.Operativnaya khirurgiya - I.K.Shomirzayev - 1987.
5.Novoye licheniye nezaraznqx bolezney selsko-xozyaystvenqx - V.R.Mosin - 1973.
6. A. David Weaver, Guy St Jean, Adrian Steiner “Bovine surgery and Lameness” USA,
2005

In farm animals, the abdomen is the largest part of the animal's body and contains the main part of the digestive system. The soft abdominal wall forms the anterior junction of the thoracic part of the body with the diaphragm dome, the posterior - the entrance to the pelvic cavity, the upper - the lumbar spine and peripheral muscles, the lower - the lower part of the abdominal wall.

The soft wall of the abdomen consists of the following layers:

1. Skin and subcutaneous klechatka layer.
2. A layer of yellow fascia of the abdomen.
3. Muscular layer

a) the external oblique muscle of the abdomen - (m.obliguus abdominis externus);
b) internal curvature of the abdomen - (m.obliguus abdominis internus);
c) rectus abdominis;
g) transverse abdominal muscle - (m.transversus abdominis)

4. Transverse fascia.
5. The white line of the abdomen (linia alba) - a narrow, elongated triangular fibrous layer - formed by the aponeurosis of the abdominal muscles, yellow and transverse fascia layers, firmly scarred in the middle - the umbilical cord. ladi.

The soft wall of the abdomen is supplied with blood by the subcutaneous artery of the abdomen, the branches of the external thoracic artery, the intercostal artery, and the lumbar artery of the lumbar artery.

Innervation. The entire layer of the soft wall of the abdomen is supplied by two dorsal and ventral nerve vessels formed by the lower (ventral) branches of the thoracic nerves, separated from the lumbar spine.

The abdomen is divided into three main sections:

1. The anterior part of the abdomen - the epigasterica region - is bordered on the front by the diaphragm muscle, on both sides by the ribs, on the right and left subcostal space, and on the occipital ridge.
2. The middle part of the abdomen - the mesogasterica region occupies the right and left flanks, consisting of the lumbar region at the top and the umbilical region at the bottom.
3. The next part of the abdomen - the region of the hupogasterica is divided into several sections: the right and left sections of the abdomen are located close to the pelvic canal, above the pelvis - is the section of the abdomen, in which to It is located at the beginning of the large intestine, bladder and genitals.

The main part of the digestive system is located in the abdomen, which is a complex process in the body, which serves for metabolism. The soft wall of the abdomen forms a serous membrane on the inside, which passes from the parietal lobe to the visceral state near the peritoneal vertebrae and surrounds the organs.
The large abdomen (rumen) occupies the left side of the abdomen. The dorsal 6 kisses the diaphragm in the direction between the ribs. Only the spleen is located on the parietal surface of the abdomen and adheres to the diaphragm. The right (visceral) surface of the abdomen is smooth, slightly above the abdomen, touching the pancreas and liver.
The reticulum is located medianly, near the diaphragm and liver, and joins the esophagus through the esophageal canal, with the large abdomen and large abdomen. The serous layer resembles a beehive.
Katmasin (booklet) - omasum - consists of small leaves on the floor, located on the right side in the direction of 7-12 ribs near the chest, between the abdomen and pelvis. Capacity 7-12 liters.
Shirdon - obamasum - is located in the middle of the bottom of the abdomen. It is bordered on the anterior side by the ventral sac, the ventral sac of the abdomen on the upper abdomen and the pelvis, and the soft abdominal wall and rib cage on the lower abdomen. Capacity up to 20 liters. It moves forward and takes a transverse position during deep pregnancy.
Blood supply. In the liver, spleen, stomach, and ruminants, the large abdomen, pelvis, abdomen, spleen, and intestines are supplied with vascular branches of the lateral carotid artery.
Innervation. Provides a network of stray and sympathetic nerves to the pancreas and spleen. Both stray nerves form 2 dorsal and ventral trunks, forming the pancreatic and superior gastric nerve tangles.

Abdominal anesthesia.
Lumbar (renal atrophy - paranephral) novocaine blockade.
Siege on horses by the Tikhonin method.
Instructions. Paranephric novocaine blockade is used in acute aseptic and purulent inflammatory processes, postoperative complications, chronic wounds, fistulas, muscle spasms in the abdomen and pelvis. The main purpose of the blockade is to send a solution of novocaine between the fat cells around the kidneys, where there are a large number of autonomic nervous system nodes and tangled nerve connections.
At the distance of 8-10 cm from the sagittal line after the preparation of the surgical site, insert the needle into the cells around the kidney to a depth of 8-9 cm in a position parallel to the diurnal rib tumor of the last rib and the first lumbar spine. will be sent depending on. The point of injection is at the corner of the posterior edge of the last rib and the outer edge of the long lumbar muscle. If the

needle is in the correct position, the needle will not bleed and the solution can be easily injected with a syringe.

If no pressure is felt on the thumb of the syringe plunger when delivering the novocaine solution, it means that the solution is being poured into the abdominal cavity. If bleeding occurs, it indicates that the needle has entered the renal parenchyma or blood vessel.

1 ml of 0.25% novocaine solution per 1 kg of live weight of the animal is administered on both sides of the waist. This procedure will be repeated in 5-7 days.

In cattle, M.M. Block by Senkin method

In these animals, it is convenient to perform the blockade of the sympathetic nerves located in front of the kidneys. After the operation was prepared by inserting the animal into the machine and fixing it with a nasal clamp, the needle was inserted through the posterior rib of the last rib and the diurnal rib tumor of the first lumbar spine or the tip of the first and second lateral rib tumor, 1.5 times relative to the sagittal line. Go down -2 cm and slowly pierce the long needle to a depth of 8-11 cm.

Depending on the size, age, fatness and sex of the animal, Tikhonin uses a simple 500-5000 ml flat glass tube (tube). Adjust the returned glass tube by inserting it into the bottom of the container through a rubber stopper. At its reverse outer end, an Agali crane dies in a tube 3-4 mm wide and 40-50 cm long, and a 20 ml Record syringe is attached to the coupling. A 45-50 cm tube (drain) is passed through the agali faucet and the other straight open end, and a needle is inserted into the metal canal at the end. Along with the sterilized needle mandrel, 60 ml of novocaine solution is injected into the body using a rubber tube, syringe. Once the solution is delivered, the mandrel is inserted back into the needle and the two are pulled together. The wound on the skin is treated with a 5% iodine solution.

After perforation of the skin, the needle inserted into the foot of the diaphragm and the upper part of the kidney is slightly moved, and if the peritoneum is properly perforated, then the crunch is felt on the finger, so the needle is inserted to a depth of 1.5-2 cm 200-400 ml. 0.25% novocaine solution is administered. As the solution is sent through the syringe, its piston is slowly pressed under pressure. This procedure is repeated after 7 days.

Access to the abdomen is a laparotomy.

Fixation. Small animals are placed on the operating table with their backs or sides, and large animals are tied to a vertical or operating table.

Anesthesia. Under anesthesia or the Magda method, the last ribs are anesthetized by the permeability of the intercostal, iliac, and iliac crest nerves. The point of needle insertion for analgesia of the last intercostal nerve is near the tip of the lateral tumor of the first lumbar spine; lateral nerve - a similar tumor of the second

lumbar spine; the sciatic nerve is located in the lumbar spine at the tip of a similar tumor of the third lumbar spine (in cattle - the fourth tumor). The lumbar vertebrae, which belong to all three cases, are pierced perpendicular to the end of the lateral tumor with a long needle. After the tip of the needle touches the bone, it is moved slightly to one side, then it is deepened by 5-8 cm. At each point, 10 ml of a 3% novocaine solution is administered. During the withdrawal of the needle, in addition to the thorax, 5-10 ml of novocaine solution is injected into the upper branches of the lumbar nerve.

The animal is left hungry for 18-24 hours before starting the operation. Before preparing for the operation, the animal is given an enema to empty the bowel with warm water mixed with soap.

Median laparotomy.

Operation techniques. It is fixed on the back of the animal. The abdominal wall is cut through a white line from the umbilical cord or umbilical cord.

Paramedian-transrectal laparotomy. The abdominal wall is cut 2-10 cm from the white line of the abdomen (depending on the size of the animal). The abdomen is divided according to the direction of the right muscle fiber. At the end of the operation, a three-layer incision is made over the cut tissue wound to complete the suture.

Laparotomy of the side of the abdomen. This method is mainly used for all animals, mostly cattle. The abdominal wall is incised vertically from the lateral and ventral sides, or curved in the direction of the fibers of the external or internal abdominal muscles. The thoracic, bicuspid surface fascia, the thoracic muscle, the yellow fibrous membrane of the abdomen, the external and internal curvature, the transverse muscles, the transverse fascia, and the peritoneal tissue are then cut.

After the skin layer is cut without cutting the rectus abdominis, the abdomen is pushed slightly out of the white line to avoid damaging the rectus abdominis. It then cuts a deep layer of tissue. When closing a wound in the abdominal wall, several stitches are made to bring the rectus abdominis muscle closer to the white line of the abdomen. Anna can then act as a muscle cover for the abdominal wall injury, preventing future dabba events after surgery.

1. Slice the lamb.

The only way to stimulate maximal growth in any muscle is to work it to failure.

Anesthesia - rampun, rometer - 0.15 g 1 kl, infiltration anesthesia along the incision line.

Surgical technique - fixation of the sheep lying on the shoulder. Laporotomy is performed along the white line at a length of 10 - 15 cm, in front of the umbilicus. With the left hand, the wheel is pushed to the left. Grasp the pylorus portion of the syringe with your fingers, pull it out through the wound and pour it on a clean gauze napkin. The incision wall is then cut where vascularization is low, and the size of the incision should correspond to the largest bezoar. Through the incision,

the bezoars in the syringe are removed one by one. Shirdon's wound is sutured with a two-layer suture: the first is sutured with Schmiden suture, the second layer is sutured using Lamber or Plaxotin-Sadovsky suture. The abdominal wall is continuously sutured. The operation ends with a skin graft.

Ruminotomy technique

Operation techniques. An incision of 18-20 cm is made in the abdomen. All tissue is cut to the peritoneum and the membrane is cut between 2 fingers or using a slotted probe. The large abdomen is removed through the incision, and clamps are used to prevent food from entering the large abdomen before it is cut. The large abdomen is removed and a large incision is made around the wound without touching the mucous membrane. The large abdomen is cut and the edge is flattened and sutured to the skin. After examination of the retina and the large abdominal wall, a lumbar suture is applied to the large wound. The operation ends with a two-stage suture to the abdominal wall. Diet is performed 4 days after surgery.

Topic: GASTROTOMY, ENTEROTOMY AND BOWEL CUTTING TECHNIQUES IN DOGS. RIGHT BOWEL OPERATIONS. SURGICAL TREATMENT OF HEATS.

1. Ruminotomy technique.
2. Gastrotomy technique.
3. Enterotomy technique - bowel rupture.
4. Cut the bowel.
5. Cut the rectum -

a) anatomical and topographic structure.
b) G.M.Olivkov, Müller-Frick method.
c) Create an artificial back hole.

6. Surgical treatment of abdominal pain.

a) dabba classification.
b) umbilical cord surgery.
c) surgery on the seminal vesicles.

Basic terms: gills, stomach, intestines, artificial hole, dabba.

References:

1.Operative Surgery - X.K. Rustamov, Ya.A.Axbutayev, B.D.Narziyev - 1997.
2.Operativnaya khirurgiya - I.I.Magda - 1990.
3. Surgery of large rats - P.S. Kuznesov - 1974.
4.Operativnaya khirurgiya - I.K.Shomirzayev - 1987.
5.Novoye licheniye nezaraznqx bolezney selsko-xozyaystvenqx - V.R.Mosin - 1973.
6. A. David Weaver, Guy St Jean, Adrian Steiner “Bovine surgery and Lameness” USA,

Gastrotomy technique.
This operation is mainly performed on dogs.
Anatomy - topographic data.
The main part of the dog's stomach is located under the left rib and in the area of the sword-like ridge. When the anterior side touches the liver, the posterior side reaches the 12th rib, the ventral surface facing the abdominal wall, which touches it when it is full. The small intestine is directed forward and connects with the liver through the small intestine. In the large intestine, the abdomen is directed toward the caudal cavity, which separates the abdominal organs from the abdominal wall.
Indication - in the case of obstruction of foreign bodies in the lower part of the stomach or esophagus.
Anesthesia for anesthetics, neurolept-analgesia - 2.5% aminazine 1 ml up to 10 kg live weight, rampun, rometar - 0.15 g 1 kg, ketamine, colipsyol, ketanal - 1 mg 1 kg, cut line infiltration analgesia, suprapleural novocaine blockade by Mosin.
Operation techniques.
The animal is fixed from the shoulder. The incision is made in the anterior part of the umbilicus, length 10-12 cm, it can be medial or paramedial. By lowering the arm into the abdominal cavity, the stomach is expelled along with the foreign body through the wound. From this, the sung stomach is bordered with napkins and the area where the blood vessels are scarce is cut. A foreign body is removed with a corset or finger through the incision. At the final stage of the operation, Schmiden, Lamber suture is poured into the stomach wound. This irritates the abdominal wall and skin. The dog is kept on a diet for several days. The stitches are removed after 7–10 days.
Enterotomy technique
Indications - Intestinal lavage surgery is performed mainly in small animals. If there are foreign bodies in the intestines.
Tools are a pair of bowel clamps in addition to the tools that are always used.
Anesthesia - anesthesia neuroleptonolgesia, local anesthesia, novocaine blockade of the pleura.
Surgical technique - the animal is fixed on the back or side. The incision is made along the white line at the back of the umbilicus. After the laparotomy, the bowel is removed with a foreign body. If the intestinal wall is not necrotic, the food inside is pushed to the left and right with the fingers and squeezed with a bowel clamp. After the intestinal wall is cut, the foreign body is removed. The wound is sutured twice with the lamber method. Once the bowel is inserted into the abdomen, the wall is closed.
Intestinal resection technique

Indications - perforation or necrosis of the intestinal wall; necrosis of the intestinal wall as a result of constriction; intestinal adhesions or intussusception: tumors, foreign body obstruction. This operation is performed on all types of animals.
Tools - In addition to the tools I always use, a bowel clamp, a ligature needle, a Belrot clamp.
Anesthesia - anesthesia for small animals, neuroleptics, local anesthesia, novocaine blockade of the pleura.
Surgical technique - a laparotomy of the affected intestine. In small animals, paramedical, in large animals, the incision is made on the other side of the abdomen or abdomen. Bowel resection is performed the same in all animals, and some technical changes may be made depending on the type of animal. The main requirement is that the bowel should be removed within the boundaries of healthy tissue.
The affected bowel is removed through the wound and isolated with wipes. The stools are squeezed with intestinal clamps after being shaken on both sides. Two ligatures are connected to the blood vessels in the intestinal tract. The bowel is cut with scissors, and then the ligament between the ligatures is also cut. The wound is cleaned with a tampon and the intestines are attached to each other. Basically, two methods can be used for this - tip-to-tip and side-to-side.
In the final stage of the operation, the abdominal wall is sutured.

Rectal resection
A) anatomical - topographic structure - the rectum (intestium rectum) occupies a large part of the pelvic cavity and is divided into two parts: anterior - abdominal and posterior - retroperitoneal, it is covered with sparse connective tissue ralgan. The dorsal side touches the ventral surface of the tail and the beginning of the tail. In males, there is a bladder, extra gonads, urethra, seminal vesicles, and urethra below it. In females, the uterus is the body and the vagina. Between the above organs, the rectum, the abdominal wall, and the abdominal wall, there are three peritoneal folds in males and four in females. In the middle of the pelvic cavity, the rectum expands in the form of an ampulla, then narrows and ends with a posterior orifice. In large animals, the length of the rectum is 20-30 cm.
The blood supply to the rectum is provided by hemorrhagic vessels.
Innervation - through the middle, caudal hemorrhaidal nerves, pelvis and sympathetic nerves.
The indication is rupture of the wall of the rectum and necrosis.
Preparation - the intestine is cleaned, washed and disinfected.
Fixation - fixation of large animals in an upright position, while small ones are fixed.
Anesthesia - lower sacral in large animals, superficial anesthesia in small animals, neuroleptanalgesia. Re-insertion of the rectum into the pelvic cavity according to

the Henry method. To do this, the protruding part of the intestine is thoroughly washed with a solution of 0.1% potassium permanganate or ethacridine lactite (rivanol) in a ratio of 1: 1000, the sticky foreign bodies are removed. The Vaseline is then rubbed in slowly and a circular suture is placed around the back discharge hole.

B) if the protruding part of the rectum is necrotic, it is cut by Olivkov or Müller-Frin method. These methods differ from each other in the method of intestinal fixation. The Olivkov method uses knitting needles, mandrels, or injection needsles. The Müller-Frin method uses a cross-shaped migraine. The bowel is removed by a circular incision 1-1.5 cm back from the fixation site. A nodular suture is infused 0: 5 cm into the rectal lesion and the remainder is injected into the pelvic cavity.

Incision of the rectal mucosa.

After cleaning and disinfecting the intestine, 0.5-1 cm back from the anus, the intestinal mucosa is cut in a circle, and the same part is cut near the hole. The mucous membrane is then removed from the subcutaneous layer with scissors and cut. The two circular cuts are sewn together with a knotted seam.

C) create an artificial back hole.

The indication is that the newborn does not have a posterior opening.

Fixation - the animal's head is lowered and fixed.

Anesthesia is local infiltration.

Surgical technique - the skin is cut in the form of a mirror where the natural back hole should be located. When the animal is placed on its side, the bowel swells from the injury. Hold it with tweezers and cut a circle and nail it to the edge of the wound.

In some cases, the rectum may not be found, which is especially common in pigs. It is done in this case.

Fixation and analgesia - barbiturate anesthesia is given.

By the technique of operation (Plonite)

A 4 cm long incision is made 2 cm from the knee joint in the direction from caudal to dry. It is cut using scissors, holding it with tweezers. The peritoneum is then sutured to the right muscle. The lower part of the small intestine is found and pulled out with a finger through the hole. After the intestinal wall is cut, the edge of the wound is sutured. An hour later, garbage begins to flow out of the hole.

Surgical treatment of abdominal pain

A) dabba and its classification. A hernia is a condition in which organs in the abdomen, along with the peritoneum, fall under the skin through anatomical and pathological holes in the abdominal wall. The dabba consists of three elements - the daba hole daba bag - the abdominal wall and the organs that fall into it.

If the organs fall under the skin without the peritoneum, that is, when the muscles rupture, this pathology is called prolapse.

Depending on the cause, the disease is: a) congenital and b) acquired. The first occurs when the anatomical hole is not closed or is too large. The second is after an injury or surgery.
The umbilical cord is divided into: umbilical cord, pelvis, abdominal wall, intravaginal diaphragm, spinal cord, and others.
Depending on the clinical manifestations, the disease is divided into:
1. That's right - the organs can easily fall into the abdomen.
2. Incorrect - when the organ is attached to the sac
3. Squeezing - splitting into two - squeezing with interstitial tissue (ring), squeezing with rubbish, this remedy is considered dangerous.
B) umbilical cord surgery technique.
Preparation - the animal is kept on a 12-hour diet for bowel movements.
Fixation and anesthesia - combined anesthesia - combined with local anesthesia.
Neuroleptanalgesia in dogs, infiltration along the incision line.
The animal is fixed in the supine position.

Operation techniques
The main purpose of the operation is to close the incision.
If the sac is not large, the organs are sent to the abdomen and a continuous suture is inserted into the hole.
If the sac is large, after the organs are sent in, the sac is wrapped around its axis and tied with a ligature near the hole. The bag is removed after revision. The rest is sent to the hole and closed with a seam. If the organs inside the bag are stuck, they can be cut from the bag with scissors without separating. Once the organs are inserted into the abdomen, the hole is closed with a suture.
In the final part of the operation - the excess skin is removed and stitched.
C) chow - a technique of operation on the seed sac.
The cut is made parallel to the chow channel. Through the resulting wound, the common vaginal membrane is pulled out of the vagina along with the organs. Through the perforation of the abdomen, the organs are squeezed inwards, the sac is twisted around its axis several times, and tied close to the hole. The bag is removed after revision. The rest is sent to the hole and stitched. At the final stage of the operation, a stitch is placed on the skin.
Topic: GENITAL AND URINARY SURGERY

TOPIC PLAN:
1. The importance of castration in the prevention of injury and trauma, indications and contraindications.
2. Anatomy - topographic data.
3. Preparation of the animal for castration, its age, time and place.
4. General characteristics of casting methods.

5. Castration of various types of animals.
6. Techniques of ovarioectomy in females.
7. Structure of the genitals and analgesia of the nerves.
8. Genital surgery, urerotomy, urethrostomy, cystotomy technique.

Basic terms: ejaculation, esophageal canal, esophagus, sperm, excess sperm, spermatic cord, orchidestomy, ovarioectomy, common vaginal curtain, copulation method, copulation method, percutaneous, elastication, genitals , uratrotomy, urostrostomy, cystology.

References:
1.Operative Surgery - X.K. Rustamov, Ya.A.Axbutayev, B.D.Narziyev - 1997.
2.Operativnaya khirurgiya - I.I.Magda - 1990.
3. Surgery of large rats - P.S. Kuznesov - 1974.
4.Operativnaya khirurgiya - I.K.Shomirzayev - 1987.
5.Novoye licheniye nezaraznqx bolezney selsko-xozyaystvenqx - V.R.Mosin - 1973.
6. A. David Weaver, Guy St Jean, Adrian Steiner “Bovine surgery and Lameness” USA,
2005

1. Infertility is the artificial cessation of the function of the gonads.
Castration is performed in different ways: surgical, surgical, hormonal, radioactive. In veterinary practice, the surgical method is used.
If the gonads of males are completely removed, it is called orchidectomy (orchis - egg; ectome - cutting), in females - ovariectomy (lot ovarium - ovary).
Leaching affects the metabolism of animals, improves their nutrition, the meat is soft, fat, loses a specific odor, changes the quality of taste, improves the length of the day, calms the animals, prolongs the milking period of lean cows.
Castration is used to remove extra fat, meat, and wool from animals and to prevent injury.
Leaching is rarely used for treatment, i.e. in semen diseases, in the semen duct in the semen sac, in pigs before seeding.
Contraindications: if there are infectious diseases on the farm, the organism is weak, purulent - in necrotic processes and and after vaccination.
2. Anatomy - topographic data.
The canalis inquinalis (canalis inquinalis) is a funnel-shaped fissure (10–12 cm in length in horses) formed by the external and internal iliac muscles. The length of the first hole is 12 - 15 cm in stallions, the second - 2 - 4 cm. in bulls the gov channel is the longest, in the stallions the rings are the widest.

The choke canal is struck on the inside by the abdominal wall and forms a kin canal. It forms the outer and inner rings of hatred. They fit into the rings of the chow canal.
In addition to the vaginal canal, the fallopian tubes contain the external sphincter, the external carotid artery and vein, the external sphincter and the lymphatic vessels.
The seminal sac is located between the saccus teqticularum, the ruminant, and the number of ungulates, while the rest of the animal is located at the base of the hindquarters. The seminal vesicle consists of the following: a pair of hollows, a pair of external muscles that carry the sperm, and a pair of common umbilical cords.
The scrotum is composed of the following layers: a) skin, b) muscle - elastic membrane - (tunica dortosa), - a cavity closely connected with the skin, which divides the scrotum into two cavities.
c) Fascia fascia (fasia quldartonica) - well developed in bulls and rams
g) The common umbilical cord (tunica vaginalis communis) is a continuation of the peritoneum, on the surface of the litera is the external sphincter.
d) The seminal vesicle (tunica vaginalis propria) - the sperm that surrounds the sphincter and the seminal vesicle, joins the common sphincter through the sphincter, in practice called the sphincter.
The testicle (didyniis, s.orchis) is surrounded on the outside by a special kin membrane, which is tightly connected to the seminal membrane, from which the tribeculae separate and form chambers, which are filled with glandular cells to produce sperm and androgen hormones.
The seminal vesicle is the epididynus, in ruminants it is located on the ladual surface, in others it is lateral. It consists of head, body and tail. From the tail begins the seed path.
The seminal vesicle (funiculus spermaticus) is surrounded on the outside by the visceral peritoneum and is further surrounded by a common umbilical cord. It includes:
a) The internal seminal artery (a.seprematica interna) separates from the abdominal aorta.
b) The carotid artery (a.deferentis) separates from the umbilical artery.
c) The seminal vesicle muscle (m.cremaster intarnus) is composed of smooth muscle fibers.
(g) The spermatic cord internus (plexus spermaticus internus) is composed of postganglionic fibers of the cardinal node.
d) lymphatic vessels, the number of which ranges from 18 to 38.
e) The seminal vesicle (dustus spermaticus) is a continuation of the tail portion of the seminal vesicle.

Yorgok is provided with blood vessels and nerves. From the arteries of the testicles and pubic. The seminal nerve, the iliac crest, the iliac crest.

3. Animals can be castrated at any age. When slaughtering males, attention should be paid to the following: type, breed, maxari, maturity and method. Fast-ripening - 1.5 - 2 years, late - 3 - 4 years, Hangi and mules - 3 - 4 years, bulls, rams, goats - 5 - 6 months or 6 - 8 months before slaughter, Autumn and heifers - 2 - 3 per month, piglets - 4 - 8 - 12 weeks, camels - 2.5 - 3 years, deer - 10 - 12 months, rabbits - 1.5 - 2.5 months. Before hatching, large animals are starved and their intestines and bladder must be emptied.

The place for casting should be open and soft.

4) General characteristics of casting methods

Leaching is mainly carried out in 2 different ways: bloody and bloodless (percutaneous, percutaneous).

Bloody castration is widespread and can be used in all types of animals, using this method to select the whole seed and excess, which can be done in a closed and open way. If the common venom membrane is cut, it is called the open method, if the incision is closed, the sperm is removed, along with the common venom membrane.

Partial removal of gonadal elements

The goal of this method is to prevent the release of androgen hormones while stopping the release of sperm. They do not stop the animal from developing. There are two ways to do this:

a) Removal of only the parenchyma of the seed (express castration) in which the base of the connective tissue and the excess of the seed is preserved

b) Cutting off the tail part of the excess semen - used for the preparation of bulls.

Non-percutaneous (percutaneous) method is a common method, performed in two different ways; crushing of the spermatic cord or spermatozoon.

There are three types of cervical spondylosis:

A) Crushing the seed coat through the skin with the help of special castors.

B) tying the seed string.

C) Elasticity - wearing a rubber ring.

Seed crushing is a method of compression casting, which is performed through the skin with the help of Machalovsky pliers.

5. Castration of various types of animals

Stallion leaching is done by open pit mining, but old stallions are leached by closed method.

Fixation - is fixed in a standing position, mainly when lying down and with a special machine. When fixing in the supine position, the right hind leg is pulled forward, the other three are tied together.

Anesthesia is very important and is given before the fall. For adaptive anesthesia, 20 - 25.0 chloral hydrate is dissolved in 2 liters of water and passed through a probe. Therefore, local anesthesia is performed in the following ways:

1. Intratesticular - 10 ml of 4% novacaine is injected into the semen (Sanojnikov's method)
2. Put the excess semen on the tail
3. Excess semen on the head (Plaxotin method)
4. Seed ridge (Brasse method)
5. 0.5% novacaine solution along the cut line
6. Intravenous 5 ml of 5 - 10% rampun, rolitar
7. 8 - 10 ml of 2.5% aminazine intramuscularly

Operation techniques:

When stalling stallions, you can use a Zand stall or a squeegee. The main purpose of their use is to prevent the flow of ore by creating trolls in the veins.

The skin of the seminal vesicle is tightened with the left hand, which can also be used with a tourniquet. Using a scalpel, two identical parallel incisions are made on the protruding surface, all the tissue is cut to the seed, which is not important if the seed is also cut in the seed. The overall kinetic membrane cut should match the skin cut. The sperm is removed with the left ash through the wound, the stem is flattened and cut close to the common sternum. If the stem is cut too close to the semen, the semen artery can be damaged.

From this, the sperm and ridge are separated from the common vaginal membrane by 7-10 cm in length.

The separated common vaginal membrane is inserted into the vaginal canal using tweezers.

The seminal vesicles are pulled out, the sac and the common vagina are lifted upwards, and the seminal vesicles are removed.

When a Zand clamp is used, a ridge is cut 7 to 9 cm above the seed, and the seed is twisted around the face axis 10 to 15 times until it breaks. As a result of twisting, the veins are tightly closed.

When an emulsifier is used, the seed is removed from the ridge without twisting. This is because the emulsifier is held on the cutting surface of the emulsifier on the cutting and cutting surfaces for 5-6 minutes.

Closed casting is the removal of semen using a ligature or ligature.

Lishchetka casting - the seed sac is cut to the common vena cava. the sperm is removed with a common umbilical cord, the organ is rotated 180oC after it is determined that the organ tissue in the cavity is loaded, and the sterile lesion should be burned and closed at a height of 7 cm. The ridge is cut 2 to 2.5 cm lower than the rhizome and the seeds are removed. After 7 - 8 days the leshchyetka is removed or falls off.

Ligature burns - after the seed is removed with a spindle, it is cut from the top with a Zand tweezers. After removing the clamp, the ridge is twisted at 180oC and cut again, the resulting arc is connected by burning catgut. Two to three fingers are removed from below.

Calving of bulls
Fixation - standing and lying down.
Anesthesia - Anesthesia is not given to children under one year of age, and after one year of age, anesthesia is given to horses.
Bulls are castrated in a concave and conical manner.
Non-percutaneous method:
The purpose of crushing the cervical spine through the skin is to stop the supply and innervation of the sperm.
The following casting tongs can be used for this: Telyatnikov, Burdisso, Glumko-Golensky, Khanindiki.
When casting with a Telyatnikov forceps, the auxiliary spermatic cord is moved close to the skin, the surgeon burns the forceps on the spine with two ashes and holds it for 5 seconds, making a squeaking sound. If the sound is not noticeable, the ridge is cut again 1, 5 - 2 cm higher, and after 10-15 minutes a hematoma is formed in this place.
It was found that percutaneous calving increased the fattening mass of bulls by 8-17%, live weight by 6-10% and the cost of feed by 6-10%.
Conley method - is done in several ways.
Ligature castration - The seed bag is tightened by holding the back. An incision is made on the caudal or lateral surface, and all tissue is cut to the seed, including the common sinus. Through the wound, the sperm is removed with the spine after the sperm is cut. The ligature is tied to the upper part of the string, cut 2 - 2.5 cm lower and removed.
Cutting off the tail of the excess sperm is a method that does not produce sperm cells, but retains the production of hormones. Conducted in an upright animal. At the base of the seed sac are cut two 1.5 - 2 cm. Through this incision, the tail is squeezed out of the semen and removed with scissors. The wound heals well.
Casting of goats and goats
They are cast by percussion and mining methods.
Fixation - fixation in the supine position
Non-conical casting - percutaneous and elastic method can be used.
In percutaneous casting, the spermatic cord is crushed with a forceps.
The elastization method is performed on 2-week-old Autumn goats. In this method, the upper part of the seminal vesicle is covered with a rubber band and burned atrophy in 10-15 days.
Mining method: The method of complete or partial removal of seeds is used.

1. After the operation site is prepared, the bottom of the seed sac is pulled and cut. The seed is expelled with a common venomous membrane. The ligament is connected with a catgut ligature, from which the seed is removed by cutting 1 cm lower. The wound is sprayed with antiseptic powder.
2. Casting of old dogs:
Instruction - is performed on the old-bred puppies.
Anesthesia - infiltration of the seminal vesicle into the neck, intratesticular - 10 ml of 3% solution of novacaine.
Surgical technique - the force is applied to the left side and fixed. With the left ash, the seed rises to the top. The cut is made in a circle 2 cm lower than the slider blades.
The skin is pulled down, and the Zand clamp is injected into the seminal vesicles for 2-3 minutes. The seed is removed with scissors and iodine is applied. The wound is approached with a 1-2 knot suture.

Partial castration is performed by the Bayburtyan method - a scalpel is inserted into the seed to a depth of 0.5-1 cm and the seed parenchyma is squeezed out of the wound.
Pig casting

Conley is made in open and closed method.
1) Removal of the seminal vesicle
Fixed - in the supine position.
Surgical technique - the seminal vesicle is held with the left hand and cut with a scalpel. All the tissue is cut, and the wound is pulled out by the spinal cord. Hemastatic tweezers are inserted into the upper part of the spine and the sperm is removed.
2) Ligature is done in a closed and open way. In the second, the common venous membrane is opened and the ligature is attached to the cervical spine by cutting 1-2 cm from the bottom.
In the closed method, the common venous curtain is not opened, the ligature is removed by burning the spine.
Camels - in an open way
Vapors are percutaneous
Dogs are a closed method, the wound is bitten
Cats are an open method
Hare is a closed method
Castration of sows
The ovaries of female pigs are 1.5-4 cm. in the middle of the abdominal cavity in the exhausted pig. The ovaries are shifted to the right.
Mining - ovarian artery, prvanial uterus
Innervation - the pelvic nerve

The indication is to improve feeding. It loses 30% of its fat during puberty, 5 to 8 kg per head. The carcasses weigh 10 to 15 percent, the carcasses shrink for 15 to 30 days, and the carcass weighs 30 percent.
At 4 - 8 months of age or 2 weeks before feeding
Fixation - at an angle of 45oS with the head down to the left
Anesthesia - intramuscular injection of 2.5% aminarin 1 ml 25 kg, indentation along the incision method 0.5% novacaine.
Technique - the cut is 2 - 3 cm lower on the right side of the macula, 5 - 7 cm at birth, 4 - 7 cm to 10 cm in length. All tissues are cut and the abdomen is pierced with scissors. The ovary is removed through the wound. The crown is ligated and removed. Thus, the one on the left is also removed. The skin is sutured with 2-3 knots.

TOPIC: MALE ANIMAL SURGERY

LECTURE TOPIC:
1. Anatomy - topographic data.
2. Anesthesia of the genital nerves.
3. Treatment of phylloxera and paraphylococcus aureus with surgery
4. Genital aputia in horses
5. Operations in the field of printing: anatomy - topographic information, urethrotomy, urethrostomy.
6. Bladder operations; anatomy - topographic information, cystotomy.

References:
1. .Operative Surgery - X.K. Rustamov, Ya.A.Axbutayev, B.D.Narziyev - 1997.
2. Operative surgery - II Magda - 1990.
3. Surgery of large ragota cattle - P.S.Kuznesov - 1974.
4. Operative surgery - IK Shomirzayev - 1987.
5. Novoye licheniye nezaraznqx bolezney selsko-khozyaystvenqx - V.R.Mosin -
6. 1973.
7. A. David Weaver, Guy St Jean, Adrian Steiner “Bovine surgery and Lameness” USA,
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The penis is a complex organ that plays an important role in inserting sperm from the sperm into the genitals of predators, as well as in excreting urine. The back of the penis is called the base, and it starts at the pelvic floor and forms two legs - the erura penis. Each of the legs is covered with mouse - novak muscle - m.ischocavernosus. The legs of the penis join together to form the base of the

penis, the radix penis. The poplar is covered with an arrowhead (tunica alhuganea) from the top of the body. During an erection, the anna is injected into these gills.
The penis is made up of three parts: the base, body, and head.
On the dorzan surface of the body there is an artery for veins and nerves, and on the ventral surface there is a urogenital canal (analis urognitalis).
(The penis is made up of two parts: a fixed one and a bush.
The skin that surrounds the upper part of the penis is made up of inner and outer layers. The leather pouch serves to protect the genitals. Between the outer layer - lamina cutanea, the inner layer lanius vercirales is the cavity of the skin sac (percussion) - cavaum praeputi, in which the fluid that lubricates the sac accumulates smegma.
The ostium praeputiale opens into the skin sac cavity. When the penis gets an erection, the skin sac tightens and flattens. This is aided by the tense muscle m.praeputiale cranialis. The head of the penis is pulled into the sac through the penis muscle - m.retractor penis. In pigs, the genitals form a "S" -shaped fold between the cheekbones and the scrotum. The genitals of horses are very heavy, the sides are slender, the hollow body is very developed, and the head forms a cap - corona glandis.
The penis consists of three fascia, the deep and the superficial.
The urethra (canalis upogenitalis) begins at the base of the urethra and ends at the head of the penis. It consists of a mucous membrane on the inside and a hollow membrane on the outside.
Mining is provided through the genital arteries and the carotid artery
The innervation is provided by the following nerves: the genital nerve, the rectal nerve.
The genital nerve, the pudendus, originates from the third and fourth pairs of nerves in the buttocks.
These nerves are anesthetized.
Instructions - a technique for removing genital pain and during operations on it - in horses with a left incision at the base of the anus with a left incision in the anus. 901090 needles are injected left and right into the bone and then 20 mm 3% novacaine solution is injected. After 5-7 minutes, the organ is slowly removed from the sac for 2 hours.
In chickens - the point of injection of the needle is on the inside of the middle part of the tail of the tail. For this you need 2 needles: sender and injection, vibration and 10120, 12120 needles.
The direction of injection is sent to the cranio-ventral, the entire length and 40 ml of 2% solution of novacaine. At the same time the rectal nerve is anesthetized. Lasts 1.5 to 2 hours.
Genital amputation in horses

Indications: necrosis, inflammation, tumor, fracture, paralysis, paraphimosis, severe injury.
Anesthesia - anesthesia and analgesia of the genital neuralgia
Surgical technique - amputation relative to the injured area can be performed in the lower and upper extremities.
Lower Amputation - Horse fixation is held laterally using an auxiliary head or Lecoso clamp. A rubber ligature is burned in the upper part to prevent mining. The urethra and other tissues are cut from the ventral surface so that the mucous membrane of the urethra is 7 to 8 cm long until the sac reaches the visceral layer of the penis. It is connected with a thick ligature in the lower part, from which the injured limb is removed 2-3 cm below. After 10 to 15 days, the untied tissue will fall off.
2. Amputation of chultos.
The operation is performed as described above. After the mucous membrane of the urethra is sutured, a 2 cm long urethra is prepared in the lower part. This is where the penis is cut and a nodular suture is made in the ventral lobe. The remaining urethra is straightened, the skin and fascia are amputated.
Guideline - When most of the genitals are injured.
Technique - The operation consists of two parts, the first of which is a technical operation on the urethra in the chat area (urethrostomy). The upper part of the skin is cut, tied in a circle and ligatured.
The limb, which is 2 to 3 cm below the joint, is removed, and after 12 to 15 days, the limb is removed.
Operations of male animals in the chot area
Anatomical and topographic information - the area of the uterus from the posterior foramen to the seminal vesicles. The posterior foramen and urethra, which consists of two parts, contain the genitals and the urethra.
Mining - with the help of brush and cover arets
Innervation is caused by the genital nerve
Guidelines - Ulstrotomy and urethrostomy during surgery
Technique - in the depth of the rectum, a needle is inserted over the incision of the pelvic bone, a finger is inserted through the posterior hole and 5 ml of 3% novacaine solution is injected, deepened to 0.5 cm and sent back. The same is done on the left.
Urethrotomy of the urethra
Held on horseback.
The instruction is to remove the stones from the bladder and urethra.
Anesthesia is as described above
Operation technique - vertical bag is fixed. Paste is sent to the urinary tract. In the Chot region, the tissue opposite the keyest is cut, 6 cm long. The flow is stopped, a

short is sent to the urethra from the cut and the stones are removed. The tissue is then sewn in two layers

In bulls - they are fixed in the supine position.

The incision is 5 cm from the seed sac and 10 cm from the back. the genital area is removed with ash and the urethra is cut and the stone is removed. The urethra and skin are sutured.

Creating an artificial hole in the urethra. Uretrostonia

Indication - when the urine is incomplete and during organ aputia

Technique - The operation is similar to a urethrotomy, but the mucous membrane is sutured to the skin, the wound heals, and urine comes out of the hole.

Bladder surgeries

Anatomy - topographic information: The vesicle uricaria cystiena is a sac formed by the muscular membrane and is located in the pelvic cavity, in males under the small intestine, and in females under the uterus. The bladder consists of three parts, the body, the anterior end, the posterior neck, this part joins the urethra. The bladder consists of an inner - mucous middle - muscle and an outer serodal layer.

Blood supply is through the cranial and caudal bladder arteries

Perforation of the bladder

The instruction is to urinate.

Fixation - small animals sideways, large animals upright.

Technique - in small animals, urine is excreted using a needle by suturing a bladder in the middle and side of the middle system between the cynic and the pelvic bone.

In large animals, a hose is inserted through the rectum into the end of the intestine

Rupture of the bladder

Instruction - to remove stones from the bladder is often carried out on horses and small animals.

Anesthesia is the use of lycopene in low jump horses and small animals

Operation techniques:

In horses, a single urethrotomy is performed. The bladder of an upright animal is emptied using a catheter. 10-15 cm of tissue is cut between the technical and pelvic bones. Through this wound, the ash is inserted into the pelvic floor to a depth of 15-20 cm. The left ash should be sent to the rectum. A stone was found in it and the bladder was brought to the back of the neck.

Using scissors in the right hand, the wall of the bladder is drilled 2-3 cm and the stone is removed, and the lath is crushed. Antibiotic and antiseptic emulsions are sprayed or applied to the wound. The wound heals in 2 weeks.

In small animals - through the abdominal cavity. Fixation is performed while lying on the shoulder. With a parallel incision at the bottom of the umbilicus, the coronal wall is ruptured and 8 - 10 cm long mining vessels are connected. The bladder is removed and the needle is emptied using a syringe. The syringe is then lifted using a ligature and the wall is cut with the help of solanine and the stones are removed.

The inside of the collar is washed and the wound is sutured with Sirley-Lambur suture.
The corine wall is sewn in three layers.
Topic: ANATOMO-TOPOGRAPHIC STRUCTURE OF THE FEET. NERVE PAIN.

LECTURE TOPIC:
Front foot.
1. Anatomical and topographic information, boundaries and parts
2. Anesthesia that conducts the nerves of the legs
3. Operations on synovial structures
A) The structure of the capsule of the larynx, the mucous sac and the tubular synovial sheath.
B) punctures in the joints
Back leg.
1. Anatomical-topographic information, boundaries and division into parts.
2. Innervation and their analgesia.
3. Puncture of the hind leg joints
4. Exarticulation and aputation in the phalanges in ungulates.

Key words: joint, joint, joint, sinus, neur, amputation, exarticulation.

References:
1.Operative Surgery - X.K. Rustamov, Ya.A.Axbutayev, B.D.Narziyev - 1997.
2.Operativnaya khirurgiya - I.I.Magda - 1990.
3. Surgery of large rats - P.S. Kuznesov - 1974.
4.Operativnaya khirurgiya - I.K.Shomirzayev - 1987.
5.Novoye licheniye nezaraznqx bolezney selsko-xozyaystvenqx - V.R.Mosin - 1973.
6. A. David Weaver, Guy St Jean, Adrian Steiner “Bovine surgery and Lameness” USA,
2005
The forelegs are divided into the following parts.
1. The upper border of the shoulder blade (regio scupolo humeralis) - in the upper third of the shoulder blade, from the top of the lower elbow; on the anterior side of the anterior shoulder joint; back elbow line.
It consists of the following floors:
Muscle layer:
1. Axillary muscle - m.supraspinelus fills the anterior axillary fossa of the shoulder blade, the muscle that stretches the shoulder joint.

2. Small round muscle - m.teres minor is small and thin, located between the posterior axis and deltoid muscles. It hurts the joints.
3. The dorsal muscle of the arrow - m.intraspinalus fills the cavity behind the axis of the sternum. The muscle that brings the legs together.
4. The triceps muscle of the humerus - m.tricepa brachii. This muscle is located in the triangle that forms the sternum. It is divided into long, medium and lateral heads. The muscle that stretches the elbow joint.
5. The biceps muscle of the shoulder is m.bicepa brachii. It is located on the front of the humerus, has a tubular structure, and affects two joints. The bursa is located under the upper stake. This muscle tears the shoulder joint and bends the elbow joint.

The subclavian muscle, m.subscupularis, fills the groove under the scapula. The muscle that moves the legs away.

The bone marrow.

Bones and shoulder bones. Together, they form the shoulder joint.

This joint is a multi-axis joint.

The elbow joint and wrist area are the cubitalis et antibrachialis region. The upper bouts featured two cutaways, fore and aft; the lower bouts featured two cutaways, fore and aft.

It consists of the following layers:

The muscular layer passes through the lateral surface:

1. The muscle that writes the wrist joint - m.extensa carpi radialis. This muscle starts at the shoulder blade and ends at the palmar bone. It's too tight.
2. The common extensor muscle of the fingers is long, ending at the elbow joint to the hoof bone.
3. The muscle that writes the fingers from the side, the synovial vagina around the joints.
4. The elbow muscle, which stretches the wrist joint, but performs the function of flexion.

From the medial surface:

1. The wrist muscle that flexes the wrist joint - m.flexor carpi radialis begins at the elbow joint and ends at the palmar bone, wrapped around the vagina.
2. The flexor carpi ulnaris, which flexes the wrist joint, begins at the elbow and shoulder bones and ends at the hoof bone, surrounded by the vagina.
3. The flexor surface muscle of the finger - m.flexor digitalis super facialis begins at the shoulder blade and ends at the fingers.
4. The deep flexor muscle of the fingers - m.flexor digitalis profundus - joins the surface muscle with the foot, surrounded by the vagina.

5th floor bone top layer.

6th floor bone-wrist and elbow bones, wrist bones and palmar bone.

The shoulder, wrist, and elbow bones form the elbow joint.

The wrist, wrist bones, and palmar bone form the wrist joint, which is made up of three joints — the wrist-wrist, the wrist, and the wrist.
The upper border of the palio and finger part - regio metacarpi et digitalis is bordered by the lower border of the anterior part, the lower hoof.
The first finger bone is called the tibia, the second the round bone, and the third the hoof bone.
The foreleg is innervated by the following nerves. Thoracic nerve, axillary nerve, wrist nerve, elbow nerve, middle nerve.
Pain in the middle nerve
Instructions. During wrist and wrist surgery.
Technique. A needle is inserted into the medial surface of the wrist, between the wrist bone and the wrist muscle, which flexes the wrist joint. At a depth of 1-1.5 cm, 10 ml of 3% novocaine solution is administered. Magda recommends sending the wrist joint between the flexor wrist and elbow muscles.

Pain in the elbow nerve
Technique. On the surface of the wrist volar, 8-10 cm above the auxiliary bone, the ankle is pierced to a depth of 1-1.5 cm between the extensor and flexor muscles of the wrist, and 10 ml of 3% novocaine solution is injected.
The legs have the following synovial structures: the joint capsule, the mucous sac, and the palatal synovial vagina.
The joints are surrounded by a membrane-shaped capsule made of connective tissue. It consists of two layers: the outer fibrosis and the inner synovial, which separates the synovial fluid. The fibrous membrane is a continuation of the bone marrow, passing from one bone to another.
The mucous membrane, the bursa, is located under the muscles that move a lot and rub during movement. Depending on the inner layer, they are divided into mucous or synovial bursa, the latter of which are joined by joints. It consists of 4 layers - epithelioid, thin, thick fibrous and fibrous.
The parietal synovial vagina surrounds the parietal part of the leg muscles, allowing the muscles to work more easily. It consists of two layers: fibrosis and synovial. The synovial layer consists of two membranes - close to the visceral lobe, close to the parietal fibrous layer.
Puncture of the shoulder joint
Instructions. For diagnosis and treatment.
Technique. It is fixed in the lateral position, the needle is inserted from the outside into the space between the outer and outer posterior vertebrae to a depth of 4-5 cm.

Puncture of the submucosal bursa of the biceps
Fixation. It is fixed in an upright position.

Technique. A needle is inserted into the lower part of the muscle between the upper leg and the backbone, the direction from bottom to top and 3-4 cm inwards.

Back leg

The hind legs of animals are divided into the following parts:

The hip is the upper limit of the midline, below the upper part of the knee joint, in front of the muscle that stretches the broad fascia of the thigh.

It consists of the following parts:

Muscle layer:

1. The facial muscle of the sacrum;
2. The middle muscle of the sacrum;
3. Deep sagittal muscle;
4. Noxious muscle - combined with the middle muscle;
5. The bicepa femoris, the two-headed muscle of the thigh, consists of the buttocks and the groin. extends from these bones to the femur;
6. Half-leg muscle - m.genifendinosus begins in the first tailbone and extends to the femur;
7. Hemispheric muscle - m.semumembranus begins in the humerus and ends in the distal part of the femur;
8. The quadriceps muscle of the thigh is the rectus muscle, the right, lateral, middle, and intermediate head;
9. The flexor muscle is located on the middle surface of the thigh;
10. Comb muscle - bends the pelvic joint, lifts the leg forward;
11. Thin muscle - is located on the inner surface of the thigh. It begins at the beginning of the pelvis and ends at the scalp.

The bone marrow.

Bone - The pelvis and hip bones join together to form the pelvic joint.

The knee joint and the shin joint consist of the following layers:

Writing muscles:

1. The triceps: two of which are the latissimus dorsi and midbrain, and the third is the calf muscle.
2. The anterior muscle of the greater tibia is located in the anterior part of the femur, ending in the palmar bone.
3. The third muscle of the tibia is the flexor, starting at the femur and ending at the palm.
4. The long muscle of the small calf bone begins at the side of the big calf bone and ends at the I heel bone.
5. The muscle that writes the finger joints.
6. The muscle that writes the fingers to the side.
7. The surface muscle that washes the fingers.
8. Deep muscle that flexes the fingers.

Bone layer - The bones are the knee, the big toe, the small thigh, and the femur. The kneecap and hip joint join together to form the kneecap joint. The joint is complex, with two axes, and is closed by 4 stakes in addition to the capsule.
Jumping joints, palms and fingers - the upper border corresponds to the lower border of the anterior part, the lower border is bordered by the hoof.
The heel joint is complex and consists of several rows of bones, of which 1) there is only movement in the ankle joint; 2) the central bony joint of the upper row; 3) the lower row joint of the central bone; 4) the palmar bone joint of the lower extremity.
The blood supply is to the external iliac artery.
The innervation is the sciatic nerve and the nerves that extend from it, the big and small leg nerve.
Removal of the third finger of cattle (exarticulation)
Instructions. Purulent arthritis, rotting joints, bone rot.
Preparation for surgery - washed and cleaned with a brush.
Fixation - in the supine position.
Anesthesia is a circular anesthesia of neuroleptic, volar nerves.
Technique. A tourniquet is placed on the palm of the hand. before the hoof is cut and removed, a line is drawn through it, from the front to the soft heel, cut with a saw 3 cm below it, the remaining tissue bone fragments are removed, and the round bone ridge is scraped off. Antibiotics are sprayed and tightly bound with pine oil. After 10-15 days, the residue disappears and the horn layer is formed.

Finger amputation of large horned cattle
Instructions. Purulent inflammation of the joints of 2-3 fingers, the process of decay, complications of puberty are cleaned by washing the hooves.
Fixation - in the supine position.
Anesthesia - analgesia of neuroleptic, volar nerves.
Technique. A tourniquet is applied. amputation should be performed through the femur. The operation begins with a cut from the dorsal surface, the hoof is cut to the chin, then the hoof space is cut, and so the skin on the volar surface is also cut and the skin is removed. The stakes are cut using scissors, then the bone is cut and removed by tilting it from top to bottom using a saw. Eventually, the bleeding stops, the tissue is removed, and antibiotics are given. The treated skin is sutured with a continuous suture.
Puncture of the knee cap joint
Instructions. For diagnosis and treatment.
Fixation. Standing or lying down.
Technique. The puncture is performed between the outer and middle or right and middle and right knee joints. The needle is pierced 2-3 cm below the knee cup, 3-5 cm deep. The synovium should flow from the tip of the needle.

Pain in the big toe nerve.
Instructions. For diagnostic purposes or during operations on the jump joint and fingers.
Technique. The horse can be fixed in an upright or lying position. The point of needle insertion is from the inside of the heel groove, 10-12 cm above the top of the heel and 0.5-1 cm forward from the heel. The needle is injected from top to bottom at an angle of 45-500 cm, 1-1.5 cm deep, and 20 ml of 3-4% novocaine solution is injected.

Blockade of the common body of the small calf nerve
Instructions. During surgery on the palms and fingers.
Technique. The animal can be fixed in an upright or lying position.
The point at which the needle is inserted is opposite the outer side of the calf bone. At the bottom of the biceps muscle is moved to a depth of 1.5–2 cm, then the needle, which is directed to the back, 3–4 cm.

3.2. Training materials for practical exercises

Topic: Acquaintance with the surgical clinic and the organization of surgical work. Principles of animal fixation

The main thing when fixing animals is to apply the necessary technique, soothing and immobilizing them, to create conditions for safe research and operation. For an animal of each species, special fixation methods are used, the variety of which also depends on the patient's condition and on the nature of the surgical intervention. The fixation of large animals presents particular difficulties. Usually, animals are fixed in a standing or lying position. Since fixation in the supine position is a violent and sometimes very rude action, then, when applied to large animals, it is fraught with the risk of causing the animal various injuries: bone fractures, rupture of internal organs, overheating of the body, degeneration of the heart muscle, shock, etc. In felling, such actions should be used, from which the animal, due to the emerging need, would take a lying position without much resistance. When fixing, it is necessary to take into account the habits of the animal, its character, etc. You should never approach the horse from behind, but to the cattle from the side due to the peculiarities of the lane. 1. Using a twist: and - twist; b, c - stages of its imposition; d - cattle nasal forceps. Fixation of the thoracic limb of the horse (3): I fetlock belt; 2 impromptu way howl to kick from behind, and the second to the side. Hailing an animal, they always approach it from the front. Obstinate horses are taken by the halter from the side, from the side of the shoulder. It is

advisable that the animal is accompanied by a caregiver; he is also entrusted with the simplest fixation techniques: applying a twist (Fig. 1), raising a limb, imposing restraints and other means. Before fixation, especially during felling, the intestines and bladder are freed from the contents of animals. Sometimes physically strong, angry and violent animals are kept on a starvation diet for a long time. Fixing the horse in a standing position. In some studies and small operations, as a rule, they resort to fixation of the thoracic limb, which the assistant lifts and holds with his hands or with a rope reinforced in the area of the restraint. For this, special or improvised fetlock belts are used. The pelvic limb is fixed when shoeing, examining and trimming the hooves. The assistant raises, pulls the limb back and fixes it on the thigh (Fig. 2, a). A double rope is attached to the tail for obstinate horses, and it is passed through Fig. 2. Fixation of the pelvic limb of the horse through the ring of the fetlock strap, and its free ends are stretched by assistants (b). During research and operations requiring an approach to the rear parts of the body, the pelvic limbs are strengthened with ropes, which are tied to the rings of the fetlock straps; the other ends of the ropes are passed between the chest limbs, wrapped around the forearms and fixed on the back. To avoid unnecessary movements, when the animal is disturbed, it is necessary to apply a twist to the lip. You can reliably strengthen the animal in special benches (portable or stationary). The first ones are made collapsible for convenience. The most common are the machine tool of Kitaev's system and the machine of Vinogradov (Fig. 3). Fixed machines are mostly improvised 14 fixtures of four wooden or metal posts with blind longitudinal and removable crossbeams. Some machines look like a fixed wall to which the animal is fixed with belts. Ways to bring down the horses. Folds are used to fix the animal in a supine position, in which you can give it the proper position. They resort to felling in the absence of an operating table and when providing emergency assistance in the conditions of the farm. Before a felling, it is necessary to prepare the area by covering it with soft straw or grassy bedding so that there is no dust and to avoid damage to the animal. For this purpose, special mattresses are also used. The prepared place is covered with a tarpaulin. There are a wide variety of ways to bring horses down. The Russian side of the power is carried out with only one belt (if one is able to do it, even one person can do it). To do this, use a standard long (7-10 m) leather or cotton belt with a metal ring at the end (diameter 8-10 cm). Passing the free end of the belt twice through the ring, form a loop. It is thrown around the horse's neck so that the ring falls approximately at the level of the elbow tubercle, opposite to the side on which the animal is knocked. Then the belt is looped from the inside out around the fetlock fold of the opposite pelvic limb and its end is again passed through the ring; the free end of the belt is thrown over the back and croup of the animal to the other side (Fig. 4). The helper stands at the horse's croup on the side where it is supposed to be dumped, and with a quick movement, without throwing the free end of the

belt, pulls the pelvic limb to the horse's stomach. Then the helper pulls the halter reins with his left hand, and his right hand pulls on the halter. 5. Fixation of the limbs during the felling by the Russian method, howling - a general belt, presses with the elbows on the horse's croup and by its own effort knocks the animal down. In a recumbent horse, the head is immediately fixed, and the thoracic limbs are entangled, tied to the lower pelvic. The upper pelvic limb is pulled to the abdomen with a belly belt and the hock joint is strengthened with a belt (Fig. 5). Most often, the Russian method of felling is used for the castration of stallions. Fell according to method B. WITH . The lattice (with co-authors) is carried out by three assistants using one belt (rope) folded in half and fastened with a loop on the path of the pelvic limb, on the side of which the animal is knocked down. Having passed both ends of the belt between the chest limbs over the rope entangling them, one of the ends is thrown behind the horse's withers (Fig. 6). Two assistants pull the ends of the straps in opposite directions. The third assistant fixes the horse's head, moving it away from the direction of the felling. The horse lies down smoothly. To strengthen the pelvic limb, for example, during castration, a belt with a loop is used, which is thrown around the neck, and then they do with it as they do with Russian felling.

The BERLIN and ANGL and felting methods are performed using collapsible safety belts with buckles and rings. One belt is the main one; the chain from the rope is fixed on it by means of a screw. Strengthen it on the pectoral limb opposite to the one on which the animal is being felled. When the belts are put on, a rope is thrown over the body, passing between the chest limbs. Four people are involved in the felling. 6. Fixation of the limbs during felling by the method of V.S. Reshetnik Fig.7. A device for the Berlin felling of the walk: 1 - the main fetlock belt, 11 - general view of the felling, A - fixing the horse before the felling, B - fixing the horse on the trader's back: one by one they stand at the tail, head and body, and the fourth pulls the rope, bringing together limbs. To strengthen them, a bow of the lock is inserted near the main fetlock belt in one of the chain links. The animal can easily be given a dorsal position, and any limb, as necessary, can be fixed in the required position after unfastening the fetlock strap and additional application of the rope (Fig. 7). Fixation of cattle in a standing position requires first of all the strengthening of the head in order to avoid damage from horns. To do this, squeeze the nasal septum with fingers or nasal forceps and simultaneously capture one horn. In bulls, nose rings are usually inserted for life, fixation for which is carried out either by hand or by special wooden or metal carriers. For greater strength, the head is tied to a pole using the techniques shown in Figure 8. The thoracic limb is fixed by lifting or using twists on the forearm from a rope loop and a wooden bar; sometimes the limb is bent at the wrist and tied with a rope in the area of the metacarpus and forearm (Fig. 9, a). To fix the pelvic limbs, a rope loop is used, with which both limbs are pulled together above the hock joints (b). A

very simple technique is to stretch the tail between the legs and hold it at the level of the knee joint (c). Mobility and the threat of a blow with a pelvic limb are completely excluded when a shin rope twist is applied (e). To firmly hold the pelvic limb during examination, trimming and other operations on the hooves, it is strengthened in the extended position back on the pole (e). With the general fixation of the animal, use the technique shown in Figure 9, d, g. The best fixation is achieved in pens, the design of which is no different from horse pens. In some operations, relatively calm animals can be strengthened near a wall or fence, protecting the pelvic limbs with a pole (Fig. 10). Methods for felling cattle. The most common is the G e s.

Topic: Preparation of surgical instruments for surgery and their postoperative sterilization and storage.

STERILIZATION OF INSTRUMENTS Of the existing methods of sterilization of instruments, boiling is the most common; braided instruments covered with gutta-percha are treated with chemicals. All metal instruments: scalpels, scissors, needles, tweezers, various forceps and others are sterilized in water with the addition of alkalis: 1% sodium carbonate; 3% sodium tetraborate (borax), 0.1% sodium hydroxide. Alkalis increase the sterilization effect, precipitate salts found in ordinary water and prevent corrosion and darkening of instruments. Before boiling, the instruments are cleaned of the grease covering them, large and complex instruments are disassembled, injection needles are freed from mandrels, sharp parts of instruments, and glass ones are wrapped in gauze. As a rule, the liquid is boiled in special metal vessels - simple and electric sterilizers (Fig. 24). Sterilizers have a removable grill with handles. The grate is taken out with special hooks and instruments are placed on it, which are then lowered into the sterilizer after boiling the liquid for 3 minutes. During this period, the water is freed from the oxygen dissolved in it and is neutralized with alkali. Small instruments, injection and surgical needles are immersed in the sterilizer, pre-pricked or wrapped in gauze so that they do not get lost in the sterilizer during boiling. In the absence of a sterilizer, you can boil in an enamel or other container with a lid. The boiling time depends on the alkali dissolved in water: with sodium carbonate 15 minutes, with brown 20 minutes, with NaOH 10 minutes. Used instruments (after opening abscesses, working with cadaveric material) are boiled (for at least 30 minutes) also in an alkaline liquid with the addition of 2% lysol or phenol. Glass objects (syringes, etc.) are placed in a disassembled sterilizer before heating it. Syringes and glassware for anesthetic solutions are boiled in distilled water, as alkaline solutions decompose some local anesthetics. After boiling, the grate with the instruments is removed from the sterilizer and the instruments are transferred to the instrument table. If the instruments need to be prepared in advance, then after sterilization they are wiped with sterile swabs, wrapped in 2-3 layers of sterile sheets or towels, and then in oilcloth; store and transport instruments in a sterilizer.

Other methods are used depending on the circumstances and type of tools. In emergency cases, flambing of metal tools is allowed; they are placed in a basin, poured over with alcohol and fired. However, cutting and piercing tools become dull and lose their luster from burning. Rubber items: tubes, bougie, drains, catheters, syringes and others are sterilized by boiling in distilled water for 30 minutes. Skin-lined probes, braided catheters are sterilized in formalin vapor.
For this, after washing and drying, they are suspended for 24-48 hours in hermetically sealed boxes or boxes, on the bottom of which open wide vessels with formalin are placed. Storage of tools. All instruments after the operation are thoroughly washed, sterilized and dried. Then they are laid out in a dry cabinet, and a vessel with calcium chloride is placed there. Other medicines, especially iodine preparations, should not be stored in the instrument cabinet. After washing, the injection needles are stored with mandrels inserted in them in a closed vessel filled with alcohol and ether. Place rubber items separately from metal instruments. With a loss of elasticity, they are softened by immersion for 15 minutes in a warm 5% solution of ammonia, and then for the same period in a 5% solution of glycerin. The syringes are stored disassembled. If the piston is pinched in the syringe, its mobility is restored by placing the syringe in antiformin (7.5% NaOH and 6% NaCl in distilled water). Stains appearing on metal tools are wiped with a mixture (2: 1) of chalk with ammonia or paste for a safety razor point.

Topic: Sterilization of linen and dressings

Purpose of the lesson: To acquaint students with dressing materials, types of dressing and suture materials and methods of sterilization.
Inventory and equipment. Chemical solutions, suture samples
Silk sterilization. Silk is pre-washed in hot water and soap, dried with a sterile towel and wound on glass spools, sticks or glass slides with rounded edges. After that, it is sterilized by one of the following methods.
Sadovsky's method. Silk is immersed in a 0.5% solution of ammonia for 15 minutes, with sterile tweezers it is transferred into a 2% solution of formalin in 65% alcohol (formalin - 2 ml, 96% alcohol - 68 ml, water - 32 ml) and stored in this solution until use, but not less than 15 minutes.
Kocher's method. Silk for degreasing is placed in ether for 12 hours, transferred to 70% alcohol for 12 hours, and then boiled for 10 minutes in a solution of mercury dichloride 1: 1000.
Sterilization of catgut. It is impossible to process catgut by boiling or in any other way using high temperature. Before sterilization, it is rolled into rings or wound on glass spools. There are several ways to sterilize it.
Method Drove. Without preliminary defatting, the catgut is preliminarily immersed in a 4% formalin solution for 72 hours.

The Sadovsky-Kotylev method. Catgut is immersed in a 0.5% solution of ammonia for 30 minutes and transferred to a 2% formalin solution in 65% alcohol, in which it is stored until use, but not less than 30 minutes.
Gubarev's method. Catgut is defatted in gasoline for 12 hours, dried and immersed for 14 days in a jar with 1-2% alcohol solution of iodine (crystalline iodine - 2 g, potassium iodide - 3 g, glycerin - 4 g, ethyl alcohol - 100 g). After 14 days, the catgut is transferred to another jar with the same solution and stored in it.
Sterilization of cotton and linen threads. Sterilized like silk by the Sadovsky method or immersed for 24 hours in a 4% aqueous formalin solution. It is also stored in it.
Sterilization of synthetic threads. Synthetic threads (nylon, lavsan) are sterilized by boiling and stored in 96% alcohol.
Sterilization of dressings and surgical drapes. Dressings (bandages, napkins, tampons, etc.) and surgical linen (gowns, sheets, towels, etc.) are sterilized by autoclaving, flowing steam and ironing.
Sterilization by autoclaving. Before autoclaving, the material and linen are placed in special metal boxes - Schimmelbusch bixes. The holes on the side wall of the bix are opened before loading into the autoclave and closed after sterilization when removed from the autoclave. Depending on the size of the bixes in the autoclave, several of them can fit. The sequence in which the linen is put into the bix depends on its further use. If the consumption of the dressing material is small, it is sterilized in small bags or linen bags.
Sterilization is carried out strictly following the instructions supplied with the autoclave. The sterilization time depends on the pressure in the autoclave. It is better to sterilize dressings in an autoclave at a pressure of 15-20 kPa. So, for example, at 15 kPa - 45 min; at 20 kPa - 30 min. The sterilization time is counted from the moment the specified pressure is reached.
The bixes are removed from the autoclave after the holes in their walls are closed; sometimes, to dry the sterilized material, the bixes are left in an autoclave for 20-30 minutes.
The reliability of sterilization is controlled by chemically pure sulfur, the melting point of which is 117 ° C. To do this, a test tube with powdered sulfur is placed in the middle of the bix before sterilization. If, after sterilization, the sulfur turns into a homogeneous mass (melts), this indicates that the sterilized material has been exposed to temperatures above 117 ° C and is sterile.
Sterilization with flowing steam. It is carried out either in a special Koch fluid-steam sterilizer, or (in its absence) use a saucepan or bucket with a lid. The latter should be well-fitting, but capable of letting in steam. Water is poured into the vessel to 1/3 of its height, a lattice partition is inserted above the water level, on which the sterilized materials are placed in cloth bags or in a bix. After closing the vessel with a lid, in which there must be several very small holes for the steam to

escape, they heat it up. The start of sterilization is considered from the moment when steam begins to escape from under the lid in a continuous stream for some time. The steam temperature reaches 100 ° C; the duration of sterilization is at least 30 minutes.

+ Sterilization by ironing. Allowed only in cases where other sterilization methods cannot be used. Usually the temperature of the iron reaches 150 ° C; first lay out and iron the sheet on which the treatment will take place, then spray the necessary material with water and iron it on both sides (gauze on one side), while moving the iron slowly 2-3 times in one place. The ironed linen is folded with sterile tweezers into a bix or a bag

Topic: Preparing hands for surgery.

The purpose of the lesson: To master the technique of preparing hands for the operation according to the methods; learn how to put on gloves and sterilize them;

Preparing hands for surgery. Proper preparation of the hands for surgery is one of the most important measures to ensure aseptic surgery. It is known that the skin of the hands constantly contains a variety of microbes. They are located in the excretory ducts of the sebaceous and sweat glands, in the numerous grooves and folds of the skin and in the subungual spaces. However, if the skin is elastic, without cracks and burrs, then the treatment of hands with one of the methods adopted in surgery ensures their reliable sterility. If there are burrs, ulcerations, cracks, pustules on the skin of the hands, the number of bacteria increases noticeably, which makes it difficult to disinfect the hands, they can become a source of infection for surgical wounds. Therefore, the skin of the hands needs constant and attentive care.

Hand skin care. To maintain the softness and elasticity of the skin, hands need to be lubricated at night with petroleum jelly, lanolin, Tushnov's liquid (castor oil - 5 g, glycerin - 20, wine alcohol 96 ° - 75 g) or Girgolava (glycerin, wine alcohol, ammonia and distilled water - 25 g each).

There are three main methods of modern preparation of hands for surgery: a) mechanical cleaning, b) _ chemical disinfection, and c) leather tanning. Some antiseptic substances often combine bactericidal and tanning properties (alcohol solution of iodine, brilliant green solution, etc.), thus representing a bactericidal tanning agent or tanning antiseptic. Hand processing is carried out from the fingertips and further to the elbows.

10-20 minutes before the operation, the hands are cleaned mechanically: the nails are cut shortly, the burrs are removed, the subungual spaces are cleaned and the hands are thoroughly washed with soap and brushes.

Before use, brushes (hair and herbal) are boiled for 20-30 minutes in enamel pots and stored in glass jars in a 3% solution of carbolic acid or 0.1% solution of mercuric chloride.

The most common hand treatment methods are as follows.

Furbringer's method - Wash hands for 10 minutes with soap and warm water. Then, for 2-3 minutes, the hands are treated with a tampon treated with 70 alcohol or 1: 2000 mercuric chloride solution. At the end of sterilization, they are treated with a 5% tincture of iodine.

Spasokukotsky's way - Kochergin. This method is based on the property of a solution of ammonia (like alkali) to dissolve fats on the surface and in the pores of the skin and to wash out bacteria along with them. Pre-washing your hands with soap and water and a brush is optional; it is resorted to in some cases with household contamination of hands.

The hand processing technique is as follows. Freshly prepared warm 0.5% solution of ammonia is poured into two enamel basins. Hands are washed (wiped) with a sterile napkin for 3 minutes, first in one basin, and then for 3 minutes in another. When washing hands, the following sequence is observed: first, the ends of the fingers and nail beds are washed, then the palmar and back surfaces of the hand and, finally, the forearms. After that, hands are thoroughly wiped with a sterile towel and treated with 70-96 "alcohol for 3-5 minutes. In conclusion, the nail beds are lubricated with GL.-vdm with an alcohol solution of iodine.

This method has been clinically tested on several million operations and is deservedly considered the best currently available. Its advantages are reliability, simplicity and harmlessness to the skin of the hands.

Alfeld's method. Hands are washed for 10 minutes with hot water and soap and a brush, after which they are wiped with a sterile towel, treated with 96 ° alcohol for 5 minutes and the nail beds are lubricated with a 5% alcohol solution of iodine. With this method, the reliable de-clutching of the hands is maintained for a short time (about 30 minutes).

Olivkov's way. Hands are washed for 5 minutes with hot water (40-50 ° C) with soap and a brush, wiped dry with a coarse sterile towel and thoroughly wiped for 3 minutes with gauze balls or cotton wool soaked in an alcohol solution of iodine (1: 3000). At the end of the treatment, the subungual spaces are lubricated with a 5% alcohol solution of iodine.

Kiyashov's way. Hands are washed with a 0.5% solution of ammonia for 5 minutes, then treated for 3 minutes under a stream with a 3% solution of zinc sulfate. The fingertips are smeared with a 5% alcohol solution of iodine. This method is very effective (zinc sulfate solution has a tanning and bactericidal effect) and is always acceptable in veterinary practice.

Amnev's way. After washing your hands, wipe the napkin soaked in 70 ° alcohol solution for 3 minutes, then with 96 ° alcohol for 2 minutes.

Work with gloves and their sterilization. All existing methods of treating hands do not ensure their absolute sterility; this can be achieved by using sterile rubber surgical gloves. The disadvantage of gloves is their low strength. In addition, the surgeon's hands sweat a lot while wearing gloves, as a result of which "glove juice"

is formed. The latter contains germs and can infect the wound if the glove is accidentally punctured with a needle, scalpel or other instrument. Therefore, before putting on gloves, hands must be treated using one of the methods discussed above.

Gloves are sterilized in several ways. Check their integrity before sterilization. To do this, the gloves are inflated and immersed in a vessel with water. At the slightest damage, air will escape from the chamber, which is easy to recognize by the appearance and iodine of bubbles.

The most convenient methods for sterilizing gloves are as follows.

Sterilization in an autoclave. Each glove, separately, is carefully sprinkled with talcum powder inside and out, wrapped in a gauze cloth and sterilized in an autoclave along with a dressing material.

Sterilization by boiling. Each glove is wrapped with gauze and tied with threads to the sterilizer net so that they do not float. Boiled in water, without adding soda, within 15 minutes.

Chemical sterilization. The gloves are immersed in a solution of mercuric chloride (1: 1000) for at least an hour or in 2% chloramine for 15-20 minutes.

Gloves are put on wet hands and, after putting on, regardless of the method of sterilization, they are wiped with alcohol.

Theme. Preparation of the animal and the operating field

Preparing the animal for surgery. The course, outcome and condition of the animal after the operation directly depend on the preoperative preparation. Any surgical operation carries a risk to the health and life of the animal. Surgical intervention disrupts homeostasis and thermoregulation of the body. The condition of the animal can be influenced by both major and concomitant diseases, therefore, in order to minimize the risk, it is necessary to carefully examine the animal before the operation and, if necessary, carry out a course of therapy. On the eve of the operation, the animal must be kept on a 12-hour fasting diet. This need is dictated by the fact that drugs for anesthesia and sedation in some cases cause vomiting.

Before the operation, it is necessary to objectively assess the patient's condition, identify concomitant diseases. This is the main factor in the choice of drugs for anesthesia, it helps to choose and carry out pre - and postoperative therapy.

The examination begins with the collection of anamnesis. The doctor asks the owner of the animal for the following information:

the age of the animal;

the owner's complaints about the health of the animal;

the general condition of the patient;

appetite, thirst;

frequency and volume of urination, bowel movements;

past illnesses; allergic reactions;

conditions of detention;

vaccination carried out.
Then a general examination of the animal is carried out: weighing, thermometry, counting the frequency of respiratory movements and pulse, general examination (special attention is paid to the color of the mucous membranes, skin turgor, fatness), palpation, percussion and auscultation.
Further, special studies may be required:
blood clotting test (blood clotting is a protective reaction that protects the body from bleeding); mandatory analysis before any surgical intervention;
a general and biochemical blood test is prescribed according to indications upon detection
pathologies during the general examination and in animals older than 7 years, because many diseases of the liver, kidneys and heart can be chronic without clinical
signs, and during operations lead to complications.
radiography.
electrocardiogram. It is advisable to carry out in older animals, in brachycephals, or if pathologies on the part of the cardiovascular system are found during a general examination - rhythm disturbances are heard or
a history of fainting.
Only after the studies have been carried out it is possible to draw conclusions about the expediency of the operation, appoint the time and date of planned and urgent operations, and prescribe preoperative therapy.
Preparation of the operating field
Preparation of the operating field includes the removal of hair. Mechanical cleaning with degreasing, disinfection (treatment with antiseptic agents) with tanning and isolation from other parts of the body.
The coat is clipped or shaved off. The latter has the great advantage that the skin can be disinfected with greater care. Shaving can be dry (if there is no undercoat and in case of emergency) and wet (using soapy foam or soapy alcohol). It is more convenient to do this treatment on a fixed animal after anesthesia or tranquilization. In this case, the surgical field was carefully cut with an electric clipper in the groin, inner thigh, and abdomen up to the 3rd pair of nipples. Removed the rest of the hair.
After shaving, the skin of the operating field is degreased and cleaned mechanically, wiped for 1-2 minutes. a swab soaked in alcohol or ether, and then the skin is treated with a 0.5% solution of ammonia, or an aqueous solution of furacilin 1: 5000, potassium permanganate 1: 10000, rubbing the skin from the center to the periphery. In the presence of an open purulent focus, the skin is wiped from the periphery to the center.
Methods for disinfection and tanning of the operating field
There are many ways to disinfect and tan the operating field.

Topic: Injection, Infusion and Bloodletting Technique

Injection (from Lat. Injectio - throw-in, injection) is the introduction of liquid forms of medicinal substances or biological preparations into the thickness of tissues, body cavities, vascular bed using a syringe. The introduction of large amounts of liquid (various solutions, blood, blood substitutes, etc.) is mainly called by gravity infusion (from the Latin infusio - infusion).

Injections and infusions are carried out in cases where it is impossible to enter medicinal substances inside, impractical or if you need to quickly get a therapeutic effect. They are made using a syringe with a needle, a needleless injector or special systems.

Syringes are produced with a capacity of 1, 2, 5, 10, 20 ml. Luer syringes (2, 5, 10, 20, 50, 100 ml) are made entirely of glass and require needles with a large inner cone "cannula" diameter. If it becomes necessary to use needles for Record syringes in combination with Luer syringes, or vice versa, transition cannulas are used. Disposable sterile plastic syringes are also available. For infusions, blood transfusions and lavage of body cavities, Janet's syringes, Bobrov's apparatus, glass funnels and other systems are used.

Injection needles of various lengths and diameters for Record and Luer syringes are produced under the following numbers: the first two digits indicate the tube diameter in tenths of a millimeter, and the next - the tube length in millimeters; for cleaning the channel, the needles are equipped with a thin wire - a mandrel.

Injections and infusions should be carried out in strict compliance with all the rules for the prevention of surgical infection - for sterilization of instruments, injected fluids, preparation of hands and the operating field. Injections are diagnostic, therapeutic and prophylactic. Depending on the route of administration of the liquid, injections are distinguished: intradermal, subcutaneous, intramuscular, intravenous, intraarterial, intraperitoneal, intraosseous intracardiac, intrasynovial, etc.

Intradermal injections are performed mainly for the introduction of allergic drugs in the diagnostic study of animals for infectious diseases. Syringes (2 ml capacity) with a slider and special needles or needleless injectors are used. The needle is inserted into the thickness of the skin fold, captured by two fingers, parallel to the skin surface. Injection site: in large animals - the lateral surface of the middle third of the neck; in small ruminants, the tail fold; in pigs, the outer or inner surface of the ear; chickens have a beard.

Subcutaneous injections are the most common route of administration of aqueous (less often oil) solutions. Suspensions, hypertonic and irritating solutions, which cause the development of infiltrates and necrosis, are contraindicated for subcutaneous injection. The needle is inserted under the drawn skin fold in places with well-developed subcutaneous tissue: in horses and cattle - in the area of the lateral surface of the neck, dewlap; sheep - on the inner thigh; pigs - in the neck, at

the base of the ear, inner thigh; for dogs and cats - in the neck, chest, inner thigh; bird - in the back of the head and chest. The action of the drug occurs in 10 ... 15 minutes.

Intramuscular injections are less painful. In addition to water, you can enter oil solutions and suspensions. Irritating substances are contraindicated. Muscles are more abundantly supplied with blood than the subcutaneous tissue, and the drug is absorbed faster. In large animals, intramuscular injections are made into the posterior femoral muscle group, neck muscles, dewlap, triceps muscle of the shoulder; in pigs - in the neck muscles at the base of the ear, inner thigh, gluteal muscles, triceps muscle of the shoulder; in dogs and cats - in the posterior femoral muscle group, inner thigh, triceps muscle of the shoulder; in birds - in the area of the sternum and thigh.

For intravenous injections and infusions, only aqueous solutions are used, since suspensions and oily solutions can cause embolism. They resort to intravenous injections if you need to very quickly get a therapeutic effect, inject a large amount of liquid or if there are contraindications for administration by another route (tissue necrosis with subcutaneous or intramuscular injection, for example, chloral hydrate, calcium chloride, etc.). In a horse, the injection site is the jugular vein in the anterior third of the neck, where there are no valves of the vessel, or the external thoracic vein.

For cattle, drugs are injected into the external jugular vein or saphenous vein of the abdomen; pigs - into the large ear vein, pigs - into the saphenous vein of the abdomen, as well as into the cranial vena cava. In dogs, the saphenous vein of the forearm on the thoracic extremity and the small hidden vein on the pelvic extremity are available for injection; M9 needles 0840, 0625 are used; in birds, the saphenous ulnar vein near the elbow joint.

Puncture site of the saphenous vein in birds (marked with a cross)

There are general rules for intravenous injection. Large animals are fixed in a standing position, small ones - in a lateral or abdominal position. The central end of the vein in relation to the site of its puncture is clamped with a rubber band, hand or finger. The injection needle is placed on the skin at an acute angle, placing it parallel to the course of the vein with a cut outward. After puncturing the skin, lightly press the wall of the vein with the tip of the needle and pierce it with a sharp jolt. It is advisable to advance the tip of the needle into the lumen of the vein by a few millimeters, giving the needle a longitudinal position to the vessel. At the time of injection, the vein is released, and at the end, the puncture site is pressed with a finger. Make sure that no air bubbles enter the bloodstream. Small amounts of fluid can be administered to small animals from a syringe with a needle attached.

Needle position for vein puncture

Intravenous infusion of a large amount of liquid is carried out by various infusion systems, for which glass funnels, a Janet syringe barrel, a Bobrov apparatus, etc. can be used as containers. A rubber hose is attached to them, which has a nozzle at its free end for connecting to a needle. If the Bobrov apparatus is used to inject liquid by gravity, the rubber balloon is removed, and a hose with a needle is connected to a short glass tube. During infusion, the vessel is held with the neck down. Air from the rubber hose is displaced either by liquid from the system at the time of attachment to a needle inserted into a vein, or by a stream of blood. In the latter case, after attaching the hose to the needle, the vessel is lowered below the puncture site of the vein until the release of air bubbles completely ceases. The tourniquet is removed, and the system is raised above the puncture site. At the end of the infusion, the vein is squeezed again, as was done before the injection, to flush the needle with a stream of blood and prevent irritating fluid from getting into the paravascular tissue when the needle is removed. At the moment of removing the needle, the tourniquet is removed. If the liquid is injected with the Bobrov apparatus under pressure, the rubber balloon is connected to the short glass tube of the apparatus, and the hose with the needle is connected to the long one. During infusion, hold the device with the neck up.

Intra-arterial injections are performed to target the lesion. In large animals, medicinal substances are injected into the median and metatarsal external dorsal arteries in the treatment of purulent-necrotic processes in the distal extremities, into the common carotid artery to directly affect the lesion in the head and neck region, as well as into the abdominal aorta.

The general rules for intra-arterial injections are similar to those for intravenous injections, but the end of the vessel is not clamped, but peripheral to the puncture site. The position of the artery is determined by palpating the pulsation.

Intraperitoneal injections can replace intravenous injections, since the peritoneum has a well-pronounced resorptive ability. The injection point in cattle is determined in the right hungry fossa in the middle of the line drawn from the crotch to the last rib. The depth of the injection is controlled with a finger, guiding the needle caudo-ventrally. In pigs, it is injected in the region of the middle part of the left ileum. Small pigs, dogs and cats are punctured on the side of the white line between the navel and the pubic fusion.

Topic: Methods of introducing anesthesia and narcotic substances to farm animals

Pain reactions in the body of animals cause a variety of sensations. With pain, the processes of excitation and inhibition of the nervous system are disturbed, vascular tone increases sharply, breathing becomes more frequent, its rhythm changes, the secretion of the glands of the gastrointestinal tract is inhibited, metabolic processes are enhanced, a significant amount of adrenaline appears in the blood. Pain can cause traumatic shock, which is often fatal. The sensitivity of organs and tissues to

the pain reaction is different, the cornea of the eye, the skin in the region of the lips, the corolla, the interdigital fissure, the pads of the fingers in carnivores, the region of the abdomen, perineum, and external genitalia are very painful. Muscle soreness also varies. Particularly painful are the walls of the tendon sheaths, joint capsules, periosteum, mucous membranes in the area of the eyes, nasal and oral cavities, bladder, anus, spermatic cord, pleura.

Prolonged painful irritations sharply reduce the productivity of animals and the quality of products, the increase in live body weight is significantly reduced, especially in fattening animals.

In order to exclude painful reactions in the animal's body, at present, practically in any operation and in the provision of medical care, 2 main methods of anesthesia are used: general anesthesia, or anesthesia, and local anesthesia, or anesthesia.

Anesthesia (numb, make senseless) is an artificially induced sleep, which is accompanied by temporary loss of sensitivity, complete relaxation of skeletal muscles (relaxation), suppression of some reflexes, but at the same time the activity of the vital centers inherent in the medulla oblongata - respiration and cardiac activity - remains.

But not all drugs can cause the above reactions in the body. It depends on the dose of the substance used. It must be remembered that an overdose during anesthesia leads to the shutdown of these centers and the death of the animal. During anesthesia, it is necessary to take into account both the individual characteristics of the animal and their species sensitivity to narcotic substances.

According to the strength and duration of the action of the narcotic substance, a distinction is made between deep anesthesia, used in long-term operations, and superficial anesthesia, used in simple short-term operations.

Depending on the route of administration of the narcotic substance, inhalation and non-inhalation anesthesia are distinguished.

With inhalation anesthesia, a narcotic substance (ether, chloroform) is administered through the respiratory tract using masks. Non-inhalation drugs (alcohols and aldehydes - chloral hydrate, ethyl alcohol, etc.) are injected into the body, bypassing the respiratory tract (intravenously, into the rectum mixed with decoctions and oils, through the mouth with food or through a nasoesophageal tube, intramuscularly, subcutaneously, intraperitoneally , intraosseous).

Anesthesia can be simple (one-component), when one substance is used for it (chloroform, ether, chloral hydrate, etc.) and mixed, when a mixture of two or more substances is introduced (ether + nitrous oxide). With combined anesthesia, several substances are injected into the body sequentially (in different ways) at regular intervals (pentothal ether). This method of drug administration is sometimes called introductory and basic. For induction of anesthesia, first some substance is used, causing a short-term shallow sleep and sharply reducing sensitivity (induction anesthesia), and then, against the background of the action of

this narcotic substance, an additional drug of a longer and deeper action is administered, which gives a deep and prolonged sleep (main anesthesia) , at which the operation is started.

Distinguish between pharmacodynamic anesthesia, when pharmacological substances are used, and electron anesthesia (electrical anesthesia), when the effect on the brain is carried out by an electric current of certain parameters.

Before anesthesia, the animal must be prepared accordingly: prescribe a 12-24 hour fasting diet; in large animals, to free the intestines, rectum from feces, urine from the bladder. An important point of modern anesthesia is the pre-anesthetic pharmacological preparation of the animal - premedication, which facilitates the fixation of the animal, the conduct of anesthesia and allows you to reduce the dose of the narcotic drug. For this purpose, antipsychotics (drugs with a pronounced sedative effect) are administered, soothing, reducing the analgesic effect, muscle tone, arousal stage, reducing motor activity, reducing and causing a dream-like state, but not drugs.

In practice, antipsychotics are used to calm and immobilize strongly obstinate animals, before falling down, during loading, transportation, for prevention and stress relief.

With anesthesia, complications can occur at any stage. With local anesthesia, they are rare and can occur if the rules of asepsis are not followed when injecting the drug (hematomas, abscesses). In general anesthesia, the main cause of complications is errors in the technique of anesthesia and the accuracy of the dosage of the drug. Under anesthesia, excitement, sweating, vomiting, respiratory arrest, cardiac arrest, tympanic scar in ruminants are possible. If complications arise, urgent help is needed, consisting in stopping further administration of the drug, using artificial respiration, administering drugs that stimulate cardiac activity and mandatory constant monitoring of the animal in the stage of anesthesia.

Contraindications to anesthesia. The greatest difficulty and danger is the anesthesia of large animals, especially cattle. Therefore, deep anesthesia is used only in exceptional cases, bearing in mind that some narcotic substances give the meat a persistent smell. If an unfavorable outcome of the operation and the forced slaughter of the animal is possible, then in such cases it is better not to use chloroform or ether anesthesia.

For deep anesthesia, especially inhalation, old, with a feverish state of animals, with disorders of the functions of the cardiovascular system (myocarditis, endocarditis), kidneys, liver, respiratory tract should not be allowed. In case of exhaustion, anemia and pregnancy, only shallow anesthesia in combination with local anesthesia should be used. The same anesthesia is recommended for large animals, if they have cracks in the bones of the limbs, since after waking up from anesthesia, animals can cause themselves even more damage.

Cattle anesthesia

Oral alcoholic anesthesia - the animal is fed with a rubber bottle 40 ° ethyl alcohol at a dose of 1-3 ml per 1 kg of animal weight.
Intravenous alcoholic anesthesia - 20-30 ° alcohol is injected into the external jugular or saphenous vein of the abdomen at a dose of 1-2 ml per 1 kg of animal weight.
Atropine-chloral hydrate anesthesia according to Klochkov - 5-10 ml of a 1% solution of atropine sulfate is injected under the skin and after 15 minutes a 10% solution of Chloral hydrate is injected intravenously at a dose of 1 ml per 1 kg of animal weight.
Intubation potentiated anesthesia with controlled breathing according to Dmitrieva - a 2.5% solution of Aminazine is injected intramuscularly at a dose of 2.5 mg per 1 kg of body weight (premedication), after 1.5 hours a 1% solution of atropine sulfate is injected under the skin in a dose 0.5 ml per 1 kg of animal weight and intravenously - 10-15% solution of Chloral hydrate at a dose of 50-113 mg per 1 kg of animal weight and 2% Diplacin solution at a dose of 0.3 mg per 1 kg of weight animal; then the trachea is intubated and Ether is inhaled during the operation (periodically).
Equine anesthesia
Oral chloral hydrate anesthesia - the animal is fed a solution of Chloral hydrate (in a mash with flour or bran) at a dose of 9.0-12.0 g per 100 kg of animal weight.
Rectal chloral hydrate anesthesia - in a mucous broth, a solution of Chloral hydrate is injected into the rectum, freed from the contents, at a dose of 8.0-10.0 g per 100 kg of animal weight.
Intravenous chloral hydrate anesthesia - a solution of Chloral hydrate (10%) is slowly injected into the jugular vein at a dose of 8.0 g per 100 kg of body weight.
Combined chloral hydrate anesthesia - a solution of Chloral hydrate is injected intravenously at a dose of 3.0-4.0 g per 100 kg of body weight and then local anesthesia is applied in the area of the surgical operation.
Pig anesthesia
Thiopental sodium anesthesia - 5% drug solution is slowly injected into one of the auricle veins (15 mg per 1 kg of animal weight).
Aminazine stunning - a 2.5% solution of Aminazine is administered subcutaneously at a dose of 1 ml per 25 kg of animal weight.
Intravenous chloral hydrate anesthesia - a 15% solution of Chloral hydrate (on a 15% glucose solution) is slowly injected into the ear vein at a dose of 1 ml per 1 kg of body weight.
Sheep and goat anesthesia
Alcohol stunning - inside they give 40 ° alcohol in a dose of 2-3 ml per 1 kg of body weight.
Thiopental sodium anesthesia - a 5% drug solution is injected intravenously at a dose of 15 mg per 1 kg of body weight.

Anesthesia in dogs
Anesthesia in dogs
Inhalation anesthesia Before the operation, premedication is performed: chlorpromazine 1-2 ml of a 2.5% solution, diphenhydramine 0.5 ml, then 0.1 ml of atropine per 10 kg of body weight. With proper premedication, the dog becomes lethargic, drowsy in 10-15 minutes, negative reactions disappear, dryness of the nose and mucous membranes of the oral cavity is noted. Breathing becomes even, deep.

During this period, you can process the operating field (cut, shave, wash the skin). Aminazine can be replaced with morphine at a dose of 1-1.5 mg / kg. After its introduction, emptying of the stomach and intestines is noted (due to spasm of the sphincter muscles), which is of no small importance for further anesthesia. In very aggressive animals, for the purpose of premedication, intramuscular administration of sodium thiopental at a dose of 4-5 mg / kg over 30 minutes can be used. before the onset of anesthesia. After fixing the dog on the table, sodium thiopental 2-10 ml of a 2.55% solution is injected intravenously before sleep. Thiopental should be injected slowly, carefully until a deep inspiration appears, then the rate of administration should be slowed down still until the animal shows a convergent squint, and the eyeballs are closed by 1 / 3-1 / 2 by the third eyelid. At this time, you can intubate the animal (if possible, pre-enter 0.5-0.8 mg / kg listenone). Anesthesia is maintained with fluorothane in a dose of 0.1-0.5 vol.% Together with oxygen and nitrous oxide (in a ratio of 1: 2). If necessary, analgesia can be enhanced by fractional administration of fentanyl at 0.1-0.15 mg / kg every 20-30 minutes. Relaxants, if they were introduced, in the overwhelming majority of cases act for 1.5-2 hours. Usually this time is sufficient for complex operations.

Ftorotane can be replaced with ether; in this case, it is necessary to increase the volume of anesthetic supply and take into account the fact that ether is removed from the body for a longer time, and therefore, at the end of anesthesia, the supply of ether must be stopped earlier 15-20 minutes before the end of the operation.

The awakening period passes faster with fluorothane anesthesia. The endotracheal tube should be removed only after the restoration of adequate spontaneous breathing and the appearance of reflexes. With severe myasthenia gravis, proserin is administered. Very often, after awakening, tremors are noted as a result of hypothermia and the residual effect of drug blockade of the thermoregulation center. After the operation, the animal must be covered, warmed with heating pads. Attention should be paid to the color of the tongue, the cyanosis of which indicates a violation of pulmonary ventilation and gas exchange.

Non-inhalation anesthesia

Premedication is carried out according to the previous scheme. For a short-term small surgical intervention, intravenous administration of 25 ml of a 2.55% solution of sodium thiopental and an analgin 0.5-1 ml of a 50% solution (per 10 kg

of body weight) is sometimes sufficient, which makes it possible to carry out small surgical procedures within 15-20 minutes (catheterization of the bladder, opening of small abscesses, primary surgical treatment of wounds, etc.). The same anesthesia can be used for X-ray examinations, especially in excited, angry animals, with extensive skeletal injuries, in cases where the animal moves and does not allow an X-ray examination. Thiopental sodium or hexenal can be used for mononarcosis and in another variant: 1 g of one of these drugs is administered intrapleurally or intraperitoneally. Sleep comes in 35 minutes; the surgical stage of anesthesia in 5-10 minutes. and lasts up to 1.5 hours. Long-term drip infusion of 1% solution in 200 ml of 5% glucose solution is possible with the rate of administration of 30-40 drops / min.This method of anesthesia is quite simple and effective, but it is not very manageable, and the doctor must have sufficient experience to maintain a stable level of anesthesia.

Mononarcosis with ketamine when administered intramuscularly at a dose of 8-10 mg / kg allows for minor surgical operations within 25-30 minutes. Possible fractional intravenous administration of the drug at a dose of 2-4 mg per kg of body weight. After mononarcosis with ketamine, a state of psychomotor agitation is noted, which is removed by seduxen, diazepam. Marek Zakievich (1994) recommends the following variant of mononarcosis: intramuscular administration of sodium thiopental at a dose of 15 mg / kg with preliminary premedication with aminazine at a dose of 3 mg / kg.

Topic: Elements of a surgical operation. Methods for separating fabrics.

Separation of soft tissues. Disconnection of soft tissues is performed to create prompt access to the affected organ and tissues, as well as in the process of performing the operative technique itself, when it aims to remove pathologically altered tissues, neoplasms, or even normal organs (for example, the testis during castration).

Disconnection of soft tissues is carried out in three ways: by incision (dissection), spreading (stratification) or squeezing (pinching off). In the first case, the tissues are separated with a sharp object, and in the next two cases - with a blunt one. The choice of this or that method depends on the type and location of the tissue, as well as the nature of the operation.

Tissue incision. This method of tissue separation is the main one. It is widely used for operations on the skin, mucous and serous membranes, fascia and aponeuroses, muscles, nerves, blood vessels and internal organs.

Indications for incisions are very diverse, therefore, the methods of their implementation are also different. However, in all cases, it is necessary to respect the tissues and organs, to take into account the functional significance of the organ and its regenerative capacity.

Rational incisions must meet the following basic requirements: 1) be wide enough to provide free access to the pathological focus or organ; 2) not to disrupt the blood

supply and innervation of tissues in the operated area, that is, not to injure large vessels, nerve trunks, and excretory ducts of the glands passing in the incision zone; 3) not to cause excessive gaping of the wound, which makes it difficult to join its edges with sutures or slow down the healing of non-sutured wounds; 4) to provide free drainage of wound discharge during purulent operations. The size, shape and direction of the incision in each individual case depend on the anatomical and topographic features of the operated area, the nature of the disease and the chosen method of surgery.

The size of the incision should correspond to the depth of the pathological focus. The deeper the organ or tissue to be exposed or removed, the longer the incision of the skin and underlying tissues should be.

The shape of the incision is rectilinear, spindle-shaped and patchwork. Most often, rectilinear incisions are used, since they create the most favorable conditions for wound healing and are simpler than others in the technique of execution. Fusiform incisions are used with excess skin in the operated area (for example, during the operation of umbilical hernias, benign tumors, etc.) or in the presence of pathological processes in it (ulcers, fistulas, cicatricial changes, etc.). Flap incisions are used in plastic surgery and are sometimes used to create the most free flow of purulent secretions from deep wounds and perforated cavities.

The direction of the incision is chosen taking into account the creation of the most favorable conditions for wound healing (provision with a drain, etc.). In addition, the direction of the incision depends on the anatomical and topographic data of the operated area. On the lateral surfaces of the trunk and neck, vertical or close oblique incisions are usually used, and longitudinal incisions are used on the dorsal and ventral surfaces of the neck and trunk. The dissection of the muscles is carried out, as a rule, in accordance with the course of the muscle fibers, which prevents significant dehiscence of the wounds. In rare cases (anaerobic infection, malignant tumor), dissection of the muscles in the transverse direction is allowed.

Spreading of tissues. This method is often used to sever muscle tissue. Flat muscles move apart along the course of their fibers, and muscles connected by loose fiber - in the direction of the adhesion course. The method of expanding tissues is also used in the process of removing neoplasms, with a closed method of castration and a number of other operations.

The tissues are pushed apart with a scalpel handle, scissors jaws, fingers or gauze tampons, thereby preventing damage to blood vessels and nerves, eliminating excessive gaping of the wound.

Squeezing, or pinching, tissues. In some operations (castration, removal of tumors, etc.) for the separation of tissues and organs by? pinching off use special tools, such as bream, ekraser (Fig. 40), or impose a ligature.

Disconnection of bone tissue. Indications for the separation of bone tissue are bone diseases (necrosis, osteomyelitis, neoplasms, bone growths, etc.) and some joint lesions (purulent osteoarthritis of the phalanges of the fingers in cattle, etc.).
During operations, the following methods of separation of bone tissue are used: osteotomy - dissection of the bone with its complete separation; resection - dissection of a part of the bone along its length andrepanation - formation of an artificial hole in the bone. Osteotomy, accompanied by the removal of the peripheral part of the organ (limb), is called amputation.
Tissue separation tools. When separating soft tissues, cutting instruments (scalpels, scissors), tweezers, wound hooks and probes are used
Scissors (fig. 42) are also cutting tools. They are used when dissecting tissues deep in the wound, during operations on hollow organs (stomach, intestines, uterus, etc.), nerves and vessels, when suturing and ligating, cutting hair, etc. Scissors are straight (pointed, blunt and button-shaped), curved along the plane, curved along the edge, as well as for special purposes (eye, intestinal, etc.).
Tweezers (Fig. 43) are used to fix tissues during operations, to remove stitches and when dressing wounds. Surgical tweezers have sharp teeth on one branch of the bottom, and one on the other. Anatomical tweezers have corrugated brams without teeth.
Saws (arc, sheet, wire) are designed to separate bones during osteotomies.
Spoons and curettes are used for scraping bone and removing pathological granulation.
Raspators are chisel-shaped and serve to separate the periosteum from the bone; there are horizontal cuts near the cutting part on the spreader. On these cuts, the index finger is placed, and the handle of the raspatory is pressed into the palm of the hand.
Elevators, or lifters, are used to lift the bone and hoof horn

Topic: Ways to stop bleeding

BLEEDING AND METHODS OF ITS STOP Bleeding is constantly encountered in operative surgery, since not a single operation accompanied by a violation of the integrity of tissues takes place without damage to blood vessels and loss of blood. The larger the vessels, the more the threat of bleeding and its consequences has a more adverse effect on the body. Depending on the source of occurrence, bleeding can be arterial (scarlet blood flows out in the form of a pulsating stream, which stops after pressing the central end of the vessel); venous (the color of the stream is dark cherry, sometimes flows intermittently synchronously with breathing, decreases after pressing the peripheral part of the vessel), capillary (blood flows evenly from the entire surface of the wound) and parenchymal (occurs when the lungs, liver, spleen, kidneys are damaged, characterized by abundant blood flow ; like capillary, it is mixed). In addition, bleeding is distinguished external - with damage to the integrity of the integument and internal - with the outpouring of

blood into the internal closed cavities of the body; finally, the accumulation of blood in the interstitial spaces qualifies as interstitial (interstitial) bleeding; if at the same time a cavity appears in the interstitial spaces, then a hematoma is formed. According to the time of occurrence, bleeding is primary, arising immediately after damage to the vessel, and secondary, if it develops as a result of weakening and slipping of the ligature or the collapse of a thrombus. Bleeding that can occur as a result of erosion of the vessel wall during the decay of surrounding tissues is called arrosive. With prolonged and tight application of a hemostatic tourniquet, damage to vasoconstrictors may occur; developing bleeding after removing the tourniquet is called paralytic. Prevention of bleeding can be carried out by using general agents that increase blood clotting, and by local action on the vessels of the operated area. 70 To increase blood clotting, a good remedy is an advance transfusion of compatible blood: for large animals 500-1000 ml, for small animals up to 300 ml. Blood coagulability increases, in addition, from intravenous injection of 10% calcium chloride solution in the amount of 100-150 ml large and 2-4 ml small animals, normal horse serum, injected subcutaneously or intravenously in horses (100-150 ml). Bleeding of the operated area is achieved using a hemostatic tourniquet - a rubber tube or rubber band with a hook at one end and a chain at the other (Fig. 44, a).

It is easiest to apply on the limbs. Immediately before the operation, a tourniquet is wrapped around the limb several times above the operation site, where the neurovascular bundles are located among the muscles and cannot be damaged as a result of pressure. The best places to apply a tourniquet are directly above the wrist and metatarsal joints (b). The tourniquet can be successfully replaced with a canvas bandage, towel, etc. When the tourniquet is applied, the pulse is monitored distally from the tourniquet and stops tightening as soon as the pulsation disappears. The tourniquet is applied for 1-2 hours (in winter, it is reduced by half). If this period needs to be extended, then for some time the tourniquet is loosened, and then tightened and fixed again. Remove the tourniquet with a slow release. Abundant postoperative bleeding that occurs after removing the tourniquet is stopped by reapplying it for 5-10 minutes. Temporary stop of bleeding. When bleeding from small vessels, the easiest way to stop it is 71 Fig. 44. Hemostatic tourniquet (a) and places of its application (b) temporary pressing of the vessel through tissues with a finger or in a wound with a tampon. This can be easily done on the arteries of the horn, metacarpal arteries, etc. When bleeding from the branches of the carotid artery, it is sometimes exposed and an arterial clamp is temporarily applied to it. Bleeding from the branches of the abdominal aorta and iliac vessels in large animals can be stopped by pressing them through the rectal wall. A reliable means of temporarily stopping bleeding is the application of a hemostatic tourniquet, as well as short-term seizure and twisting of a bleeding vessel with hemostatic forceps. After a temporary stop of bleeding, urgent measures should be taken to

stop it permanently. The final stop of bleeding can be carried out using mechanical, physical, chemical and biological means, the former being the most reliable. Mechanical methods. The simplest of these is tamponade. Capillary bleeding is easily stopped with gauze pads applied to the bleeding surface. With profuse bleeding from the cavities, they are filled with gauze tampons and gauze bandages. For this, Mikulich's tampon is especially suitable - a square napkin of the corresponding size made of gauze folded in half, in the center of which either a gauze tape is sewn or a thread is reinforced. With a forcepsang, a napkin is inserted into the cavity, then carefully filled with gauze-cotton swabs, trying to evenly distribute them in order to create appropriate pressure on the bleeding vessels; the tape of the tampon is taken out of the wound. Often, to hold this large tampon in the wound, the edges are brought together with temporary sutures, which are removed on the 2nd-4th day. The tampon is removed by the end of the string after first freeing it from small tampons. For better separation of tampons, they are moistened with a solution of hydrogen peroxide. Twisting the vessel (torsion) is one of the most common methods of mechanical arrest of bleeding. At the same time, they often use Kocher and Pean's hemostatic tweezers.

The first of them has teeth at the ends of its branches, which easily grip the vessel along with the tissues. The second has no teeth, which makes it possible to capture the vessel stump in isolation, without further damaging it. Grasping the stump of the vessel with tweezers, it is slightly tightened and, having made several turns around the longitudinal axis, the tweezers are removed. Sometimes during the operation, severely bleeding vessels are clamped with tweezers and left in the wound for a certain period; twist them before removing. When bleeding from a large vessel in the depth of the wound, when it cannot be stopped by other methods, the applied forceps are left in the wound for 12-24 hours, and sometimes even for several days. In the same way, you can stop bleeding from the spermatic cord. Vessel ligature is the most effective way to stop bleeding. It consists in tying up a bleeding vessel with a thread (silk or catgut). First, the vessel is grasped in the wound with tweezers and slightly tightened, and then a ligature is applied below the tweezers, tying it with a surgical knot. The ends of the threads are left with a length of 0.5 cm. If the vessel cannot be isolated from the tissues, then for the convenience and reliability of the ligation, it is pricked with a needle and thread, capturing part of the surrounding tissues. In exceptional cases, the ligation of the vessel is used throughout, that is, away from the place of bleeding. For this it is necessary to expose the great vessel in the central direction from the place of bleeding (Fig. 46).

Physical methods for stopping bleeding are based on the use of cold or heat. Cold in the form of douches, lotions and irrigations with cold water with ice, and sometimes with clay Fig. 45. Hemostatic tweezers: a-Peana; b - Kocher; c - arterial clamp is used for bleeding in the joint cavity, in the thickness of tissues, etc. They

also use a bladder of ice water. As a heat in veterinary practice, you can widely use red-hot metal, which is used to cauterize the bleeding area. The resulting scab from tissue carbonization contributes to the formation and retention of blood clots (see the section "Cauterization"). Bleeding on small surfaces is stopped with an electric knife. Sometimes hot water tampons are applied to bleeding surfaces.

Chemical methods are based on the use of local pharmacological substances. For example, with tampons, a 3% solution of hydrogen peroxide, turpentine (Caution! Skin burn!), Etc. are applied to the wounded surface. During operations in the nasal cavity and paranasal sinuses, on the larynx and perchymal organs, tampons soaked in adrenaline 1: 2000 are used or 10-20% antipyrine solution.

B iologichesk and e s about s, first of all, have a general effect, increasing blood coagulability. For this, mainly horse serum is used. Use it topically with tampons. In addition, due to the presence of thrombokinase, pieces of omentum, adipose tissue, muscle, and fascia transferred to the bleeding surfaces also have a hemostatic effect. To strengthen them, they are hemmed with catgut. In addition, catgut itself, due to the thrombokinetic substance contained in it, is an effective means of stopping bleeding. Its skeins are placed on bleeding areas, in wounds, anatomical cavities, where they are kept by bringing together (sutures) the edges of the wounds or the walls of the cavities. To stop bleeding, hemostatic sponges containing a thromboplastic substance and penicillin (biological antiseptic swab) have been proposed.

Topic: Seam Technique and Fabric Joining

To close operational and accidental wounds of the skin or walls of cavities in order to restore their integrity and create conditions for a favorable course of the healing process, one of the existing methods of joining living tissues is chosen. Tissues are connected by applying thread and staple sutures (bloody methods) or by bloodless methods without the use of suture material. Wounds with signs of a developing wound infection, in the presence of foreign bodies, dead tissue scraps and mechanical contamination are not subject to closure. Materials and tools for joining fabrics. To connect soft tissues, non-absorbable threads (silk, linen, lavsan, dacron) and absorbable (catgut, occelon threads) are used, as well as metal brackets and cyacrine surgical glue. Suture threads are mono- and polyfilament. To pass the suture material through the tissue, use

x and rur gichesk and e and gly. They are straight and curved, round and triangular, have a springy fork-shaped eyelet. Round needles are used for operations on internal organs, and triangular needles are used for sutures on the skin, muscles, fascia. To pass the threads around the vessels and other organs, there are ligature needles with a massive handle and an extended tip, in the center of which there is an eyelet. A. Kovacs proposed a needle, in the handle of which a coil with suture material is mounted, which makes it possible to suture the skin with a single charge

of the needle with a thread. Currently, needles with embedded threads, the thickness of which does not exceed the diameter of the needle itself, are used for single use (Fig. 47).

Needles are designed to fix the needle at the time of its passage through the tissue and transfer the movement of the surgeon's hand to the needle. The most common needle holders Troyanov, Mathieu, Gegara (Fig. 48), differing in design

Continuous sutures are applied in the absence of severe gaping of skin wounds, with immersed sutures on the abdominal wall. Most often, a furrier suture is used. When it is applied, the first stitch is tied in a knot near the corner of the wound at the point where the needle exits. Subsequent stitches are applied at the same distance from the edges of the wound. To prevent the thread from loosening, the assistant picks up the thread with each needle thrust and pulls it slightly, ensuring a tight and even alignment of the wound edges. On the last stitch, a double end of the thread is pulled through the edges of the wound and tied with a single one (Fig. 58, a). The mattress seam is applied to fabrics where seam stitches can be cut (b). A purse string suture (c) on the skin is used on small rounded wounds, as well as for temporary closure of natural openings. The thread is carried out parallel to the edges of the wound or hole, alternating the punctures and punctures of the needle through the fold captured by the tweezers, the ends of the thread are pulled together and tied.

Technique When healing by primary intention, the sutures are removed on the 7-8th day, with strong tension of the edges of the wound - on the 10-12th day. Surgical tweezers slightly raise the knot, cut the thread near the skin with scissors and remove it. With a continuous seam, each stitch is crossed and removed separately, Fig. 59).

The bowel sutures are applied to the hollow organs covered with a serous membrane. The principle of the intestinal suture is based on the rapid adhesion of adjoining serous membranes by the fallen out fibrin and their adhesion, which leads to a high tightness of the suture. The healing process at the level of muscle and mucous membranes is slower. The prototype of the modern intestinal suture is the Lambert suture, used: in the form of an interrupted or continuous suture, both independently and in combination with other sutures. For suture, the needle is inserted from the side of the serous membrane at a distance of 5-8 mm and withdrawn at a distance of 1-2 mm from the edge of the intestinal wall wound, the other edge of the wound is captured in the reverse order. The needle and thread, while passing through the thickness of the muscular membrane. When tying the ends of the thread, the serous membranes touch, and the edges of the wound are screwed in (Fig. 60). Pirogov's double-row suture - Cherni is placed on the wall of the bladder. When the first row is applied, the needle is inserted 82 from the side of the serous membrane, and it is brought out into the lumen of the wound between the mucous and muscular membranes, then it is injected between these membranes

of the other edge of the wound, and punctured on the serous surface (Fig. 61). After tying the knots, a second row of Lambert suture is applied. Schmieden's suture is used in operations on the rumen, abomasum, and large intestine. This is a continuous stitch that starts with the first knot, just like a furrier stitch. The rest of the seam stitches are performed by making an injection from the side of the mucous membrane and piercing all layers of the organ wall. The assistant maintains the thread in a state of tension, which contributes to the screwing of the edges of the wound and the contact of the serous membranes (see Fig. 60.3). As a second row, in this case, a serous-muscular suture according to Lambert is applied, providing a high level of wound tightness. Plakhotin-Sadovsky's seam resembles a mattress seam. It differs from it in that each next stitch of the other side is positioned, stepping back by 1/3 of its length in relation to the previous stitch.

When the thread is pulled together, the suture completely closes the previous row of the suture, providing a wide contact of the serous membranes (see Fig. 60.4). This seam can also be single-row. 83 Fig. 58. Continuous seams: a - furrier; b - mattress: a - purse string Fig. 59. Technique for removing the seam Fig. 60. Intestinal sutures: / - scheme of one-story Lambert suture; 2 - continuous Lambert seam; 3 - Schmiden's seam; 4 - Plakhotin-Sadovsky seam; a - suture; b - view of the suture after tightening The purse-string suture is used to close a round wound or intestinal stump. When applying all intestinal sutures, depending on the size of the lumen of the organs and the thickness of its walls, injections and vykolg needles are made at a distance of 2-8 mm from the edges of the wound. S u w h and l n s sutures are applied to the tendons at. complete relaxation of the damaged muscle after anesthesia or injection of novocaine into its thickness. As a suture material, sublimate silk or lavsan thread is used. Before suturing, the ends of the tendon are refreshed and held with styptic tweezers. The thread is first passed through the thickness of one end of the tendon at right angles to its longitudinal axis, and then both ends of the thread at an angle of 45 °. The other end is stitched in the reverse order and both ends of the tendon are pulled together, the ends of the threads are tied (Fig. 62, a, b, c). After suturing the skin wound, a plaster cast is applied to the limb.

Tikhonin's suture is used for rupture of tendons in large animals (d). The ends of the tendon are connected with three circular stitches overlaid in three different planes. The first stitch is applied at a distance of 0.5 cm from the edge of the gap, the second and third - at a distance of 1-1.5 cm. The procedure is completed by applying a plaster cast to the skin and special shoeing. The plaster cast is removed in large animals on the 30-40th day, in small animals - after 15-20 days.

The joint is rarely used in veterinary practice. The main principle of this suture is to ensure the contact of the endothelial layers of the two connected ends of the vessel or the edges of its wound, which are fixed with holders for stretching. The

ends of the vessel are freed from the surrounding tissues and brought together with a continuous suture made of fine silk (Fig. 63).

SH ovne r v a. The ends of the nerve are cut off, precisely matched with each other and brought together, superimposing several stitches of an interrupted suture on the epineurium. Fine needles and silk or catgut threads are suitable for suturing. When tying the threads, they try to prevent the twisting of the nerve along the longitudinal axis. The fascia and skin are sutured using one of the methods described.

The connection of bones (osteosynthesis) is performed in various ways, depending on the location and nature of the fracture. Osteosynthesis is more efficient in small animals. For long oblique fractures, it is advisable to apply wire ligatures. The soft tissues are dissected, exposing the fracture site, the fracture surfaces are carefully brought together, several ligatures of soft (nickel, brass, etc.) wire are drawn around the fracture site with a Deshan needle; the ends of each ligature are twisted and taken out of the skin wound, which is sutured (Fig. 64, a). A plaster cast is applied to the limb. The bandage and ligatures are removed after callus formation (6-8 weeks). For transverse and short oblique fractures of tubular bones, stainless steel pins are used for osteosynthesis. In the area of the pineal gland, soft tissues are dissected, a canal is drilled into the bone along the longitudinal axis, a pin is inserted into it, and the bone fragments are carefully compared (b). Sutures are applied to soft tissues and skin, and a plaster cast is applied to the limb. After 8 weeks, the pin is removed and the plaster cast is removed. Recently, absorbable posts have been proposed. Fractures of the protruding parts of the bones (tubercles, processes) are connected with screws. The soft tissues are dissected, perforated 85 Fig. 61. Pirogov-Cherni seam Fig. 63. Vascular suture: a - with a lateral defect; b - circular seam Fig. 62. Tendon suture: a, 6, c - according to Amman; d - according to Tikhonin, a channel in matched debris, into which a screw is screwed (c). Sutures are applied to soft tissues. The screw is removed after 8 weeks. With all methods of osteosynthesis, a course of antibiotic therapy is prescribed. C l e and v and n and e t. Along with the described methods, associated with secondary tissue injury during the suture application, there are bloodless methods of tissue joining without the use of suture material: joining the wound edges with adhesive tape, tissue gluing, ultrasonic welding of bones. With a seamless connection, squeezing of fabrics by seams is excluded, a high tightness of the connection is ensured. For gluing soft tissues, cyanoacrylate adhesive compositions are used: cyacrine CO-4, CO-9, CO-100, MK-6, etc. In the body, cyanoacrylate glue undergoes biodegradation and is gradually replaced by connective tissue. Cyacrine is stored in disposable polyethylene ampoules at temperatures from 0 ° to 5 ° C. When performing operations on hollow organs, holders with double stitching of the serous and muscular membranes are applied at the ends of the alleged incision of the organ wall. Provide hemostasis before gluing, edges

Topic: Desmurgy. Soft bandage technique

Desmurgy - the doctrine of bandages (Greek desmos - bond, bandage, ergon - business) - studies the methods of applying bandages, the forms of application of the bandaging material and its properties. A dressing is understood as the application of a dressing to a wound or any part of the animal's body in order to protect it from secondary trauma, infection and to stop bleeding. Dressings are often an act of therapeutic intervention, for example, a suction dressing on wounds, a warming compress for closed injuries, hardening dressings to immobilize a part of the body or organ in the desired position in case of fractures, dislocations, etc. ... When applied to open lesions, it must have good suction and evaporation capacity. A material that does not absorb moisture is used only in cases where the dressing should not absorb liquid. The best dressing material is gauze, cotton wool, calico, calico, oilcloth, cellophane. Classification of dressings and the technique of their application. According to the purpose, the dressings are divided into the following types. The first aid is used to protect the wound from repeated injury and secondary infection. A gauze napkin is applied to the wound, fixing it with a sling-like, kerchief or bandage bandage. An impermeable (occlusive) band is applied in the presence of a penetrating wound into the chest or abdominal cavity, if it is necessary to completely prevent the penetration of air, microflora, dust particles and other foreign bodies into the cavity. To do this, the first layer of the dressing, that is, a gauze napkin, is impregnated with a fat emulsion and the wound is covered. A layer of absorbent cotton is laid on top of the napkin and everything is fixed together with an adhesive bandage made of airtight fabric (oilcloth, cellophane, etc.). The suction dressing has the purpose of absorbing the wound discharge into the dressing material and continuously removing exudate, microflora and tissue decay products from the wound. It is shown in the first phase of the course of the wound process. The bandage is three-layer. The first layer is suction, represented by a gauze pad or gauze pad, loosely filling the wound cavity; it absorbs the wound discharge and, according to the laws of capillarity, moves it to the next layer. The second perceiving layer consists of absorbent cotton wool; its thickness depends on the quantity and quality of the wound discharge, but in a loosened form it should not exceed 1 cm. Vata absorbs liquid from the first layer and moves it into the next layer. The third (upper) layer is evaporating, must hold the underlying layers in the desired position (by bandaging or other form of fixation) and evaporate the absorbed liquid into the environment. This layer consists of rare-loop gauze.

A good suction is recommended if an increased suction action is required. Its first layer, that is, a gauze compress or gauze drainage, is impregnated with hypertonic salt solutions (5-10% solution of sodium chloride and sugar, 20% solution of magnesium sulfate or sodium sulfate). Otherwise, this dressing is not significantly different from a dry suction dressing. The same band is used to apply uniform

pressure on any area of the animal's body, for example, to stop bleeding. Immobilisation of the band and aim to create, under certain indications, a state of immobility for the diseased focus, which is a prerequisite for effective treatment.

The warming com press - the banding causes a local increase in temperature in any area of the animal's body. Its first layer consists of a fabric folded in several rows and soaked in water at room temperature, 40-50% alcohol or 5% solution of bicarbonate of soda. The fabric is lightly wrung out and covered with the intended area of the body. The first layer of the compress should extend from all sides beyond the affected area by 2-3 cm. This layer is completely covered with a second layer of material impervious to water and air (compressor oilcloth, parchment paper, cellophane, etc.). The third layer consists of materials that retain heat well (non-fat compressed cotton wool, cloth, etc.). It should cover the second layer by several centimeters in all directions. All of these layers are held in position with a bandage or some other bandage. Compresses are replaced after 4-6 hours (with breaks for 2 hours).

This technique is repeated with each subsequent turn of the bandage (each subsequent round covers half the previous one). The folds of the bandage should fall on the same vertical line. The bandage is finished with circular tours. Creeping bandage (d) - the bandage is helical from bottom to top, and each subsequent round is spaced from the previous one by the width of the bandage. It begins and ends in the same way as spiral dressings. The lining material is fixed with a creeping bandage when immobilizing bandages are applied. The eight-shaped bandage (d) is called so according to the peculiarity of the bandage's movement, which describes the eights; it is used when bandaging parts of the body with an uneven surface, for example, fetlock or wrist, joints, where the spiral bandage is usually not held. Bandaging begins below the joint in circular rounds, and then the bandage is led from left to right obliquely upwards. Above 105 Fig. 83. Bandage bandages: a - circular; b - spiral-shaped c — with an inflection; d — creeping; d - the eight-joint is again applied with several circular rounds and the bandage is directed obliquely from top to bottom, so that over the joint it crosses the previous round (going from bottom to top). In the future, these techniques are repeated until the bandaged area is completely closed, making sure that each subsequent round in its oblique part covers the previous one by 2/3 of the width. It should be noted that this bandage is not held for long on the wrist joint, since even slight flexion of the joint leads to the bandage breaking. Bandage on the horns. Bandaging begins with several circular rounds on a healthy horn. From it, a bandage is led to the diseased horn, previously covered with gauze, and 2-3 circular rounds are applied at the base of it. After that, they proceed to spiral bandaging with bends, starting from the base of the horn to its top. The latter is closed with a bandage fold and spiral tours lead in the opposite direction (from top to bottom to the base of the horn), ending the bandage by fixing it on a healthy horn. Hoof bandage. On the raised limb, the

concavity of the sole is filled with a cotton-gauze compress. Several circular rounds of the bandage are applied to the rim or puto, while in the heel part of the rim, the initial end of the bandage 20-25 cm long is left free to fix all subsequent rounds. Then the bandage is transferred through the corneal wall to the sole and at the level of the crumbs it is circled around the free initial end of the bandage, which the assistant keeps all the time in a taut state. From here, the bandage is directed back through the sole and the horny wall to the corolla, while covering half of the previous round. Having reached the heel, the bandage is again circled around the free initial end of the bandage and again directed through the wall to the sole and rim. The bandaging is continued in this order until the horn shoe and the rim are completely closed, after which both free ends of the bandage are tied together (Fig. 84). To protect the bandage from contamination and rapid wear, the bandage is protected from above with a tarpaulin or oilcloth. The bandage is fixed with braid or twine (fig. 85). A bandage on the tail is applied when it is injured and to prevent contamination of wounds in the region of the croup, thigh, perineum (during castration) (Fig. 86). Bandaging with kinks begins at the root of the tail, so that the bandage holds well, a strand of hair folded in a loop is placed on top of each round, it is bandaged with the subsequent turn of the bandage.

To better hold the bandage and save the bandage, the hair of the tail is folded below the turnbuckle in half with a loop, and the bandage is continued up to this loop and ends like a conventional spiral pattern. 85. Protective bandage on the hoof Fig. 86. Bandage on the tail knit. A bandage is attached to the loop, by means of which the tail is fixed to the horse's neck. Special dressings are made of coarse calico, canvas (gauze is undesirable) and cut them out in relation to certain areas of the animal's body, where other dressings are poorly held.

The red band and are based on a support device (usually of wire), which serves to fix the dressing in the forearm, lower leg, tarsal (hock) joint, occiput, withers and back. A frame bandage on the forearm area (according to Andreev) holds the dressing material well in the lower leg area. The frame is woven from four pieces of soft wire, the length of which should correspond to the length of the forearm or lower leg of the animal (two shorter wires should be located on the inner side of the forearm). A rubber tube 2-3 cm shorter than the wire is put on each of them to prevent trauma to the skin. At both free ends of each wire, loops are formed through which two rubber tubes are threaded. The length of the latter is made slightly larger than the circumference of the forearm (lower leg), so that it is enough for tying a knot. Before applying the frame, the forearm (lower leg) is wrapped with 2-3 layers of dressing material, on top of which the frame is applied. After that, the free ends of the rubber tubes are tied together. To prevent the rubber tubes from pressing on the skin and underlying tissues, the dressing material is released 1.5-2 cm down and up outside the frame. The strength of the frame and the non-displacement of the dressing are further increased when it is bandaged

from above with a spiral dressing, after having wrapped the dressing on the frame, which protrudes up and down from the rubber tubes (Fig. 87). A frame bandage on the tarsal joint (according to Andreev) fixes the dressing along the line above and below the calcaneal tubercle, which makes the bandage well kept not only at rest, but also when the animal moves. The bandage consists of: 1) a rubber ring 4-8 cm in diameter and four gauze ribbons tied to it at an equal distance from each other. The ring is made from a rubber tube (fig. 88); 2) a cotton-gauze compress folded in half, sufficient in length and width to cover the entire joint in 1.5-2 layers. After the compress, a rubber ring is applied to the flexor surface of the joint, the two upper rubber bands of which are guided over the napkin along the outer and inner surfaces of the distal end of the lower leg and fixed in Fig. 87. Skeleton bandage on the forearm of the Achilles tendon. A second pair of straps is attached below the joint on the plantar surface.

Glue bands are attached with special glue directly to the skin or coat and can be applied to almost any part of the animal's body. They have a number of advantages over other dressings: they are simple in application technique, require a minimum amount of dressing material, do not constrain the organ and do not interfere with normal blood and lymph circulation, and allow free observation of the wound circumference (Fig. 89). Allow, without removing the dressing, to change the dressing material directly adjacent to the wound surface. They use several types of glue. Casein glue (factory made) brands SP-104, SP-105 - gray or white powder. When mixing 1 part of glue and 1.5 parts of water in the first 2 minutes, a thick mass is obtained, which then begins to liquefy and after 4 minutes acquires a creamy consistency, suitable for use. At a later date (10-15 minutes), the mass thickens and loses its adhesive properties. This glue fixes the bandage even to a damp coat and holds it for up to 15 days. In addition to gauze, glue adheres well to dense fabrics, as well as paper and cellophane. The dressing can be easily removed with hot soapy water. Zinc-gelatin glue (Unna paste) is prepared according to the recipe: zinc oxide 30.0, glycerin 60.0, gelatin 90.0, distilled water 150.0. Gelatin is dissolved in water heated in a water bath to 100 ° C, after which glycerin is added and zinc oxide is added in small portions with constant stirring. Glue 109 Fig. 88. A hot bandage on the tarsal joint (the color of coffee with milk) is applied to the coat and the bandage is immediately pressed against it. The dressing dries up in 2-3 minutes and holds well for 10-12 days. Remove it with hot water. Cured glue can be reused after reheating. Collodion is a viscous solution of colloxylin in a mixture of alcohol and ether, after evaporation of the solvent it forms a dense film. It is used to protect an operating wound or puncture site of an anatomical cavity (chest, abdominal, joint capsule). To do this, the wound is covered with a cobweb-like layer of absorbent cotton wool, on top of which it is evenly applied to collodiy.

Topic: Hard dressing technique

Immobility and ligation provide complete immobility of a part of the animal's body and create rest for the damaged organ. They are indicated for bone fractures, ligament and tendon ruptures, dislocations, etc. To create complete immobility of the organ, especially in fractures, the bandage must necessarily capture one joint above and one below the injury site. Immobilizing dressings include splint and hardening (plaster). Splint bandages are based on a supporting device in the form of various types of splints, which provide temporary immobilization of the limb in the case of the above injuries. To prevent disorders of blood and lymph circulation and the development of edema, tissue displacement and repeated injuries to reduce pain, it is advisable to apply a splint bandage as soon as possible after injury. However, it does not create a complete immobilization of the limb and therefore is used only until it is replaced with a more reliable hardening bandage. This dressing consists of a lining material, splints and fixation devices. For the lining material, use fat-free cotton wool, tow and other improvised means. Tire dressings are made of soft wire, tin, plywood, splint (linden bark), cardboard and other material. Of the factory-made wire tires, Cramer's ladder tire dressings and mesh dressings meet the requirements of veterinary desmurgy (Fig. 90). When applying a splint, the limbs are given a slightly bent position at the joints. The skin of the immobilized area is covered with a gauze pad. An even layer of non-fatty cotton wool 1 - 1.5 cm thick is laid on it (the bone protrusions are covered with a thicker layer). The lining material is fixed with a creeping bandage over which pre-fitted splints are applied; wire ^ thorns are placed only on the dorsal and volar (plantar) sides; plywood, popular prints and others — from all four; to prevent trauma to the skin from the ends of the tires, make them 4_5 cm shorter than the lining material. The protruding lining material from the top and bottom is wrapped around the ^ ends of the tires. The latter are held in place with a spiral bandage or other means of fixation. The Thomas splint is used in dogs to fix fractures of the upper links of the extremities. One of its versions is made from soft wire with a cross section of 5-10 mm, the length of which depends on the size of the animal. In the middle part of the wire, a ring is formed, corresponding to the girth and shape of the upper links of the thoracic or pelvic limb. Along the length of the limb, the free ends of the wire are bent and connected together. The made frame is given the outline of the limb. After the fracture has been repositioned with special bandages applied in the upper and lower parts of the limb, the frame is fixed, creating 111 Fig. 89. Preparation (a) and application (b) of an adhesive bandage Fig. 90. Wire bandages: a - mesh; b - Cramer immobility of broken bones (Fig. 91). This entire procedure is performed under general anesthesia. This splint can be used after applying a plaster cast. Plaster casts are used to immobilize the limb in cases where the nature of the injury or disease requires a prolonged stay of the organ in conditions of complete immobility. Before applying a plaster cast, prepare everything necessary for this operation: plaster cast bandages, lining material, splints, dishes with warm water.

In veterinary practice, the bandages are manually cast. A gauze bandage is placed on a table covered with oilcloth and gypsum sifted through a sieve is rubbed into the expanded part of it with a hand or a spatula so that the entire surface of the gauze mesh is filled with powder. The gypsum part is rolled up loosely and the next section of the bandage is cast until the whole of it is processed.

A standard bandage 7 m long is cut in half and cast in 2 steps, since when the whole bandage is wetted, it is poorly saturated with water and becomes unsuitable for applying a bandage. As a lining material, use is made of non-degreased gray cotton wool or cotton-gauze compresses (a layer of fluffy gray cotton wool 0.5-1 cm thick is placed between two layers of gauze of the appropriate length and width). For a plaster cast, splint dressings made of soft wire (mesh or ladder) are most suitable: they can easily be shaped to match the contour of the bandaged organ, with all its protrusions and irregularities. The splint in the bandage gives strength to the hardened mass of gypsum, so it is adjusted to the organ with maximum care and, together with the bandage, they start modeling so that the latter fits well the immobilized area: bandages that are too loose do not ensure immobility of the organ, and too tight can cause impaired blood and lymph circulation , nervous disorders and ultimately lead to limited or extensive necrosis. The condition of the corolla is used to judge the nature of the blood and lymph circulation and how correctly the bandage adheres to the immobilized area. In the area of the limb to be immobilized, including the adjacent joints, the lining material is evenly spread and strengthened with a creeping bandage. The latter is covered with plaster cast bandages. For wetting, bandages (no more than two) are dipped into a basin of warm water and kept there until the release of air bubbles stops, which indicates the end of soaking. Then the bandage is removed from the basin and the excess water is squeezed out of it between the two palms. The bandage intended for the first layer of the dressing is squeezed a little harder to prevent the lining from getting wet. The outer free end of the bandage up to 10-15 cm long, from which the gypsum is usually washed off during wetting, is cut off. After that, the plaster bandages are applied in spiral rounds from the bottom up and back, leaving the lining material to protrude 4-6 cm down and up from the bandage. The entire immobilized area of the limb is covered with 6-8 layers of bandage, preventing it from twisting and forming folds. During bandaging with a moistened palm, the hands stroke (simulate) the bandage along the bandage, trying to give it a shape that matches the contour of the organ. For strength, gypsum gruel is spread on the surface of each layer during modeling.

In a splint-plaster bandage, splint bandages are smeared (after covering the limb with 3-4 layers of plaster cast bandage) using plaster gruel, which should fill all the smallest gaps and spaces between the splint and the bandage. Only in this form do the splint bandages adhere all the way to the bandage, exert uniform pressure on it and increase its strength. The lining material protruding from the bottom and from

the top of the bandage is tucked onto the outer surface of the splint, thereby preventing the formation of pressure ulcers and skin necrosis. Smeared splint bandages are additionally covered with 3-4 layers on top. 91. Thomas's tire. The stages of making and applying a bandage to the chest limb, all the time subjecting the bandage to modeling. In this case, the cotton-gauze rollers are left 0.5-1 cm free of gypsum. The dressing is finished by rubbing dry talcum into it, which helps the gypsum to dry quickly. The bandage hardens in the first 5-10 minutes, and it acquires sufficient strength after 1-2 hours. During this period of time, all measures are taken so that the animal does not worry and does not damage the bandage. The dressing dries completely after 24 hours. The plaster dressings can also be non-lining, fenestrated, bridge-like, folded, etc. Remove the plaster dressing with special scissors or saws (Fig. 92). If there are no such scissors, they are replaced with ordinary straight scissors, but in such cases it is necessary to first soften the bandage along the incision line with a hot saturated solution of sodium chloride or a strong solution of vinegar.

Topic: Anatomical and topographic structure of the head. Pain relief of the head nerves

General topographic data. The border between the head and neck is defined by a segmental plane drawn along the posterior edges of the mandibular branches. The head area is divided into cranial and facial sections, which are delimited by a line running along the posterior edges of the orbits, then along the upper edge of the zygomatic arch to the posterior edge of the lower jaw branch (Fig. 93).

On the face of the head of large animals, the following landmarks are easily determined: in cattle, the buccal tubercle, in the horse, the facial crest. In the same animals, the jaw joint, the naso-maxillary and intermaxillary angles and the angle of the lower jaw, the infraorbital and chin foramina, the anterior edge of the external masseter muscle are easily probed; in addition, the abdomen of the special upper lip lifter, the vascular notch, and the angular vein of the eye are well contoured under the skin in the horse.

The black area in cattle is flat, and in the horse a somewhat convex area. On it, the occipital (in cattle, the posterior frontal or inter horn with horny processes) and the external frontal ridges, the zygomatic process of the frontal bone and the temporal fossa are probed on it. At an equal distance between the orbit and the median line of the head in cattle, the supraorbital foramen and the supraorbital groove are groped. In the horse, the groove is absent, and this opening is at the level of the medial edge of the orbit. The surface of the entire head area is delimited into areas shown in Figures 94 and 95. Zones of cutaneous innervation (Fig. 96). The entire skin of the head region in cattle and horses, with the exception of the posterior lower parts of the lower jaw and partly the area of the auricles, is innervated by the branches of the trigeminal nerve (item trigeminus), which is further divided in the cranial cavity into the following three branches: the orbital nerve (item

opthalmicus) comes out in a horse through the orbital fissure, and in cattle through the round-eye opening. It has branches: the lacrimal nerve (in ruminants it gives off the horn nerve), frontal, nasal (its branches are the ethmoid and subblock nerves); Innervation is carried out in the oral region by the dorsal branches of the external nasal nerve (from the infraorbital nerve), and in the aboral - by the subblock nerve. The nasal cavity opens with nostrils and ends with choanas. Along it is divided by the nasal septum into two halves. In cattle, the nasal septum does not reach the aboral part of the nasal cavity. Attached to the lateral walls of the nasal cavity, the dorsal and ventral turbinates divide each half of the nasal cavity into the dorsal, middle and ventral nasal passages. The last one is the largest. A common nasal passage is formed between the nasal septum and the concha, with which the first three passages merge. The posterior part of the middle nasal passage in a horse is connected with the aboral part of the maxillary sinus by a small opening, the naso-maxillary entrance, and the ventral concha is connected with the oral part of this sinus by a narrow slit. In cattle, the ventral turbinate is divided by a longitudinal septum into two floors: the dorsal one, which communicates with the middle nasal passage, and the ventral one, with the ventral nasal passage. In the dorsal turbinate of a horse, two sections are distinguished, formed as a result of its division by a transverse septum; the oral department is called the curl, and the aboral one is called the sinus. On the wing fold of the ventral nasal concha at a distance of 5-8 cm from the nostril in ruminants there is an outlet of the lacrimal canal. In horses, it (sometimes double) opens behind the edges of the nostril on its ventral wall.

The blood supply to the inner surfaces of the nasal cavity is carried out by the ethmoid, aboral nasal and dorsal branches of the great palatine artery. Venous plexuses are located under the mucous membrane in the area of the nasal septum and the bottom of the nasal cavity.

Innervation with a lis and a tubercle is provided by the branches of the cuneopalatine and ethmoid nerves. Between the nostrils of ruminants is the nasolabial mirror — a patch of skin extending from the upper lip. It is part of the so-called tip of the nose. At the heart of this area in cattle are the bodies of the incisor bones, the membranous part of the nasal septum and nasal cartilage. In surgery, this area is of great importance due to its frequent damage in breeding bulls. From the dorsal and ventral edges of the nasal septum, the dorsal and ventralis, respectively, extend to the right and left. 98. Insertion of the nasal restraining ring with the formation of an anesthetic depot near the infraorbital foramen. In this case, in large bulls, 20-50 ml of novocaine solution is injected, leaving part of the solution under the skin (blockade of the branch of the superficial temporal nerve). Maxillary nerve block (according to A.P. Studentsov). The indications are the same as for infraorbital nerve blockade and for operations on all the teeth of the upper jaw.

Anesthesia technique. The blockade is the simplest technique and is most effective in the horse. The point of injection of the needle is marked at the point of intersection of two lines: a) the front line, going from the middle of the outer contour line of the jaw joint, towards the nasal end of the facial ridge and b) orbital, perpendicular to the previous one, drawn to it from the aboral edge of the orbit. At the point of intersection of these lines, a needle is injected perpendicular to the surface of the skin (injection line) (/). The needle is pricked near the transverse facial arteries and veins, and it should not coincide with their position. Otherwise, the needle needs to be moved a little. After puncturing the skin, subcutaneous tissue, chewing fascia and masseter muscle, the mandrel is removed from the needle and slowly advanced until it touches the bone (the area of the cuneopalatine fossa). The depth of the injection, depending on the size of the animal, 6.7-8.7 al. Inject 20 ml of a 2-3% solution of novocaine. At the end of the injection, the needle is quickly removed, holding the skin at the injection site with your finger. Anesthesia occurs in 7-30 minutes and lasts 25-50 minutes. Sometimes the sensitivity of the orbital organs is lost.

Topic: Auricle amputation technique

Operations in the head area differ significantly from operations in other areas of the animal's body. This is due to the complexity of the anatomical structure and the variety of physiological functions performed by various organs and tissues of the head.

There are two main sections on the head: cranial and visceral (facial). The border between them is the line connecting the posterior edges of the orbits and continuing along the lower edge of the zygomatic arch to the end of the jugular process of the occipital bone.

The brain is located in the cranial region. The visceral (facial) section of the skull is the skeleton of the nasal and oral cavities with its chewing apparatus. Thus, the skeleton of the head - the skull - performs the function of support and protection of the brain, organs of smell, sight and hearing located in it. The skull is formed of lamellar paired and unpaired bones. All of them are firmly and motionlessly connected to each other by seams. Mobility is carried out only in the temporomandibular joint and between the segments of the hyoid bone.

The visceral part of the skull has an extensive network of blood and lymph vessels, as well as branches of the cranial nerves, which must be taken into account when performing operations on the head.

Ear surgery

Brief anatomical and topographic data. Depending on the breed of dogs, the auricle has a varied shape and size. Its dense basis is made up of elastic cartilage covered with periosteum. The skin of the outer surface of the shell is loosely connected to the cartilage, and on

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the inner surface is firmly spliced. There is a skin pocket near the base of the posterior-outer edge of the auricle.

Blood supply is carried out by three branches of the large auricular artery, going under the skin from the outside of the auricle, the anterior ear artery located on its inner surface. The outflow of blood occurs through the veins of the same name that accompany the arteries. The skin of the outer surface of the auricle is innervated by the caudal cervico-auricular and auricular nerves. Its inner surface and the end of the external auditory canal innervate the branches of the anterior ear plexus.

Amputation (relief) of the auricles

Amputation, amputatio (from the Latin amputo I cut off, cut off) - the operative removal of the final part of an organ. Partial or complete amputation of the auricles is performed.

Indications: partial amputation is performed in some breeds for cosmetic purposes, and in all breeds for therapeutic purposes (partial or complete) in the presence of neoplasms, necrosis, ulcers of the auricle. For cosmetic purposes, the operation is performed on large breeds of dogs at the age of 8-12 weeks, in small breeds - at the age of 5-6 weeks. And in some breeds of dogs (Caucasian Shepherd Dogs and others) - at 3-7 days of age. At a later age, the operation is usually accompanied by profuse bleeding, and the placement of the auricles after the operation is rarely beautiful (cicatricial contractions, thickening of the edges of the incision and other complications are observed). For therapeutic purposes, the operation is performed at any age.

The operation is contraindicated in emaciated and affected by ear scabies animals.

When performing an operation with a cosmetic purpose, depending on the breed of the dog, the auricle is given a different shape: in Great Danes and Boxers - long and sharp with a somewhat convex posterior-outer edge; in Doberman Pinschers, it is relatively long and pointed with an even posterior-outer edge; in terriers it is short and sharp with a smooth posterior-outer edge. The existing standards are conditional, so for American Staffordshire Terriers leave short ears - fighting or long - show. In such operations, the wishes of the owners of the animals are taken into account.

In addition, the consistency of the auricle must be taken into account. the age and sex of the animal. Long-headed dogs

even the same breed requires longer ears than short-headed dogs. The dog's head looks good when the height of the amputated auricle (the distance from the base of the anterior edge of the auricle to its apex) is equal to a line drawn from the inner corner of the eye to the anterior edge of the auricle (Fig. 20).

Operation technique. For 10-12 hours before the operation, the animal is kept on a starvation diet. The operation is performed under local potentiated anesthesia, i.e. with the use of antipsychotics and local anesthesia. Anesthesia is performed in two ways (conduction and infiltration anesthesia).

Conductive anesthesia (Fig. 21): the auricle is slightly retracted, a needle is inserted at its base in the dorsolateral direction to a depth of 0.5 cm directly above the upper edge, palpable here

parotid salivary gland, against the base of the auricle. The needle is advanced under the gland and 2-3 ml of a 2% solution of novocaine (trimecaine) are injected at the indicated depth. Then the needle is removed so that its end remains under the skin, and successively moving it forward and then backward, 3-4 ml of the same solution is injected at the anterior and posterior edges of the base of the auricle.

Infiltration anesthesia from the outside of the auricle along the incision line. For anesthesia use 0.25 - 0.5% solution of novocaine (trimecaine), the amount of solution depends on the size of the auricle.
The operating field is prepared according to the generally accepted technique.
The dog is fixed on the stomach, the jaws are tied with a bandage, the head is held with the hands. At the same time, during the operation, it is necessary to ensure that the animal does not have vomiting or asphyxiation. The ear canal is closed with a gauze or cotton swab to prevent blood from entering the ear canal.
After preparing the animal, the auricles are connected together with the outer surfaces and raised up so that their ends are located strictly along the midline of the skull. Then the ears are measured and a small skin incision is made on their front edge with scissors at the desired height. Then the assistant pushes the skin on the dorsal surface of the auricle as much as possible to the midline of the occiput. This technique allows you to avoid exposing the cartilage of the auricle from its outer side and thereby create the most favorable conditions for wound healing.
Subsequently, an ear clip of the desired configuration is applied to the auricle so that its upper end strictly adjoins the skin incision, and the lower end of the ear clip should be below the ear skin pocket, as close as possible to the base of the auricle.
When fastening the clip, the auricle is leveled and skin folds are prevented. After that, a part of the auricle is smoothly cut off with a sharp scalpel (razor) strictly along the outer surface of the clamp, starting from the pocket zone. The removed flap serves as a template for the second side. After 5-8 minutes, the clamp is removed and the edge is leveled with scissors at the lower edge of the ear, giving it a semicircular shape.
To stop bleeding, intestinal pulp can be applied to the auricle. Then on the skin, along the line of the incision, knotty sutures are applied with thin threads, without capturing the cartilage. When suturing, it is necessary to capture the bleeding vessels with a ligature, which prevents the formation of hematoma. First, the skin of the inner surface of the auricle is pierced, and then the outer one.

Topic: Brain surgery
Anatomical and topographic data. Surgical boundaries of the cranial cavity in sheep: posterior - occipital crest; the front is subject to significant fluctuations (depending on the breed), is within the level of the outer corner of the eye or somewhat aboral; lateral - along the medial outline of the base of the horn and along the line of the temporal crest. The cranial vault in sheep is covered from the outside with skin, subcutaneous tissue, fascia (and in cattle, a powerful cutaneous muscle) and periosteum. It is divided into the frontal, parietal and occipital regions; the thickness of the bones of the skull depends on this, which is very variable. In sheep, it reaches 5-14 mm in the frontal region, 4-7 mm in the parietal region, and 6-7 mm in the occipital region. Blood supply is provided by the branches of the superficial temporal and large ear arteries. Innervation is carried out by the branches of the subblock, lacrimal and frontal nerves. The intracranial cavity is subdivided into the anterior section — for the cerebral hemispheres and the posterior — for the cerebellum and medulla oblongata. The anterior section has a sagittal crest (the place of attachment of the crescent fold of the dura mater); perpendicular to it, at the level

of the inter-parietal bone, there is a transverse ridge (the place of attachment of the transverse fold of the dura mater). The sagittal venous sinus is located at the base of the crescent fold, and the transverse sinuses are located at the base of the transverse fold. P.P. Herzen recommends to divide the external vault of the sheep's skull into quadrants and thus facilitate the determination of the position of the parts of the brain. A point on the cranial vault must be found to coincide with the central point of the cerebral mass (1). A straight line is drawn between the base of the horns or their primordia (Fig. 120.9), and then an equilateral triangle is built from its ends as from the base (2); the top of the latter just coincides with the desired point. Through this point two other mutually perpendicular lines are drawn, one of which is the middle (median) line of the holo Fig, 120. Division of the outer vault of the sheep's skull. (According to P.P. Herzen) (see the text you (3, 4). Now the outer the vault of the sheep's skull is divided into four parts - quadrants: right back (5), left back (6), right front (7), left front (8). In the first and second of them lie the occipital lobes of the brain and the cerebellum, in the third and the fourth - the temporo-parietal and frontal lobes.Surgical treatment of coenurosis in sheep.Indications.The operation is performed when the coenurosis bladder has reached a significant size and by its development determines the manifestation of clinical signs.The main task is to clarify the localization of the bladder, that is, to determine the place for trepanation. attention recommended by P.P. Herzen methods of topical diagnostics: Often the animal circles and falls on the right side, vision is not impaired; b) finding a bubble in the left posterior quadrant is accompanied by the same signs, but the animal circles and falls on the left side; c) the localization of the bladder in the 'right anterior quadrant is associated with a sharp decrease in vision or even blindness of the left eye, the desire to go forward or, more often, accompanied by manege movements to the right side with the head down; d) if the bubble is in the left anterior quadrant, a picture is observed opposite to the previous one: decreased vision or blindness of the right eye, manege movements to the left.

The operated animals are kept in a clean, spacious darkened room with abundant bedding. They are monitored until the stitches are removed (at least 7 days), after which the sheep are transferred to the flock. If necessary, at this time, treatment is prescribed, depending on the general condition of the operated patients. 155 Fig. 121. Methods for removing the tsenorosny bladder (according to P.P. Herzen and V.R. Tarasov) (see text) Recovery occurs in 80% of cases (V.R. Tarasov). However, this figure is subject to significant fluctuations - from 51.8% (Yakovlev) to 85% (P.P. Herzen), which often depends on the timeliness of the operation.

Topic: Anatomical and topographic structure of the ventral part of the neck. Nerve pain relief

The ventral region of the neck is represented by the larynx, trachea, esophagus, thyroid gland, as well as the muscles and fascia that surround them. Since the location of these organs is not the same in different regions of the neck, the surgical manipulations in the ventral region of the neck are very diverse.

In the ventral region, six layers are distinguished.

1. The skin is thin and mobile with an insignificant layer of subcutaneous tissue, in places it is tightly connected to the cutaneous muscle of the neck.

2. Superficial fascia, cutaneous muscle of the neck with longitudinally directed fibers.
3. The brachiocephalic muscle (in the lateral region of the neck) and the sterno-jaw muscle (in the lower-lateral region of the neck). The gap between them is called the jugular groove.
4. The brachiohyoid muscle is connected in the posterior and middle part almost inseparably with the brachiocephalic muscle. In the front third of the neck and in the parotid region, it closely fuses with the sternohyoid muscle, but is separated from the brachiocephalic muscle.
5. The sternohyoid and sterno-thyroid muscles are located in the lower part of the neck. From the sides, the visceral fascia covers the organs of the neck. These muscles are enclosed in the parietal layer of the visceral fascia, which surrounds the larynx and pharynx cranially, and is caudally attached to the ribs and hilt of the sternum at the entrance to the chest cavity.
6. Actually the organs of the neck, each of which is surrounded by its own fascia. They are connected by jumpers both between themselves and with the parietal leaf of the visceral fascia, which acts as a support for all fasciae and a common cover for the neck organs.
The trachea is located ventrally from the long muscle of the neck. From the larynx to the entrance to the chest cavity, its cervical part extends. The basis of the trachea is made up of open cartilaginous rings. From the dorsal side, the ends of the rings are connected by the transverse connective tissue ligament. The mucous membrane is loosely connected with the lower and lateral walls of the trachea. The fascia of the trachea, esophagus and the neurovascular bundle are connected. The cervical part of the trachea is quite mobile, especially in the lateral directions.
The blood supply to the trachea is carried out by short tracheal branches of the common carotid artery, which form longitudinal arches. Segmental inter-annular vessels are connected in the midline with the branches of the same name on the other side.
The trachea is innervated by the branches of the vagus
The branches of the vagus and sympathetic nerves innervate the trachea.
The esophagus begins with the pharyngeal opening and is located dorsally from the trachea. At the level of IV, the cervical vertebra deviates to the left and, before entering the chest cavity, follows the left upper-lateral edge of the trachea. At the level of the VII cervical vertebra, the esophagus is again located dorsally from the trachea and thus penetrates into the chest cavity. Outside, the cervical part of the esophagus is covered with adventitia (connective tissue sheath), firmly connected with the muscle layer. The mucous membrane is dense, extensible, connected to the muscle layer by loose fiber; at rest, it is usually collected in longitudinal folds. The cervical part of the esophagus is covered with its own fascia. Both the thickness of the wall and the diameter of the lumen of the esophagus are not the same in different parts. Adjacent to the esophagus is the left common carotid artery, the left tracheal lymphatic duct, the vagosympathetic trunk and the recurrent nerve.
The cervical esophagus is supplied with blood from the short branches of the common carotid artery and the cranial thyroid artery. The branches of the vagus, sympathetic and glossopharyngeal nerves innervate the esophagus.

Birds have a thickening of the esophagus - goiter. In chickens and pigeons, the goiter is represented by a bag-like subcutaneous protrusion: single (in chickens) and paired (in pigeons). In geese and ducks, the crop looks like a longitudinal expansion.
The jugular groove is formed by the brachiocephalic (upper wall), sterno-jaw (lower wall) and shoulder-hyoid (bottom of the groove) muscles.
The jugular vein is located in the jugular groove. At the level of the II cervical vertebra, it is formed by the fusion of the external and internal jaw veins. Before entering the chest cavity, both jugular veins merge into the bibular trunk, which flows into the anterior vena cava. The diameter of the external jugular vein, when filled, can reach 3 cm. Valves are located on its inner surface. The first pair of valves is located at a distance of 15 cm from the confluence of the external and internal jaw veins; this is level IV of the cervical vertebra. Medicines are injected into the area of the vein, free of valves, and blood is taken from it. The jugular vein is covered by the fascia of both the thin own and passing from the sterno-brachiocephalic muscle. In the sheets of its own fascia, the cutaneous nerve of the neck runs along the dorsal surface of the vessel, the upper-inner edge of the groove.
The blood supply to the ventral region of the neck is carried out by the common carotid artery (through numerous branches) and the ascending cervical artery.
The neck skin is innervated by the ventral branches of the cervical nerves. The cutaneous muscles of the neck innervate the cutaneous nerve of the neck, formed by the cervical branch of the facial nerve and the ventral branch of the 2nd cervical nerve. The sterno-jaw muscle is innervated by the accessory nerve. The sternohyoid, sterno-thyroid and brachiohyoid muscles are innervated by the branches of the ventral cervical nerves.

Topic: Jugular vein resection technique

Indications. Most often, purulent thrombophlebitis and vein necrosis after incorrect intravenous infusion of some solutions to animals (calcium chloride, chloral hydrate, etc.).
Fixation. The animal is well fixed in the pen on a short leash.
Anesthetic protection. Restless animals are injected with antipsychotics.
Operation technique. After standard preparation of the operating field and infiltration anesthesia with 0.25% novocaine solution, the skin, superficial two-leaf fascia and subcutaneous muscle are dissected. The incision should allow free removal of the dead part of the vein, inspect the vascular bed and, if necessary, bandage the peripheral vessels flowing into the vein. Therefore, the incision should be larger than the lesion site by 4 cm cephalad and caudal.
The dissection is best done under the vessel, along the upper edge of the sterno-jaw muscle, so as not to accidentally damage the vessel. Bleeding is stopped and the edges of the skin wound are extended with wound hooks. The vein with its own fascia is carefully bluntly separated from the surrounding tissue. A thin layer of the surrounding tissue should be left on the vein: this way the ligature lays down more firmly and prevents the possibility of rupture of the vessel above the intersection.
A Deschamp needle is placed under the exposed vein and two ligatures are applied at a distance of up to 6 cm from the affected area; the distance between the ligatures is 2 cm.

The ligature on the cranial side must be impeccably applied, since the stump will experience great tension from the side of the blood flowing from the head, as well as during the movements of the animal's head. It is recommended that this ligature be stitched if possible, capturing the surrounding tissue.

After two pairs of ligatures are imposed at a distance of up to 4 cm from each other, the affected area of the vein is separated from the vascular bed with straight scissors and pulled out. To remove the purulent cavity together with necrotic tissues from the wound, care should be taken not to open the cavity, therefore, the dissection is performed along healthy tissue. After stopping the bleeding, the skin wound is sutured with partial sutures, leaving a hole wide enough in the lower corner so that pus can drain freely and drainage can be changed.

The animal is fixed on a short leash to restrict neck mobility. Since the chewing movements prevent the formation of a strong thrombus, the animal is kept on a starvation diet for 2 days, and then another 3 ... 4 days are fed with a chatterbox. Within 3 days, edema in the head and parotid gland can be observed. Sutures can be removed after 8 ... 10 days. Short-term unilateral and even bilateral cessation of blood flow through the jugular vein is not dangerous for animals, and blood circulation in the head region is restored within 2 hours to 3 days.

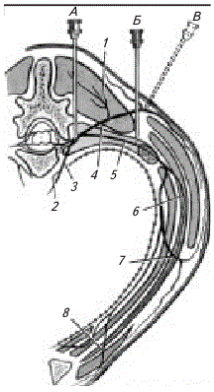
Topic: Anatomical and topographic data of the chest wall. Nerve pain relief.

Indications. For operations on the lateral chest wall in large animals.

Fixation. The animal is fixed in a standing position.

Operation technique. In fact, the operation is represented by blockade of the intercostal and dorsal cutaneous nerves and the thoracic ventral nerve.

Blockade of intercostal and dorsal cutaneous nerves. The number of blocked nerves depends on the size of the operated area, plus one additional nerve caudal and cephalad outside the surgical area



The scheme of the blockade of the nerves of the thoracic segment (according to I. I. Magda): A - the position of the needle during paravertebral blockade of the thoracic nerve; B - with blockade of the intercostal nerve; B - displacement of the needle from the rib under the skin to block the cutaneous (lateral) branch of the dorsal branch of the thoracic nerve: 1 - cutaneous branch of the intercostal nerve; 2 - a branch to the pericapsular plexus; 3 - connecting branch to the border sympathetic trunk; 4 - dorsal branch of the thoracic nerve; 5 - the ventral branch of the middle nerve; 6 - nerve to the external intercostal muscle; 7 - lateral cutaneous branch; 8 - medial branch

The puncture points are located behind each rib in the groove formed by the longissimus dorsi and the iliocostal muscle, along a line parallel to the spine from the top edge of the macloc. The needle is advanced perpendicularly until it touches the bone at the posterior edge of the rib. By displacing the end of the needle, it is advanced 0.5 cm and 10 ml of a 3% solution of novocaine is injected. So they block the intercostal nerve. After that, the needle is withdrawn to the state "under the skin" and an additional 10 ml of solution is injected to block the dorsal cutaneous nerve.

Thoracic ventral nerve block. The needle is inserted from top to bottom at the level of the V rib, above the external thoracic vein to a depth of 2 cm.The end of the needle is turned both up and down and 10 ml of a 3% solution of novocaine is injected

Topic: Rib resection technique.

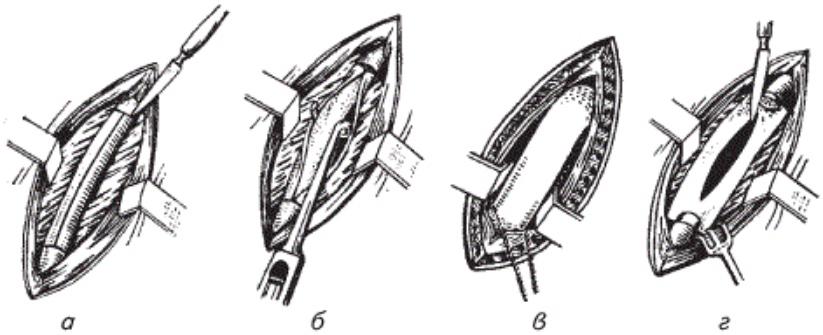
Indications. Caries, rib necrosis, osteomyelitis and neoplasms. Also, a healthy rib has to be removed if it is necessary to open access to the chest cavity.

Fixation. Large animals are fixed in a standing position, small ones - in a lateral position on the operating table.

Anesthetic protection. Conductive or infiltration anesthesia (infiltration of the skin, subcutaneous tissue along the incision line, muscle infiltration to the rib, injections into the thickness of the intercostal muscles).

Operation technique. The rib is removed by freeing it from the periosteum. The latter is removed only if it is also affected.

Stages of rib resection: a - dissection of the rib periosteum; b - peeling of the periosteum from the inner side of the rib; c - sawing the rib with a wire saw; d - opening of the pleural cavity



The skin is cut along the middle of the outer surface of the rib to be removed. Then the superficial fascia, the cutaneous muscle, and the subsequent deep-lying muscles are dissected.

The wound is stretched with hooks and the periosteum is dissected, first vertically, and then across the entire width of the rib, either at the upper end of the wound, or above and below. The periosteum is separated with a raspatory (straight outside, curved at the edges and semicircular on the inner surface). Ruptures of the periosteum and opening of the chest cavity should not be allowed.

The rib is cut off at the upper and then at the lower end with scissors with bone forceps or a wire saw. If the ends of the ribs, devoid of the periosteum, are left in the wound, they undergo necrosis. To close the wound, the periosteum is pushed onto the site of the removed rib and connected with a suture. Muscles and skin are sutured. The pleura should not be caught in the suture.

In cases of chronic inflammation, the periosteum is not separated from the rib, which causes a violation of the integrity of the pleura during manipulations. Then it is necessary to urgently close the wound and eliminate the consequences of pneumothorax by removing air from the pleural cavity. It is also advisable to perform cervical vagosympathetic blockade.

Topic: Anatomical and topographic structure of the abdomen and nerve pain relief.

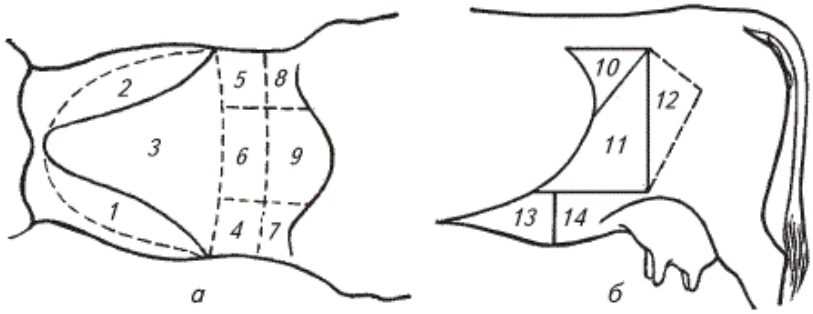
The peculiarities of the gastrointestinal tract of ruminants (the presence of proventricles - rumen, net and book) allow them to digest coarse rigid feed.

Cattle grab feed and, almost without chewing, swallow it. Together with the feed, various metallic and non-metallic objects clogging it get into the rumen. The latter are especially dangerous because they cannot be diagnosed with the old methods and removed using magnetic probes. Basically, in the rumen, in addition to sand, small pebbles, pieces of ceramics, pieces of synthetic twine are found, with which bales of hay are tied. These ropes become entangled in large conglomerates that cannot exit through the natural openings of the scar and irritate the walls of the scar during contractions, periodically block the entrance and exit from the scar (disrupt the functioning of the proventriculus and cause inflammation of the scar walls). Other causes of cicatricial digestion disorders are outlined in the course of internal non-infectious diseases. The operation will help to accurately establish a diagnosis and radically solve digestive problems.

Anatomical and topographic characteristics of the abdomen

The abdomen is the largest part of the animal's body, located between the chest cavity and the entrance to the pelvis. The anterior border of this area coincides with the posterior border of the thoracic part of the animal's body and is determined by the line of attachment of the diaphragm and its dome. The posterior border of the abdomen comes at the entrance to the pelvis and is determined by the level of the inguinal ligament, which is projected along the groove between the fascia ligamentum tensioner and the gluteus muscle. The upper limit is defined by the lumbar vertebrae with adjacent muscles. The lower border is the ventral part of the soft abdominal wall and the xiphoid cartilage. Lateral borders - the lateral parts of the soft abdominal wall with areas of the last ribs and with an adjacent diaphragm.

The abdomen is subdivided into separate areas.



Areas of the abdomen of cattle (according to N.V. Sadovsky): a - on the ventral surface of the body; b - on the lateral surface of the body: 1, 2 - right and left hypochondrium; 3 - the area of the xiphoid cartilage; 4, 5 - right and left iliac regions; 6 - the umbilical region; 7, 8 - right and left groin areas; 9 - pubic region; 10 - area of the hungry fossa; 11 - sigh; 12 - groin area; 13 - pre-umbilical area; 14 - posterior umbilical region

For this, two transverse planes are conventionally carried out: the first - along the rear edges of the last pair of ribs, the second - along the anterior-upper corners of the crochet. The cranial department, or epigastric region (regio epigastrica), lies between the diaphragm and the first plane; the middle section, or celiac region (regio mesogastrica), is located between two planes; the caudal department, or hypogastric region (regio hipogastrica), is located between the second plane and the entrance to the pelvis. In the epigastric region, a line drawn along the costal arch on both sides separates the region of the xiphoid cartilage (regio xiphoidea) and the areas of the right and left hypochondria lying dorsally from it (rr. Hipochondriacea dextra et sinistra).

The celiac region is divided by vertical longitudinal planes drawn along the ends of the transverse costal processes of the lumbar vertebrae, and the umbilical region and the right and left iliac regions are determined (rr. Iliacae dextra et sinistra). In each of the latter, closer to the spine, there is a triangular depression - a hungry fossa (fossa paralumbalis), below which the actual sigh is located. The continuation of the vertical planes into the hypogastric region denotes the right and left inguinal regions (rr. Inguinales dextra et sinistra), between them is the pubic region (regio pubis).

They also distinguish between the lateral and lower abdominal walls, the border of which is determined along the line drawn from the ileal-knee fold to the costal arch. On the ventral abdominal wall, the pre-umbilical and post-umbilical regions are distinguished. That part of the abdominal wall, which does not include ribs and costal cartilage, is called the soft abdominal wall, on the lateral surface of which there is an area of the hungry fossa, an iliale and the groin area.

The structure of the soft abdominal wall is quite complex.

The skin is thinnest on the lower part of the abdominal wall. The subcutaneous tissue and superficial fascia are closely fused. Between the sheets of the superficial fascia is the subcutaneous muscle, which is present only in the ventro-caudal part of the soft abdominal wall, entering the ilio-knee fold. The subfascial tissue going further is well developed and contains mammary glands in females, and prepuce in males. The patellar lymph node is located in the tissue in front of the fascia lata tensioner, above the knee cap; in the groin area - superficial inguinal lymph nodes. In the same layer there are subcutaneous artery and abdominal vein (a. Et v. Subcutanea abdominis). In cows, the vein during lactation reaches large sizes and is clearly visible; it flows into the internal thoracic vein through the milk well - an opening located in the region of the xiphoid process.

The yellow abdominal fascia is a dense fibrous membrane permeated with a large number of elastic fibers, it is most pronounced in the lower abdomen. Here it connects to the overlying oblique external abdominal muscle. In cows, the suspension ligament of the udder is separated from it in the rear half of the lower wall, and in bulls - the fascia of the penis.

Layered structure of the soft abdominal wall at the level of the III lumbar vertebra: 1 - skin; 2, 3 - superficial fascia with cutaneous muscle; 4, 5 - lumbar-dorsal fascia; 6 - yellow abdominal fascia; 7 - preputial muscle; 8 - white line; 9 - external oblique muscle of the abdomen; 10 - transverse abdominal muscle, 11 - internal oblique abdominal muscle; 12 - peritoneum; 13 - transverse fascia; 14 - ilio-costal muscle; 15 - the longest

muscle of the back; 16 - multifidus muscle; A - aorta and posterior vena cava; B - cranial branches of the deep peripheral iliac artery and vein; B - epigastric cranial artery and vein; D - saphenous vein of the abdomen

The external oblique muscle of the abdomen consists of nine teeth, which begin at the posterior edges of the nine ribs (V to XIII). Each of these teeth, expanding, is thrown over the subsequent ribs, firmly connecting with their outer surface and intercostal external muscles. Muscle boundaries: AB - anterior border line, BC - upper border line, SD - posterior border line, DE - lower border line, DD '- vertical, P - patellar lymph node. The muscle fibers are directed from top to bottom and back, and in the posterior region - almost horizontally. Thinning, the oblique external muscle of the abdomen passes in the area of the abdominal wall into a wide aponeurosis, which is divided into the abdominal, pelvic and femoral parts.

Projections of the oblique muscles of the abdomen: a - oblique external; b - oblique inner

The abdominal part of the aponeurosis is fixed on the white line of the abdomen, in the formation of which it participates. The pelvic part of the aponeurosis is attached to the ventral spine of the external iliac tubercle and the crest of the pubic bone. It has the form of a tendon cord there, called the inguinal, or pupar, ligament, which goes from the macloc to the pubic tubercle. The femoral part of the aponeurosis is directed to the medial surface of the thigh, where it merges with its deep fascia (N.V. Sadovsky, 1960).

At the site of the boundaries of the abdominal and pelvic parts of the aponeurosis, the subcutaneous opening of the inguinal canal is located, in the anterior-external corner of which there is the external spermatic nerve. The latter passes along the inner surface of the abdominal part of the aponeurosis of the oblique external abdominal muscle parallel to the inguinal ligament and 2 ... 3 cm caudal to it. Behind the named nerve lies the spermatic cord. In addition, between the inguinal ligament on one side and the anterior edge of the pubic bone and the columnar part of the ilium, on the other hand, there is a lunate space, in the medial part of which the femoral artery passes, and inside from it are the nerve and vein of the same name.

The oblique internal muscle of the abdomen begins with the main part from the anterior surface of the external tubercle of the ilium. Its fibers fan out downward and forward. The muscle covers the hungry fossa with its additional leg extending from the external iliac tuber cranially and along the transverse costal processes of the lumbar vertebrae. The specified leg, not reaching the posterior edge of the transverse costal process of the II lumbar vertebra, descends obliquely forward to the lower third of the last rib, where it is fixed. A deep peripheral iliac artery extends into the gap between the leg and the main part of the oblique external muscle from under the external tubercle of the ilium.

The abdomen of the muscle passes into the aponeurosis at the mid-height of the lateral abdominal wall. It firmly grows together with the outer edge of the rectus abdominis muscle and loosely - with the aponeurosis of the external oblique muscle. The aponeurosis of this muscle is fastened with the upper edge on the costal arch (at the end of the XII rib), and with the lower edge on the white line of the abdomen.

The rectus abdominis muscle (right and left) begins with a short aponeurosis from the outer surface of the V rib cartilage.

Topic: Ruminotomy Technique for Ruminants

Indications. This operation allows the surgeon to influence the scar, mesh and book and carry out medical manipulations in them. Rumenotomy is indicated and effective in case of excessive overfilling (blockages) of the scar, blockage of the book with difficult-to-digest feeds, foamy tympania, as well as traumatic reticulitis, reticuloperitonitis, and even reticulopericarditis.

Surgical intervention is the only correct method, especially for fresh and clinically clear traumatic lesions of the proventriculus; animals tolerate the operation well during pregnancy.

In chronic cases of traumatic reticulitis and reticuloperitonitis, accompanied by significant irreversible organic changes, rumenotomy often does not give the desired therapeutic result.

At the present time, when methods of anesthesia, prevention of infection, as well as methods of laparotomy, fixation of the scar have been developed, this operation has become quite accessible and feasible not only in a hospital setting, but also directly in livestock farms.

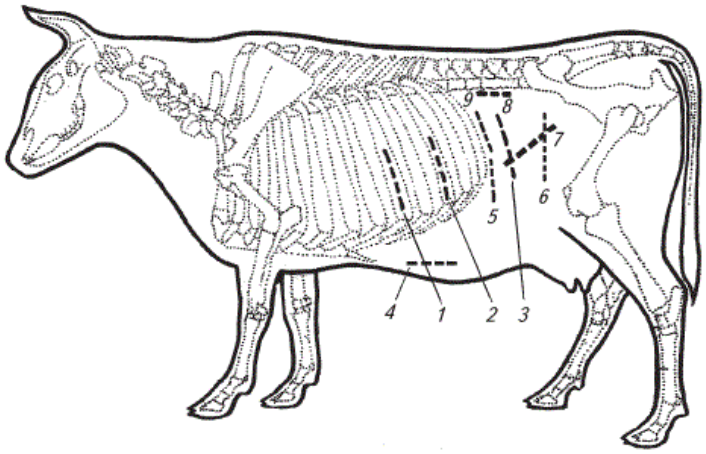
To prepare the animal, if possible, prescribe a fasting diet for 24 ... 36 hours, if necessary, a rumenotomy is performed without prior fasting.

Fixation. The animals are fixed in a standing position. Only seriously ill cows or restless bulls are fixed in a lateral position. PA Alekseev (1955) indicates that in production conditions, when preparing the operating field, you can limit yourself to a short hair cut, refusal to shave does not affect the result.

Anesthetic protection. For anesthesia of the lateral abdominal wall, paralumbar anesthesia is performed according to I. I. Magda (sometimes infiltration anesthesia is additionally carried out with a 0.5 ... 1% solution of novocaine along the incision line) or according to B. A. Bashkirov. In restless animals, local anesthesia is combined with neuroleptanalgesia.

Operation technique. Ruminotomy is performed in several stages.

Surgical access to the scar. Currently, the most often used is a skew-vertical incision of the abdominal wall in the left hungry fossa (according to I.I.Magda).



Surgical approaches to the scar: 1 - with resection of a part of the IX rib according to S.G. Eltsov; 2 - with resection of part of the XI rib along H. Kubitsu; 3 - according to P.P. Herzen; 4 - according to M.A.Maltsev; 5 - according to N. A. Azbukin; 6 - vertical; 7 - along the fibers of the oblique internal muscle of the abdomen; 8 - according to V. Blendinger and I. Khan; 9 - after I. I. Magda

In this case, the skin and all layers of the abdominal wall are dissected parallel to the last rib, retreating from it by 5 ... 7 cm caudal and the width of the palm ventral to the free ends of the transverse costal processes of the lumbar vertebrae. The length of the cut usually does not exceed 18 ... 20 cm.

After cutting the skin, the wound is isolated by attaching an oilcloth to the edges of the skin incision. Then all layers of the abdominal wall are dissected in layers, up to the peritoneum. The peritoneum is preliminarily captured with surgical forceps into the fold, which is dissected with scissors. The bleeding is usually mild. This operative approach has been proven and proven in clinical practice.

Performing an incision of the abdominal wall according to NA Azbukin (1941), all tissues are dissected, stepping back 5 ... 6 cm from the last rib and 20 ... 22 cm downward from the outer edge of the transverse costal process of the I lumbar vertebra. This makes it possible to more freely penetrate the net with your hand.

Almost a similar vertical incision with a good result on significant clinical material was used by Kh. D. Dzhailov (1958) and P.P. Herzen (1961).

Due to shortcomings, other approaches have not become widespread in clinical practice (the course of the wound process worsens in the postoperative period, the first lumbar nerves are cut and the internal oblique muscle of the abdomen is cut in the transverse direction - pockets are formed, additional instruments are required, scar removal is difficult, chronic osteomyelitis occurs, wound contamination, incisional hernia).

Examination of the internal organs and the peritoneum adjacent to them. Immediately after the end of the laparotomy, it is necessary to examine the accessible organs of the abdominal cavity and, first of all, the spleen, which lies on the left side of the scar, and the peritoneum.

According to clinical observations (A. A. Weller, P. A. Alekseev, B. A. Bashkirov, P. I. Pankrev, 1961), this study, carried out before opening the scar, has a very important diagnostic and prognostic value. It is performed with a hand inserted through the wound into the abdominal cavity. By palpating the peritoneum and internal organs, it is possible to establish the presence or absence of adhesions, changes in the liver, spleen, and also to determine the nature of pathological changes.

Fixation of the scar and isolation of the wound of the abdominal wall. This is the most important and crucial stage. There are many ways, the most applicable are described below.

If the scar is fixed according to I.I. Magda (1952), then after the laparotomy, the operating surgeon inserts his hand into the abdominal cavity and, advancing it as far as possible in the caudal direction, captures the wall of the dorsal half-bag of the scar and brings it into the wound. Then, at the level of the upper corner of the skin wound, the scar wall is dissected and fixation is started. According to I. I. Magda, the fixation of the scar can be performed to the skin or rubber. The edges of the scar wound are stretched with hooks and attached to a special rubber pad. It is prepared from a rectangular piece of rubber 40 x 40 cm in size and 5 ... 7 mm thick. An oval hole 18 × 9 cm is cut in the center of it, ribbons are attached at the corners.

Cat hook for fixing the scar to the rubber mat

Having opened the abdominal wall, a sterilized rubber square is applied to the wound so that the hole on it coincides with the skin incision, the ribbons are thrown over the body and tied, fixing the rubber on the body. The wall of the scar is punctured, an obstetric hook is inserted into the cavity, with which the scar is fixed. Next, the surgeon lengthens the puncture of the scar wall to half the estimated length. Starting from the upper section of the scar wall, it captures it from the side of the mucous membrane and nails it with three or four cat hooks to the rubber square.

The incision is lengthened to the bottom corner of the wound and is additionally reinforced with 3 ... 4 cat hooks. In this case, the wall of the scar quite tightly covers the edges of the wound of the abdominal wall, preventing the contents of the scar from entering the wound during its evacuation and expiration.

You can fix the scar according to P. A. Alekseev. After a laparotomy, the left hand is inserted into the abdominal cavity and advanced to the posterior superior edge of the scar. Pushing aside the forage masses, they bring out a part of the caudo-dorsal blind sac of the scar outside the wound, straighten it in the form of a fold in the longitudinal direction to the edges of the skin wound.

The base of this fold is covered with a sterile towel and a special gastric pulp or bream is applied.

bream.

Fixation of the scar with bream according to P.A.Alekseev

It consists of two wooden, slightly curved planks 350 mm long and 20 mm wide, connected with screws and nuts. There is a hinge screw at one end that quickly compresses the flap and changes the compression force of the scar fold.

Along the fold, along its top, the scar wall is cut to the required length. Then oilcloths (50 x 50 cm) are applied to the edges of this incision, they are folded 3 ... 4 cm into the lumen of the scar and fixed to the edges with special clamps (tongue holders, Israelson's forceps, linen clips). Particular attention should be paid to the tightness of the oilcloth joint at the bottom corner of the wound of the scar wall. They remove the bream, straighten the oilcloth and begin the necessary medical interventions.

When finished, the surgeon re-processes the hands. At this time, the assistant, folding together (with the contaminated side) pieces of oilcloth, raises them and at the same time carefully removes a part of the scar from the abdominal cavity, collecting it into a fold. The surgeon, having covered the base of the fold with another sterile towel, starts the pulp jaws (or strips of bream) from below and, squeezing them, fixes the scar, brings the edges of its wound closer, remove oilcloths and suture the wound. The scar fold is thoroughly washed from dirt and the scar is immersed in the abdominal cavity. After that, the wound of the abdominal wall is closed.

When fixing the scar according to P.P. Herzen (1961), the scar is removed through the wound of the abdominal wall in the same way as in the method described above (according to P.A.Alekseev). For fixation of the scar, isolation of the abdominal cavity and surgical wound, a fixator FR-1M is proposed.

Scar fixators: a - FR-1M (P.P. Herzen); b - K. A. Petrakova

Having opened the abdominal cavity, applying some effort, the lapels of the retainer are alternately adjusted by the edges of the skin wound, thereby isolating it and the adjacent section of the operating field. Then, by rotating the two tensioning screws, the device is finally fixed in the required position. If the skin incision is too long, it is sutured. The removed scar fold from above and below is captured with the pole hooks of the retainer. Cotton-gauze napkins moistened with isotonic sodium chloride solution or rivanol solution (1: 1000) are placed along this fold on each side. The corners of the cotton-gauze napkins are adjusted under the rubber rings of the pole hooks to hold them in the required position. The scar wall is dissected and the incision is fixed with hooks from the side of the mucous membrane.

After finishing manipulations in the scar, they wash off the contamination from the surface of the scar and the fixator, remove the scar fold from all hooks, except for the two pole hooks, apply sutures, remove the fold from the pole hooks and set the scar into the abdominal cavity.

When working with P.P. Herzen's fixator, there are no ruptures of the scar wall at the points where the hooks are pricked, the scar walls are fixed softly, the wounds are well isolated.

KA Petrakov's scar fixator consists of four metal plates - valves. They are hinged with a set screw and wing nut to form a diamond-shaped hole. There are rigidly fixed hooks on the sash plates and on the upper hinge, designed to fix the scar. In addition, rubber inserts are mounted on the plates (between which the folds of the scar wall are clamped) and racks (designed to open the wound).

After laparotomy and revision of the abdominal organs, a retainer is inserted into the wound, having previously brought together the links of the valves so that the edges of the abdominal wall incision are placed between the valves and the curved part of the plates. The links of the device are pushed apart and access to the abdominal cavity is opened. The scar fold is removed and fixed by closing the links (plates) of the device, the hinge lugs are screwed on. As the dissection proceeds, the scar walls are stretched to the sides of the wound edges and grasped with hooks. Move the hinges apart, opening the way to the scar. Before closing the wound, loosen the locking screws, loosen the hinges, bring the plates closer together and suture the scar wound.

The special scar fixator of I. Schutt and M. Rudich resembles bream. Each lath of the bream consists of two wooden halves connected by movable hinges. Metal plates with holes are attached to the outer edges of all halves of the planks for hemming the cut walls of the scar. The strips of the bream are fastened at one end with a double-threaded screw, which allows the opposite strips of the bream to be expanded or brought closer together and thus not to be removed during the rumenotomy process.

Fixation of the scar according to V.R. Tarasov (1948) provides better isolation of the surgical wound with foamy tympanic. After laparotomy, the edges of the wound of the abdominal wall are widened to the width of the palm. A part of the scar is removed from the abdominal cavity and its wall is sewn to the skin with a knotted suture with a distance between the stitches of 4 ... 5 cm. In this case, the needle is passed through the serous and muscular layers of the scar wall. The scar is opened, its edges are twisted and again hemmed to the skin with 4 ... 6 stitches, 2 ... 3 stitches on the right and left.

Stages of scar fixation according to V.R.Tarasov

The needle is passed through the mucous and muscle layers. At the same time, the food masses do not contaminate the edges of the wound and the peritoneum. Before closing the wound, the scar is washed abundantly, the stitches that were used to sew the scar wall to the skin are removed, and the first floor of the suture is applied to its wound. The wound is washed again, the second suture connecting the scar to the skin is removed, and the second floor of the suture is applied to the scar wound.

The disadvantages of this method include the fact that it takes a lot of time to suture, the scar wall is significantly damaged and adhesions of the scar to the peritoneum can form.

Other methods of scar fixation have been developed, based on the same principles.

Scar wall incision. Proceed directly to the rumenotomy (dissection of the scar wall). According to I. I. Magda (1952) and P. A. Alekseev (1955), carrying out a rumenotomy, they capture and remove the caudal portion of the dorsal sac of the scar and, after appropriate fixation, open it. With such a cut of the scar in its upper-posterior part, co-ownership and contact of the scar wound with the wound of the abdominal wall is excluded (prevents the formation of adhesions). The incision made in this way does not entail significant disturbances in the innervation and blood supply (there are no large nerves and blood vessels). If the scar is excessively overfilled with forage masses, gases (blockages, foamy tympania), then it is difficult and unsafe to remove this half-bag (ruptures of its wall are possible), therefore, a section of the scar that is adjacent to the operating wound is cut.

Medical manipulations, removal of fodder masses and foreign bodies from the rumen and mesh. After performing an incision in the scar, depending on the purpose, part of its contents (20 ... 40 l) or almost all dense masses are removed, leaving only the liquid contents (P.P. Herzen removed 100 kg of grain). However, in case of frothy tympania, food poisoning, rumen debris, it is advisable to completely remove the fodder mass (sometimes up to 80 kg or more). Liquid contents are siphoned out using a wide rubber hose.

Examining the scar, all foreign bodies that are freely lying and pierced into it are removed. Sand and small stones are believed to cause ulcers, so they are also removed. Foreign bodies are usually found in the mesh. Therefore, having freed the scar from food masses and foreign bodies, the mesh is carefully examined - the hand is moved along the wall of the scar down and forward towards the xiphoid cartilage. At the level of half the height of the chest, an opening is found connecting the scar with the mesh. Through it, they enter the mesh cavity (identified by the characteristic cellular structure of its mucous membrane).

A foreign body that has entered the wall of the mesh is usually determined by the reaction of the tissues of the mesh wall (they are compacted and inactive), while in the unaffected area, the wall is easily folds. Wounding objects can be in the thickness of the compacted areas, but their ends, as a rule, protrude. Therefore, all compacted sections of the mesh wall are examined again and more carefully (more than one foreign body may lie). Foreign bodies more often injure the cranioventral wall of the mesh, less often they

are introduced at the entrance to the book. Freely lying metal objects can be conveniently collected with a magnet, embedded ones - it is safer to remove by hand.
Then the degree of filling of the book and the nature of its contents are determined. To do this, on the right back wall of the mesh, the hand grope for the folds (esophageal groove). They look for an entrance to the book, through which the degree of its filling is determined with a finger. In case of overflow, the book is first massaged through the scar wall, then the nearby fodder masses are kneaded with a finger and removed into the mesh cavity, washed through a hose with 1 liter of a 2% solution of ichthyol or warm water. Sometimes a puncture of the book is done.
Suturing the scar walls. The edges of the scar wound are thoroughly cleaned and washed. Then the scar wound is sutured with two-storied intestinal sutures - the first suture is continuous, "herringbone" lege artis. To prevent accidental splashing of the contents of the scar, it is better to start sewing from the bottom corner of the wound, since the animal, tired of many manipulations, begins to behave restlessly. Further, the wall of the scar is re-processed and the second floor is applied - the serous-muscular intestinal suture according to Lambert or Sadovsky-Plakhotin. Thick catgut or silk severely injures the scar wall (causing sticky inflammation), so it is advisable to use catgut or silk No. 2.
After suturing the scar wound, remove the fixing instrument, insulating material, wash the wound with an antiseptic solution again, lower the scar into the abdominal cavity.
Suture on the wound of the abdominal wall. The wound of the abdominal wall is closed with a two- or three-story suture. Starting from the lower corner of the wound, a Reverden suture is applied to the peritoneum, transverse fascia and transverse abdominal muscle, then carefully observe that when the thread is tightened, the edges of the peritoneal bandages adhere to each other. The second - continuous (better than Reverden) or loop-shaped - suture connect the oblique muscles of the abdomen and the fascia and impose the third - knotty - suture on the skin.
You can limit yourself to a two-story suture: the first - continuous - suture suture the peritoneum, transverse fascia and transverse abdominal muscle; the second - knotty - suture to connect the skin and deeper tissues, including the oblique external muscle of the abdomen.
The wound of the abdominal wall is usually sutured completely, and only if it is contaminated, a drain or capillary drainage is left.
Postoperative treatment and diet. In simple cases (uncomplicated traumatic reticulitis), symptomatic treatment is limited. If, at the time of the operation, peritonitis was established, antibiotic therapy is prescribed and suprapleural novocaine blockade according to V.V. Mosin is performed. According to indications, cardiac drugs, glucose are prescribed, calcium chloride is administered intravenously. After the end of the operation, anti-fermenting agents are injected into the rumen cavity, when tympania and fodder intoxication appear, neutralizing agents are used, and in case of atony, ruminator agents are used.
On the first day after surgery, the animal is given a moderate amount of slightly warmed water. On the 2nd day, a diet consisting of a small amount of good-quality hay, washed carrots (beets) is prescribed. The amount of feed is gradually increased and on the 7th ... 8th day the ration is brought to the norm. The stitches are removed on the 9th ... 10th day.

Mild subcutaneous emphysema that does not require treatment may appear after a rumenotomy. Sometimes there are subcutaneous abscesses, much less often subcutaneous or intermuscular phlegmon, purulent peritonitis. Then surgical treatment is combined with antibiotic therapy, restorative therapy. Cases of formation of fistulous ulcers have been noted, then surgical treatment is used (excision, antibiotic therapy, suture).

The outcome of the operation depends primarily on the stage of the disease and the state of the body. In the presence of significant adhesions, diffuse purulent foci, irreversible lesions of internal organs (heart, liver), the outcome of rumenotomy may be unfavorable. This also applies to severe cases of food intoxication. In general, with the usual course of traumatic reticulitis, reticuloperitonitis (especially in the initial stages of the disease), rumen debris, blockage of the booklet, foamy tympania, rumenotomy provides a high percentage of recovery.

After correctly performed abdominal operations, almost all cows retain milk production and reproductive ability.

Topic: Technique of gastrotomy in dogs

Anatomical and topographic data. In dogs, the stomach is mostly located in the left hypochondrium in the region of the xiphoid process, within the IX ... X thoracic vertebrae.

The front part is adjacent to the liver. When filled, it touches the abdominal walls. In the front of the stomach is the funnel-shaped entrance of the esophagus - the cardia, and in the back - the exit from the stomach into the duodenum - the pylorus (pylorus). Large and small curvatures are distinguished on the stomach; large blood vessels pass in these areas. The greater curvature faces the lower abdominal wall, touching it when the stomach is full, an omentum extends from it in the caudal direction, separating the organs from the abdominal wall. The middle part of the stomach from the side of the greater curvature is its bottom.

Before the operation, the animal is kept for 12 ... 20 hours on a starvation diet.

Indications. The presence of foreign bodies in the stomach and lower esophagus.

Fixation. The animal is fixed on the operating table in the dorsal position.

Anesthetic protection. The operation is performed under potentiated local anesthesia using antipsychotics and infiltration anesthesia with 0.25 ... 0.5% solution of novocaine (trimecaine).

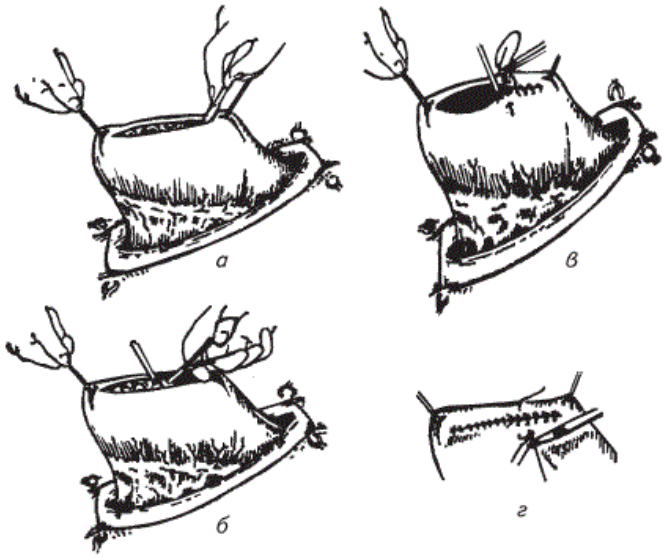
Operation technique. The operating field is prepared in the umbilical region according to the generally accepted technique. Surgical access to the stomach is carried out by an 8 ... 10 cm long incision along the white line of the abdomen, retreating 1 ... 1.5 cm from the xiphoid cartilage, or by a paramedian incision (left) bypassing the rectus abdominis muscle. The tissues of the white line of the abdomen, except for the peritoneum, are dissected in layers with a scalpel. The latter is grasped into a fold, with two anatomical forceps, between which an incision is carefully made. Through it, two fingers are inserted into the abdominal cavity and, under their control, the peritoneal incision is lengthened with blunt scissors.

After the laparotomy, a hand is inserted into the abdominal cavity, the stomach and the location of the foreign body are found by palpation. Fingers grab the wall of the stomach together with a foreign body and take it out of the abdominal cavity to the level of the

surgical wound. If it is not possible to capture a foreign body (often heavy objects move downward and it is not possible to reach them when the animal is in the dorsal position through the stomach wall), then as much of the stomach as possible is taken out without a foreign body. The removed stomach is fixed by hand and covered with sterile napkins around the wound of the abdominal wall. Along the line from the greater curvature to the small one, two ligatures are applied, then between them parallel to the greater curvature of the stomach, where there are no large blood vessels, a 3 ... 8 cm long incision is made on its side wall with a scalpel.

Opening of the stomach in dogs: 1 - greater curvature of the stomach; 2 - small curvature of the stomach; 3 - incision site

Gastrotomy is performed in several stages. First, the serous-muscular layer is dissected with a scalpel, and then the mucous membrane protruding into the incision with scissors. Two fingers are inserted into the incision, foreign bodies are found in the stomach cavity and removed by hand, and from the esophagus - with forceps or tweezers. After removing foreign bodies, the edges of the stomach wound are treated with tampons soaked in a warm antiseptic solution (ethacridine lactate or furacilin). The stomach wound is sutured with silk with a two-storied suture: the first - with piercing of all layers according to Schmiden, the second - serous-muscular according to Lambert, Plakhotin or Sadovsky. Before applying the second floor, wash your hands or change gloves.



Stages of gastrotomy: a - dissection of the serous-muscular layer with a scalpel; b - dissection of the mucous membrane with scissors; c - suturing a stomach wound with a Schmiden suture; d - the imposition of a serous-muscular suture

Schmieden's suture - continuous, also used in operations on the large intestine. Near one of the ends of the wound, one stitch of the Lambert suture is applied, and then all subsequent injections are made from the side of the mucous membrane through all layers of the wall onto the serous surface. And they do it in turn on one and the other side of the wound. The helper keeps the thread taut. As a result, when tightening, the edges of the wound are set into the lumen of the organ. Finish the suture as usual with a continuous skin suture. The last stitch should be Lambert's serous-muscular suture.

The Lambert suture is performed in the form of a knotted or continuous suture, both independently and in combination with other sutures. The needle is injected from the side of the serous membrane at a distance of 4 ... 6 mm from the edge of the wound through the serous and muscular membranes and submucosal tissue. An injection is made approximately at a distance of 1 ... 1.5 mm from the edge of the wound. The same stitch, only in reverse order, is made on the opposite side of the wound. As a result of the fact that the thread is pulled and tied in a knot, the surfaces of the edges of the wound are wrapped inward and firmly connected to each other. Separate seam stitches are applied at a distance of 3 ... 5 mm from each other. The Lambert suture does not exclude the possibility of leakage of liquid contents between the individual suture stitches and infection of the abdominal cavity. Therefore, when joining the wound of the walls of large organs (stomach, large intestine), a two-story Lambert suture is applied.

Sadovsky's suture is a continuous serous-muscular suture. It begins outside the wound with one simple stitch at one of the ends of the wound. The beginning of the thread is secured with a sea knot. A needle with a thread is passed through the serous and muscular membranes parallel to the edge of the wound, stepping back from it by 3 ... 5 mm, then also through the other edge of the wound, again through the first, and so on, alternately piercing the edges of the wound. The stitch length is within 5… 6 mm. The points of withdrawal of the needle on one side of the wound and its subsequent puncture on the other side should be at the same level. After each stitch, the thread is tightened, as a result, the edges of the wound are wrapped in the lumen of the organ and are in close contact with their serous surfaces. The last stitch is the same as for any continuous seam. Before the last stitch, the free end of the thread is pulled, and after the stitch, it is tied with a sea knot with the loop on which the needle was. The wound of the stomach and colon is sutured with a two-storied suture.

The Plakhotin's seam, proposed later, is no different in principle from Sadovsky's seam. Initially, it was not serous-muscular, but through all layers of the intestinal wall. The types of seams are described in more detail here.

A three-story suture is applied to the wound of the abdominal wall: the first continuous (catgut, silk) on the peritoneum, transverse fascia and aponeurosis of the transverse abdominal muscle; the second to the rectus abdominis muscle and aponeurosis of the internal and external oblique muscles of animals (silk or catgut); the third is intermittent from silk to the superficial fascia and skin. As the sutures are sutured, tricillin is sprinkled on the wound. The sutured wound is treated with an alcohol solution of iodine (iodosol, etc.) and irrigated with cubatol or septonex. The suture area is closed with a postoperative blanket. Skin sutures are removed on the 9-10th day.

On the first day after the operation, the dog is deprived of food, on the second day they give tea, milk, then slimy soups. Subsequently, the dog is gradually, on the 5th ... 6th day, transferred to normal feeding. During the first 5 days, antimicrobial drugs are prescribed to the dog with food.

Topic: Bowel resection technique

Indications. Perforation or necrosis of the intestinal wall; danger of necrosis due to infringement with hernias, volvulus; irreparable adhesions or intussusceptions; neoplasms.

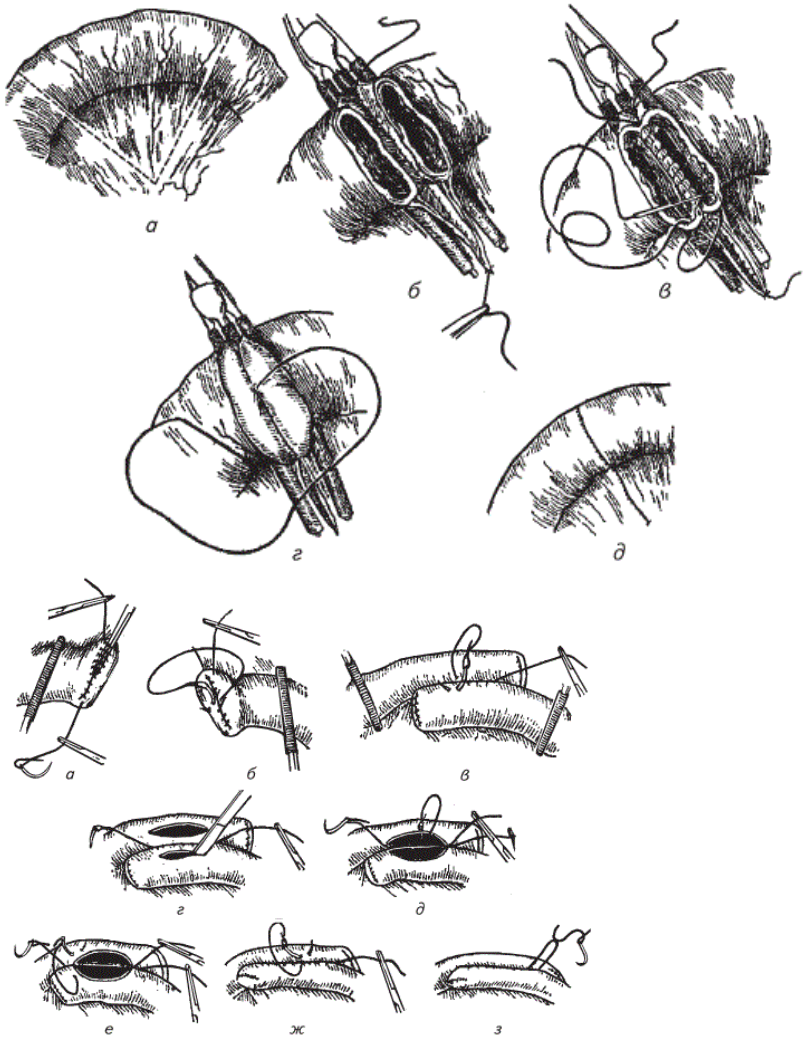
Fixation. The animal is fixed on the operating table in the dorsal position.
Anesthetic protection. Combined use of neuroleptics with suprapleural novocaine blockade according to V.V. Mosin.
Operation technique. The site of the laparotomy is determined by the localization of the lesion. More often, a paramedian incision is performed. Opening the abdominal cavity, remove the damaged intestine on sterile napkins, isolate it from the abdominal cavity. The contents of the intestine are pushed aside. After that, four soft intestinal pulp, two on each side, are applied to the absolutely healthy parts of the intestine at a distance of at least 5 ... 6 cm on both sides of the intended area of resection.

Intestinal resection: a - isolation of intestinal contents; b - superposition of four soft intestinal pulp
I apply double ligatures on the mesenteric vessels going to the resected area (being careful not to ligate the borderline trunks that supply blood to the intestine on the lines of the planned resection). Applying ligatures to the mesenteric vessels, 2 ... 4 cm of the mesentery can be captured in each ligature. The needle for the next seam is injected through the puncture hole of the previous one. The mesentery is dissected between the ligatures with scissors. Depending on the size of the lumen of the intestine, two methods are used to connect its ends.
End-to-end stitching of the intestine is used if the intestinal lumen is large enough, more often on the large intestine in large dogs.

Resection of the intestine and the imposition of the terminal anastomosis: a - oblique section of the intestine; b - provisional ligatures on opposite sections of the intestine; c - suture on the back wall of the intestine; d - continuous suture on the anterior wall of the intestine; e - a separate continuous suture on the mesentery
The intestine is dissected with scissors or a scalpel in an oblique direction so that the section of the intestine opposite to the mesentery is excised over a greater extent. Due to this, the lumen of the ends to be connected increases, it is possible to avoid narrowing of the intestinal lumen during suturing, and their better blood supply is ensured. The mucous membrane is carefully freed from the remnants of the contents, lightly wiping with tampons moistened with antiseptic solutions.
The intestinal stumps are brought together with the lateral surfaces so that their mesentery is directed in one direction, and both open ends lie side by side. First, two ligatures are applied to both sections of the intestine; the first is carried out through the edges of the mesentery at the place of its attachment to the intestine and through the entire thickness of the wall of both segments of the intestine; the second I connect the sections of the intestine from the opposite side. Pulling up the ligatures, the ends of the intestine are brought together and straightened in one straight line. After that, they begin to impose a continuous suture (according to Schmiden or Albert) through all layers of the intestine, first on the back wall, and then on the front. At the end of the operation, a knotted or continuous Lambert suture is applied. The first stitches of this seam are made first on the anterior intestinal wall. Then the intestine, together with the mesentery, is turned over and a suture is applied on the back wall. At the end of the enteroanastomosis,

intestinal pulp and provisional ligatures are removed. The edges of the mesentery incision are connected with a separate continuous suture.

Side-to-side stapling is used in small dogs and cats on the small intestine.



Intestine resection and the imposition of a lateral anastomosis: a, b - closure of the dissected ends of the intestine with sutures; c - fixation of the blind areas of the intestine with a serous-muscular suture; d - longitudinal sections for the formation of the anastomosis; d ... h - stages of suturing when creating a lateral anastomosis

The places where it is planned to dissect the intestine are squeezed with intestinal pulp. At a distance of 1 ... 2 cm on the periphery of the pulp, a purse-string serous-muscular suture is applied to the intestine. Then the pulp is replaced with a silk ligature to prevent wound contamination; next to the ligatures, the removed section of the intestine is isolated using arterial clamps. Only after that, the intestine is dissected between the forceps and the ligature.

Before tightening the ends of the purse string suture, the tied end of the intestine is set into its lumen. An 8-shaped serous-muscular suture is applied over the purse-string suture. Do the same with the other end of the intestine. The tightly sewn ends of the intestine are folded side to side with the blind ends and their mesentery in opposite directions. They are fixed with soft intestinal pulp and sutured with Lambert's serous-muscular suture. The end of the thread remaining from the seam is not cut off, but wrapped in a gauze compress. After that, longitudinal cuts are made, coinciding in the

length and direction of the superimposed seam, at a distance of 0.5 ... 0.8 cm from it. The length of each incision should be 1.5 times the diameter of the corresponding bowel. The incisions lead no further than 2 ... 3 cm from the intestinal stump in order to avoid the formation of large blind bags and fecal debris in the future. The inner edges of both wounds of the intestine are connected with an Albert suture, for which a second thread is taken. With the same thread, the outer edges of the intestinal wounds are sewn using the Schmiden suture, and the end of the thread is fixed by tying it to the beginning of the same thread. To complete the formation of the anastomosis, the Lambert suture is applied with the remaining end of the first thread, with which the Schmiden suture is immersed. As a result, an anastomosis is formed, around which a two-story suture is imposed. When applying this anastomosis, special attention is paid to the tightness of the seams, especially in the area of the corners of the anastomosis. The operation ends with the imposition of several stitches of the suture on the mesentery wound.

End-to-side stitching of the intestine is used when connecting intestines of different diameters or the intestine to the stomach. The operation technique is basically the same as in the two cases described above. First, the end of the intestine (5 mm back from its edge) is stitched with a Lambert suture to the lateral surface of the stomach or large intestine. Then the stomach or large intestine is opened and the inner edge of the stomach and the edge of the intestine are sutured with a second thread with Albert's suture, with the same thread, the Schmiden suture is applied and, finally, the anastomosis is completed with the Lambert suture with the rest of the first thread. Before immersing the intestine back into the peritoneal cavity, it is necessary to once again examine the mesentery of the intestine, check whether the bleeding has been thoroughly stopped, and remove blood clots. The connected intestine is washed with a warm antiseptic solution (ethacridine lactate, furacilin, etc.). Lubricate with an oil solution of camphor and set into the abdominal cavity. The operation ends with sutures on the abdominal wall. Before this, hands should be reprocessed, gloves should be changed, and a different set of sterile instruments should be used.

Stitching with staplers. The world's first practically applied surgical stapler was designed in 1908 in Hungary by the tool mechanic Fischer according to the idea of the surgeon Hilt. Surgeons have long sought to close the infected intestinal lumen with metal clips. This method has many advantages. With a suitable apparatus, metal staples can be applied in a single motion. Metal clips are easier and more reliable to sterilize than any other suture material, they are non-hygroscopic, do not suck in or pass out infectious intestinal contents. The pressure under which the machine applies the staples is always the same. Currently, several types of staplers are used in operations on the stomach and intestines.

Topic: Hernias and their surgical treatment

Purpose of the lesson: To master the methods of treating diseases of the abdominal region.

Material equipment: Sick animal, surgical set of instruments, sutures, alcohol, iodine, physical. Solution, gauze swabs, dressings, gloves.

Hernias are abdominal and umbilical, congenital and acquired. They are often found in cattle and pigs.

Congenital hernias occur in newborns and are considered hereditary anomalies in the development of the umbilical and other openings. The causes of acquired hernias are various injuries leading to rupture of the abdominal walls (falling on uneven, hard ground, blunt objects, blows with a horn and hoof, scars after injuries and previous operations).

Clinical signs. According to the clinical picture, hernias are reducible, irreducible and restrained. With non-strangulated hernias, the prognosis is favorable, with strangulated hernias, it is very careful, since purulent peritonitis (inflammation of the peritoneum) may develop. At the site of the developing hernia, diffuse inflammatory edema is observed. After their disappearance, a limited, painless swelling appears, which decreases from pressure. Sometimes it is possible to set it into the abdominal cavity and probe the hernial ring (reducible hernia). The size of the hernia may vary; in the abdominal area, hernias are large, in the area of the hungry fossa - smaller.

An irreducible hernia is accompanied by partial or significant fusion of the serous membrane of the displaced organ with the hernial sac. The contents of the hernial sac cannot be adjusted into the abdominal cavity.

A restrained hernia is characterized by squeezing of the fallen bowel loops with a narrow hernial ring, which leads to impaired blood circulation, cessation of movement of contents, the formation of gases in the restrained loop of the intestine, stretching it and the hernial sac. This leads to cardiac disorders and intoxication with signs of colic. Hernias are repaired promptly.

An abdominal hernia is characterized by the displacement of an organ outside its cavity through a natural or artificial opening together with the peritoneum. It often occurs in horses, cattle and pigs, very rarely in other animals with a subcutaneous rupture of the abdominal muscles with prolapse under the skin of the omentum and intestinal loops along with an unsecured parietal peritoneum. Cattle in the hernial sac can have abomasum, liver, uterus.

In a hernia, a hernial gate is distinguished (an artificial ring or hole formed when the abdominal muscles rupture); hernial sac (protrusion of the parietal peritoneum); the contents of the hernial sac (intestinal loops, omentum, uterus, abomasum and other internal organs).

The causes of abdominal hernia are various injuries leading to stretching, tearing or tearing of the muscles of the abdominal wall. A defect forms in the abdominal wall, into which the parietal peritoneum protrudes. If intestinal loops, uterus, omentum, scar and other internal organs fall into the hernial sac, then this pathology is called prolapse; the loss of the listed internal organs to the outside is called eventration.

Clinical signs. At the site of the developing hernia, diffuse inflammatory edema is observed. After their disappearance, the swelling becomes limited and when pressed on it decreases in size, sometimes it can be adjusted into the abdominal cavity and the hernial ring can be felt. The size of the hernia may vary. In the area of the lower and lateral walls

of the abdomen, hernias are large in comparison with small hernias in the area of the hunger fossa and intercostal space.
Treatment - only surgery has a positive effect, and the use of conservative methods of treatment (dressings and bandages, rubbing irritating ointments into the hernia, various injections) are ineffective.
An umbilical hernia is characterized by the protrusion of the peritoneal dressings and the exit of the internal organs of the abdominal cavity (omentum, intestine) through the expanded umbilical ring. This disease occurs in piglets and puppies, rarely in calves and foals. Umbilical hernias can be congenital (excessively wide ring) and acquired (traumatic injuries), reducible (a prolapsed intestine or omentum can easily be adjusted into the inguinal ring) and irreducible (fallen out viscera cannot be freely repositioned due to adhesions of the hernial sac with hernial contents; these hernias can be impaired).
Clinical signs. With the development of an umbilical hernia in the navel, a saccular, limited, painless, soft, hemispherical swelling appears.
With large umbilical hernias, inflammation of the hernial sac as a result of injuries is observed, and with the introduction of microbes, abscesses are formed, tissue necrosis develops, and skin lesions appear. With repositionable umbilical hernias, the prognosis is favorable, with restrained hernias with bowel necrosis, it is very careful.
Treatment. Young animals may self-heal. In adult animals, in the treatment of umbilical hernias, surgical methods are used (hernia repair, or hernectomy), which give a good positive effect, and various conservative (dressings and bandages, rubbing irritating ointments into the hernia area, subcutaneous and intramuscular injections around the circumference of the hernial ring), but they ineffective.
Rectal prolapse. This disease is more common in piglets and somewhat less often in dogs and horses. It is usually the result of another, underlying disease.

Causes. Rectal prolapse is usually observed with diarrhea or constipation, bladder stones, severe prenatal attempts and other diseases in which the animal is very and often strained.

Signs. The prolapsed part of the rectum hangs down from the anus. Soon she swells, takes on a grayish-cherry color, wounds and necrotic ulcers appear on it.

Treatment. The prolapsed part of the rectum is washed with warm saline or 0.25% potassium permanganate solution, lubricated with penicillin (biomycin) ointment. To eliminate edema, the intestine is lightly massaged, then set and a purse-string suture is applied to the anus, leaving a small gap for feces to exit. The suture is removed on the 6-7th day. If this does not help, as well as with significant necrosis of the intestine, they resort to surgery. For this purpose, the mucous membrane of the prolapsed intestine is irrigated with a 0.25% solution of novocaine. Two long threads perpendicular to each other are stitched through the entire thickness of the fallen out intestine. Departing from the threads to the outer edge by 1 cm, the intestine is cut off. In the lumen of the intestine, at the intersection of the threads, they are grasped with tweezers, pulled outward and cut. The free ends of the four threads obtained in this way are tied, resulting in the formation of the first stitches of the knotted seam. Then, in the intervals between them, the required

number of stitches of an intermittent knotted suture is applied to the end of the intestine, after which the ends of the threads are cut off.

Scrotal hernia. The lowering of the viscera between the muscular-elastic and common sheaths of the vagina into the scrotum It is observed most often in stallions and boars. A scrotal hernia occurs as a result of enlargement of the groin rings and muscle tension when the animal falls, strains, or is anxious. In horses, scrotal hernias are often impaired and are accompanied by general anxiety of the animal.

Treatment. Operational. In case of chronic hernias, animals are castrated on bream or ligature, in case of strangulated hernias, the loops of the intestines are adjusted through the rectum. If it turns out to be impossible to reposition the prolapsed intestine, an urgent operation is performed - castration on bream. It is advisable to give the sick animal a dorsal position at the time of the operation. Abdominal hernia. Observed in horses and cattle. Etiology. Subcutaneous rupture of the abdominal muscles with prolapse under the skin of the omentum and intestinal loops along with the unsecured parietal peritoneum. Cattle may have abomasum, liver and uterus in the hernial sac.

Topic: Operations of the genitourinary organs, anatomical and topographic structure, nerve pain relief.

CASTRATION OF AGRICULTURAL ANIMALS

Castration is an artificial termination of the function of the sex glands of males or females by various methods. Most often, castration is performed by surgery, removing the sex glands. Sometimes the function of the gonads is stopped, disrupting their blood supply, completely or partially destroying them. For this purpose, chemicals, hormonal drugs, and radioactive radiation are also used.

The economic significance of the castration of farm animals. The sex glands of males and females produce sex cells and secrete hormones. The action of sex hormones is closely related to the function of the endocrine glands. Sex hormones, entering the bloodstream, strongly affect the animal's body, including its exterior forms, behavior, metabolic characteristics, etc. The castration of animals leads to significant changes in metabolism, hormonal activity, behavior, etc. Quantitative and qualitative changes occur in the organs and tissues of the animal. Castration has a stronger effect on animals operated on at a young age.

In animal husbandry, castration is carried out for economic and medical purposes. Castrated animals are better fed, give greater weight gain, and the quality of meat improves, especially in boars, goats, and rams. The quality of the wool is also improved in rams. Working animals become calmer and more resilient, the group keeping of castrated animals is facilitated. Castration of males allows purposeful breeding work and prevents related crossbreeding.

For therapeutic purposes, animals are castrated for injuries and inflammations of the testes, intravaginal hernias, neoplasms, etc.

Brief information on the topography of the scrotum and testicles. The scrotum in most animals is located between the thighs, in some it is shifted closer to the anus. The

scrotum is divided by a septum into two cavities in which the testes are located. Four layers are distinguished in the wall of the scrotum:
1) the skin of the scrotum. In bulls, stallions, boars, the skin of the scrotum is covered with thin, thin hair; in rams, males, and cats, it is covered with well-developed hair;
2) the muscular-elastic membrane is tightly connected to the skin, has many muscle bundles and elastic fibers and forms a septum;
3) the fascia of the scrotum is a dense fibrous plate, firmly connected with the muscular-elastic membrane and loosely with the next fourth layer;
4) the common vaginal membrane is loosely connected to the fascia of the scrotum. It is a protrusion of the peritoneal bandages in each half of the scrotum and forms the cavity of the common vaginal membrane in which the testis is located. The cavity of the common vaginal membrane through the vaginal canal connects to the abdominal cavity. The vaginal canal runs inside and lines the inguinal canal.
The inguinal canal has two openings (rings): external (subcutaneous) and internal (abdominal). It is a slit-like space between these openings, limited by the oblique muscles of the abdomen. The length of the inguinal canal in a stallion reaches 10-12 cm.
The outer (subcutaneous) inguinal ring is located in the groin 2-3.5 cm in front of the pubic bone and at the same distance to the side of the white line. It has the shape of a slit 10-13 cm long in stallions. The inner (abdominal) inguinal ring opens with an elevation in the abdominal cavity, is located 3-4 cm in front of the pubic bones and 11-14 cm away from the white line and has an oval shape. Vessels and nerves pass in the inguinal canal.
Testes are oval in shape; in ruminants they are more oblong (Fig. 57). Outside, they are covered with their own vaginal membrane, which is the visceral layer of the peritoneum. On the surface of the testis is an appendage, which basically carries the vas deferens. On it, the head, body and tail of the appendage are distinguished. From the testis and its appendage, the spermatic cord departs, representing the mesentery of the testis, the spermatic cord from the testis goes to the peritoneal opening of the vaginal canal. It includes the vas deferens, the internal spermatic artery, the internal spermatic nerve, the plexus of the internal spermatic vein, lymphatic vessels, and the internal testis lifter.
The own vaginal membrane of the testis, epididymis and spermatic cord is connected to the common vaginal membrane through the vaginal (transitional) ligament. Its lower section, which connects the tail of the epididymis and the common sheath, is thickened.
Age, season, most favorable for castration.
Stallions are usually castrated at the age of 3, when the growth and development of the body has already been completed. With herd keeping for rapidly developing breeds, castration is allowed at 1.5-2 years of age.
It is advisable to castrate bulls for fattening at the age of 5-6 months, and with prolonged fattening, even at 8-11 months. With intensive fattening and in industrial complexes, when fattening ends at 13-15 months of age, bulls are recommended to be castrated in a percutaneous way at the age of 4-6 months. Sheep and goats are castrated at the age of 2-4 months, less often at the age of 5-6 months; boars can be castrated at any age, but preferably at 4-5 weeks of age. Camels are castrated at 2.5-3 years old; reindeer - at 10-12 months; rabbits at 1.5-2.5 months.

The question of the rational timing of castration, taking into account the convenience of the operation and obtaining the highest productivity, has not yet been finally resolved.
There are different methods of castration that can be used effectively, taking into account the age, type of animal, housing and feeding conditions.
For medicinal purposes, animals can be castrated at any age.
Better to carry out castration in the spring and early autumn. It is easier to ensure compliance with asepsis and antisepsis at this time of the year; little dust, flies, low air temperature, which contributes to the rapid healing of the surgical wound.
It is better to operate on animals in the morning, in order to be able to observe them during the day and prevent possible complications.
Examination of animals before surgery, preparing them for surgery and postoperative care. Before the operation, each animal is examined. Castration should not be carried out if the farm has patients with acutely infectious diseases typical of animals of this species. They also do not operate later than two weeks before mass prophylactic vaccinations, and earlier than two weeks after their implementation. Emaciated animals with increased body temperature should not be castrated.
Large animals are subjected to clinical research: body temperature is measured, lymph nodes, mucous membranes, pulse, respiration are examined. When neutering small animals, they are limited to general examination and measurement of body temperature in those animals that refuse to feed and are depressed.
Before castration, the scrotum area and its contents are carefully examined. In the presence of a hernia, the question of the method of surgical treatment of the hernia is simultaneously resolved. The animals are provided with a clean, dry bedding. Animals are fed before and after castration according to the usual diet. Only for stallions 12 hours before castration, it is recommended not to give concentrates and somewhat reduce the hay rate. In the postoperative period, overfeeding of animals is not allowed and regular examinations are carried out.
In stallions, after castration, the tail is bandaged and tied to the side through the neck. In most cases, they are kept in a barn on a short leash, the floor must be clean. On the second day, postings are prescribed in increments of 1 hour, 2 times a day. After 12-14 days, it is allowed to use them for light work, gradually increasing the load.
Castration methods. There are many ways to castrate animals. They can be divided into two main groups - bloody and bloodless (percutaneous). With the bloody method, the testes and their appendages are removed in whole or in part.
Currently, the most common castration with complete removal of testes and appendages. Their removal can be done in an open or closed way.
Open castration method. All layers of the scrotum are cut, including the common vaginal membrane, then the thickened part of the transitional ligament, and the testis with the appendage is removed, destroying the spermatic cord. The spermatic cord, depending on the type and age of the animal, is dissected with an emasculator, crushed with forceps and unscrewed, tied with a ligature and cut, cut off. With this method of castration, the abdominal cavity communicates with the external environment through the vaginal canal.
Closed method of castration. During castration, the skin, muscular-elastic membrane and fascia are cut in this way. The common vaginal membrane is not cut, but is bluntly

separated from the above layers. The testes remain covered with this membrane, easily moves in it. Then a ligature is applied to the common vaginal membrane, the spermatic cord above the testis, closer to the inguinal ring, and the testis is cut off together with the membrane covering it. In this case, the vaginal canal is closed and the abdominal cavity does not communicate with the external environment.

With bloodless methods of castration, the function of the testes stops without removing them. This is achieved by destroying the spermatic cord, testis. The spermatic cord is destroyed with hands or forceps of various designs (Telyatnikova, Khanina, Tynibekov, Golensky, Glushko, Burdizzo, etc.), without violating the integrity of the skin.

Topic: Operations performed on the female genital organs

Castration of females (ovariectomia) - operative removal of one or both ovaries, depopulation of females.

Indications: pathology of the ovaries, withdrawal of sexual desire.

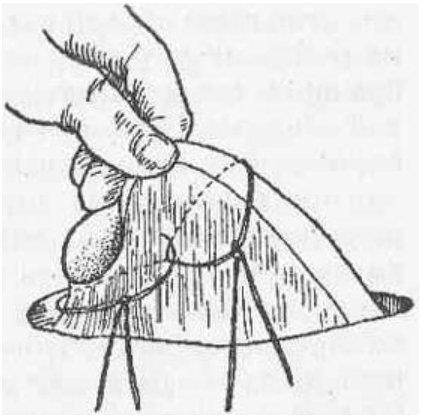
Brief anatomical and topographic data. The ovary is a paired organ located in the peritoneal cavity. On the ovary, two ends are distinguished: tubal (cranial) and uterine (caudal), two edges - mesenteric and free. The funnel of the oviduct is attached to the tubal end, and the ovarian ligament, which connects the ovary to the uterine horn, is attached to the uterine end. The mesentery of the ovary is attached to the mesenteric edge. The outer form of the ovary is lumpy, small in size, oval-elongated. From the ovary, the oviduct departs, which is a thin, winding tube that connects the ovary to the uterine horn. The uterus is of a two-horned type. Paired horns are distinguished in it. They are thin, straight, long and diverge cranially along the lateral abdominal wall without a visible border into the oviducts, and caudally into the body of the uterus.

Operation technique. The preparation of the operating field is carried out according to the generally accepted technique. The animal is fixed in the dorsal position. The operation is performed under general anesthesia or with the combined use of antipsychotics and local infiltration anesthesia. Before the operation begins, the bladder is catheterized.

Laparotomy of the abdominal wall is performed along the white line of the abdomen or through the iliac region.

Ovariectomy along the white line of the abdomen

An incision 5-6 cm long is made along the white line of the abdomen, stepping back 1-1.5 cm caudally from the navel. In cats, the incision should be 1–2 cm in front of the pubic fusion. Reveal all layers of the white line. After opening the abdominal cavity, two fingers (index and middle) are inserted into the wound opening and the uterine horn (it differs from the intestine in a smaller diameter and greater wall density) or an ovary is found in the dorsal part of the abdominal wall. The latter is taken from the cavity to the outside into the wound. Deschamp needles with a long ligature pass through the uterine ligament, mesentery and vessels. Then the ligature is cut into two threads and tied in front and behind the ovary (Fig. 71). The ovary is cut off with scissors as well. the stump is treated with an alcoholic flock of iodine.



Rice. 71. The scheme of imposing ligatures during the castration of a bitch

Instead of ligatures, torsion of the ovaries can be done. To do this, hemostatic tweezers are applied to the ovarian ligament together with the fringe. The second tweezers are brought under it and the ovary is removed by twisting. Another ovary is found with fingers deep in the abdominal cavity or passes with fingers from the end of the uterine horn to its bifurcation, and then along the other horn to the ovary, which is removed by any of the above methods. After amputation of the ovaries, the uterine horns are immersed in the abdominal cavity and antimicrobial substances (antibiotics, sulfa drugs, etc.) are injected into it. A continuous catgut or silk suture is applied on the white line fabric, and an intermittent knotted silk suture on the skin.

Ovariectomy through a sigh

In large dogs, operative access through the white line is difficult (the ovaries are located on a short mesentery in the kidney region), so they resort to a lateral incision in the iliac region. But through one side suture it is often not possible to pull up the opposite ovary, therefore, bilateral oophorectomy is performed in two steps.

The animal is fixed on the operating table in a lateral position. Rational for this approach is a 4-6 cm incision along the fibers of the oblique abdominal muscle, in the middle of the space between the crotch and the last rib. The upper corner of the wound should be 2 cm below the ends of the transverse costal processes of the lumbar vertebrae. It is advisable to separate the muscle layers of the abdominal wall in a blunt way (with a scalpel handle or fingers) along the muscle fibers. This contributes to better wound closure, prevention of bleeding and prolapse of internal organs. Then the retroperitoneal fat is disconnected, the peritoneum is grasped with anatomical tweezers, pulled into the wound cavity and, making sure that the intestines are not captured with it, carefully make a notch with a scalpel, through which the peritoneum is cut along the length of the operating wound with blunt scissors on the finger. The ovaries are found and amputated according to the methods described above. After the amputation of the ovaries and the immersion of the uterine horns in the abdominal cavity (this must be carefully checked), they begin to close the wound. The first suture (continuous) is applied to the peritoneum and fascia transverse. Muscles are straightened along the muscle fibers. Knotted sutures are applied to the skin and subcutaneous tissue.

The sutured skin wound is treated with cubatol (lifuzol or septonex) or an alcohol solution of iodine. Skin sutures are removed on day 8-10. On the first day after the operation, the animal is resting. Feeding is normal.

Topic: Anatomical and topographic structure of the limbs, nerve pain relief

The following areas are distinguished on the thoracic limb: the scapular-humeral region of the scapula and the shoulder joint; the area of the elbow joint and forearm; wrist area; the area of the metacarpus and fingers, which includes the fetlock area, the fetlock area, the coronary joint area, the coronal area, the area of the hoof joint (in artiodactyls) and the hoof (in artiodactyls). The wrist, metacarpus and fingers form the hand of the limb.

Scapular-humeral region. Borders of the scapular-humeral region: upper - between the upper and middle thirds of the scapula; front - the front edges of the scapula, shoulder joint and humerus, covered with muscles; lower - a horizontal plane corresponding to the upper part of the ulnar tubercle; back - elbow line. In this area, bony protrusions are clearly visible and palpable in large animals: the external muscular tubercle, deltoid roughness and the crest of the greater tubercle of the humerus.

The innervation of this area is carried out by the branches of the brachial plexus (subscapularis, cranial thoracic, musculocutaneous, axillary nerves), which are located mainly on the medial side of the shoulder joint.

The blood supply is provided by the subclavian artery, which runs along the medial side of the shoulder joint along its flexor surface. In doing so, it gives up a dorsal branch called the subscapularis artery and a ventral branch called the brachial artery. On the extensor surface of the scapular-humeral region from the subclavian artery, dorsally from the shoulder joint, there is the thoracic-acromial artery.

Elbow and forearm area. Borders of the elbow joint and forearm: the upper border corresponds to the lower border of the previous area; lower - a plane running along the ligamentous tubercles of the distal end of the forearm bones.

On the skin of the medial surface of the forearm, near its middle, the horse has a longitudinal horny formation, the so-called chestnut. Under the superficial fascia in the region of the apex of the ulnar tuberosity, the subcutaneous synovial bursa is localized, which in horses and dogs is often injured and inflamed. On the medial surface of the forearm (in the dog on the dorsal), under the superficial fascia are well-contoured saphenous veins of the forearm - the head and accessory; the latter runs along the medial surface of the radial extensor of the wrist. Between these veins in a horse, you can sometimes feel the thin trunk of the cutaneous branch of the musculocutaneous nerve.

On the palmar surface, the deep fascia of the forearm covering the muscles is thickened. It forms two large fascial sheaths for the muscles of the forearm with passing nerves and vessels: the dorsal for the extensors and the palmar for the flexors. At the same time, on the lateral surface, the radial and lateral grooves of the forearm are clearly visible, on the palmar surface - the ulnar and on the medial surface - the median.

The blood supply to the elbow joint and forearm is carried out by the branches of the median, collateral ulnar and radial arteries; innervation - branches of the axillary, median, ulnar, radial and musculocutaneous nerves.

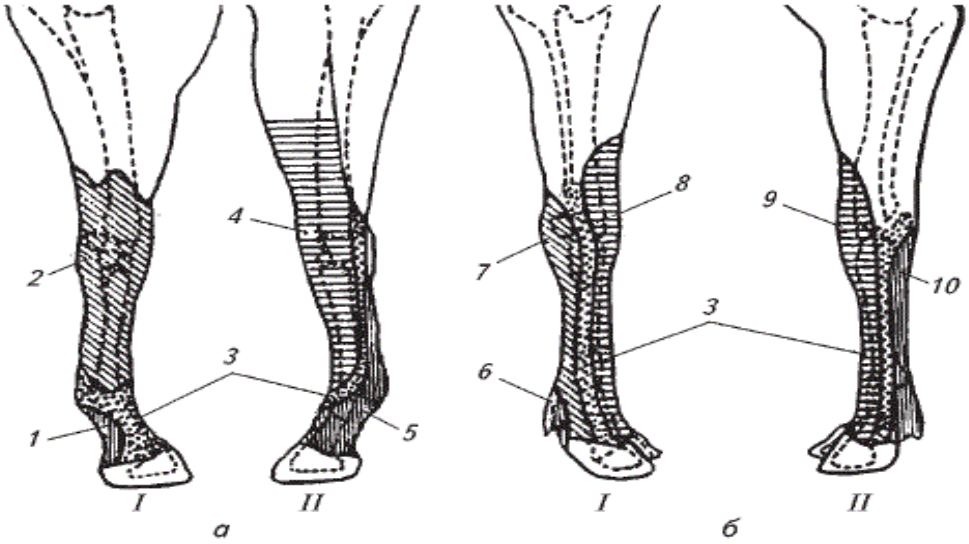
Wrist area. The upper border of the wrist area runs along a border that coincides with the lower border of the previous area, and the lower one corresponds to a horizontal plane drawn along the upper thickened ends of the metacarpal bones. On the lateropalmar surface of the metacarpus, the accessory wrist bone is felt. Beneath the superficial fascia

is the precarpal subcutaneous synovial bursa (mainly in cattle). The deep fascia of the wrist is a thick and dense sheet that forms seven connective tissue canals for the tendons, tendon sheaths and neurovascular bundles (N.V. Sadovsky). The largest of the canals is palmar, located along the posterior surface of the joint. The tendons of the superficial and deep flexors of the fingers pass through it with a common carpal tendon sheath and, depending on the type of animal, the median or ulnar nerves with their accompanying vessels.

The bones of the carpal joint form three of its floors: the radiocarpal joint is the largest and most mobile, the intercarpal joint is less mobile, and the carpometacarpal joint is inactive. In this regard, the carpal joint forms three articular cavities, of which only the second two are connected to each other. The wrist joint has an extensive palmar protrusion of the synovium.

The blood supply to this area is carried out by the branches of the median artery from the collateral ulnar and radial arteries (horse) or from the ulnar and radial (cattle).

The innervation of the wrist is provided by the median, ulnar and musculocutaneous nerves, and in cattle, pigs and dogs, also the radial.



Zones of cutaneous innervation of the distal part of the thoracic limb: a - horses; b - cattle; I - from the lateral side; II - from the medial side; 1 - medial palmar nerve; 2 - ulnar nerve; 3 - zones of mixed innervation; 4 - musculocutaneous nerve; 5 - medial palmar nerve; 6 - medial palmar nerve; 7 - ulnar nerve; 8 - radial and musculocutaneous nerves; 9 - musculocutaneous nerve; 10 - medial palmar nerve

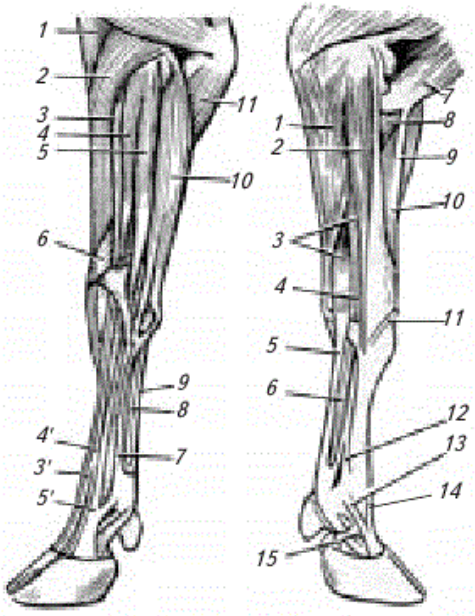
Metacarpus and toes. The upper border of the metacarpus and toes follows the lower border of the previous area. In horses, the basis of the metacarpus is the third metacarpal bone and only the third finger, while in ruminants and pigs, the third and fourth metacarpals with the third and fourth fingers. Accordingly, the horse has II and IV rudimentary (slate) bones, and cattle and pigs have II and V rudimentary hanging fingers.

There are several fascial canals in the metacarpus. The largest one runs along the palmar surface. It contains the superficial and deep flexors of the fingers, interosseous muscles and the vermiform muscle (not in ruminants), vessels and nerves. The grooves are clearly visible in this area. In the medial palmar groove in cattle, there is a common palmar artery with the same vein and the median nerve, in the lateral groove - the superficial

palmar metacarpal arteries and vein, as well as the palmar branch of the ulnar nerve. The dorsal median metacarpal groove is followed by the dorsal median metacarpal vessels and the superficial radial nerve.

In horses, the medial palmar groove contains the common digital artery and vein, as well as the medial palmar nerve. The lateral palmar groove is followed by the thin superficial palmar metacarpal lateral vessels and the lateral palmar nerve.

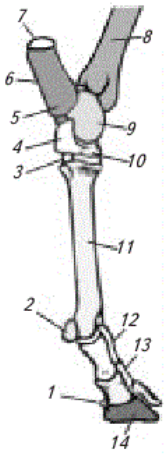
Muscles of the pectoral limb. In the area of the chest limbs, the following muscle groups are distinguished: shoulder girdle; shoulder joint; elbow joint; carpal joint; finger joints.



Muscles of the forearm and hand of cattle: a - from the lateral side: 1 - internal brachial muscle; 2 - radial extensor of the wrist; 3, 3 ′ - extensor of the third finger and its tendons; 4, 4 ′ - common extensor of the fingers and its tendons; 5, 5 ′ - extensor IV of the finger and its tendons; 6 - long abductor of the thumb (I) toe; 7 - tendon of the interosseous muscle; 8 - deep flexor of the fingers; 9 - superficial flexor of the finger; 10 - the elbow extensor of the wrist; 11 - deep flexor of the fingers; b - from the medial side: 1 - humeral head of the wrist flexor ulnar; 2 - radial flexor of the wrist; 3 - superficial flexor of the wrist; 4 - deep flexor of the fingers; 5 - tendon of the superficial flexor of the fingers; 6 - the tendon of the deep flexor of the fingers; 7 - biceps brachii; 8 - internal brachial muscle; 9 - tendon cord of the biceps brachii; 10 - radial extensor of the wrist; 11 - long abductor of the thumb (I) toe; 12 - interosseous third muscle; 13 - a branch to the tendon of the common extensor of the finger from the interosseous third muscle; 14 - tendon of the common extensor of the finger; 15 - annular ligament

Anatomical and topographic data of the pelvic limb

The following areas are distinguished on the pelvic limb: gluteal region; thigh area; the area of the knee joint and lower leg; the area of the tarsal (hock) joint; the area of the metatarsus and fingers, the latter includes the fetal joint area, the fetal area; area of the coronary joint, coronal area; the area of the hoof joint (in artiodactyls of the hoof); hoof area (in cloven-hoofed hooves). In this case, the fetlock, crown and hoof (hoof) areas together with the joints form the area of the fingers. The toes, together with the metatarsal joint and metatarsus, form the foot.



The skeleton of the foot of cattle from the medial surface: 1, 2 - sesame bones; 3 - I bone of the metatarsus; 4 - IV and central bones are tarsus; 5 - holder of the talus; 6 - heel bone; 7 - tubercle of the calcaneus; 8 - tibia; 9 - talus; 10 - II and III bones are tarsus; 11 - III and IV bones of the metatarsus; 12 - bone of the I phalanx of the fingers; 13 - bone of the II phalanx of the fingers; 14 - bone of the III phalanx of the fingers

The gluteal region. Borders of the area: upper along the median line of the body; front - along the line connecting the outer and inner hillocks of the ilium; lower - along a broken line running from the outer corner of the ilium through the hip joint to the ischial tubercle; back - along the line from the root of the tail to the ischial tuberosity. In clinical practice, this area, together with the contralateral area, forms a part of the body called the croup. Bone landmarks in the gluteal region are the outer and inner hillocks of the ilium, spinous processes, ischial tubercles, trochanters of the femur, and the posterior edge of the sacro-sciatic ligament. Under a well-developed deep fascia are the superficial, middle and deep muscle layers.

Thigh area. Area borders: the upper one coincides with the lower border of the previous area; lower - a plane drawn through the upper end of the knee cap; anterior - the front edge of the fascia lata tensor of the thigh; back - back contour of the thigh. In large animals, a groove is visible between the biceps femoris and the semitendinosus muscles.

The deep fascia of the thigh is a powerful fascial sheath, which, covering the thigh, radiates into the cleavage to form partitions that divide the muscles into separate groups.

Knee and lower leg area. Area borders: the upper one corresponds to the lower border of the previous area; the lower one runs along a horizontal plane drawn through the tubercle of the calcaneus. The following grooves are well pronounced on the surface of the region: peroneal - between the long and lateral extensors of the fingers; lateral and medial - between the common calcaneal (Achilles) tendon and the deep flexor of the finger (supracal external and internal fossa).

The knee joint consists of two joints: the knee cap (patellar) and the hip joint. The patella has ligaments - straight (lateral, middle and medial) and lateral. The joint cavity of the knee cup very often communicates with the cavity of the hip joint. In the latter, two cavities are distinguished, almost always isolated from one another.

The area of the tarsal (hock) joint. Borders of the area: the upper one coincides with the lower border of the lower leg; the lower one runs just below the thickened proximal ends of the metatarsal bones. The tarsal joint is an anatomically complex area characterized by

the presence of a large number of ligaments, tendons with tendon sheaths, vessels, nerves, bursae and bones. In this case, the following protruding landmarks are distinguished on the joint: the tubercle of the calcaneus, the lateral and medial ankles; the tendons of the extensor longus of the fingers and the anterior tibial muscle, the greater and lesser veins of the safen. In the area of the calcaneal tuberosity between the superficial and deep fascia lies the subcutaneous synovial bursa of the calcaneal tuberosity, which is the object of surgical intervention due to its inflammation. There is also a synovial bursa ("spar" bursa) under the medial pedicle of the tibialis tendon.

The deep fascia of the tarsus, which serves as a continuation of the fascia of the tibia, forms five fascial canals on the dorsolateral, lateral, medial and medioplantar surfaces, through which the flexor and extensor tendons of the tarsus and fingers pass.

The following two canals are of clinical interest: the medial canal of the tarsus, in which the tendon and sheath of the long flexor of the fingers pass; the plantar canal is tarsus with the tendon of the long flexor of the thumb and the posterior tibial muscle passing through it, which have a common so-called tarsal tendon sheath. The tarsal fascia, which forms a thickening in this area, called the oblique plantar ligament of the wrist, takes part in the formation of the canal and the fixation of the tendon.

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Metatarsus and toes. The upper border of the metatarsus is a plane drawn along the lower contour of the proximal thickened end of the metatarsal bones. In general, this area is basically the same as that of the thoracic limb.

Blood supply to the pelvic limb. The arteries are carried out: the muscles of the gluteal region supply the ilio-lumbar, deep and circumferential femoral arteries, the cranial, caudal gluteal and obturator arteries. In the femoral region, the femoral, cranial, deep and caudal femoral, medial and lateral circumferential femoral arteries and the safen artery branch out. The lower leg area receives blood supply mainly from the branches of the popliteal artery, originating from the femoral artery. The tarsus region supplies blood to the arteries of the safen and the posterior (in cattle, the anterior) tibial arteries.

Innervation of the pelvic limb. The innervation of the skin of the croup and thigh is carried out by the cutaneous branches of the dorsal lumbar and sacral nerves, the muscles innervate the femoral branches of the lateral cutaneous nerve of the thigh, the obturator, cranial and caudal gluteal nerves. In this case, the sciatic nerve, having given branches to the muscles of the gluteal region and thigh, branches into the tibial and peroneal nerves, which, with their branches, innervate the region of the lower leg and distal part of the limb.

In a horse, the branching of the sciatic nerve is carried out as follows.

The peroneal nerve is a weaker branch of the sciatic nerve. At the height of the tubercle of the tibia, it is divided into two trunks: the superficial and deep peroneal nerves.

The superficial peroneal nerve leaves the muscle fissure in the place where the long extensor of the finger passes into its tendon. It accompanies the tendon along its lateral edge and divides approximately at mid-height of the tarsus into two branches running parallel to one another on the dorsal surface of the metatarsus distally to the fetal joint and branching into the skin of the limb.

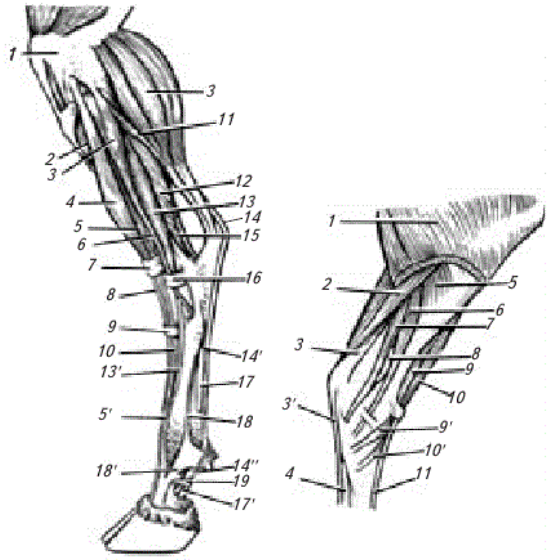
The deep peroneal nerve exits at the distal end of the muscular groove, in which it lies superficially and further divides into two branches: lateral and medial. The lateral branch of the deep peroneal nerve folds to the short extensor of the fingers and, having given up two weak branches, continues to run parallel to the dorsal lateral metatarsal artery to the lateral side. Further, this nerve follows distally from the clavate thickening of the lateral slate bone, reaching the surface of the finger to the corolla. It branches at the corolla and base of the skin of the hoof wall. The medial branch of the deep peroneal nerve, descending medially downward, reaches the border of the middle and distal thirds of the metatarsus, reaches the finger.

The tibial nerve at the mid-thigh level secretes the plantar cutaneous nerve of the lower leg, and at the level of the proximal part of the common calcaneal (Achilles) tendon - the medial cutaneous nerve of the lower leg. It innervates the medioplantar surface of the tarsal joint. Approximately at the level of the calcaneal tuberosity, the tibial nerve divides into two branches: the latter first go together, and then, palm-width below the calcaneal tuberosity, diverge as lateral and medial plantar nerves. In this case, the lateral plantar nerve runs along the edge of the deep flexor tendon of the finger, gives off a small branch, from which two branches, called the medial and lateral deep plantar metatarsal nerves, branch off to the medial and lateral sides of the interosseous middle muscle. They descend distally along the plantar surface of the metatarsus and toe.

The medial plantar nerve, like the lateral one, runs along the medial edge of the deep flexor tendon of the finger, accompanied by blood vessels.

Both plantar nerves are involved in the innervation of the capsules of the fetal, coronary and hoof joints, the naval bone bursa and the flexor tendon sheath. In the proximal fetal joint, the plantar nerves are divided into two branches: a stronger plantar nerve and a weaker dorsal one.

The safen nerve branches off from the femoral nerve. First, it passes together with the femoral artery in the femoral canal and gives off branches to the tailor, scallop and slender muscles. Upon leaving the femoral canal, it is divided into 3 ... 5 branches accompanying the vein of the same name and branching in the skin of the medial surface of the thigh, lower leg, tarsus and metatarsus, reaching the fetlock joint.



Muscles of the pelvic limb. The pelvic limb is set in motion by the muscles of: the hip joint; knee joint; hock joint; finger joints.

Muscles of the lower leg and foot in cattle: a - from the lateral side: 1 - knee joint; 2 - anterior peroneal muscle; 3 - gastrocnemius muscle; 4 - peroneal muscle; 5, 5 ′ - long extensor of the fingers; 6 - peroneal longus muscle; 7 - tibial transverse ligament; 8 - peroneal third muscle; 9 - metatarsal transverse ligament; 10 - short extensor of the fingers; 11 - heel muscle; 12 - peroneal short muscle; 13, 13 ′ - extensor IV of the finger; 14, 14 ', 14 "- superficial flexor of the fingers; 15 - posterior tibial muscle; 16 - tarsal transverse ligament; 17, 17 ′ - deep flexor of the fingers; 18 - its tendon branch to the extensor tendon; 19 - digital ligament; b - from the medial side: 1 - slender muscle; 2 - gastrocnemius muscle; 3, 3 ′ - superficial finger flexor; 4 - deep flexor of the fingers; 5 - popliteal muscle; 6 - long flexor of the toes; 7 - posterior tibial muscle; 8 - flexor of the thumb; 9, 9 ′ - tibialis anterior muscle; 10, 10 ′ - peroneal third muscle; 11 - long extensor of the fingers

General patterns of muscle distribution on the joints of the limbs. On the limbs, the following muscle groups are distinguished: flexors and extensors, abductors and adductors, rotators (supinators and pronators).

Flexors are located inside the corner of the joint, when they contract, they reduce the articular angle, that is, they flex the joint.

The extensors pass through the apex of the joint angle, when they contract, they increase the joint angle, which leads to the extension of the joint. Moreover, in both cases, the axis of motion in the joint lies horizontally in the segmental plane, and flexion and extension occur in the sagittal plane.

As a rule (with some exceptions), flexors and extensors lie with their abdomens proximal to the joint on which they act.

Abductors move one limb away from the other, causing the limbs to spread apart. They are located on the lateral surface of the shoulder and hip joints. In this case, on the multi-beam paw, the abductors spread, "spread" the fingers and go along the outer sides of the fingers.

Adductors, on the other hand, bring the limbs closer together. They lie on the medial surface of the shoulder and hip joints. On the paw, adductors are located on the surface of the fingers and bring them closer.

Rotators (rotators) occupy a perpendicular position to the longitudinal axis of movement in the limb joint. In this case, the instep supports rotate the limb outward, that is, they turn the dorsal surface of the hand in the lateral direction, and the pronators, on the contrary, rotate the limb in the opposite direction, that is, they rotate the dorsal surface of the hand in the medial direction. In tetrapods, in the area of the shoulder and hip joints, the function of rotators is partially performed by special muscles - instep supports and pronators. Basically, the function of rotation is performed by extensors and flexors as a side effect. In the elbow joint, rotators are found only in dogs, and in the knee joint, limited rotation is possible in almost all animals. Muscle fibers on the limbs are mainly represented in the scapula-shoulder and femoral regions, somewhat weaker in the forearm and lower leg. Starting from the lower third of the forearm and lower leg, distally, the muscles are presented in the form of tendons and tendon sheaths.

Nerve operations General notes on the structure of the nerve. Each nerve contains 3 types of fibers - sensory, motor and autonomic. The nerve fiber consists of axons (axial cylinders) - the processes of the nerve cell. Axons are covered with membranes; in myelin (pulp) fibers there are myelin and Schwann membranes (neurilemma), and in myelin-free (non-fleshy) fibers, only Schwann membranes. Fibers are composed of a large number of bundles of axons. Each bundle is surrounded by a connective tissue sheath - perineurium. From the perineurium to the thickness of the bundle, there are dividing plates - endoneurium, which surround the fibers. Gathered together and surrounded by connective tissue, a group of bundles forms a nerve trunk; outside it is surrounded by a shell - the outer epineurium. From this sheath, its elements penetrate inside the nerve between the bundles, forming the internal epineurium. Fig. 208 Areas of cutaneous innervation of the distal thoracic limb (a) horses and (b) cattle

Topic: Finger amputation

BLOCKADE OF NERVES Conductive anesthesia on the thoracic limb of cattle. The innervation of the distal limb is carried out by the branches of the median, ulnar, radial and skin-muscle nerves. Nerve block for wrist pain relief. Indications. Anesthesia during extirpation of the precarpal hypodermic bursa, with plastic surgery of the skin in the wrist area and other operations. The blockade technique (according to Artmeier) consists of two stages. 1. Blockade of the cutaneous branches of the radial and musculocutaneous nerves (Fig. 209, a). At a distance of 8-10 cm proximally of the wrist on the dorsal surface of the forearm, the tendon of the radial extensor of the wrist is sought. It is well felt in the form of a string as thick as the little finger. On the medial edge of this tendon perpendicular to the skin, a needle is inserted under the fascia of the forearm to the bone and 10 ml of a 4% solution of novocaine is injected, blocking the passing cutaneous branch of the radial nerve (item cutaneus antebrachii dorsalis). Then the needle is given a horizontal direction, moving it subcutaneously across about 4-5 cm medially, and 10 ml of solution is injected on this line again. This injection will block a thin cutaneous branch of the musculocutaneous nerve (n. Cutaneus antebrachii medialis). 2. 2. Ulnar nerve block (b) is additionally applied only in cases of lesions extending to the lateral surfaces

of the wrist. A palm width above the accessory bone of the wrist, an intermuscular groove is found exactly along the midline, corresponding to the interval between the elbow flexor and the wrist extensor. The needle is injected at this point under the fascia to a depth of 3 cm. 10 ml of the same solution is injected. Nerve block in the metacarpus. Indications. Operations on the distal areas of the metacarpus and on the fingers.

Toe amputation in cattle

Indications. Purulent inflammation of the coronary and hoof joints, necrosis of phalangeal ligaments, complications of foot and mouth disease, etc. The operation is also performed in small ruminants and pigs.

Preparation . For a day, a warm disinfectant bath, washing with brushes, shaving, a protective bandage. Before the operation, thorough treatment of purulent-necrotic foci with hydrogen peroxide. Fixation. Lateral position as with disarticulation. The limb is strengthened with the affected finger outward. Pain relief. Neuroleptic, circular "anesthesia according to Regneri, intravascular or conductive anesthesia according to Shabrov. In pigs, anesthesia.

Operation technique. Hemostatic elastic tourniquet is applied. They are amputated at the level of the fetal bone - the upper limit of the spread of phlegmonous and necrotic processes. The operation begins with a median skin incision along the dorsal surface of the finger from the proximal part of the fetal bone and ends above the corolla by 0.5-1 cm. Then it is continued slightly arcuate medially into the interdigital fissure directly along the horny border and even laterally (Fig. . 220, a). A similar vertical incision is made on the palmar (plantar) surface of the finger, which is also medially and laterally connected to the previous incisions. A skin flap formed on the outer surface of the finger is prepared to the proximal part of the fetal bone and turned upward; the same is done with the medial surface to the upper border of the interdigital fissure. As a result of dissection, a small triangular piece of skin remains on the dorsal surface of the corolla. The vessels are ligated. Using a knife or scissors, the cruciate ligaments and inter-ligamentous adipose tissue are dissected up to the level of the distal end of the fetal bone. Then, with a wire or other saw, the fetlock bone with adjacent tendons is sawn obliquely from top to bottom and from outside to inside (b). Finally, the scraps of tissue are removed, the vessels are tied up and the bone marrow is scraped out of the bone with a sharp spoon. Then sprinkle with antibiotic powder and the outer skin flap is sutured with the inner one (c). Apply a tar-soaked bandage. If the tendon sheath of the deep flexor of the finger is not infected, then healing occurs by primary intention. The bandage is changed on the 10-12th day. When the tendon sheath is infected (recognized by the cloudy synovium), on the recommendation of Rode, in addition to amputation, the deep flexor tendon of the finger is resected in the proximal part of his vagina. A probe or forceps is inserted into the opened cavity of the tendon sheath until its end is felt under the skin, about the width of the palm proximal to the rudimentary hoof. At this point, the wool is shaved off and the skin is disinfected. In parallel with the tendon, focusing on the probe, the tissues are cut up to the tendon of the superficial flexor of the finger 5-8 cm long until it penetrates into the cavity of the tendon sheath. Then folded curved scissors are inserted into the incision and, making an effort, they remove the stump of the deep flexor tendon outward. At this moment, you can observe a profuse flow of infected

cloudy synovium. The tendon is grasped with hooks and excised. The cavity of the tendon sheath is irrigated with an antiseptic solution and loosely tamped with gauze. Rice. 220. Amputation of a finger in cattle: a – preparation ovum of a skin flap; b - amputation of the 1st phalanx is completed; c - suture on the amputation stump 277 This wound is not sutured. At the same time, a bandage is applied to the sutured stump and the open wound; it is changed after 8-14 days.

LIMB AMPUTATION IN SMALL ANIMALS

Indications. Multiple open fractures, crush injuries of a limb, extensive neoplasms, gangrene. Fixation and pain relief. The animal is given a lateral position on the side opposite to the diseased limb.

Anesthesia is applied. In case of amputation of the distal limb segments, transverse incision anesthesia is successfully used after appropriate premedication. Operation technique. A rubber tourniquet is applied proximally to the site of the planned amputation, which must be performed within healthy tissues. The damaged area is wrapped with a sterile napkin. There are 2 main methods of amputation - with the use of circular and flap cuts. The first is used for amputation of the proximal parts of the limb - forearm, lower leg; the second is distal (Fig. 229). In all cases of amputation, a two-stage incision is made. First, the skin and superficial fascia are dissected with a scalpel blade or a special amputation knife. Then, pulling them 1–2 cm proximally, the muscles are dissected to the bone. In this case, the periosteum is dissected along the line of sawing the bone, which is performed with a surgical saw, having previously pulled the muscles proximally by 2-3 cm. On the formed stump, the vessels are carefully torsed, somewhat loosening the applied rubber band. Nerves pull up the pin first

Incisions for amputation of a limb in a dog: a _ circular; b, c - patchwork Fig. 228. Operation with spar: a - according to Peters; b - according to Vamberg, 284 cents above the stump level and excised with a safety razor blade. The bone marrow is scraped out with a sharp spoon to a depth of 0.5 cm. Bone sawdust and scraps of tissue are removed, the wound is sutured with a deaf knotty suture.

3.4 Study materials for self-education

Topic: Thermocauterization

Thermocautery is the use of thermal procedures by moxibustion.

The history of cauterization has ancient origins, when iron tips of various shapes were used to cauterize the skin and deep-lying tissues, which were heated to the desired degree in a forge and somewhat later on a blowtorch. Modern cauterizers are special devices that are heated by burning vapors of gasoline or ether, or electric.

Thermocautery in surgical practice is used for neoplasms, operations on parenchymal organs (high-frequency currents are also used for electrocoagulation), in some cases - directly to stop bleeding, in chronic inflammatory processes, sprains of tendons and ligaments, with tendovaginitis, fibrous periostitis (punctate penetrating), spar (chronic deforming osteoarthritis of the tarsal joint), chronic

periarthritis, bruises, sprains of the sacro-lumbar joint, and in some cases with chronic pleurisy.

Electrocauterization is carried out with an electrocauter - a metal tungsten tip, which is heated with an electric current to the desired temperature, regulated by a rheostat.

Due to the fact that moxibustion is a very painful procedure, the animal must be pre-prepared. On the day of the procedure, a fasting diet is prescribed and 10-15 minutes before moxibustion, shallow anesthesia, conduction or local anesthesia are performed. The place of cauterization is shaved and lubricated with a 5% alcohol solution of iodine. Deep moxibustion is performed on a fallen animal, light moxibustion - in a machine.

Moxibustion can be superficial, medium and deep, in shape - point, banded and needle-like.

Point moxibustion is staggered, the points are 1-1.5 cm from one another. The electrocauter is applied to the same point 8-10 times in a fraction of a second with light moxibustion, 12-15 times with average moxibustion and 18-20 times with strong moxibustion.

Banded moxibustion is done in the form of parallel stripes spaced 1-1.5 cm apart from one another. They are performed with a knife-shaped electrocautery heated to a cherry-red color. Movements on the intended place should be quick, at some intervals. The number of repeated banded moxibustion in one procedure for mild, moderate and severe degrees of the disease should be the same as for point moxibustion. With thin skin, the number of repeated moxibustion is 2-3 times less.

After light cauterization, yellowish-brown grooves are formed with drops of serous fluid at the bottom. Medium cauterization creates deeper stripes of yellow-golden color with serous fluid at the bottom. Strong moxibustion penetrates almost the entire thickness of the skin. The bottom of the stripes has a straw-yellow color with abundant effusion of serous fluid.

Banded moxibustion on the flexor and extensor surfaces of the joints is not recommended (ID Medvedev).

Needle moxibustion is performed once by pricking with a red-hot needle to the entire intended depth. The duration of the injection is 3-5 minutes. The injection points are staggered at a distance of 0.5-1 cm.

Subcutaneous moxibustion is performed in some cases. After the skin is cut with a scalpel, the edges are dissected and moved apart with wound hooks. Naked tissues are cauterized using a point or needle method and then covered with skin with knotted sutures. The lower opening of the wound is left open for the outflow of inflammatory secretions.

Depending on the nature of the surgical pathology, moxibustion can be mixed (banded and needle-like: needle moxibustion is made between the strips, which are held at a distance of 2-2.5 cm from one another).

For a higher therapeutic effect, after moxibustion, you can rub in sharp ointments that enhance the irritant effect.

In addition, you can also apply the method of cauterizing the inflamed skin with special devices (thermocouchers), followed by rubbing in irritating ointments. After rubbing in the ointments, a warming bandage is applied, at the same time protecting animals from licking the ointment.

It is possible to translate chronic inflammation into acute by rubbing acutely irritating ointments into the focus of inflammation. For this purpose, use 10% two-chromic potassium, 20-25% ichthyol ointment, etc. An exacerbation of a chronic inflammatory process can be caused by three-fold lubrication of the surface with a 10% alcohol solution of iodine, pure ichthyol.

An exacerbation of the inflammatory process is also caused by the interstitial injection of irritating substances (turpentine, turpentine in equal proportion with ether, an alcohol solution of iodine, alcohol-novocaine) in a dose of 2-3 ml. After exacerbation of chronic inflammation, treatment is carried out similar to the second stage of acute inflammation. More widely, for this purpose, sparing agents are used, which enhance active hyperemia and resorption of pathological tissue. These include diathermy (course of treatment - 20-30 sessions), UHF, ultrasound, enzyme therapy (lidase, fibrinolysin, collagenase)

, as well as drugs that increase the general metabolism in the body, tissue therapy, hemotherapy (auto- and heterohemotherapy).

The most effective is complex treatment: local and general. For the purpose of local treatment, irritating drugs and thermal procedures of a more active and prolonging effect (UHF, paraffin and ozokeritotherapy, microwave, massage) are used, and for the purpose of general treatment, drugs that increase metabolic processes in the body are used. In chronic exudative inflammatory processes (serous, serous-fibrinous, fibrinous), local administration of corticosteroid drugs and proteolytic enzymes is indicated. To enhance the resorption of exudate or fibrous tissue, local administration of autologous blood to the tissue is advisable.

When treating chronic inflammations, it is necessary to keep in mind that their therapeutic effectiveness can be achieved under the condition of long-term (course) treatment, therefore, a one-time use of any procedure with a positive result will not be good.

Topic: Trepanation of accessory sinuses

FRONTAL SINO TREPANATION IN CATTLE

The frontal sinus is an anatomical cavity that occupies the entire cranial vault and communicates with the cavities of the nose and cornea. Its anterior border corresponds to the line connecting the anterior edges of the orbits, the posterior one runs along the inter-horny ridge, and the lateral ones along the outer ridges of the frontal bone. Inside, the frontal sinus is divided into two halves isolated from each other and has numerous open bony septa. In the case of a fracture of the cornea, the

frontal sinus becomes open and, due to microbial contamination, undergoes purulent inflammation - frontal sinusitis [1-3]. The exudate accumulated in the sinus does not stand out due to a violation of the patency of the middle nasal passage. It should be noted that pus is a strong irritant to the nervous system, a source of infection, which constantly disturbs the animal and maintains a high body temperature. Conservative treatment of purulent frontal sinusitis in case of horn fracture is ineffective [4]. And only an operation can give the desired result [5]. In surgical practice, trepanation of the frontal sinus in cattle is performed using trephine [6]. But what if there is no such tool? In our work, trepanation of the frontal sinus in case of purulent frontitis is performed using a medical chisel and a hammer, making a hole in the form of a triangle, one of the vertices of which is facing down (Certificate for rationalization proposal No. 129, issued by GASU on 02/01/2011). Fixation - in a standing position in the machine of Vinogradov, Kitaev or improvisation. The main thing is to ensure the immobility of the animal's head. The preparation of the surgical site is carried out in accordance with the requirements of the laws of surgery. Anesthesia. Infiltration anesthesia is performed with 2% novocaine solution along the line of the upcoming incision in combination with conduction (10 ml of 2% novocaine solution) by switching off the frontal nerve of the corresponding side. Operation technique. Two cuts (3 cm long) are made, connected in the form of an angle so that its top is facing down. Layers are dissected: skin, subcutaneous tissue, superficial fascia and periosteum. In this case, the surgeon's hand feels the sliding of the scalpel along the frontal bone. Stop bleeding. Then the periosteum is separated from the bone with a direct Farabef raspatory, after which the skin flap is grasped with a hemostatic clamp and taken upward. The next stage of the operation is trepanation. Trepanation site - a point located in the middle of the distance between the supraorbital foramen and the midline of the head. It is safer to do trepanation near the base of the horn, where the frontal sinus is maximally expressed and accidental damage to the skull is excluded. A chisel is used to make a trepanning hole in the form of a triangle, one of the vertices of which must be directed downwards, which is necessary to ensure the drainage of the wound discharge. After evacuation of purulent exudate, the sinus is sanitized with a solution of rivanol 1: 1000 and tubular drainage is introduced. On the skin with subcutaneous tissue, three stitches of a knotted suture are applied on each side. After the operation, symptomatic therapy was carried out for 7 days. In order to eliminate postoperative pain, blockade of the frontal nerve was used - 15 ml of a 0.5% solution of novocaine with an interval between injections of 48 hours. Irrigation of the frontal sinus was performed daily using a solution of rivanol at a concentration of 1: 1000. The drainage tube was removed on days 4-6. We operated on 4 cows and 2 bulls, aged from 2 to 7 years, of the Simmental breed with a diagnosis of a fracture of the corneous process of the frontal bone, complicated by purulent frontal sinusitis.

Topic: Abomasum Operations

Indications. Stretching and displacement of the abomasum to the left, not amenable to conservative treatment.

Fixation and anesthesia, as with laparotomy in the left hunger fossa. Suprapleural block is desirable.

Operation technique (according to Dirksen). A laparotomy is performed in the right hungry fossa with an oblique incision parallel to the last rib. After opening the abdominal cavity, the operator penetrates with his left hand behind the intestinal loops and under the scar behind the displaced abomasum.

At the highest point, the wall of the abomasum is pierced with a Bobrov needle, with a 2-meter tube attached, the end of which is brought out. Gases (volume 5-15 liters) are evacuated within 5 minutes until the abomasum collapses and returns down to its normal position. Removing the needle with a hose, close the tip of the needle with your finger so that a certain amount of the contents of the syringe does not get into the abdominal cavity. Having finished with this procedure, they penetrate into the abdominal cavity with the left hand, with the palm facing the costal wall to the midline between the navel and the xiphoid cartilage. Turning the hand 180 ° counterclockwise, grasp the large omentum and abomasum. This mass is carefully removed upward until the pyloric part of the abomasum is at the level of the wound in the ilia. Then, 2 cm ventrally and cranially from the wound, a suture is applied to the caudal edge of the pyloric wall of the abomasum (capturing a few centimeters of the omentum), attaching to the adjacent abdominal wall, including the muscles. The second similar suture is applied 3 cm dorsally from the first (Fig. 151). Perlon thread is used as a suture material. Care should be taken not to damage the bowel loops. The incision of the abdominal wall is closed, as after a rumenotomy. Anti-biotic therapy for 3 days. After 2-3 days, there is an improvement in appetite. In uncomplicated cases, the prognosis is good. Postoperative complications - peritonitis in case of violation of sterility, leakage of contents from the abomasum puncture site, suppuration of sutures on the abdominal wall.

Autopsy of sheep abomasum (abomaso tomia ovis)

Indications. Removal of stones of plant (phytobezoars) or animal (hair balls - pylobezoars) origin from the rennet of lambs.

Anesthesia. Antipsychotic. Infiltration anesthesia.

Operation technique (according to S. G, Yeltsov). The animal is fixed in the dorsal position. Laparotomy is carried out along the white line with a 10-15 cm incision in the umbilical region, starting from the xiphoid cartilage. At the same time, the omentum is bared to the left with a hand inserted into the abdominal cavity. At the same moment, the pyloric part of the abomasum is grasped with the fingers (the entrance to the duodenum is closed with small bezoars) and it is removed into the wound, isolating it with sterile napkins. Then the left wall of the abomasum at the

beginning of the pyloric part is dissected parallel to the greater curvature - in the interval between the vessels of the lesser and greater curvature; the size of the incision should correspond to the size of the largest bezoar felt through the abomasum wall and brought to the incision site. After opening the abomasum, the bezoars are alternately removed from the cavity, trying not to contaminate its surfaces. The wall of the abomasum is sewn up with a two-story suture: first along Schmiden, then along Lambert or Plakhotin.

Topic: Castration of cryptorchids

Cryptorchids are males in which the testes do not enter the scrotum during the uterine period and after birth remain in the abdominal cavity (abdominal cryptorchidism) or the inguinal canal (inguinal cryptorchidism). Most often found in boars and stallions.

In abdominal cryptorchids, the tail of the epididymis, the vas deferens, and even the epididymis are often found in the inguinal canal; the testis in these animals is always in the abdominal cavity. Only in some cases, in abdominal cryptorchids, the peritoneum does not protrude, and in this case the testis, epididymis and vas deferens are localized in the abdominal cavity, and the inguinal canal is filled with adipose tissue

Castration of cryptorchid stallions. Among cryptorchid stallions, abdominal cryptorchidism is observed: on the left - in 49% of animals, on the right - in 17%, on both sides - in 9.5%; inguinal: on the left - in 6%, on the right - in 7%, on both sides - in 4.5%.

It should be noted that in stallions with abdominal cryptorchidism, the testes often lie on the ventral side of the abdominal wall, next to the inner inguinal ring, sometimes on the lateral abdominal wall, but within the inguinal region.

Preparing the animal for surgery. For fat stallions, a week before the operation, they stop feeding concentrated feed or reduce the diet by half, which helps to reduce the amount of fatty tissue in the groin area. 8-10 hours before the operation, all stallions, regardless of their fatness, are prescribed a starvation diet. Longer fasting can lead to bowel prolapse during surgery.

Fixation. The animal is fixed in a lateral position opposite to the area on which the operation is performed, with the pelvic limb retracted upward. If the stallion has anorchidism, it is fixed in the dorsal position.

Anesthesia. Anesthesia, paralumbar conduction and infiltration anesthesia are applied, a neuroleptic is injected. In order to prevent postoperative peritonitis, suprapleural or perirenal novocaine blockade is performed.

Operation technique. Operative access to the testes with abdominal or inguinal cryptorchidism is performed mainly through the inguinal canal. In some cases, with abdominal cryptorchidism, operative access through the iliac is advisable.

An incision is made in the groin area, under the external inguinal ring, which is palpated through the skin, in the form of an oval opening. The length of the

incision is 10-12 cm (Fig. 195). The skin, subcutaneous fatty tissue and superficial fascia are dissected. Near the posterior angle of the incision, large branches of the external jugular vein are often encountered, which are pushed aside.

After the separation of adipose tissue and superficial fascia, an external inguinal ring is found in the form of a gap. If the animal has inguinal cryptorchidism, a thin ball of loose tissue is found in the inguinal canal, and above it is a protrusion of the common vaginal membrane. In abdominal cryptorchidism, the outer inguinal ring is filled with adipose tissue, and the common vaginal membrane is absent or located somewhat deeper.

In the case of inguinal cryptorchidism, the cellulose is disconnected in a blunt way, and the common vaginal membrane is grasped with hemostatic forceps or forceps, tightened and cut with scissors. After that, in the region of the canal, a testis or appendage is found, which is pulled outward.

With abdominal cryptorchidism, the tissue is disconnected along the inguinal canal (in the direction of the spine of the operated side). If in depth along the inguinal canal they do not find a common sheath of the vagina, the internal oblique abdominal and transverse muscles, transverse fascia and peritoneum are perforated with a sharp push of the finger (at the moment of inhalation of the stallion). Through the resulting hole, one or two fingers are inserted into the abdominal cavity and the nearby areas of the inner surface of the abdominal wall are examined. The fingers should not be pulled back until the testis has been found, as it is very difficult to get into the peritoneal opening with repeated insertion!

Rice. 195. Operational access during castration of a cryptorchid stallion

Most often, the tail of the epididymis or the spermatic cord is found, along which it is easy to find the testis. The latter is smaller than usual and resembles a pouch filled with mercury. The appendage of the testis is recognized by its tortuosity: its tail is of a soft consistency and spindle-shaped. The vas deferens is palpable in the form of a dense cord. If the search is unsuccessful, the hand is inserted into the abdominal and pelvic cavities. In the pelvic cavity, the hand is advanced to the dorsal surface of the bladder, where the vas deferens is found, and along it they descend forward and downward, reaching the epididymis and testis. They are pulled out.

Before removing the testis, a catgut ligature is applied to the cord. Having departed from the ligature of 1.5-2 cm, the spermatic cord is crossed. After making sure that there is no bleeding from the stump, it is carefully set into the abdominal cavity.

The wound is sprinkled with tricillin or streptocide and stitched. With inguinal cryptorchidism, when the abdominal wall is not damaged, a catgut ligature is applied to the common vaginal membrane, then a knotted suture on the external inguinal ring and a suture with rollers on the skin.

For abdominal cryptorchidism due to perforation of the abdominal wall, use three-story suture: the first - knotty - on the peritoneum, transverse fascia and transverse

muscle, the second - on the external and internal oblique abdominal muscles (preferably knotty) and the third - with ridges on the skin and fascia.

Bilateral cryptorchids are operated on in one go. In cases where the animal has a hard time tolerating the operation, especially if it is delayed, the intervention on the other side is postponed for 2-3 weeks.

With unilateral inguinal cryptorchidism, it is necessary to remove the testis, which is located in the scrotum. After that, the testis, located in the inguinal canal, descends into the scrotum (after six months or a year) and is removed by the same method. In inguinal cryptorchids, the testis located in the scrotum is best removed as early as possible (at the age of 1.5-2 years). If the testis does not descend into the scrotum for six months or a year, the stallion is castrated at the age of 2.5-3 years, like cryptorchid (L.A. Ty-khonyuk).

Castration of cryptorchid boars. When fattening pigs reach puberty and sexual arousal appears, cryptorchid boars become aggressive, lose their appetite, and lag behind in growth and development. The quality of the meat obtained from cryptorchids decreases due to a sharp specific odor.

The most common in boars is left-sided cryptorchidism, which is observed in 50-59% of animals; right-sided - in 35-40% and bilateral - in 6-10%.

Castration of cryptorchid boars is performed at 4-5 months of age. In boars aged 2 months and younger, it is difficult to locate the testis in the abdominal cavity if one or two fingers inserted through a laparotomic incision are manipulated (meaning the irrationality of a wide incision for inserting a hand in animals with a limited abdominal volume).

Fixation. Depending on the surgical approach, the animal is fixed in the dorsal position (with paramedian laparotomy) and lateral (access through the iliac) - head down at an angle of 45-50 ° (the intestine is displaced to the diaphragm).

Anesthesia. Apply neuroleptanalgesia and infiltration anesthesia along the incision line. The introduction of a solution of novocaine into the testis, which is brought to the incision or taken out, provides, as with ordinary castration, its painless separation.

Operation technique. In boars over the age of 6 months with monorchism, the incision is made on the lateral wall of the abdomen on the corresponding side. The incision should be along a line that connects the front end of the nipple to the penultimate nipple. Having retreated 5-7 cm lower from the maklok, the skin and subcutaneous tissue are dissected, and the muscle layers are exfoliated in a blunt way. In the incision at this level, it is most easy to remove the testis with its different localization in the abdominal cavity. In boars, more often than in males of other species, the testes are fixed on a very short mesentery in the lumbar region (in front of the kidney), therefore the shortest access to it lies through an incision in the iliac region. In 5-6 months old, when it is not known from which side the cryptorchidism has developed, it is better to perform a paramedian laparotomy (2-3 cm to the side, from the white line) so that the middle of the incision is at the level of the penultimate nipple - in fact, the incision begins directly in front the outer inguinal ring and lead it to the side of the prepuce, which is pushed back in the opposite direction. The length of the incision is 4-6 cm.

Having performed a laparotomy, the adjacent abdominal wall is examined with two fingers in the following sequence: first, palpate, move the fingers along the inner wall of the abdomen, the groin area, then the entrance to the pelvic region near the pubic fusion, dorsally from the bladder. In these parts of the abdominal cavity, it lies most often.

In the absence of a testis near the inguinal canal and in the adjacent parts of the abdominal cavity, the surgeon palpates along the midline to the sides of it in the direction of the kidneys. Here you can find the testes on a very short mesentery, therefore, by the degree of limited displacement, it is not so easy to distinguish it from the kidneys. In this case, a clarifying orientation by palpation is necessary with the definition of the testis, its appendage, their characteristic softness of cryptorchidia, and small tuberosity.

The final point is the study in the area of the ilia, among the intestinal loops, towards the umbilical region. This completes the search for the testis in boars operated at 2–3 months of age. If the latter is not found, these studies must be repeated in 2-3 months. In boars aged 5-6 months, a reliable method of searching for testes is examination of the abdominal cavity when introduced through an incision in the hand.

After the testis is found, it is fixed with the fingers and pulled out through the incision. Before removing the testis, a catgut ligature is applied to the spermatic cord (Fig. 196). After making sure that there is no bleeding from the spermatic cord stump, it is carefully set into the abdominal cavity. Antibiotics, dissolved in a 1% solution of novocaine, are poured into the latter before suturing.

Rice. 196. Castration of a cryptorchid boar (ligation on the spermatic cord)

Two-story sutures are applied to the wound of the abdominal wall: the first floor is a continuous furrier suture on the peritoneum, transverse fascia and transverse muscle; the second - a knotted suture on the skin with the capture of the aponeuroses of the muscles of the abdominal wall.

Castration of cryptorchid rams. Among domestic animals, cryptorchidia in hornless (hornless) meat-wool rams is observed very often (from 2 to 35% of cases).

In rams 2-3 months old, the testis remaining in the abdominal cavity is small compared to the testis that descended into the scrotum. Therefore, it is difficult to detect it with two fingers. The testes are suspended on a short mesentery and it is difficult to pull it out into the incision of the abdominal wall. When examining the abdominal cavity of rams, it is much more difficult to distinguish the testis from the kidney than in boars.

Fixation. Depending on the method of laparotomy, the animal is fixed in a lateral or dorsal position.

Anesthesia. Neuroleptanalgesia, infiltration anesthesia along the incision line are performed, and a solution of novocaine is injected intratestically after pulling the testis into the incision.

Operation technique. A vertical incision is made in the iliac region, midway between the last rib and the anterior edge of the macloc. The skin and superficial fascia are dissected, and the muscles of the abdominal wall are dissected using a blunt method. The peritoneum is pulled into the wound with two tweezers and a small incision is made with a scalpel. Two fingers of the left hand are inserted into the formed hole and, under their control, the peritoneum is dissected with scissors. After the laparotomy, two fingers of

the right hand are inserted into the abdominal cavity. To find the testis, first palpate the inner surface of the abdominal wall in the groin above the bladder, and then in the lumbar region near the kidney. The found testis is pulled outward through a laparotomic incision. A ligature is applied to the spermatic cord and, stepping back from it 1.5-2 cm lower, dissect it. The testes can also be removed using an emasculator that is placed over the spermatic cord. The wound of the abdominal wall is closed with a two-storied suture.
A paramedian incision is used for bilateral cryptorchidia. In this case, the rams are operated at 6-7 months of age, when the testes are suspended on more elongated mesentery.
Castration of cryptorchid males. Indications. The operation is carried out only with a therapeutic purpose in the defeat of the testicles lingering in the abdominal cavity with a neoplasm.
Fixation in the dorsal position.
Anesthesia. Anesthesia and infiltration anesthesia along the incision line. An antipsychotic is injected.
Operation technique. Paramedian laparotomy is performed. The length of the incision is 6-8 cm. The testes are found in the lumbar region behind the kidneys. It is removed using a ligature. A three-story suture is applied to the wound of the abdominal wall.

Topic: Pig Ovariectomy
Females are able to well assimilate (assimilate) nutrients to ensure the growth and development of fetuses during pregnancy, and after farrowing - for milk production.
In castrated females, the assimilation processes proceed in the same way as during pregnancy, therefore, castration can shorten their fattening period and reduce feed consumption by 1 kg of weight gain. An increase in weight gain is also facilitated by the termination of sexual cycles in castrated females. In non-castrated pigs, the stage of sexual arousal during the fattening period lengthens and proceeds violently, the animals are very anxious, refuse to feed. It has been proven that in the stage of sexual arousal (hunting and estrus), the weight of pigs decreases by 5 ... 8 kg.
Hunting females worry, squeal or irritate other pigs, which are also losing weight. The stage of excitement in each pig proceeds at different times, and every day several sows disturb the rest of the animals kept in the house. Therefore, the benefit of the operation lies not only in the fact that the operated animals absorb the feed better, but also in the fact that it provides a calmer behavior and better feeding of all animals in the pigsty. The age of the mumps at castration has a great influence on the subsequent increase in body weight.
Anatomical and topographic data
The vagina and vestibule in a pig is a relatively long narrow tube that passes into the cervix without sharp boundaries. In a pig, the cervix is long (8 ... 20 cm), without sharp boundaries, it turns into a short body (3 ... 5 cm), which is divided into two long (100 ... 200 cm) horns. The place where the uterus is divided into the right and left horns is called the bifurcation of the uterus. Both horns first go together and over the course of 10 ... 15 cm grow together with their walls facing each other. After divergence, the horns form a large number of loops resembling intestinal loops. The front ends of the horns gradually

taper and, without a sharp border, pass into the fallopian tubes 12 ... 23 cm long, which form small bends and end with a well-defined fringe.

The size of the ovaries is variable (1 ... 10 cm in length). The follicles and corpus luteum protrude above the surface of the ovaries, giving them a lumpy appearance, so the ovary resembles a blackberry.

The pig's uterus and ovaries are supplied with blood mainly from the middle and posterior uterine arteries. The middle uterine artery departs from the umbilical artery, is introduced into the uterine mesentery, where it diverges into several branches that form arterial loops that are connected to each other. The posterior uterine arteries run along the vagina and cervix and connect to the branches of the middle uterine arteries. Sometimes the posterior uterine arteries merge into a common trunk. The anterior uterine arteries are separated from the aorta at the level III ... IV of the lumbar vertebrae and, having penetrated into the uterine mesentery, give out strongly convoluted ovarian branches. Very often, the anterior uterine arteries in pigs are absent, and their functions are performed by the ovarian arteries connecting with the branches of the middle uterine arteries (PI Melekhin), or the anterior ends of the uterine horns and the ovary are supplied with blood from the arterial branches of the anterior uterine artery.

To successfully complete the operation, you must have a clear understanding of the topography of the ovaries in pigs. SG Isaev sewed a metal cube into the ovarian ligaments on one side, and a metal ball on the other, and studied the topography of the ovaries on radiography. Studies have shown that the length of the ligaments in pigs 5 ... 7 months of age reaches 7 ... 14 cm, and in sexually mature and pigs - 15 ... 25 cm. The ligament of the left ovary is 1 ... 2 cm longer than the ligament of the right. Due to the long mesentery (ligament), the ovaries move in the abdominal cavity and take different positions depending on the age, the degree of intestinal filling and the position of the animal during the operation.

The topography of the pig ovaries depending on the duration of the fasting diet (according to S. G. Isaev): a - the location of the ovaries after a 4-hour fasting diet; b - after a 16-hour fasting diet; c - after a 40-hour fasting diet; [] - right ovary; o - left ovaries

The cecum separates the ovaries from the left abdominal wall. The more it is filled, the more the ovaries are displaced into the right half of the abdominal cavity; often both ovaries are located near the right abdominal wall, where loops of the small intestine are adjacent to them.

In pigs (up to 3 ... 4 months of age), the ovaries are located under the penultimate lumbar vertebra, and sometimes in the pelvic cavity. They are held by a short ligament and do not fall below the border of the upper third of the abdominal cavity. Therefore, the technique of oophorectomy in animals up to 5 months of age is somewhat more difficult, and vice versa, in pigs 6 ... 10 months of age and older, the operation is easier, since in sows the ovaries are lengthened and the ovaries descend.

In an animal in a standing position and with moderate intestinal filling, the genitals occupy an average position and are isolated from the abdominal walls by intestinal loops. The ovaries and uterine horns can be located on the right, between the abdominal wall and the cecum, or less often on the left, between the loops of the small intestine and the

left abdominal wall. It is important to take this into account during the operation, since the haphazard search for the ovaries can cause additional trauma to the peritoneum.

If an animal sustained on a starvation diet is given a position with a raised pelvis, then the anatomical and topographic relations change dramatically. In this case, the cecum and loops of the small intestine (moreover, reduced in volume) are moved to the side of the diaphragm and free access to the ovaries on the left. At the same time, the loops of the large intestine are displaced so that the genitals become accessible from the right and lower abdominal walls. This anatomical and topographic arrangement of the organs makes it possible to open the abdominal cavity both through both side walls and from the side of the lower abdominal wall.

The abdominal walls of a pig have some anatomical and topographic features:

the rectus abdominis muscles extend in the form of wide muscle layers with their upper edges to the side wall;

the layers of subcutaneous fat are highly developed - the outer subcutaneous and inner sebaceous layer; between them is a delicate abdominal muscle and its shell, merging with the skin of the abdomen in the area of the knee fold;

the presence of a wide aponeurotic zone, which is a section of the lateral abdominal wall, in which all the muscles of the abdominal wall pass into their lamellar tendons (aponeuroses);

the layer of subperitoneal tissue is highly developed.

With a layer-by-layer dissection of the tissues of the lateral abdominal wall in pigs, the same layers fall under the scalpel as in other animals:

leather, differing in thickness and density; subcutaneous tissue, which forms a layer of subcutaneous fat; Superficial fascia (connective tissue sheath) of the abdomen, covering the entire surface of the torso and intertwining with the subcutaneous muscle;

subfascial fat layer (sebaceous layer); the external oblique muscle of the abdomen, originating from all the lumbar vertebrae and the last rib; its fibers are directed from top to bottom and back and at a short distance from the place of discharge end in a flat tendon part, merging with the aponeuroses of other muscles;

the internal oblique muscle of the abdomen, starting from the lumbar vertebrae and the macloc, heading forward and down to the last rib; however, the muscle fibers of the internal oblique muscle are present only in the upper third of the abdominal wall, below they turn into the aponeurotic layer, merging with the aponeuroses of other abdominal muscles;

the transverse abdominal muscle, which, like other muscles, becomes aponeurotic near its origin: the muscle part is present only in the upper part of the lateral wall and in the hypochondrium;

the transverse fascia does not grow together, like in other animals, with the peritoneum, since between them there is a layer of subperitoneal (subperitoneal) tissue;

a layer of subperitoneal (subperitoneal) fat, the thickness of which is different depending on the age and fatness of the animal;

the peritoneum, loosely connected to the layer of subperitoneal fat and therefore easily displaced during surgery.

When dissecting tissues along the white line, the following layers of the abdominal wall are cut: skin; subcutaneous fat layer with superficial fascia; the musculo-aponeurotic layer formed by the fusion of the outer and inner plates of the sheath of the rectus abdominis muscle; subperitoneal fat layer (subperitoneal fat) and the peritoneum with the transverse fascia of the abdomen.

Indications

See above. Neutering gilts, like boars, can be done at any time of the year. In a warm, bright room, the operation can be carried out in winter. The greatest increase in weight is obtained when fattening gilts castrated at the age of 5 ... 6 months, but they can be castrated at any age.

It is easy to operate on animals of average body condition. Operations on large and fatty pigs are hampered by thick layers of subcutaneous and subperitoneal fat.

It is unacceptable to castrate gilts in farms that are unfavorable for infectious diseases. It is impossible to operate on pregnant, emaciated, sick and weak animals, since they easily develop severe postoperative complications and death is possible. Some authors recommend refraining from operating on pigs during estrus, however, with oophorectomy with vascular ligation, this contraindication to surgery disappears.

The pigs are fasted for 24 hours prior to surgery. But since complete starvation promotes the accumulation of gases in the intestines, it is advisable to give pigs 50 ... 100 g of bran and 20 ... 100 g of Glauber's salt 12 hours before the operation.

A few days before the operation, the animals should be thoroughly washed and placed in a clean room with plenty of bedding. The day before the operation, the pigs must be washed again, and if the skin becomes contaminated again, wash again on the day of the operation.

To empty the bowels and bladder, it is recommended to let the animals go for a walk 1 ... 2 hours before the operation. All gilts should have a thermometry before the operation.

Fixation

Regardless of the method of operation, the animal must be fixed with a raised pelvis, so that the axis of the spine is at an angle of 45 ... 50 °, and even better - 75 ... 90 ° in relation to the floor surface. The presence of several fixation points allows the operation to be carried out along the conveyor.

Previously, it was believed that anesthesia during the castration of females was a waste of time. However, it is more expedient (especially for well-read doctors) to perform infiltration anesthesia according to A.V. Vishnevsky. Anesthetize the abdominal wall by injecting (regardless of the place of operation) along the line of the intended incision 10 ... 30 ml of 0.25 ... 0.5% solution of novocaine under the skin and into the muscle layers. It is not necessary to anesthetize the ovarian tissue, since the soreness and anxiety of the animal when manipulating the ovary is noted only when the ovarian ligaments are strongly pulled. Anesthesia lengthens the operation by a few seconds, but allows you to complete it more freely and faster.

S. G. Isaev recommends operating pigs from 7 months and older under general anesthesia with chloral hydrate. There are recommendations in the literature on the use of antipsychotics before ovariectomy, for example chlorpromazine intramuscularly for 30 ...

40 minutes, 1 ml of a 2.5% solution for every 25 kg of animal body weight. In addition, stresnil or azaperone can be used.
To carry out mass castrations of females, it is necessary to have at least 1 ... 2 trained, well-instructed assistants familiar with the rules of aseptic surgery, and several workers, each of whom must clearly know and fulfill his duties.
When operating on 3 ... 4 tables, each table must be secured by 2 ... 4 assistants. They deliver the animals to the operation site, fix them on the table, release them correctly after the operation and carefully deliver the operated gilts to the prepared room.
Surgical assistants check whether the animal is correctly fixed, prepare the surgical site, supply instruments, tampons and provide other assistance.
Such an organization system allows the operator to switch from a neutered animal to another already prepared on an adjacent operating table and quickly perform operations.
Operation technique
Castration of females consists of two operations: laparotomy - opening the abdominal cavity and oophorectomy - removing the ovaries.
Now two operative approaches to the ovaries are used: through an incision along the lower abdominal wall (along the white line of the abdomen and paramedian operative access); through an incision along the side wall.
There is an opinion that it is better to operate on the white line in young gilts, since thanks to the short ligaments, the ovaries are closer to the pelvic cavity. Pigs over 6 months of age are more comfortable to operate in the right iliac region, but this reduces the value of the hide and is detrimental to the farm. Therefore, many specialists perform laparotomy exclusively along the white line, regardless of their age. Topic: Breast surgery
Mastectomy (from ancient Greek mastòs "breast" and ek tome "remove") is a surgical operation to remove breast tissue. The essence of the operation is to remove the mammary gland, adipose tissue, which contains lymph nodes (probable sites of metastasis), and also, depending on the stage of the oncological process, removal of the superficial pectoral muscle, possibly part of the abdominal wall.

Indications for surgery

• Breast tumors (the most common reason for performing mastectomies in dogs and cats)
• Purulent process, severe mastitis with gangrene of most of the breast, or severe breast wounds (although this is rare).

There are several options for this operation:

• Unilateral mastectomy - involves the removal of the entire ridge of five mammary glands on one side, subcutaneous tissue and regional lymph nodes (axillary and inguinal). Always used in cats and most commonly in dogs.

• Bilateral mastectomy - characterized by an increase in the volume of surgical intervention: in this method, two ridges of the mammary glands are removed from both

sides together with regional lymph nodes (axillary and inguinal). This operation is very traumatic, difficult to tolerate and should be avoided.

• Regional mastectomy is performed exclusively in dogs and will be discussed in this article.

It is used only in dogs, as this operation is impractical in cats. In order to understand what a regional mastectomy is and what it is for, you need to know some of the basics of oncological surgery and animal anatomy, in particular the structure of the lymphatic system of the mammary gland.

Breast lymphatic system

Dogs and cats normally have five pouches of mammary glands on either side. The first and second pairs of mammary glands have regional lymph drainage into accessory axillary and axillary lymph nodes. The fourth and fifth pairs of mammary glands have lymph outflow into the inguinal lymph nodes, and the third has a mixed lymph outflow (both in the axillary and inguinal lymph nodes).

Basic concepts of oncological surgery:

• Zoning: involves excision with the tumor and surrounding healthy tissues of areas located in the path of regional lymph drainage (this is subcutaneous tissue containing lymphatic vessels and lymph nodes of the first and second order).
• Blockiness: involves excision of the tumor and the area of potential invasion of its cells in a single block. For example, in case of a breast tumor, it is necessary to remove the accessory axillary lymph nodes and the fiber containing them in a single block.

That is why, if a tumor appears in the first or second pair of mammary glands, the first, second and third pair with axillary tissue and lymph nodes must be removed. If a tumor appears in the fourth or fifth pair, the third, fourth and fifth pairs of mammary glands with inguinal tissue and lymph nodes are removed. And with a tumor in the third pair, all mammary glands and both groups of lymph nodes are removed, as this ensures the radicality of the operation.

Regional mastectomy in dogs removes at least three packets of mammary glands from one side. And in most cases, this operation is needed for breast cancer. Failure to comply with these simple principles will lead to the development of tumor recurrence in the place of its removal.

The main stages of the operation

1. Fringing skin incision and removal of breast tissue with subcutaneous tissue.

2. Axillary lymphadenectomy - removal of tissue containing the axillary lymph node located in the axillary region (there is no need to look for the inguinal lymph node, since it is removed together with the mammary gland).
3. Suturing the wound.

Complications after regional mastectomy

• Bleeding in the early postoperative period. It rarely occurs, when using an electrocoagulator this is a solvable problem (most often observed in the presence of blood clotting disorders).

• Suppuration of the postoperative wound. Compliance with asepsis - antiseptics and the use of antibiotics solve this problem.

• Seroma (lymphorrhea) is the secretion of fluid (lymph and a small amount of blood) under the postoperative stitches. Seroma after mastectomy occurs to varying degrees in many animals. The accumulation of seroma is caused by a serious surgical trauma, as well as by the fact that lymph does not clot, unlike blood, and can continue to ooze under the stitches for up to 2-3 weeks. The volume of lymphorrhea may vary. Most often, this problem worries obese animals and it is eliminated by installing drainages under the seams (plastic or rubber tubes through which lymph flows out) or by evacuation using a puncture (performed with a regular syringe).
Topic: Operations of the muscles of the extremities
TENOTOMY (from the Greek tenon - tendon and tome - incision, dissection), incision of the tendon, performed by Ch. arr. in horses with cicatricial contractures, more often the deep flexor of the toe with dislocations of the knee cap, as well as in other animal species with traumatic contractures of the joints.
It so happens that after injuries of the limbs in animals, contractures of the joints develop (Contracture is a limited mobility of the joint due to cicatricial contraction of the surrounding soft tissues: skin, muscles, subcutaneous tissue, etc. Contracture can be: flexion, extension, abduction, adduction). Small joints are most susceptible to this disease.
Flexion contracture is most often found in animals, while the function of the limb is impaired and the support occurs not on the pads of the fingers, but on the dorsal surface of the phalanges of the fingers. As a result, the skin wears away and creates a large gaping wound. This situation causes discomfort to the animal and the owner, since the gate of infection opens through the wound and an unpleasant odor emanates from it.
Operations are often planned. In the clinic "SQ-lap" and the veterinary hospital "SQ-lap" they are carried out after the preoperative examination of the animal, which includes ultrasound, ECG, General and Biochemical Blood Analysis, R-studies, it is imperative to maintain an 8 hour diet. Before the operation, the doctor and the owner draw up a document on the informed consent to the operation, after the owner has been explained all the risks from these measures.

It is very important that the owner brings a warm blanket to the operation, it will be needed to warm the animal after the operation, disposable absorbent diapers, napkins.
POSTOPERATIVE CARE IS BETTER TO PERFORM IN THE CONDITIONS OF THE HOSPITAL.
The operation to dissect the flexor tendons is cosmetic and is intended to improve the quality of life of the animal. Through a small incision in the skin, the deep digital flexors are dissected (all, some or their incision), this is done in order to reduce the tension of the aforementioned tendons. Then the limb is straightened, the wound is sutured and a plaster cast is applied. The stitches are removed after 10-14 days. The plaster is left for 4-6 weeks.

Topic: Operations in joints and articular apparatus
Diseases of the joints of animals occupy a significant proportion among surgical diseases (S.V. Timofeev et al, 2007; IB Samoshkin, N.A. Slesarenko, 2008).
Known conservative and surgical methods of treating joint pathology do not always allow achieving positive clinical and anatomical and functional results of treatment.
In diseases accompanied by the accumulation of fluid in the articular cavity, a puncture of the joint is performed, partial or complete removal of its contents, followed by the introduction of drugs into the cavity. However, carrying out this manipulation does not exclude injury to the articular surfaces by the needle, and with a single injection of the drug, complete relief of the pathological process is not always achieved. In addition, the known method does not provide for the restoration of the correct anatomical relationships and the integrity of the articular components in their pathological condition, which sharply reduces the indications for its use.
In the RRC "WTO" them. acad. G.A. Ilizarov, a method for treating joint pathology in animals has been developed and experimentally clinically tested (application for invention of the Russian Federation No. 2008152874, application filed on 12/30/2008). It consists in the immobilization of the joint with the help of an external fixation apparatus and the installation of a catheter, followed by the introduction of medications.
For this, after anesthesia and treatment of the operating field, osteosynthesis of the affected joint is performed with an external fixation apparatus. When it is performed using known techniques, fixing elements - pins and / or rods-screws - are transversely carried out (or cantilevered) at several levels into the areas of adjacent bone segments adjacent to the affected joint. The free ends of the clamps are attached to the apparatus supports installed at an appropriate level, which are connected to each other with the help of threaded rods and hinge assemblies with the possibility of dosed multi-plane movement and reversal.
If necessary, the anatomically correct relationships of the joint components are restored by displacement of the apparatus supports and, accordingly, the fixed segments of the limbs or their fragments. These manipulations can be performed both simultaneously, directly during the operation, and dosed in the postoperative period. The rate of the dosed movement varies within 0.5-1 mm, the dosed turn - up to 5 ° per day.
After the restoration of the anatomically correct relationship of the affected joint, its articular surfaces are diluted by no more than half the normal width of the joint space.

The criterion in this case is the width of a paired healthy joint, or they are guided by the average size of the joint space of healthy animals of the same breed, sex and age.
Then, a soft catheter is inserted into the joint cavity enlarged in this way, orienting and immersing its working end to the area with the most pronounced pathological changes. To visualize the process of installing a catheter, it is advisable to use a mandrel made of a radiopaque material in it. The free end of the catheter is fixed on one of the apparatus supports directly adjacent to the joint zone.
In the presence of pathological contents in the articular cavity (blood, exudate, transudate, gases, etc.), it is partially or completely evacuated by attaching an aspirating device (syringe, vacuum pump, etc.) to the catheter. The isolated contents of the cavity are analyzed and, based on the results obtained, as well as the orthopedic state of the joint, it is pre-washed, or drugs are immediately introduced into the joint cavity by jet or drip. The introduction of drugs is carried out both during one course and prolonged, during several courses of drug therapy. In the latter case, at the end of one course, the catheter is left in the joint cavity, ensuring its tightness. Upon completion of the courses of drug therapy, the catheter is removed under sterile conditions, and the width of the joint space is normalized by bringing the supports of the apparatus closer together.
Subsequently, stable fixation of the joint is carried out until the integrity of its components is restored. At the same time, in parallel, the development of active-passive movements with a gradually increasing amplitude can be carried out in it. At the end of the treatment, the apparatus is dismantled.
The use of the method in the experimental department of traumatology and orthopedics of the RNC "VTO" named after acad. G.A. Ilizarov has shown that its use provides the possibility of treating joint pathology, combined with a violation of the integrity and anatomically correct relationships of their components, as well as preventing injury to the tissues of the joints during surgical procedures. Topic: Operations on the tibia
The gluteal region (borders, regions, layers) 1) Skin 2) subcutaneous tissue 3) Superficial gluteal fascia 4) Subfascial tissue in which in the region of the maclok there is a large mucous membrane 8-10 cm. 5) Deep gluteal fascia 6) Muscles, vessels and nerves lying on the lateral surface of the gluteal region. It should be noted the groove of the biceps femoris (what is formed and what lies). 7) Muscles, blood vessels and nerves on the medial surface of the t / b joint. Nerves - emerging from the sacral plexus: cranial and caudal gluteal, sciatic, emerging through the large caval foramina and at the level of the lesser sciatic plexus branch into the plaque and peroneal. In addition, here are located the nerves emerging from the lumbar plexus: obturator and femoral. Bone skeleton: Sacral bone, feather 3 tail vertebrae, sciatic and proximal femoral epiphysis and femoral canal. In the groove of the 2nd head of the muscle, the peroneal nerve is located, it divides near the knee joint into the dorsal cutaneous nerve of the lower leg, and appears near the head of the fibula and is divided into superficial and deep branches. In horses, the superficial branch in the skin forks on the lateral and surface of the foot. In cattle, on the lateral surface of the tarsus, it is divided into 3 branches: lateral - lobes, dorsal lateral and digital nerves; medial - the dorsal medial third digital nerve and the middle - the common dorsal digital nerve for the facing surfaces of the 3rd and 4th fingers, the arch of the interdigital fissure and connects with the deep digital nerve Deep branches of the peroneal nerve in

the tarsus branch into lateral and medial branches, they innervate tarsus, metatarsus, the surface of the joints of the fingers and the base of the skin of the hoof. The tibial nerve gives back the proximal and plantar cutaneous nerve. Femoral canal: in the canal, a hidden nerve leaves, in the middle of the thigh, it pierces the deep fascia of the thigh along the medial surface of the knee joint, dropping to the lower leg to the tarsus. Knee and lower leg areas. Borders, landmarks, layers 1) skin 2) n / a 3) superficial fascia 4) subfascial tissue 5) deep fascia. It is closely connected with the straight ligaments of the patella, with the periosteum of the tibia. Ligaments, muscles, blood vessels, and nerves. Peroneal groove - M.B. - A.V. N. Lateral groove of the leg: tarsal recurrent Ar., Lateral scapular, plantar cutaneous N., small secret vein. Tibial medial groove: tibial nerve, hidden artery, recurrent tibial, medial cutaneous nerve of the tibia, descending branch of the caudal femoral artery. K.R.S. the plantar medial divides into 2 branches for 3 fingers. and their medial surfaces, and laterally - for 4 fingers.

Topic: Nerve block in limbs
volar nerve block anesthesia

Indications. For diagnostic purposes, a blockade at this height is undertaken in cases where the phalanx area, fetal joint with sesamoid bones and the flexor digital tendon sheath are sought to anesthetize. In addition, it is also indicated when a low injection (over the fetal joint) due to the presence of edema, cicatricial thickenings, etc. Anesthesia of the flexor tendons along their entire length is not achieved.

The injection technique is as follows. Since the medial side is technically less accessible, injections start from it. The assistant flexes the limb at the wrist, brings it forward and crosses with the opposite limb at the level of the wrist or upper metacarpus so that the inner surface of the anesthetized limb is better accessible for injection.

The needle is inserted from the bottom up (towards the wrist), under the skin at the medial edge of the deep flexor tendon. 10 ml of the solution is injected, while trying to soak a wider field with two turns of the end of the needle under the skin. Especially, such a turn of the needle should be done in the dorsal direction (forward) and even push the end of the needle deep into the tissues, to the inner surface of the slate bone, in order to block the deep volar metacarpal nerve. Such an addition to the velar nerve block technique is necessary, especially for surgical anesthesia.

Following the medial injection, proceed to the lateral one. Here, the same sequence is observed as on the previous side, but the injection is made in the opposite direction, that is, towards the fetlock and the lower end of the ram. communicans.

After the injection of the solution, swelling forms under the skin, which is the most important sign of a correctly made injection and indicates that the solution has not penetrated into the tendon sheath or into the vessel.

The area that occupies the volar surface of the finger and the area of the metacarpus is anesthetized to a level that lies slightly above the injection points. The dorsal surface of the metacarpus, fetal joint, and sometimes the fetus and even the corolla remain sensitive.

BLOCKADE OF VELARIAN NERVES OVER THE JOINT

The indications are almost the same as in the previous cases. Therefore, diagnostic injections can be started with a blockade at this level, if they are not impeded by anatomical abnormalities (edema, scars, etc.) in this area.

The injection technique is not much different from the previous ones. First, it is carried out from the medial side of the limb, which is raised and crossed on the opposite side.

We make an injection along the edges of the deep flexor tendon of the finger at the level of the lower thickened end of the slate bone. This level of injection guarantees blockade of the branches leading to the fetal joint and facilitates access to the deep metacarpal nerves. The assistant firmly fixes the limb in the path, and the operator presses the injection site with the finger of his left hand, while inserting the needle with his right hand. It is desirable that the stroke of the needle is directed towards the forearm. When the horse flinches from the injection, the needle at this moment, following the movements of the limb, moves in the required direction; if you turn the needle in the opposite direction, it goes deeper into the tissue and can penetrate into the tendon sheath. When the end of the needle is under the skin, the solution is injected from the syringe attached to it, making gentle turns of the needle; from the same point, the end of the needle is subcutaneously advanced to the lower end of the slate bone and 3-4 ml of solution is injected under it. In the case of a short needle or a wide metacarpus, when the needle could not be brought to the slate bone, it is removed and after a new injection, directly under the lower end of the slate bone, an additional 3-4 ml of novocaine is injected subcutaneously. Do the same on the lateral surface. With these additional injections, the deep volar nerves are blocked, guaranteeing a wider area of pain relief.

BLOCKADE OF VOLAR NERVES AT THE LEVEL OF THE PATTERN FEND

Indications. This blockade can more accurately differentiate diseases in the area of the phalanges, and in particular the hoof, since the area of the sesamoid bone and fetlock is excluded from the scope of anesthesia.

Technique. Under the fetlock joint, the edge of the deep flexor tendon is probed, on which the neurovascular bundle is felt. The digital vein is sometimes clearly visible under the skin. An artery lies volarly from it and behind it is a polar branch of the volar nerve. To block both branches, it is necessary to turn the needle back and forth during the injection. As in previous cases, it is first injected on the medial side of the chickpea and then on the lateral side. For each injection, 5-10 ml of a 3% solution of novocaine is enough.

The base of the skin of the wall, soles and frogs, crumbs, the terminal section of the tendon of the deep flexor of the finger, the coffin and the shuttle bones, and the lateral cartilage are anesthetized. At the same time, the area of the rim retains some sensitivity.

BLOCKADE OF VOLAR BRANCHES OF VOLAR NERVES

Indications. It is used for diseases in the hoof area. As a result of the blockade, anesthesia occurs at the base of the skin of the sole and the lower half of the wall.

The crumbs, frog, coffin bone and the end of the deep flexor tendon, as well as the shuttle bursa, become completely insensitive. The pulp cartilage is anesthetized only in the back. The hoof joint remains sensitive. Therefore, this method of anesthesia makes it possible to differentiate the disease of the hoof joint from the disease of other parts of the hoof, especially the shuttle block. Remaining lameness, or only its reduction, indicates a disease of the hoof joint.

Second way. Taking into account the possibility of spreading the solution to the dorsal branches of the volar nerves with the first method and therefore obtaining an inconsistent result, it is recommended to inject from two points. The needle is injected under the skin, in the lower areas, near the upper edge of the lateral cartilage, against the contour of the deep flexor tendon of the finger, behind the digital vein. You can also insert a needle between the pelvic sulcus, the edge of the lateral cartilage, and the flexor tendon. 3-4 ml of solution is injected onto each nerve.

Obtaining negative results with blockade of the volar nerves or their branches suggests the localization of the lesion causing lameness in the central or proximal part of the limb. To detect it, a median nerve blockade is performed. BLOCKADE OF THE MEDIUM NERVE

The median nerve is located relatively deep in the loose connective tissue, on the medial side of the forearm, between the radial flexor of the wrist and the radial hand. There are two ways to blockade.

Old classic: the way. First, a groove is found on the medial surface of the upper third of the forearm, formed by the posterior contour of the radial bone and the anterior edge of the radial flexor of the wrist. In this area, the groove is covered with a powerful deep fascia of the forearm, reinforced by the lower sections of the aponeurosis of the sternocostal portion of the superficial pectoral muscle. The operator stands to the side, near the corresponding limb, bent over so that his head is at the level of the horse's shoulder joint. The operator's hand has the characteristic fascia puncture sensation. The displacement of the fascia with minor movements of the limb is manifested in a kind of oscillation of the needle. This is a sure sign of correct needle position. When the needle punctures the vessels tightly adjacent to the nerve of the dorsal median arteries and veins, blood begins to flow from them; this sign also indicates that the needle is near the nerve. Changing the subcutaneous position of the needle by moving its end back and making sure that it is outside the vessel, proceed to the injection. 10-15 ml of a 3-permeate solution of novocaine are injected.

The modern way. With the above method of anesthesia of the median nerve, the possibility of blockade of the muscular branches of the nerve is not excluded. Who the circumstance, along with the technical inconvenience associated with the injection in a poorly visible area, prompted to propose a method of injection in a lower, accessible and easier to see place - the area of the forearm. The site of injection is the muscular groove formed by the inner ulnar muscle and the radial flexor of the wrist on the medial surface of the forearm. The point of injection of the needle is determined in this groove, retreating one palm width above the chestnut. The injection is performed on the burdened limb. They use a needle 0-8 cm in length, which is injected horizontally, towards the medio-volar surface of the radius, through the muscles. When the end of the needle touches the bone, which will be at a depth of 1--5 cm, it is removed somewhat and 15 ml of a 3% solution of novocaine is injected, gently turning the needle in different directions to soak the solution of a wider field.

15-20 minutes after the injection, the horse is tested at a walk and easy trot. The complete disappearance or significant reduction of lameness indicates the localization of the painful focus between the injection points in the area of the polar nerves, the interosseous middle nerve and the median nerve.

The presence of lameness continues to indicate that the cause should be sought higher (elbow, shoulder, etc.).

If there is a slight decrease in lameness, it should be assumed that its cause is in the zone of joint innervation of the median and ulnar nerves, for example, in the area of the interosseous middle muscle. Then immediately, without waiting for the expiration of the period of action of the anesthesia, they start in the blockade of the ulnar nerve.

BLOCKADE OF THE ELBOW NERVE

The ulnar nerve is blocked where the neuralctomy is usually performed. The animal is fixed in a standing position with the opposite limb raised. On the polar surface of the forearm, the muscular groove formed by the lateral and medial ulnar muscles is probed. In this groove, retreating to the width of the palm (10-12 cm) above the accessory bone of the wrist, clearly visible behind the carpal joint, a thin needle is injected to a depth of 1-2 cm so that the dense deep fascia of the forearm is perforated under the skin. The nerve follows in conjunction with the ulnar collateral artery and vein. 10 ml of solution is injected, trying to make several gentle turns with the needle. Due to the fact that the solution is poured under the fascia, subcutaneous swelling does not occur at the injection site. In order not to be mistaken that the needle is under the fascia, it is necessary to catch the moment when the puncture of the latter creates a characteristic sensation in the operator's hand, reminiscent of the puncture of a sheet of paper.

After a joint blockade of the median and ulnar nerves, the decision on the localization of the pathological process causing lameness is greatly facilitated. The disappearance of xpOmota will indicate that the areas of the metacarpus and wrist are areas in which to look for painful lesions. If after some time (when the action

of the injected solution ends) the interosseous median nerve is blocked, then a disease of the muscle of the same name can be excluded.

BLOCKADE OF THE INTERSOSE MEDIUM NERVE

For the first time N.L. Vasnetsov pointed out the possibility and practical significance of blockade of this nerve. Thanks to the injection, anesthesia of the interosseous middle muscle occurs, which makes it possible to differentiate its lesion from the disease of other parts of the limb.

It is easier to inject with a bent limb. The injection site is determined at a point approximately 3 cm below the accessory wrist bone. The needle is inserted between the lateral edge of the digital flexor tendons, which, however, are poorly felt on palpation. The needle is given a direction from outside to inside, penetrating its end under the tendon of the deep flexor of the finger and under its carpal accessory head. In this case, the perforation of the carpal fascia is clearly felt after puncture of the skin. The depth of the injection is 1 - 1.5 cm. 10 ml of the solution is injected.

Topic: Hind limb wrist block

Novocaine blockade of interdigital nerves in cloven-hoofed animals

In artiodactyls, the dorsal and palmar digital nerves of the 3rd and 4th fingers pass between the toes. They innervate the corolla tissue, the skin base of the inner walls, and the soles of both hooves.

Indications for use. The blockade is used in the following cases:

- aseptic and infectious inflammation in the area of the fingers;
- phlegmon of the corolla, crumbs, laminitis of the inner walls of the hooves and pododermatitis;
- surgery on the above tissues.

Blockade technique. To perform this blockade, it is necessary to palpate the interdigital groove at the level of the middle of the dorsal surface of the putt area and at this point insert the needle perpendicular to the skin (Fig. 24). Then attach a syringe with a 0.5% solution of novocaine to the needle and advance the needle in the same direction and gradually inject 10 ... 20 ml / head in the direction of the needle movement. anesthetic solution.

Rice. 24. Scheme of novocaine blockade of interdigital nerves in cloven-hoofed animals:

a - rear view; b - front view; 1 - point of injection of the needle.

To create extensive novocaine infiltration of interdigital tissue, it is recommended (M. V. Plakhotin and S. T. Shitov) to additionally introduce 30 ... 40 ml / head. solution of novocaine in the proximal and distal directions. For this purpose, the needle must be removed to the subcutaneous tissue, then, giving it an upward

direction, push it all the way into the skin of the palmar surface at the level of the rudimentary fingers. The same is done in the distal direction, advancing the needle to the level of the lateral part of the fornix of the interdigital fissure.
In case of infected wounds, corolla phlegmon and other purulent-necrotic diseases in the area of the fingers and hooves, an antibiotic must be added to the novocaine solution. The blockade can be repeated after 3 ... 4 days.
20. Circular novocaine blockade
This blockade provides the effect of low concentration novocaine solutions on those nerve conductors of the limbs that innervate the tissues of the pathological focus area below the injection site of the anesthetic. Circular novocaine blockade is used in animals on the limbs no higher than the forearm and lower leg.
Indications for use. The blockade is especially effective for:
- fresh and granulating wounds on the distal parts of the extremities;
- purulent inflammatory diseases of the joints, metacarpus, metatarsus, fingers and hooves (hooves);
- acute rheumatic inflammation of the hooves;
- burns, frostbite;
- snake bites.
Blockade technique. Large animals are fixed in a standing position. For obstinate animals, a twist (horse) or nasal forceps (cattle) is used, and if necessary, the animal is fixed in a prone position. In small animals, the blockade is performed in the supine position. The operating field is prepared according to the technique accepted in surgery. A 0.5% solution of novocaine is injected at several points (Fig. 25): in the places where the dorsal and volar (palmar), metacarpal (metatarsal) nerves pass. In the areas of the forearm and lower leg, the injection points are selected based on the localization of the neurovascular bundles.

Rice. 25. Scheme of circular novocaine blockade. The arrows show the direction of the needle advance:
1 - bone; 2 - the point of injection of the needle.
A solution of novocaine is injected smoothly into the subcutaneous tissue, under the fascia and aponeuroses, impregnating the underlying tissues down to the bone. The fascial cases in which the neurovascular bundles are located should be especially carefully infiltrated.
The dose of 0.5% solution of novocaine for small animals is 30 ... 60 ml / head, and for large animals - 200 ... 400 ml per limb. If there are indications, the blockade is repeated after 3 ... 4 days.
21. Short novocaine blockade
With a short novocaine blockade with 0.25 ... 0.5% anesthetic solution, nerves infiltrate in the immediate vicinity of the pathological focus. A solution of

novocaine is injected into the tissue around the circumference and under the base of the lesion.

Indications for use. The blockade is used for the following pathologies:

- fresh and granulating wounds, especially if there are signs of a purulent infection;
- purulent inflammatory processes (abscesses, boils, carbuncles, etc.);
- acute bursitis, tendinitis, tendovaginitis, desmoiditis;
- simple, edematous, inflamed, gangrenous ulcers.

With infectious In these processes, penicillin, streptomycin or other antibiotics are added to the novocaine solution. Some researchers recommend using a 1: 1 hemonocaine mixture for a short block.

Blockade technique. The operating field is shaved, disinfected with a 5% alcohol solution of iodine or iodized alcohol. With a thin needle, a solution of novocaine is injected in layers: first, intradermally, and then subcutaneously, under the fascia, intramuscularly and under the base of the pathological focus, i.e. all tissues from skin to muscles are infiltrated. In this case, it is necessary to avoid too tight infiltration of tissues with a solution of novocaine, since their strong mechanical squeezing can cause tissue ischemia and negatively affect the course of the pathological process.

The dose of the injected solution of novocaine depends on the size of the animal and the extent of the tissue lesion focus: for small animals, usually 20 ... 40 ml / head, for large - 100 ... 200 ml / head. If necessary, the blockade is repeated after 3 ... 4 days.

3.4 Independent educational activities

PARAGRAPH 2 OF THE ORDER OF THE MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF THE REPUBLIC OF UZBEKISTAN "ON THE ORGANIZATION OF STUDENTS' INDEPENDENT WORK" OF AUGUST 18, 2009

APPROVED WITH "STUDENTS ARE INDEPENDENT

ON THE ORGANIZATION AND CONTROL OF ITS WORK

In addition to having in-depth theoretical and practical knowledge in the national personnel training program, he can independently work in his chosen field, independently improve his knowledge and skills, and solve problem situations with a creative approach to the problem. One of the main tasks is to train specialists who can identify, analyze and quickly adapt to the conditions.

It is known that in the current environment, where the scope of information and knowledge is rapidly expanding, it is difficult to convey all the information to students only during the lessons.

Experiments show that a student can learn deeply only if he works independently and works tirelessly on himself. The main knowledge, skills and

qualifications of students are formed only in the process of independent education, the ability to perform independent activities develops and interest in creative work appears in them.

Planning, organizing independent education of students and creating all the necessary conditions for it, teaching students in class as well as teaching them to study more, showing ways to acquire knowledge , issuing a referral for independent education is one of the main tasks of the institute.

Student independent work (TMI) is a systematic activity aimed at mastering a certain part of the knowledge, skills and qualifications specified in the curriculum of a particular subject by a student based on the advice and recommendations of a subject teacher in the classroom and outside the classroom.

Organization of TMI in the initial stages of education is associated with a number of problems. It is especially difficult for first-year students to get used to the requirements of the next type of education - higher education. Because they hardly know how to organize their independent activities during the education process. From which source and how to find information, analyze it and organize it by extracting and summarizing what is necessary, express one's opinion clearly and vividly, correctly allocate one's time, and also correctly use one's mental and physical capabilities. Correct assessment will be a big problem for them. The main thing is that they are not mentally ready for independent education.

Therefore, every professor-teacher should first instill confidence in the student in his abilities and mental capabilities, and patiently, step by step, teach them to properly organize independent learning. . It is necessary to increase their initiative and role, taking into account the fact that the knowledge and skills acquired independently by students become more complicated and expanded from course to course. Then the student who gets used to independent work does not only perform the tasks assigned by the teacher, but also independently chooses and acquires additional knowledge that he considers necessary, depending on his needs, interests and abilities.

The following aspects should be taken into account when determining the form and size of students' independent work:

- study stage;
- the characteristic of a certain subject and the degree of difficulty in mastering it;
- the ability of the student and the level of theoretical and practical training (basic knowledge);
- the level of provision of science with information sources;
- the student's ability to work with information sources.

Form and size of assignments for independent work,

the level of difficulty should change and increase from semester to semester in accordance with the formation of skills. That is, it is necessary to gradually increase the level of students' independence in completing tasks and teach them to have a systematic and creative approach to completing tasks.

Taking into account the student's level of academic mastery and ability, the following forms can be used in the organization of TMI:

• independent mastering of some subjects of science with the help of educational literature, working with educational resources;

• preparing for practical, seminar and laboratory classes;

• preparation of an abstract on a certain topic;

• completing course work (projects);

• collecting materials for graduation qualification work and master's thesis;

• perform calculation and graphic work;

• working on layouts, models and works of art;

• finding a solution to an existing problem in practice, preparing tests, controversial questions and tasks;

• preparation of scientific articles, theses and lectures;

• solving non-standard problems of practical content and creative work;

• performing homework, etc.;

Depending on the nature of the subject, students may be assigned tasks of other forms for independent work. What kind of assignments should be given to students is determined by the department. Assignments are carefully designed and focused on a certain goal, and should serve to strengthen, deepen, expand and supplement the knowledge students have received during classroom training.

Independent learning of the subject. Depending on the nature of the subject, the level of knowledge and abilities of the students, individual topics included in the working curriculum are assigned to students for independent mastering. In this case, it is necessary to pay attention to the basic phrases that serve to express and reveal the main content of the topic, to the questions that serve to systematically describe the topic, and to indicate the main literature and sources of information.

In the process of completing the task, students independently summarize this topic using educational literature, prepare answers to questions related to the topic, understanding the essence of basic phrases. In necessary cases (if learning is difficult, if questions arise, if there is a lack of literature, if the subject cannot be systematically explained, etc.), they get advice from the teacher.

The text prepared on an independently mastered topic is defended at the department.

Essay preparation. The student is assigned to prepare an abstract on a topic, the level of difficulty of which corresponds to his personal capabilities, ability and level of knowledge. In addition to the main literature, the student collects, analyzes, systematizes materials using additional literature, monographs, scientific and methodical articles, information obtained from the Internet, electronic library materials, etc. tries to provide a wide range of information. In necessary cases, he receives advice and instructions from the teacher.

The completed abstract will be defended at the department with the participation of experts.

Preparation of visual aids. The student is asked to prepare visual materials (tables, drawings, pictures, maps, layouts, models, graphs, samples, musical pieces, small works of art, etc.) that will help to explain and better master a certain topic. The topic is determined by the teacher, and certain instructions and guidelines are given to the student. The amount, form and content of visual aids are chosen independently by the student. Such a task can be assigned to several students on the same subject.

The student prepares written recommendations on the use of visual materials and defends them in the department.

Preparation of tests, discussion questions and assignments on the topic. The student is asked to prepare tests on a specific topic, problems and tasks of different levels of difficulty, and questions that are the basis for discussion.

In this case, the teacher gives guidance to the student about the requirements for the test and the rules of its preparation, what is the intended purpose, how to separate the controversial moments of the topic when preparing problematic questions, and how to prepare assignments. During the consultation, the level of fulfillment of the tasks and requirements of the work performed is monitored (reproduction, clarification or completion may be suggested).

The set of tests, questions and assignments will be defended in the department with the participation of experts.

Preparation of scientific articles, theses and lectures. A student may be assigned to prepare an article, thesis or lecture of a scientific (referential) character on any topic (the topic can be chosen by the student himself). In doing so, the student collects, analyzes, extracts and organizes materials related to the topic from educational literature, scientific research works, dissertations, articles and monographs, and other information sources, adds them based on personal experience and knowledge, scientific results. , makes comments, explains and justifies his point of view. In this, the student works in cooperation with the teacher.

The prepared article, thesis or lecture will be defended at the department.

Solving non-standard problems of practical content and creative work. Non-standard, theoretically important practical assignments, scientific and creative tasks requiring a creative approach, creation of models, mock-ups, and samples may be assigned on one topic or department. Practical tasks should be aimed at searching and finding optimal options for solving the problem.

Depending on the student's interest and ability, it is possible to give him assignments of a scientific nature, to prepare and publish scientific articles in cooperation with the teacher.

Effective organization of students' independent work:

systematic approach;

coordination and integration of all stages;

establish strict control over its implementation;

it is necessary to improve the organization and control mechanisms.

The following requirements must be met for the successful completion of independent work assignments:

purpose (consolidation of knowledge, assimilation of new knowledge, increase of creative activity, formation of practical skills and qualifications, etc.), clear justification; clear definition of tasks and assignments;

students should be sufficiently aware of the algorithm and methods of completing assignments;

correct determination of advice and other types of assistance (giving instructions and instructions, explaining the content and essence of the topic, providing insight into the methods of performing problematic tasks, solving some problematic moments together, etc.);

clearly defining the reporting form and assessment criteria;

clearly defining the time, form and types of supervision (practical seminar, laboratory sessions, time specially allocated for consultation or supervision; text of a lecture or summary, book of completed assignments, supervision work, homework book, course work, test, articles, non-standard tasks, questions, articles, demonstration equipment and creative works; question-and-answer, explaining the content and essence of the work done, reporting in written form, etc.).

Students' independent work can be conditionally divided into two:

TMIs performed in the auditorium. Tasks related to processing, expansion and consolidation of the passed topic are performed;

TMIs performed outside the audience. Independent mastering of some subjects in the curriculum, completion of homework assignments, preparation for practical and laboratory work, creative and scientific-research work, etc.

In order to check the level of mastery of theoretical and practical knowledge of students, the level of preparation for practical training (practice, laboratory, seminar classes) and the quality of the performance of homework, the first type of work usually consists of taking control tasks, question-and-answer, conversation, discussion, performing practical assignments, etc. in the methods, control (current control) is carried out mainly in practice classes.

In the current control, the student's activity, performance level and level of mastery in mastering the materials taught during the lesson and in completing homework tasks are taken into account.

The second type of work is independent research, analysis, synopsis (or formalization in the form of an abstract) and mastering of information and information on the subject that is determined to be mastered outside the audience in the working curriculum of the subject, practical tasks that require a creative approach. performed in the form of execution. The process of performing this type of work and the control of the quality of learning is carried out outside of school hours, during specially designated consultation hours.

The form and content of organizing independent education Independent education of a student in "Operative surgery" is an integral part of the process of learning

this subject and is fully provided with methodological and informational resources.
Students listen to professors' lectures during classroom sessions, choose and decide on a teaching method. Outside the auditorium, the student prepares for classes, summarizes literature, solves examples and problems given as homework. In addition, in order to study some topics more widely, he reads additional literature, prepares abstracts, and solves tests on the topic. The results of independent education are evaluated based on the rating system.
Completing tasks at home, independently learning new knowledge from additional textbooks and literature, searching for necessary information and determining ways to find it, using the Internet to collect information and conduct scientific research, within the framework of a scientific group or independently using scientific sources, such as preparing scientific articles and lectures, deepens the knowledge of students, develops their independent thinking and creative abilities. That is why educational activities cannot be effective without independent education.
Homework is checked and evaluated by the teacher who conducts practical training, and the synopsis and the level of mastery of the topic are checked and evaluated by the teacher who conducts lectures in each lesson.
The independent body of work from the discipline "Operative surgery" covers all topics of the discipline and is formed in the form of the following 15 major topics.
For students of "5440100 - veterinary" education
Content and scope of independent education of students in "Operative surgery and topographical anatomy"

№	Subjects of independent education	Implementation mechanism
1	Plastic operation elements.	Writing a report
2	Burning (thermocauterization).	Writing a report
3	Trepanation of paranasal sinuses.	Writing a report
4	Operations on saliva	Prepare from the literature and complete assignments
5	Subjects of independent education	Prepare from the literature and complete assignments
6	Plastic operation elements.	Prepare from the literature and complete assignments

7	Burning (thermocauterization).	Prepare from the literature and complete assignments
8	Trepanation of paranasal sinuses.	Prepare from the literature and complete assignments
9	Operations on saliva	Prepare from the literature and complete assignments
10	Subjects of independent education	Writing a report
11	Plastic operation elements.	Writing a report
12	Burning (thermocauterization).	Prepare from the literature and complete assignments
13	Trepanation of paranasal sinuses.	Prepare from the literature and complete assignments
14	Operations on saliva	Prepare from the literature and complete assignments
15	Subjects of independent education	Prepare from the literature and complete assignments

3.5. Glossary of Terms

Abdomen

The abdomen is that part of the body, lying between the chest and pelvis, containing the digestive organs (i.e. the belly).

Abscess

Localized accumulation of pus in a cavity; usually associated with infection. A common outcome of cat fights.

Acute

A rapid and often severe onset. (e.g. acute infection).

Addison's Disease

This disorder occurs when the adrenal glands fails to produce enough hormones for normal function, causing a metabolic and electrolyte imbalance and can potentially be fatal. In dogs, the symptoms can include vomiting, diarrhoea, lethargy, lack of appetite, shaking, muscle weakness, low body temperature, collapse and low heart rate.

Alimentary
Pertaining to food or the digestive tract (alimentary canal).
Allergen
An allergen is a substance that can cause an allergic reaction. In allergic animals, the immune system recognizes allergens as "foreign" or "dangerous" and responds accordingly. In non-allergic animals these substances cause no immune response.
Alopecia
Alopecia is a loss of hair from the body. Whilst in humans, alopecia can also be the result of environmental conditions, in animals it is usually the sign of an underlying disease. Some animals may be genetically predisposed, while in other animals it may be caused by hypersensitivity or nutritional factors.
Analgesia
The relief of pain. An analgesic is something designed to relieve pain.
Anaphylaxis
Anaphylaxis refers to a rapidly developing and serious allergic reaction that afects a number of different areas of the body at one time. Severe anaphylactic reactions can be fatal.
Anaemia
A lower than normal level of red blood cells (also referred to as erythrocytes) carrying oxygen to the body.
Anaesthesia
Anaesthesia is the total loss of feeling or sensation. It is induced with drugs to allow surgery or procedures to be performed without causing pain. Anaesthesia may be applied to the whole body, when it is known as general anaesthesia, or to part of the body, when it is known as local anaesthesia.
Anorexia
Loss of appetite, whatever the cause.
Antibiotics
A compound or substance that kills or slows down the growth of bacteria. Antibiotics are not effective against viral infections.
Bacterium
A bacterium is a unicellular microorganism which represents one of the most basic and primitive forms of life. Bacteria are everywhere. Some bacteria are capable of causing disease in animals.
Benign
Harmless.
Bilateral
Meaning two sides.
Bile
A green/yellow liquid formed in the liver. Bile plays a vital role in the digestion of fats.
Biopsy
The removal of a sample of tissue or cells from a living subject to determine the presence or extent of a disease.

Bitch
A female dog.
Bladder
A sac that receives and holds a liquid until it is excreted. Often refers to the urinary bladder.
Bladder Problems
Bladder problems are common in dogs and can include issues such as bladder stones, urinary tract infections and incontinence and can present itself by blood in the urine, difficulty urinating and frequent urination.
Bladder Stones
Bladder stones are a common occurrence in domestic animals such as dogs and cats. Blood in the urine, painful urination or straining to urinate may all be signs. Bladder stones may be associated with urinary tract infections, particularly in dogs.
Bloat
A medical condition in which the stomach becomes overstretched by excessive gas. Bloat is a very serious health risk for many deep-chested dogs.
Blood Glucose
The amount of glucose (sugar) present in the blood.
Bone Marrow
Bone marrow is a spongy, fatty tissue that houses stem cells, located inside a few large bones. These stem cells transform themselves into white and red blood cells and platelets.
Borborygmus
The rumbling noise caused by the movement of gas through the stomach and/or intestines.
Bradycardia
An abnormally slow heart rate.
Bronchi
The large airways within the lungs.
Bronchodilator
A substance that dilates the airways in the lungs.
BUN
Blood urea nitrogen (BUN) measures the amount of urea nitrogen, a waste product of protein metabolism, in the blood. It can be used as an aid to measure kidney function.
Caecum
Part of the gastrointestinal tract between the small and large intestines. It is a small, coiled organ in dogs.
Calcified
The build-up of calcium salts in soft tissue, causing it to harden.
Calculus
A concretion of material, usually mineral salts, that forms in an organ of the body. Bladder or kidney stones are an example of calculus.

Cancer
Cancer is the leading cause of death among older dogs. The warning signs of cancer in dogs are very similar to that in people. A lump or a bump, a wound that doesn't heal, any kind of swelling, enlarged lymph nodes, a lameness or swelling in the bone or abnormal bleeding should all be investigated.
Candida
This fungus or yeast can normally be found in areas of the body such as the mouth, the genital and intestinal tracts. It can cause disease in animals.
Canine
Pertaining to dogs.
Carcinoma
A subtype of cancer that arises from epithelial cells. Epithelial cells form the lining of our internal organs, cavities, glands, and skin.
Cardiac
Pertaining to the heart.
Cardiomyopathy
Literally means "heart muscle disease".
Cardiopulmonary
A term relating to both the heart and lungs.
Cardiovascular
Refers to the circulatory system comprising the heart and blood vessels which carries nutrients and oxygen to the tissues of the body and removes carbon dioxide and other wastes.
Carpus
The animal equivalent of our wrist.
Castration
Removal of the testicles.
Cataract
A cataract is a clouding of the lens of the eye causing a reduction in vision or blindness. Several factors can promote the formation of cataracts; a genetic predisposition, diabetes mellitus, advanced age or previous eye damage. Currently, cataracts may be treated surgically, if vision is severely impaired.
Caudal
A term meaning toward the tail or the posterior end of the body.
Cerebellum
A region of the brain that plays an important role in motor control and co-ordination.
Cerebrum
A region of the brain that controls emotional, behavioural and learning functions.
Chemotherapy
Treatment of cancer with drugs. The drugs used are slightly more toxic to cancer cells than healthy cells, so the cancer is treated without causing permanent damage.
Cherry Eye
Cherry eye is the common name for the condition where the tear producing gland

of the third eyelid prolapses. resulting in the appearance of a firm fleshy mass. Cherry eye is particularly common in some breeds of dog and is thought due to weakness in the attachment of the gland, allowing it to protrude.

Chronic

A disease of slow onset and of long duration. (e.g. chronic osteoarthritis)

Cirrhosis

A chronic disease of the liver whereby healthy tissue is replaced by scar tissue.

Central Nervous System (CNS)

Consists of the brain and spinal cord.

Cutaneous

Relating to, or affecting the skin.

Cyanosis

A bluish colour of the skin and the mucous membranes due to insufficient oxygen in the blood.

Cyst

A pathologic space in bone or soft tissue containing fluid or semi-solid material.

Cystitis

Inflammation of the urinary bladder.

Cytology

Refers to a branch of pathology that deals with making diagnoses of diseases based on the examination of cells.

Dehydration

The excessive loss of body water.

Dental Disease

Dental disease is very common in dogs but can be prevented. The most obvious sign of dental disease is calculus or dental plaque. Plaque build up can lead to gingivitis which if left untreated can progress to periodontitis and resulting in tooth loss. Treatment involves scaling and polishing of the teeth under general anesthesia and treatment of any periodontal disease. Special diets or treats, brushing, and plaque prevention gels can be use to prevent dental disease.

Dermal

Pertaining to the skin.

Dermatitis

Inflammation of the skin.

Diabetes

Diabetes is a metabolic disease where the animal has persistently high levels of glucose in the blood. Blood glucose levels are normally regulated by insulin, which acts cause cells to take up glucose. Diabetes can result if there is a lack of insulin production by the pancreas (so-called insulin dependent diabetes), or if the cells do not respond appropriately to the insulin (non-insulin dependent diabetes). Symptoms, are excessive drinking and urination, excessive appetite, often with weight loss, and cloudy eyes due to the formation of cataracts. If left untreated, diabetes leads malnutrition, ketoacidosis and/or dehydration, and death.

Diagnostic Test

A test to determine the presence or cause of disease.

Diarrhoea

Excessive and frequent evacuation of watery faeces, usually indicating gastrointestinal distress or disorder.

Digestive System

The organs responsible for the transit and metabolism of food in the body. These organs include salivary glands, mouth, oesophagus, stomach, small intestine, liver, gall bladder, pancreas, colon, rectum, and anus.

Dilated Cardiomyopathy

This heart condition, which is also known as DCM, is when the heart becomes weakened and enlarged and cannot pump blood efficiently. The symptoms can include less activity and tiring easily, lower appetite, signs of difficult respiration, panting and coughing while at rest and an enlarged pear-shape tummy as fluid accumulates in the abdomen.

Disinfection

A cleaning process which destroys most microorganisms, but not highly resistant forms.

Distemper

An infectious viral disease occurring in dogs. Clinical signs include loss of appetite, a discharge from the eyes and nose, vomiting, fever, lethargy, partial paralysis and sometimes death.

Diuretic

A substance increases the production of urine.

Domestic Animal

An animal that is not wild and is kept as a pet or to produce food.

Dry Eye

Dry Eye Syndrome is common in dogs. Most cases are caused by a genetic predisposition, but chronic conjunctivitis, canine distemper, and some drugs can result in either decreased tear production or increased tear film evaporation. Symptoms include eye redness, a yellow or greenish discharge, ulceration of the cornea, pigmented cornea, and blood vessels on the cornea.

Duodenum

The first part of the small intestine. The duodenum extends from the stomach to the jejunum (the second part of the small intestine).

Duration of Immunity

Length of time an animal is protected from a disease after vaccination. Vaccines for some diseases provide a long duration of immunity, others only provide immunity for up to a year.

Dysphagia

Difficulty in swallowing.

Dysplasia

A term used in pathology meaning abnormal development of tissues.

Dyspnoea
Difficult or laboured breathing; shortness of breath.
Dystocia
Difficult birth.
Dysuria
Painful or difficult urination.
Ear Canal
The narrow tube, between the ear and ear drum, through which sound enters the ear.
Ear Drum
The thin membrane that separates the middle ear from the external ear. Also called the tympanic membrane.
Ear Infections
Ear infections are commonly seen in dogs. Clinical signs include behavioural changes such is constant scratching or head shaking. The ear canal may be red and a discharge or strong odour may be present. If these clinical signs are present veterinary attention should be sought.
Ear Mites
Mites that live in the ears of animals. They can just barely be seen as a small white dot with the naked eye.
ECG
An electrocardiogram (ECG) is a test that records the electrical activity of the heart.
Echocardiogram
A test that uses sound waves to create a moving picture of the heart (i.e. an ultrasound of the heart).
Ectoparasite
A parasite, such as a flea, that lives on the exterior of an animal.
Ectopic
Meaning "out of place." (e.g. an ectopic pregnancy is one that has implanted outside the reproductive system)
Electrolyte
In medicine, certain mineral elements that are critically important to life, including sodium, potassium, chloride, calcium, and phosphorous.
Elizabethan Collar
A medical device that is shaped just like a cone and is used to prevent the animal from biting, licking, and scratching at wounds and injuries while they heal.
Elongated Soft Palate
The soft palate is the fleshy tissue at the back of the roof of the mouth that separates the mouth from the nasal passages. In some short muzzled breeds, such as pugs or bulldogs, the soft palate can be excessively long resulting in snoring, wheezing, snorting, and coughing when the dog is exercising. This can be corrected with surgery.

Emaciation
A wasted condition of the body.
Emesis
Vomiting.
Encephalitis
Inflammation of the brain.
Encephalopathy
Disease, damage, or malfunction of the brain.
Endocrine
Pertaining to hormones and the glands that make them. These hormones regulate an animal's growth, physiology and sexual development.
Endoscope
A lighted medical instrument used to get examine organs such as the oesophagus, stomach or airways.
Endotracheal Tube
A breathing tube placed into the trachea. Commonly used during anaesthesia to facilitate delivery of oxygen and anaesthetic to the lungs.
Enteritis
Inflammation of the intestine, especially the small intestine
Envenomation
The act of injecting a poisonous material (venom) by sting, spine or bite.
Enzyme
Enzymes are proteins that increase the rate of chemical reaction. Almost all processes in a cell need enzymes to occur at significant rates.
Epidermis
The outer layer of the skin.
Epistaxis
Technical name for bleeding from the nose.
Erythema
Redness of the skin resulting from dilation of blood vessels caused by irritation or injury to the tissue.
Erythrocyte
A red blood cell.
Exposure Keratitis
When eyelids are unable to close properly and hence are unable to keep the eyeball moist and free from debris and irritants, an inflammation of the cornea occurs, resulting in it becoming cloudy with a loss of transparency. This is known as exposure keratopathy syndrome. The signs are pain, squinting, pawing at the eye, avoiding light, and protrusion of the third eyelid. Depending on the cause of the keratitis, treatment may involve eye medications or surgery. If left untreated long-term visual loss may occur.
Facial Dermatitis
Facial dermatitis is a condition which causes inflammation and irritation of the face skin. The most common causes are due to flea bite allergies and reactions to

allergens, generally seasonal, in the environment. This can lead to scratching or rubbing the affected areas so it becomes inflamed and irritated.

Faeces

Bodily waste matter derived from ingested food that is discharged through the anus; also called stool.

Fanconi Syndrome

Fanconi syndrome is a condition where the tubules of the kidneys do not properly reabsorb minerals, glucose, amino acids, and water to keep the body in a metabolic balance. In dogs, if untreated Fanconi Syndrome will eventually lead to death. However, there are several different treatment options to manage kidney function. The most common signs are excessive drinking and urinating, weight loss and overall poor condition.

Feline

Of or relating to cats.

Feline Infectious Peritonitis

Feline infectious peritonitis, or FIP, is an invariably fatal immune mediated condition caused by infection with mutant form of feline coronavirus. Most cats infected with feline coronavirus show no clinical signs, however if the virus mutates to a more dangerous virulent form it may result in FIP. The cats immune response to the virus results in an inflammatory reaction in affected tissues. There are two clinical forms of the disease recognised - wet or effusive FIP and dry or non-effusive FIP. All cats with FIP will typically have a fever, reduced appetite, and weight loss. In addition those with wet FIP develop an accumulation of fluid in their chest or abdomen which may result in breathing difficulties or the characteristic pot bellied appearance respectively. In cats with dry FIP, there is no fluid accumulation. These cats often develop neurological or eye problems such as seizures, paralysis, or blindness. Currently treatment for this condition is palliative.

Foetus

An unborn animal in the later stages of development showing recognisable features of the mature animal.

Fine Needle Aspirate

A diagnostic procedure sometimes used to investigate superficial (just under the skin) lumps or masses. In this technique, a thin, hollow needle is inserted into the mass to extract cells that, after being stained, will be examined under a microscope.

FIV (Feline Immunodeficiency Virus)

A virus that specifically infects cats (not people). It is transmitted by cats biting one another, especially during fights. FIV is the cause of Feline AIDS (Acquired Immune Deficiency Syndrome) – a progressive deficiency of the immune system that can limit the ability of cats to fight off other infections.

Flatulence

Generating excessive gas in the gastrointestinal tract

FLUTD (Feline Lower Urinary Tract Disease)
Describes a collection of conditions that can affect the urinary tract (bladder and/or urethra) of cats. Common clinical signs include straining to urinate and blood in the urine.

Follicle
A small cavity or deep narrow-mouthed depression (e.g. hair follicle)

Foreign Body
Any abnormal substance within the body. Commonly used to describe foreign material under the skin (eg splinters, glass) or in the gastrointestinal tract (e.g. toys, balls, bones).

Fracture
Breaking of hard tissue such as bone. May be caused by trauma or bone disease.

Gait
The manner of walking or moving. Assessed to determine the cause of lameness in animals.

Gastric
Relating to or involving the stomach.

Gastritis
Inflammation of the lining of the stomach.

Gastrointestinal
Relating to the stomach and intestines.

Gestation
The carrying of an embryo or foetus

Gingival
Pertaining to the gums.

Gingivitis
Inflammation of the gums.

Glaucoma
Glaucoma is a condition in which there is increased pressure in eye which, if left untreated, can result in blindness. Glaucoma can be sudden in onset (acute) in which case the eye is usually very painful and red, or it can be more insidious in its onset (chronic) with no obvious outward changes until the vision is affected. For this reason regular eye checks are important, particularly in at risk breeds. If detected early medical treatment can be very effective in preserving vision.

Glucosuria
The excretion of glucose in the urine. Normally, urine does not contain glucose as the kidneys are able to reclaim glucose back into the bloodstream.

Granuloma
A mass or nodule of chronically inflamed tissue.

Haemangiosarcoma
A malignant tumour of the blood vessels, usually occurring in the skin, liver or spleen.

Haematocrit
The volume of red blood cells in a sample of blood after it has been centrifuged

(spun at high speeds). The PCV (Packed Cell Volume), or haematocrit, is expressed as a percentage. For example, normal for dogs is 40-59% and for cats is 29-50%.

Haematology

The study of blood and diseases of the blood.

Hydrocephalus

An abnormal increase in the amount of cerebrospinal fluid (CSF) within the cranial cavity. This may cause increased pressure inside the skull and progressive enlargement of the head, brain damage and even death.

Hyper

A prefix meaning more than normal.

Hyperglycaemia

High levels of glucose in the blood.

Hyperplasia

An abnormal increase in the number of cells in a tissue or organ.

Hypersensitivity

An allergic condition in which the body overreacts to certain substances, such as a bee sting or medication.

Hypertension

High blood pressure.

Hyperthermia

Elevated body temperature.

Hyperthyroidism

Hyperthyroidism occurs when the thyroid gland, which regulates metabolism, increases thyroid hormone production. This overproduction of hormones causes a "speeding up" of various body systems. Clinical signs may include behaviours changes such as irritability or aggression, increased heart rate, tremors, weight loss and muscular weakness. Treatment can include surgery, medication, or radioactive iodine therapy. It is a very common disorder of older cats.

Hypertrophic Cardiomyopathy

Hypertrophic cardiomyopathy (HCM) is the most common heart disease in all cats and in some breeds is a genetic trait. The disease causes thickening of the heart wall, which makes the heart pump less efficiently which could lead to sudden death. Early detection is important to ward off this life-threatening problem. Cat with HCM are also prone to developing thromboemboli.

Hypertrophy

An enlargement of an organ or a tissue as a result of an increase in the size of cells (rather than the number as in hyperplasia).

Hyperventilate

To breathe excessively hard and fast causing blood gas disorders.

Hypo

A prefix meaning less than normal.

Hypoglycaemia

Low levels of glucose in the blood.

Hypoplasia
Incomplete formation of a structure or organ in the body.
Hypotension
Low blood pressure.
Hypothermia
An abnormally low body temperature.
Hypothyroidism
Hypothyroidism occurs when the thyroid gland, which regulates metabolism, malfunctions and stops producing enough thyroid hormone. Usually affecting middle-aged dogs, the symptoms that can often be chronic, include hair loss or poor coat, weight gain, muscle loss, and lethargy. It can be effectively treated with medication.
Hypoxia
Deficiency in the amount of oxygen delivered to the body tissues.
Icterus
Also known as jaundice. It is a yellow discolouration of the skin, mucous membranes or whites of the eyes due to excessive levels of bilirubin in the blood.
IDDM
Insulin-dependent diabetes mellitus is a form of diabetes in which patients have little or no ability to produce insulin and are therefore entirely dependent on insulin injections.
Idiopathic
Disease arising from an unknown cause.
Ileus
Lack motility of the gastrointestinal tract.
Immune System
The system that protects the body from foreign substances, cells, and infections.
Immune-Mediated
Describes conditions which result from abnormal activity of the body's immune system. For example, immune mediated haemolytic anaemia (IMHA), is a disease in which the body's immune system destroys the body's own red blood cells.
Immunity
A condition in which the animal's immune system has been primed and is able to protect the body from a disease-causing agent such as a virus or bacteria.
Immunisation
The creation of immunity usually against a particular disease. Vaccination is a way to produce immunisation. However, a vaccinated animal is not always immune. If the body did not respond appropriately to the vaccine or if the vaccine was not administered correctly, immunity may not be stimulated.
Immunodeficiency
Immunological disorder in which the body's immune system is inadequate and resistance to infectious diseases is reduced. Can be caused by viral infections such as feline immunodeficiency virus in cats.

Immunosuppressive
Pertaining to a substance that suppresses the immune system.
Inactivated Vaccine
Vaccines which are made by taking the real, disease-causing viruses (or bacteria), killing them, and putting them into a liquid base. Also called a killed vaccine.
Incontinence
Loss of control over urination or defaecation.
Incubation Period
The period between infection and the appearance of clinical signs of the disease.
Infection
Pathological state resulting from the invasion of the body by microorganisms, such as bacteria or viruses.
Infestation
Refers to the state of being invaded or overrun by parasites.
Inflammation
A local response to injury that is characterised by redness, heat, pain, swelling, and often loss of function.
Inherited
Tending to occur among members of a family. Genetically transmitted features.
Innate
Inborn. A permanent characteristic present since birth.
Insulin
A hormone secreted by the pancreas to regulate glucose in the body.
Insulin Resistance
A condition where insulin becomes less effective at lowering blood sugars.
Intermediate Host
A host (animal, insect, snail etc) that harbours a parasite only for a short transition period, during which (usually) some developmental stage is completed.
Intestine
The portion of the gastrointestinal tract extending from the stomach to the anus. It is usually divided into two segments, the small intestine and the large intestine.
Intracellular
Inside the cell.
Intracranial
Inside the cranial cavity or head.
Intramuscular
Into the muscle. Generally relates to the site an injection is given.
Intranasal
Into the nose. This is an effective way of vaccinating dogs against canine cough.
Intravenous
Into the vein. Generally relates to the site of injection of drugs or fluids.
Intussusception
Serious disorder in which part of the intestine slides, or telescopes, into another part of the intestine. This often blocks the intestine, preventing food or fluid from passing through.

Iris

The coloured portion of the eye is called the iris. In the centre of the iris is the black opening called the pupil.

Jaundice

Also called icterus, meaning that a yellow pigment is found in the blood and in the tissues. It is most easily seen in the gums and the whites of eyes. It can be caused by destruction of red blood cells, liver disease and obstruction of the bile duct.

Jejunum

The second part of the small intestine. The jejunum extends from the duodenum (first part of the small intestine) to the ileum (the final part of the small intestine).

Jugular

Pertaining to the neck. The jugular veins carry deoxygenated blood from the head back to the heart.

Keratitis

Keratitis is inflammation of the cornea (the clear part of the eye). The cornea becomes cloudy, resulting in loss of transparency. All types of keratitis must be treated by a veterinarian.

Keratoconjunctivitis Sicca

Also known as dry eye, is a condition that results from the inadequate production of tears.

Ketoacidosis

A life-threatening condition associated with uncontrolled diabetes.

Kidney disease

There are two main forms of kidney disease, acute renal disease and chronic renal disease. Acute renal disease occurs suddenly and is often caused by toxins, infections and changes within a pets body that reduce the blood supply to the kidneys. Whilst, chronic renal disease develops over a longer time and is often a found in older pets. If there is sufficient kidney damage clinical signs of kidney failure will be seen, such as increased drinking and urination. Various medications and dietary changes are used to manage dogs and cats with kidney failure.

Killed Vaccine

Also known as inactivated vaccines. Vaccines which are made by taking the real, disease-causing viruses (or bacteria), killing them, and putting them into a liquid base.

Lactation

The secretion of milk from the mammary gland and the period of time that a mother lactates to feed her young.

Large Intestine

The portion of the intestine that connects the small intestine to the anus. The large intestine is made up of the caecum, colon and rectum.

Larva (plural larvae)

A distinct juvenile form many animals (such as insects or parasites) undergo before metamorphosis into adults.

Larynx

Also known as the voicebox, it is located at the entrance to the trachea (or windpipe). The larynx acts to control the flow of air to the trachea and food and water to the oesophagus.

Latent

A dormant stage of disease occurring between exposure to a disease-causing agent and the onset of the disease.

Lens Luxation

This inherited problem is a displacement of the lens from its normal position and can lead to secondary complications such as glaucoma and subsequent blindness. Surgery is required to correct this problem.

Liver

A large organ in the front of the abdomen that is responsible for the detoxification of blood, the production of certain digestive enzymes and bile.

Lymph Nodes

Are small glands composed of white blood cells called lymphocytes. Lymphocytes play a critical role in the immune system by destroying infectious agents (such as viruses and bacteria) and producing antibodies.

Malabsorption Syndrome

Defined as an animal's inability to absorb the vitamins, minerals, and other nutrients it needs from food.

Malignant

Refers to becoming worse and even resulting in death. Malignant tumours are cancerous growths which expand quickly and can metastasize, or spread to other areas of the body.

Malnutrition

A condition that results from taking an unbalanced diet in which certain nutrients are lacking, in excess, or in the wrong proportions.

Mammary

Pertaining to the mammary gland or breast tissue.

Mandible

The lower jaw.

Mange

Any of several skin diseases of mammals caused by parasitic mites that burrow into the skin or hair follicles. It is characterised by skin lesions, itching and loss of hair.

Mast Cell Tumour

Mast cell tumours are a type of cancer that generally occurs on the skin surface of dogs. These tumours often present themselves as a pink lump if it's on the surface of the skin or a lump if under the skin. Mast cell tumours can be very aggressive and can spread to the liver, spleen, or bone marrow. Prompt surgical removal is recommended for this type of cancer.

Masticate

Mastication or chewing is the process by which food is crushed and ground by teeth. Thin layer of tissue lining cavities that are exposed to the external environment and internal environment (such as the mouth, urinary bladder, eyelids). Also known as mucous membranes.

Mucous Membranes

Thin layer of tissue lining cavities that are exposed to the external environment and internal environment (such as the mouth, urinary bladder, eyelids). Also known as mucosa.

Musculoskeletal

Pertaining to the muscles and skeleton (bones).

Myasthenia Gravis

Is a neuromuscular disease in which severe muscle weakness is the primary sign. It is caused by an inability of certain nerve receptors to function properly.

Mydriasis
Large or dilated pupil size.
Myelogram
Radiograph (x-ray) of the spinal cord taken after a radio-opaque dye has been injected into the space around the spinal cord.
Myocardium
Muscle of the heart.
Nebulise
To convert a liquid into a spray for inhalational treatments.
Necropsy
Also known as an autopsy or post-mortem examination. It refers to the examination of an animal after death.
Necrosis
Is the premature death of cells and living biological tissue.
Nematodes
Also known as roundworms.
Neoplasia
A class of disease in which a group of cells display uncontrolled growth, invasion that intrudes upon and destroys adjacent tissues, and sometimes spreads to other locations in the body. Can be used to describe malignant or benign tumours.
Neuropathy
A condition involving a dysfunction of the nerves.
Neuter
Also known as desexing. It involves the surgical removal of the testes in males or the ovaries and uterus in females.
Nodule
Nodules are solid lumps or bumps found on an animal's skin.
Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)
Medications with anti-inflammatory, analgaesic (pain reducing) and anti-pyretic (fever-reducing) effects. Non-steroidal distinguishes NSAIDs from other drugs which contain steroids, which are also anti-inflammatory.
Non-core Vaccine
Vaccines that should be administered to animals assessed to be at risk of that disease. For example leptospirosis and canine cough in dogs or feline leukaemia and FIV in cats.
Non-pathogenic
Not capable of causing disease.
Nutraceutical
A term combining the words “nutrition” and “pharmaceutical”. It is used to describe a food or part of a food that allegedly provides medicinal or health benefits.
Nutrient
Any substance which has nutritious qualities.
Nystagmus
A term describe involuntary eye movement. Nystagmus can be horizontal, vertical or rotary.
Obsessive Compulsive
A behavioural condition in which a pet repeatedly performs an action out of context.

Occult
Refers to a structure or process that is hidden or detected indirectly.
Ocular
Pertaining to the eye.
Oedema
The medical term for fluid retention in the body, causing swelling to occur in the affected area.
Oesophagus
The part of the intestinal tract between the mouth and stomach.
Off Label
Refers to a drug prescribed to treat a condition for which it has not been approved. Off-label use of a drug must be determined by the attending veterinarian.
Opioid
A synthetic narcotic that resembles naturally occurring opium.
Osteodystrophy
Osteodystrophy is the general term for defective bone development that is usually attributable to renal disease or an imbalance in the calcium and phosphorus metabolism. Symptoms may not be diagnosed until renal disease is apparent but bone deformation can develop. Treatment may include dietary supplements, however, it is a chronic condition.
Osteomyelitis
Term to describe an infection of the bone or bone marrow.
Osteosarcoma
Osteosarcoma is a type of bone cancer, most commonly found in middle aged to older large breed dogs. The cancer commonly spreads to the lungs. Symptoms include lameness, pain of any of the bones, brittle bones (that break with minimal trauma), swelling of a limb, difficulty breathing, coughing & exercise intolerance.
Otic
Relating to the ear.
Ototoxic
Damaging to the structures of the ear.
Ovulate
The release of an egg from the ovary of the female.
Oxytocin
A hormone that stimulates the uterus to contract during birth and the mammary glands to release milk.
Packed Cell Volume (PCV)
The volume of blood cells in a sample of blood after it has been centrifuged The PCV, or haematocrit, is expressed as a percentage. For example, normal for dogs is 40-59% and for cats is 29-50%.
Palatable
Acceptable to the taste; readily eaten.
Palpation
The act of feeling with the hand or fingers. A phase of the physical examination in which the sense of touch is used to gather information essential for diagnosis.
Pancreatitis
A term that describes inflammation of the pancreas. Clinical signs include vomiting, lethargy and a painful abdomen.

Pannus

Pannus is the common name for chronic superficial keratitis, a condition frequently seen in German Shepherd Dogs. Pannus is thought to be an immune mediated condition that is triggered or made worse by UV light. Affected dogs develop scar tissue, pigmentation, and the new blood vessels on the cornea. Pannus is a life-long condition that is treated with topical eye medications.

Papule

A small solid bump rising from the skin that is usually less than 1 centimetre in diameter.

Paralysis

Refers to loss of motor function due to impairment of muscles or nerves.

Parasiticide

A substance used to destroy parasites.

Parenterally

Refers to the administration of a drug into the body through some way other than the digestive tract, such as subcutaneous or intravenous injection.

Paresis

Refers to partial loss of motor function due to impairment of muscles or nerves.

Parturition

Term used to describe delivery of a baby or giving birth.

Passive Immunity

Is the transfer of antibodies from one individual to another. It can occur naturally, when maternal antibodies are transferred to the newborn animal in colostrum, and can also be transferred artificially, such as a plasma transfusion.

Pathogenic

Causing disease. Usually used to describe bacteria which are capable of causing disease.

Pathologist

Person who specialises in the diagnosis of diseases through the examination of animal tissue and body fluids.

Patellar Luxation

Patella luxation is a condition in which the knee-cap no longer glides within its natural groove and can become evident at any age. It is believed that it is an inherited problem which is more common in smaller breeds ,however it can also result from trauma. Symptoms include intermittent skipping, occasional hitch of the leg, or a persistent weight bearing lameness.

PCV (Packed Cell Volume)

The volume of blood cells in a sample of blood after it has been centrifuged. The PCV, or haematocrit, is expressed as a percentage. For example, normal for dogs is 40-59% and for cats is 29-50%.

Perianal Fistula

A painful condition of the skin surrounding the anus, in which small tracts open up, bleed and get infected.

Perineal

The region of the body between the genitals and the anus.

Peritoneum
A thin membrane that lines the abdominal and pelvic cavities, and covers most abdominal organs.
Peritonitis
Inflammation of the peritoneum.
Phalanges
The bones that are in the toes.
Pheromone
Chemicals released by an animal enabling it to communicate with other members of its own species.
Photosensitivity
Refers to an increase in the reactivity of the skin to sunlight. It can cause reddening and blistering of the skin.
Pica
A pattern of eating non-food materials (such as dirt or rocks).
Placebo
A dummy medication or treatment.
Plaque
A biofilm that develops naturally on the teeth. It is formed by colonising bacteria trying to attach itself to the smooth surface of a tooth.
Platelets
Are found in the blood of animals and functions to promote blood clotting. Also known as thrombocytes.
Polyarthritis
The term means inflammation of more than one joint. Often used in the context of infectious or immune-mediated diseases.
Polydactyl
Having more than the normal number of toes.
Polydipsia
Excessive thirst and drinking.
Polyp
An abnormal growth of tissue projecting from a mucous membrane.
Recumbency
Lying down.
Regurgitation
Expelling food from the oesophagus.
Renal
Pertaining to the kidneys.
Renal Insufficiency
Also called renal failure, is when the kidneys no longer function well enough to maintain a normal state of health.
Respiratory
Pertaining to respiration, the exchange of oxygen and carbon dioxide.

Retina
Term referring to the light-sensitive layer of tissue at the back of the inner eye.
Ringworm
Refers to a fungal skin infection.
Sacrocaudal Dysgenesis
Sacrocaudal dysgenesis is a genetic musculoskeletal disorder which has developed as a result of the breeding of Manx cats. The vertebrae of the tail and the sacrum are not developed properly. The spinal cord may also not be properly developed or completely sealed. The cat has a tailless or stumpy tail appearance and is commonly called Manx Syndrome, after the tailless cat breed.
Sebaceous Adenitis
This is an uncommon autoimmune, inflammatory skin disease that affects the sebaceous glands of the hair follicles. The glands, that excrete a fatty lubricating oil are destroyed, resulting in dried out and brittle skin. This can lead to skin lesions along the back and ears and symptoms include silvery dandruff, hair loss which has a "moth eaten" appearance to the coat, a dull and brittle coat and facial swelling. Management of the disease is generally washing with antibiotic shampoos and soaking in mineral oils, however, results can vary greatly.
Sebaceous Cysts
Sebaceous cysts are a benign, non-painful lumps. Usually found on the head, neck, body and upper legs, they are smooth, generally round and vary in size.
Sebaceous Glands
Microscopic gland in the skin that secrete an oily/waxy substance.
Seborrhea
Seborrhoea is a skin condition that results in excessively greasy (seborrhoea oleosa) or excessively scaly skin (seborrhoea sicca), often with associated inflammation. It is possible for dogs to have both greasy and scaly skin at the same time on different regions of the body. Suggested treatments are medicated shampoo and topical and oral medication.
Separation Anxiety
Is a behavioural condition where dogs, when left alone, exhibit distress and behavioural problems.
Sepsis
A toxic state caused by the absorption of pathogenic microorganisms and their products into the bloodstream or tissues.
Septicaemia
A toxic state caused by the absorption of pathogenic microorganisms and their products into the bloodstream.
Serology
Refers to blood tests that detect the presence of antibodies against an antigen or microorganism.
Serum
The clear yellowish fluid obtained upon separating whole blood into its solid and liquid components after it has been allowed to clot.

Struvite
Also known as ammonium magnesium phosphate. Struvite can form stones in the urinary bladder.
Subcutaneous
Under the skin.
Subluxation
Refers to incomplete or partial dislocation of a joint.
Syncope
Is the sudden loss of consciousness, or fainting.
Synovial Joint
Is the most movable and widespread type of joint throughout the body. Examples include the knee, elbow and hip.
Systemic
Pertaining to or affecting the whole body rather than localised.
Tachycardia
Refers to a faster than normal resting heart rate.
Tachypnoea
Refers to a faster than normal resting respiratory, or breathing, rate.
Tarsus
The animal equivalent of an ankle. It is also known as the hock.
Tartar
A build-up of bacteria, saliva, and food on the teeth which becomes mineralised, forming a hard coating and eventually causing gum disease and possibly tooth loss.
Tear Duct Problems
Blockage of the tear ducts can be a congenital problem or can occur due to acquired conditions such as infections, dental disease, or cancer. When the tear ducts become blocked tears run down the face. Constant wetting of the skin around the eyes due to the overflow of tears can predispose the dog to developing skin infections in this area.
Temporomandibular Joint
The joint where the lower jaw bone, or the mandible, meets the skull.
Thrombocytopaenia
The medical term that refers to a low or reduced platelet count.
Ulcer
A defect of the skin, cornea or mucous membrane caused by the loss of damaged tissue.
Ultrasound
A technique used to produce an image of a deep structure within the body by directing ultrasound waves at it and recording the reflections (echoes) from it.
Umbilicus
Also known as the belly button. The umbilicus is where the umbilical cord attaches to the foetus during pregnancy.
Urate
Is a salt derived from uric acid. Urate can form stones in the urinary bladder.

Urea
Is a compound which is essentially the waste produced when the body metabolises protein.

Urinary Incontinence
Is the loss of voluntary control of urination.

Urinary Obstruction
A term to describe one of many different conditions that disrupt normal urine flow from the body.

Urticaria
Also known as hives. Raised, itchy areas of skin that are usually a sign of an allergic reaction.

Uveitis
Refers to inflammation of the middle layer of the eye.

Vaccination
The administration of a vaccine to stimulate immunity to a disease.

Vaccine Failure
A vaccine failure is when an animal develops a disease in spite of being vaccinated against it. There is usually nothing wrong with the vaccine, but for some reason, the animal's immune system did not adequately respond to it.

Vasculitis
Inflammation of blood vessels.

Vasoconstriction
Vasoconstriction is the narrowing (constriction) of blood vessels by muscles in their walls.

Vasodilation
Vasodilation is the widening (dilation) of blood vessels by the relaxation of the muscles in their walls.

Vena Cava
The cranial vena cava is the large vein which returns blood to the heart from the head, neck and both upper limbs. The caudal vena cava returns blood to the heart from the lower part of the body.

Wobblers
Wobblers is the common name for a group of conditions of the cervical vertebrae that causes an unsteady (wobbly) gait and weakness in dogs. Clinical signs are due to compression of the spinal cord and are usually progressive. The disease is most common in large breed dogs, in particular Great Danes and Dobermans. Treatment is either medical to control the symptoms, or surgical to correct the spinal cord compression.

X-ray
High-energy electromagnetic radiation used to take radiographs.

Zoonotic
A term used to describe any disease or infection that is naturally transmissible from animals to humans.

V. Questions for certifications conducted in the subject:

Oral questions for 1 pc (120)

1. Methods and administrations used for local anesthesia.
2. Application of the method of firing in surgery (thermocauterization).
3. The concept of the science of operative surgery: its goals, objectives and relationship with other disciplines.
4. Sterilization of dressings and surgical materials: (autoclave, flowing steam, ironing).
5. Blockade of the star node.
6. Special seams and their technique. (Stitches in the intestines, blood vessels, nerves, and joints.)
7. Anesthesia for horses: methods of introduction.
8. Basics of preparing hands for surgery, the use of surgical gloves.
9. Types of bleeding and their characteristics.
10. Separation of soft tissues: rules and methods.
11. Blockade of equine caudal sympathetic ganglion.
12. The introduction of infection into surgical wounds.
13. The value of desmurgy in veterinary surgery.
14. Techniques and methods of applying plaster
15. The structure of the biological properties of the skin of the hands. Ways to prepare hands for surgery.
16. Types of local anesthesia: superficial, infiltration.
17. Methods for sterilizing surgical instruments.
18. Classification of anesthesia and drug requirements.
19. Ways to stop bleeding.
20. The concept of asepsis and antisepsis and its importance in surgery
21. Discontinuous and continuous seams: methods and types.
22. Bandages: techniques and types
23. Types of bleeding and their prevention
24. Complete cessation of blood flow: chemical, biological methods.
25. Anesthesia for ruminants: substances used, amount, route of administration.
26. Injection, infusion, bleeding: instruments, types and techniques.
27. The imposition of plaster casts (techniques and methods of its application.)
28. Methods for fixing horses.
29. Types of bleeding and their prevention: drugs, their number.
30. Complete cessation of bleeding: mechanical and physical methods.
31. Types of bandages.
32. Complications after anesthesia and methods of their elimination.
33. Topographic anatomy and its significance in operative surgery: concept, scientists who contributed to it, the difference from anatomy, its significance.

34. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold (sterilization).
35. Methods of felling cattle (Hessa, Italian, Latipova).
36. Preparation of the operating field: methods (mechanical cleaning and degreasing, chemical disinfection and duplication).
37. Methods for stopping bleeding: mechanical, physical.
38. Special seams and techniques for their implementation
39. Anesthesia for dogs and cats.
40. The concept of local anesthesia: indications and contraindications.
41. Types of local anesthesia: conduction, epidural.
42. The order and methods of preparing hands for surgery (Spasokukoski-Kochergin, Alfela, Zabludovsky-Tatarinov).
43. Preparation of dressings.
44. Methods of sterilization, disinfection of suture materials.
45. Fixation of animals, its meaning.
46. Suture materials and their description. Suture sterilization methods.
47. The value of the preparation of the operating field. Principles of preparation of the operating field Methods of preparation of the operating field. Disinfection of mucous membranes.
48. Injection and its methods.
49. Types and methods of a continuous seam.
50. Methods of preparing animals for anesthesia, the technique of introducing anesthesia (diet, premedication, medical examination).
51. Sterilization of dressings and surgical materials: (autoclave, flowing steam, ironing).
52. Blockade of the star node.
53. Special seams: technique for their implementation. (Stitches in the intestines, blood vessels, nerves, and joints.)
54. Suprapleural block according to V.V. Mosin (pneumonia, novocaine, 35o).
55. Blockade of the caudal sympathetic node.
56. Surgical component: consists of several stages.
57. Disconnection of soft tissues: rules and methods.
58. Splint bandages:
59. Methods of applying plaster casts
60. Types of local anesthesia: superficial, infiltration.
61. Anesthesia: its description.
62. Methods of sterilization of surgical instruments.
63. Anesthesia for horses
64. The value of anesthesia, pain and its effects on the body.
65. Ways to temporarily stop bleeding.
66. The concept of asepsis and antiseptics and its significance in surgery
67. Bandages: types and techniques of imposition
68. Methods for stopping bleeding: chemical, biological methods.
69. Anesthesia for ruminants: substances used, amount, route of administration.

70. Injection, infusion, bleeding: instruments, types and techniques.
71. Ways to bring down the horses: Russian, German, Reshetnyak.
72. Types of bleeding and their prevention: drugs, their number.
73. Complete cessation of bleeding: mechanical and physical methods.
74. Discontinuous and continuous seams: types and methods.
75. Complications after anesthesia and methods of their elimination.
76. Topographic anatomy and its significance in operative surgery: a concept, scientists who contributed to it, the difference from anatomy, its significance.
77. Methods for preparing surgical instruments: hot (boiling, firing, hot air), cold (disinfection).
78. Types of anesthesia for local anesthesia
79. The concept of the science of operative surgery: its goals, objectives and relationship with other disciplines (anatomy, physiology, pharmacology, clinical diagnostics, microbiology).
80. Preparation of the operating field: importance, stages (mechanical cleaning and degreasing, chemical disinfection and duplication) and methods (Filonchikova, Pirogova, Grossikha).
81. Special sutures and their technique: intestinal, vascular, nerve and articular sutures.
82. The concept of local anesthesia: indications and contraindications.
83. Types of local anesthesia: conduction, epidural.
84. Paralumbar anesthesia of the nerves of the abdominal wall.
85. Types of soft bandages
86. Dressings and their forms.
87. Blockade of the cranial sympathetic ganglion.
88. Anatomical and physiological features of the skin of the hands.
89. Types of fixation
90. Ways to temporarily stop bleeding.
91. The concept of the science of operative surgery and its relationship with other disciplines.
92. Goals and objectives of the science of operative surgery. The role of science in the transition to a market economy.
93. A Brief History of the Science of Operative Surgery.
94. Topographic anatomy and its importance in operative surgery.
95. Theory of surgery. (The concept of surgery).
96. Indications and contraindications for surgery.
97. Classification of surgical operations. (An integral part of the operation).
98. Preparing an animal for surgery and postoperative observation.
99. Fixation of animals and its meaning.
100. The structure and biological properties of the skin of the hands.
101. Basics of hand preparation for surgery: mechanical cleaning, chemical disinfection and tanning.
102. Basics of preparation of the operating field and disinfection of mucous membranes.
103. Organization of surgical work in conditions of preparation of animals for surgery
104. Ways of penetration of infection into the operating wound.
105. Methods of sterilization of surgical instruments after operations and their storage.
106. Characteristics of suture materials and methods of sterilization.
107. Methods for sterilizing clothes and dressings.

108. The value of anesthesia in surgery (the effect of pain on the body).
109. The concept of anesthesia and instructions for its use.
110. Classification of anesthesia and methods of drug administration.
111. Preparation of animals for anesthesia (anesthesia for various types of animals).
112. The concept of local anesthesia (indications and contraindications).
113. Anesthesia for local anesthesia
114. Types of local anesthesia.
115. Diagnostic value of local anesthesia. (Pathogenetic effects of novocaine solution).
116. Disconnection of soft tissues (rules and methods). Disconnection types: depending on shape, direction and depth.
117. General principles of tissue joining. (Types of surgical sutures: intermittent, continuous and special).
118. The value of desmurgy in veterinary surgery.
119. Characteristics of dressing materials.
120. Immobilizing dressings: splints, plaster, their types and methods.

Oral Questions for 2 PCs (120)
1. Anatomical and topographic structure of the head.
2. Blockade of the caudal sympathetic ganglion in horses.
3. Technique of ovariectomy
4. Anatomical and topographic structure of the ear.
5. Blockade of the stellate ganglion.
6. Creation of an artificial anal opening (lamb, calf, anus, rectum).
7. Anatomical and topographic structure of the horn.
8. Suprapleural block according to V.V. Mosin (pneumonia, novocaine, 35o).
9. Technique of gastrotomy:
10. Blockade of the cranial and caudal sympathetic node.
11. Technique of rumenotomy: indications, fixation, anesthesia, instruments, technique.
12. Anatomical and topographic structure of the brain.
13. Blockade of the caudal sympathetic ganglion in horses.
14. Technique of eye exterpation: instruction, fixation, anesthesia, tools, techniques.
15. Anatomical and topographic structure of the eyes
16. Suprapleural block according to V.V. Mosin (pneumonia, novocaine, 35o).
17. Creation of an artificial anus (lamb, calf, anus, rectum).
18. Anatomical and topographic structure of the tooth.
19. Blockade of the caudal sympathetic ganglion in horses.
20. Methods for removing the horn: instructions, fixation, anesthesia, tools, methods.
21. Anatomical and topographic structure of the language.
22. Blockade of the cranial-caudal node of the sympathetic nerve.
23. Anatomical and topographic structure of the knee, hip and hock joints: boundaries.
24. Anatomical and topographic structure of the neck.
25. Blockade of the nerve of the lower jaw.
26. Technique of castration of stallions: instruction, fixation, anesthesia, used instruments, open and closed method (ligature, ligature).
27. Anatomical and topographic structure of the organs of the neck.
28. Suprapleural novocaine blockade according to V.V. Mosin (pneumonia, novocaine).
29. Technique of rumenocentesis: instructions, anesthesia, instruments, techniques.
30. Anatomical and topographic structure of the chest.

31. Blockade of the cranial-caudal sympathetic node.
32. Castration of pigs: fixation, method of anesthesia.
33. Anatomical and topographic structure of the abdominal wall.
34. Blockade of the nerve of the lower jaw.
35. Technique of bowel resection: instructions, fixation, anesthesia, instruments, techniques.
36. Anatomical and topographic structure of the inguinal canal.
37. Para-lumbar novocaine blockade.
38. Anatomical and topographic structure of the horn
39. Anatomical and topographic structure of the neck.
40. Blockade of the ulnar nerve.
41. Surgical treatment of umbilical hernia: indications, pain relief, techniques.
42. Anatomical and topographic structure of the rectum.
43. Central nerve block.
44. Castration of bulls: fixation, anesthesia, methods.
45. Division of the abdominal cavity.
46. Volar nerve block.
47. Anatomical topography of the nose
48. Anatomical and topographic structure of the ovaries of pigs.
49. Sciatic nerve block.
50. Jugular vein resection: indications, fixation, anesthesia, instruments, techniques.
51. Anatomical and topographic structure of the quadriceps muscle of males.
52. Nerve block of the lower jaw.
53. Amputation of the rectum: indications, fixation, anesthesia, instruments, techniques.
54. Anatomical and topographic structure of the anterior cruciate ligament.
55. Para-lumbar novocaine blockade.
56. Techniques of rumenocentesis: instructions, anesthesia, instruments, techniques.
57. Anatomical and topographic structure of the elbow joint, wrist, wrist.
58. Blockage of the sciatic nerve.
59. Topography of auxiliary nasal cavities (forehead, upper jaw): borders, formations, vascular and nervous nutrition.
60. Anatomical and topographic structure of the palms and fingers.
61. Blockade of the horn.
62. Laparotomy: methods of incision of the abdominal wall.
63. Anatomical and topographic structure of the hind leg pelvis.
64. Blockade of the peroneal nerve.
65. Prevention of horn growth: chemical, physical (thermal), mechanical (bloody).
66. Anatomical and topographic structure of the knee, ankle and hock joints.
67. Blockade of the femoral nerve.
68. Technique of enterotomy: indications, fixation, anesthesia, instruments.
69. Anatomical and topographic structure of the fingers and hooves.
70. Blockade of the plantar nerve.
71. Techniques of rumenocentesis: instructions, anesthesia, instruments, techniques.
72. Anatomical and topographic structure of the abdominal organs.
73. Blockade of the pudendal nerve.
74. Technique of esophagotomy: indications, fixation, anesthesia, instruments, technique.
75. Anatomical topographic structure of the genital organ.
76. Blockade of the optic nerve.

77. The structure of the spermatic cord: structure, vessels and nerves.
78. Anatomical and topographic structure of males.
79. Blockade of the upper jaw.
80. Creation of an artificial anus.
81. Technique of gastrotomy in ruminants.
82. Docking the ears of dogs.
83. Technique of eye exterpation: instruction, fixation, anesthesia, tools, techniques.
84. Operations in the area of the nose
85. Trepanation of the forehead and maxillary sinuses.
86. Operations in the area of the tongue (anatomical and topographic information and anesthesia of the lingual nerves).
87. Amputation of the tongue.
88. Dental operations (anatomical and topographic data, tooth extraction).
89. Operations on the main direction, the role of injury prevention. (General anatomical and topographic data).
90. Prevention of horn formation in calves and dehorning, anatomical and topographic structure
91. Operations on the brain. (Anatomical and topographic information).
92 Surgical treatment of coenurosis in sheep.
93. Operations in the eye area. (Anatomical and topographic information, technique of exterpation).
94 .. Technique of tracheotomy (in the larynx). (Anatomical and topographic information).
95. Jugular vein resection. (Anatomical and topographic information, treatment).
96. Operation of the esophagus. (Anatomical and topographic information, treatment).
97. Techniques of intratracheal and intracarotid administration.
98. Anatomical and topographic data of the chest wall.
99. Anesthesia of the chest wall. (Anesthesia of the borderline sympathetic trunk and abdominal nerves).
100. Pleurocentosis, rib resection technique.
101. Anatomical and topographic structure of the abdominal cavity.
102. Technique of laparotomy. (Instruction, fixation, pain relief).
103. Ruminotomy technique. (Instruction, fixation, pain relief).
104. Technique of gastrotomy. (Instruction, fixation, pain relief).
105. Technique of enterotomy - bowel resection (Instruction, fixation, pain relief).
106. Rectum resection (anatomical and topographic structure, GM Olivkova, Mueller-Frick method).
107. Creation of an artificial anal opening. (Instruction, fixation, pain relief).
108. Surgical treatment of abdominal hernia. (types of hernias).
109. Surgical treatment of umbilical hernia (fixation, anesthesia, treatment).
110. Operation on the pelvic region. (Fixation, anesthesia, treatment).
111. The Importance of Castration
112. Preparing an animal for castration
113. General characteristics of the methods of castration.
Ovariectomy technique in female pigs. (Fixation, anesthesia, treatment).
114. The structure of the genital organs and nerve pain relief.
115. Surgical treatment of phimosis and paraphimosis.

116. Amputation of the horse's penis. (Anatomical and topographic information, surgical techniques).
117. Operation of the groin area. (Anatomy - topographic data, urethrotomy, urethrostomy).
118. Operation on the organs of the urinary system. (Anatomy - topographic information, cystotomy).
119. Anatomical and topographic structure of the forelimb. (Innervation and pain relief).
120. Anatomical and topographic structure of the hind limb. (Innervation and pain relief).

Oral questions for IR (300)
1. The concept of the science of operative surgery and its relationship with other disciplines.
2. Goals and objectives of the science of operative surgery. The role of science in the transition to a market economy.
3. Brief history of the science of operative surgery.
4. Topographic anatomy, importance in operative surgery.
5. Teaching about surgery. (The concept of surgery).
6. Indications and contraindications for surgery.
7. Classification of surgical operations. (An integral part of the operation).
8. Preparation of the animal for surgery and postoperative observation.
9. Fixation of animals and its meaning.
10. The structure and biological properties of the skin of the hands.
11. Basics of preparing hands for surgery: mechanical cleaning, chemical disinfection and tanning. Use of surgical gloves.
12. Basics of preparation of the operating field and disinfection of mucous membranes.
13. Organization of surgical work in the preparation of animals for surgery and production.
14. Ways of penetration of infection into the operating wound.
15. Methods of sterilization of surgical instruments after operations and their storage.
16. Characteristics of suture materials and methods of sterilization.
17. Methods for sterilizing clothes and linen.
18. The value of anesthesia in surgery, the effect of pain on the body.
19. Concept of anesthesia and instructions for use.
120. Classification of anesthesia and drug delivery methods.
21. Preparing animals for anesthesia. (Anesthesia in various animal species).
22. Concepts of local anesthesia.
23. Anesthetics for local anesthesia.
24. Types of local anesthesia.
25. Diagnostic value of local anesthesia. (Pathogenetic effects of novocaine solution).
26. Separation of soft tissues (rules and methods). Separation types: depending on the shape, direction and depth.
27. General principles of tissue joining. (Types of surgical sutures: intermittent, continuous and special).
28. The value of desmurgy in veterinary surgery.
29. Characteristics of the dressing material.
30. Immobolization dressings: splints, plaster, and types.
30. Anesthetics for local anesthesia (methods and administration).
31. Application of the method of firing (thermocauterization) in surgery.

32. The concept of the science of operative surgery: its goals, objectives and relationship with other disciplines.
33. Sterilization of dressings, linen and surgical materials: (autoclave, flowing steam, ironing).
34. Blockade of the star node.
35. Special seams, technique and execution.
36. Anesthesia for horses: number of doses and administration.
37. Basics of preparing hands for surgery, the use of surgical gloves.
38. Types of bleeding and its characteristics.
39. Disconnection of soft tissues: rules and methods, requirements for a comfortable cut, shape, direction.
40. Blockade of the caudal sympathetic ganglion in horses.
41. Ways of infection of surgical wounds.
42. The role of desmurgy in veterinary surgery. Link materials and requirements.
43. Methods of plaster cast
44. The structure of the biological properties of the skin of the hands. Ways to prepare hands for surgery.
45. Types of local anesthesia: superficial, infiltration.
46. Methods of sterilization of surgical instruments.
47. Classification of anesthesia and drug requirements.
48. Ways to temporarily stop bleeding.
49. The concept of asepsis and antiseptics and its significance in surgery:
50. Discontinuous and continuous seams: methods and types.
51. Bandages: technique and types.
52. Types of bleeding and their prevention: drugs, their number.
53. Complete cessation of blood flow: chemical, biological methods.
54. Anesthesia for ruminants: substances used, amount, route of administration.
55. Injection, infusion, bloodletting: instruments, types and techniques.
56. Plaster bandages, techniques and methods of its application.
57. Ways to bring down the horses.
58. Types of bleeding and their prevention: drugs, their number.
59. Complete cessation of blood flow: mechanical
60. Splint bandages.
61. Complications after anesthesia and methods of their elimination.
62. Topographic anatomy and its importance in operative surgery
63. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold.
64. Methods of felling cattle (Hess, Italian).
65. Preparation of the operating field: importance, stages (mechanical cleaning and degreasing, chemical disinfection and duplication)
66. Methods for stopping bleeding: mechanical, physical.
67. Special seams and technique and execution
68. Anesthesia for dogs and cats.
69. The concept of local anesthesia: indications and contraindications.
70. Types of local anesthesia: conduction, epidural.
71. The order and methods of preparing hands for surgery (Spasokukovsky-Kochergin, Alfela, Zabludovsky-Tatarinov).
72. Dressings: technique.
73. Methods of sterilization, disinfection of suture materials.

74. Fixation of animals, its meaning.
75. Suture materials and description. Suture sterilization methods.
76. The importance of preparing the operating field. Principles of preparation of the operating field
77. Methods of preparation of the operating field.
78. Types of continuous seams. Intestinal sutures and vips.
79. Methods of preparing animals for anesthesia (diet, premedication, medical examination).
80. Sterilization of dressings, linen and surgical materials: (autoclave, flowing steam, ironing).
81. Blockade of the star node.
82. Special seams and technique and execution.
83. Suprapleural block according to V.V. Mosin (pneumonia, novocaine).
84. Blockade of the caudal sympathetic ganglion.
85. Component of a surgical operation: stages.
86. Disconnection of soft tissues: rules and methods, requirements for a comfortable cut, shape, direction.
87. Splint bandages.
88. Methods of plaster cast
89. Types of local anesthesia: superficial, infiltration.
90. Anesthesia: description, requirements.
91. Methods of sterilization of surgical instruments.
92. Equine anesthesia: number of delivery routes.
93. The value of anesthesia, pain and its effects on the body: changes in organs and systems.
94. Methods for stopping bleeding.
95. The concept of asepsis and antiseptics and its significance in surgery.
96. Bandages: techniques and types, methods of bandaging
97. Methods for stopping blood flow: chemical, biological methods.
98. Anesthesia for ruminants: substances used, amount, route of administration.
99. Injection, infusion, bleeding: instruments, types and techniques.
100. Ways to bring down the horses: Russian, German, Reshetnik.
101. Types of bleeding and their prevention: drugs, their number.
102. Complete stopping of bleeding: mechanical and physical methods.
103. Discontinuous and continuous seams: methods and types.
104. Complications after anesthesia and methods of their elimination.
105. Topographic anatomy and its importance in operative surgery:
106. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold.
107. Substances used for local anesthesia: enhance and prolong the effect.
108. The concept of operative surgery: its purpose, objectives and relationship with other disciplines (anatomy, physiology, pharmacology, clinical diagnostics, microbiology).
109. Preparation of the operating field: importance, stages (mechanical cleaning and degreasing, chemical disinfection and tanning) and methods (Filonchikova, Pirogova, Grossikha).
110. Special sutures and their technique: intestinal, vascular, nerve and articular sutures.
111. The concept of local anesthesia: indications and contraindications.
112. Types of local anesthesia: conduction, epidural.
113. Para-lumbar anesthesia of the abdominal nerves.

114. Forms from binding materials: technique. Glue joints: traces of glue, advantages, gluing methods.
115. Forms of dressings
116. Blockade of the cranial sympathetic node.
117. Anatomical and physiological features of the skin of the hands.
118. Preparation of the operating field.
119. Methods for stopping bleeding.
120. Injection and its methods (intramuscular, subcutaneous, subcutaneous).
121. The role of head surgery in injury prevention. (General anatomical and topographic data).
122. Prevention of horn formation in calves and dehorning, anatomical and topographic structure.
123. Operations on the brain. (Anatomical and topographic information).
124. Surgical treatment of coenurosis in sheep.
125. Operations in the eye area. (Anatomical and topographic information, technique of ocular exterpation).
126. Technique of tracheotomy (in the larynx). (Anatomical and topographic information).
127. Jugular vein resection. (Anatomical and topographic information, surgical techniques).
128. Operation of the esophagus. (Anatomical and topographic information, treatment).
129. Techniques of intratracheal and intracarotid administration.
130. Anatomical and topographic data of the chest wall
131. Anesthesia of the chest wall. (Anesthesia of the borderline sympathetic trunk and abdominal nerves).
132. Pleurocentosis, rib resection technique.
133. Anatomical and topographic structure of the abdominal region.
134. Technique of laparotomy. (Instruction, fixation, pain relief).
135. Ruminotomy technique. (Instruction, fixation, pain relief).
136. Technique of gastrotomy. (Instruction, fixation, pain relief).
137. Technique of enterotomy - intestinal rupture. (Instruction, fixation, pain relief).
138. Intestinal resection. (Instruction, fixation, pain relief).
139. Rectum incision (anatomical and topographic structure, GM Olivkov, Mueller-Frick method).
140. Creation of an artificial anal opening. (Instruction, fixation, pain relief).
141. Surgical treatment of abdominal hernia. (Classification of hernias).
142. Technique of an umbilical hernia operation. (Fixation, anesthesia, treatment).
143. Technique of the operation of the groin area. (Fixation, anesthesia, treatment).
144. The value of castration in the prevention of injuries, indications and contraindications.
145. Preparing an animal for castration.
146. General characteristics of castration. (castration for various types of animals).
147. Technique of ovariectomy of female pigs. (Fixation, anesthesia, treatment).
148. The structure of the genital organs and nerve pain relief.
149. Surgical treatment of phimosis and paraphimosis.
150. Amputation of the penis in horses. (Anatomical and topographic information, surgical techniques).

151. Technique of the operation of the groin area. (Anatomy - topographic data, urethrotomy, urethrostomy).
151. Technique of the operation of the groin area. (Anatomy - topographic data, urethrotomy, urethrostomy).
152. Operations on the organs of the urinary system. (Anatomy - topographic information, cystotomy).
153. Anatomical and topographic structure of the forelimbs. (Innervation and pain relief).
154. Anatomical and topographic structure of the hind limbs. (Innervation and pain relief).
155. Anatomical and topographic structure of the head (innervation and anesthesia).
156. Blockade of the caudal sympathetic ganglion in horses.
157. Technique of ovariectomy: indications, fixation, anesthesia, technique (ovary, uterus, novocaine, chlorpromazine).
158. Anatomical and topographic structure of the ear.
159. Blockade of the star node.
160. Creation of an artificial anal 161. Anatomical and topographic structure of the horn.
162. Suprapleural block according to V.V. Mosin (pneumonia, novocaine,).
163. Technique of gastrotomy: indications, fixation, anesthesia, instruments, technique.
164. Blockade of the cranial sympathetic node.
165. Technique of rumenotomy: indications, fixation, anesthesia, instruments, technique.
166. Anatomical and topographic structure of the brain.
167. Blockade of the caudal sympathetic ganglion in horses.
168. Technique of Exterpation of Eyes
169. Anatomical and topographic structure of the eyes.
170. Suprapleural block according to V.V. Mosin (pneumonia, novocaine).
171. Creation of an artificial anus
172. Anatomical and topographic structure of the tooth.
173. Blockade of the caudal sympathetic ganglion in horses.
174. Prevention of horn formation in calves and dehydration, anatomical and topographic structure.
175. Anatomical and topographic structure of the language.
176. Blockade of the cranial and caudal sympathetic node.
177. Anatomical and topographic structure of the knee, ankle and hock joints.
178. Anatomical and topographic structure of the ventral neck.
179. Blockade of the mandible nerve.
180. Technique of castration of stallions: instruction, fixation, anesthesia, used instruments, open and closed method (bream, ligature).
181. Anatomical and topographic structure of the organs of the neck.
182. Suprapleural block according to V.V. Mosin (pneumonia, novocaine).
183. Techniques of rumenocentesis: instructions, anesthesia, instruments, techniques.
184. Anatomical and topographic structure of the chest wall.
185. Blockade of the cranial and caudal sympathetic node.
186. Castration of pigs: fixation, method of anesthesia.
187. Anatomical and topographic structure of the abdominal wall.
188. Blockade of the mandible nerve.
189. Methods of bowel resection: instructions, fixation, anesthesia, instruments, treatment.
190. Anatomical and topographic structure of the inguinal canal.

191. Paralumbar novocaine blockade.
192. Anatomical and topographic structure
193. Anatomical and topographic structure of the tooth.
194. Blockade of the ulnar nerve.
195. Surgical treatment of umbilical hernia.
196. Anatomical and topographic structure of the rectum.
197. Central nerve block.
198. Castration of a bull: fixation, anesthesia, methods.
199. Division of the abdominal region.
200. Blockade of the volar nerve.
201.. Anatomical and topographic structure of the nose
202. Anatomical and topographic structure of the ovary of pigs.
203. Sciatic nerve block.
204. Jugular vein resection
205. Anatomical and topographic structure of the inguinal region of males.
206. Blockade of the mandible nerve.
207. Amputation of the rectum: indications
208. Anatomical and topographic structure of the forelimb.
209. Paralumbar novocaine blockade.
210. Technique of rumenocentesis
211. Anatomical and topographic structure of the elbow joint area, wrist and metacarpus
212. Epidual blockade.
213. Topography of the auxiliary nasal cavities (forehead, upper jaw).
214. Anatomical and topographic structure of the metacarpus and fingers.
215. Horn blockade.
216. Laparotomy: methods of incision of the abdominal wall.
217. Anatomical and topographic structure of the hind leg pelvis.
218. Small leg nerve block.
219. Prevention of horn formation in calves and dehorning, anatomical and topographic structure.
220. Anatomical and topographic structure of the knee, ankle and hock joints.
221. Tibial nerve block. (Instructions and methods)
222. Technique of enterotomy. (Instructions, fixation, anesthesia, tools, techniques).
223. Anatomical and topographic structure of the toe of the hind limb.
224. Technique of rumenocentesis. (Instructions, analgesics, instruments, techniques).
225. Anatomical and topographic structure of the abdominal organs.
226. Blockade of the pudendal nerve. (Instructions and methods)
227. Technique of extirpation: indications, fixation, anesthesia, instruments, technique.
228. Anatomical and topographic structure of the genital organs.
229. Blockade of the optic nerve. (Instructions and methods)
230. The structure of the spermatic cord: layers, vessels and nerves.
231. Anatomical and topographic structure of the inguinal canal of males.
232. Blockade of the upper jaw of the nerve.
233. Creation of an artificial anus
234. Technique of ruminant gastrotomy.
235 Dropping the ears of dogs.
236. Eye Extirpation Technique
237. Anatomical and topographic structure of the nose

238. Trepanation of the forehead and upper jaw.
239. Anatomical and topographic structure of the language.
240. Amputation of the tongue. (Instructions and methods)
241. Dental operations (anatomical and topographic data, tooth extraction).
242. History and founders of operative surgery in veterinary medicine. (Theory of surgery).
the concept of activity, its goals and objectives.
244. Instructions for surgery and contraindications. (Operation classification).
245. Ways of infection of surgical wounds. (Teachings on antisepsis and asepsis).
246. Methods of sterilization and disinfection of surgical instruments before and after surgery and their storage.
247. Characteristics of suture materials and methods of sterilization.
248. Methods for sterilizing clothes, dressings (autoclave, iron).
249. The structure and biological properties of the skin of the hands. (Use of surgical gloves).
250. Preparing the hand for surgery. (Mechanical cleaning, chemical disinfection and tanning).
251. Basics of preparation of the operating field and disinfection of mucous membranes.
252. Organization of surgical operations in conditions of preparation of animals for surgery.
253. The importance of anesthesia in surgery. (General and local anesthesia).
254. Instructions for the use of anesthesia (general anesthesia) (Premidication).
255. Classification of anesthesia and methods of drug administration. (Anesthesia of various types of animals).
256. Concept of local anesthesia and instructions for its use. Use of premedication for local anesthesia.
257. Types of local anesthesia. (Conductive, infiltrative).
258. Diagnostic value of local anesthesia.
259. Rules and methods of soft tissue separation.
260. Types of tissue separation depending on the shape, direction and depth.
261. Types of bleeding.
262. Prevention of bleeding. Temporary stopping of bleeding. (Clamp, ligature, swab).
263. Mechanical method for stopping blood flow (vascular ligation).
264. A physical method for stopping bleeding. (Use of local hypothermia (cold water, ice, ethyl chloride) and hyperthermia (thermocauterization).
265. Biological methods for stopping bleeding. (Cloth, catgut)
266. Types of surgical sutures. (discontinuous, continuous seams).
267. Characteristics of seams for use.
268. Special seams.
269. Seams connecting joints, nerves, blood vessels. (Removal of skin sutures).
270. Anatomical and topographic structure of the head, division into parts, boundaries.
271. Horn operations. (Methods to prevent the growth of calf horns).
272. Methods for removing horns in small and large horned animals.
273. Operations on the brain: anatomical and topographic data. (Surgical treatment of coenurosis in Karakol sheep).
274. Dental operations. (Anatomical and topographic information).
275. Tooth extraction. (Instruction, innervation and treatment).
276. Operations in the eye area. (Anatomical and topographic data).

277. Surgical treatment of volvulus and eyelid retraction.
278. Extirpation of the century. (Instruction, innervation and treatment).
279. Operations in the area of the outer ear of dogs: anatomical and topographic data.
280. Operations in the ventral part of the neck. (Anatomical and topographic data).
281. Blockade of caudal, cranial, sympathetic and vagonosympathetic nodes in horses and cattle.
282. Technique of larynx resection.
283. Anatomical and topographic data of the chest wall organs
284. Blockade of the star node.
285. Pleurosynthesis. Rib resection technique.
286. Anatomical and topographic structure of the abdominal wall of the abdomen. (Paranephral novocaine blockade of cattle and horses).
287. Surgery on the stomach and burnedthe uterine gland in ruminants. (Anatomical and topographic information, instructions for the operation).
288. Ruminotomy. (innervation and treatment).
289. Surgery on the intestines. (Anatomical and topographic data, enterotomy of large and small animals, intestinal resection).
290. Surgical treatment of hernias.
291. Resection of the rectum.
292. Types of hernias and surgical treatment.
293. Operations on the genitals of males
294. Castration of horses.
295. Technique of ovariectomy
296. Anatomical and topographic structure of the inguinal canal.
297. Technique of rumenocentesis
298. Operations on the organs of the urinary system. (Anatomy - topographic information, cystotomy).
299. Anatomical and topographic structure of the forelimbs in horses and cattle. (Borders, division into regions, topography of regions).
300. Methods of amputation and disarticulation of the limb (Surgical indications and contraindications, method of amputation surgery.

4.4 Written questions for 1 pc (150)

1. Methods and administration used for local anesthesia.
2. Application of the firing method in surgery (thermocauterization).
3. The concept of the science of operative surgery: its goals, objectives and relationship with other disciplines.
4. Sterilization of dressings and surgical materials: (autoclave, flowing steam, ironing).
5. Blockade of the star node.
6. Special seams and their technique. (Stitches in the intestines, blood vessels, nerves, and joints.)
7. Anesthesia for horses: methods of introduction.
8. Basics of preparing hands for surgery, the use of surgical gloves.
9. Types of bleeding and their characteristics.
10. Separation of soft tissues: rules and methods.

11. Blockade of equine caudal sympathetic ganglion.
12. The introduction of infection into surgical wounds.
13. The value of desmurgy in veterinary surgery.
14. Techniques and methods of applying plaster
15. The structure of the biological properties of the skin of the hands. Ways to prepare hands for surgery.
16. Types of local anesthesia: superficial, infiltration.
17. Methods for sterilizing surgical instruments.
18. Classification of anesthesia and drug requirements.
19. Ways to stop bleeding.
20. The concept of asepsis and antisepsis and its importance in surgery
21. Discontinuous and continuous seams: methods and types.
22. Bandages: techniques and types
23. Types of bleeding and their prevention
24. Complete cessation of blood flow: chemical, biological methods.
25. Anesthesia for ruminants: substances used, amount, route of administration.
26. Injection, infusion, bleeding: instruments, types and techniques.
27. The imposition of plaster casts (techniques and methods of its application.)
28. Methods for fixing horses.
29. Types of bleeding and their prevention: drugs, their number.
30. Complete cessation of bleeding: mechanical and physical methods.
31. Types of bandages.
32. Complications after anesthesia and methods of their elimination.
33. Topographic anatomy and its significance in operative surgery: concept, scientists who contributed to it, the difference from anatomy, its significance.
34. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold (sterilization).
35. Methods of felling cattle (Hessa, Italian, Latipova).
36. Preparation of the operating field: methods (mechanical cleaning and degreasing, chemical disinfection and duplication).
37. Methods for stopping bleeding: mechanical, physical.
38. Special seams and techniques for their implementation
39. Anesthesia for dogs and cats.
40. The concept of local anesthesia: indications and contraindications.
41. Types of local anesthesia: conduction, epidural.
42. The order and methods of preparing hands for surgery (Spasokukoski-Kochergin, Alfela, Zabludovsky-Tatarinov).
43. Preparation of dressings.
44. Methods of sterilization, disinfection of suture materials.
45. Fixation of animals, its meaning.
46. Suture materials and their description. Suture sterilization methods.
47. The value of the preparation of the operating field. Principles of preparation of the operating field Methods of preparation of the operating field. Disinfection of mucous membranes.

48. Injection and its methods.
49. Types and methods of a continuous seam.
50. Methods of preparing animals for anesthesia, the technique of introducing anesthesia (diet, premedication, medical examination).
51. Sterilization of dressings and surgical materials: (autoclave, flowing steam, ironing).
52. Blockade of the star node.
53. Special seams: technique for their implementation. (Stitches in the intestines, blood vessels, nerves, and joints.)
54. Suprapleural block according to V.V. Mosin (pneumonia, novocaine, 35o).
55. Blockade of the caudal sympathetic node.
56. Surgical component: consists of several stages.
57. Disconnection of soft tissues: rules and methods.
58. Splint bandages:
59. Methods of applying plaster casts
60. Types of local anesthesia: superficial, infiltration.
61. Anesthesia: its description.
62. Methods of sterilization of surgical instruments.
63. Anesthesia for horses
64. The value of anesthesia, pain and its effects on the body.
65. Ways to temporarily stop bleeding.
66. The concept of asepsis and antiseptics and its significance in surgery
67. Bandages: types and techniques of imposition
68. Methods for stopping bleeding: chemical, biological methods.
69. Anesthesia for ruminants: substances used, amount, route of administration.
70. Injection, infusion, bleeding: instruments, types and techniques.
71. Ways to bring down the horses: Russian, German, Reshetnyak.
72. Types of bleeding and their prevention: drugs, their number.
73. Complete cessation of bleeding: mechanical and physical methods.
74. Discontinuous and continuous seams: types and methods.
75. Complications after anesthesia and methods of their elimination.
76. Topographic anatomy and its significance in operative surgery: a concept, scientists who contributed to it, the difference from anatomy, its significance.
77. Methods for preparing surgical instruments: hot (boiling, firing, hot air), cold (disinfection).
78. Types of anesthesia for local anesthesia
79. The concept of the science of operative surgery: its goals, tasks and relationship with other disciplines (anatomy, physiology, pharmacology, clinical diagnostics, microbiology).
80. Preparation of the operating field: importance, stages (mechanical cleaning and degreasing, chemical disinfection and duplication) and methods (Filonchikova, Pirogova, Grossikha).
81. Special sutures and their technique: intestinal, vascular, nerve and articular sutures.

82. The concept of local anesthesia: indications and contraindications.
83. Types of local anesthesia: conduction, epidural.
84. Paralumbar anesthesia of the nerves of the abdominal wall.
85. Types of soft bandages
86. Dressings and their forms.
87. Blockade of the cranial sympathetic ganglion.
88. Anatomical and physiological features of the skin of the hands.
89. Types of fixation
90. Ways to temporarily stop bleeding.
91. The concept of the science of operative surgery and its relationship with other disciplines.
92. Goals and objectives of the science of operative surgery. The role of science in the transition to a market economy.
93. A Brief History of the Science of Operative Surgery.
94. Topographic anatomy and its importance in operative surgery.
95. Theory of surgery. (The concept of surgery).
96. Indications and contraindications for surgery.
97. Classification of surgical operations. (An integral part of the operation).
98. Preparing an animal for surgery and postoperative observation.
99. Fixation of animals and its meaning.
100. The structure and biological properties of the skin of the hands.
101. Basics of hand preparation for surgery: mechanical cleaning, chemical disinfection and tanning.
102. Basics of preparation of the operating field and disinfection of mucous membranes.
103. Organization of surgical work in conditions of preparation of animals for surgery
104. Ways of penetration of infection into the operating wound.
105. Methods of sterilization of surgical instruments after operations and their storage.
106. Characteristics of suture materials and methods of sterilization.
107. Methods for sterilizing clothes and dressings.
108. The value of anesthesia in surgery (the effect of pain on the body).
109. The concept of anesthesia and instructions for its use.
110. Classification of anesthesia and methods of drug administration.
111. Preparation of animals for anesthesia (anesthesia for various types of animals).
112. The concept of local anesthesia (indications and contraindications).
113. Anesthesia for local anesthesia
114. Types of local anesthesia.
115. Diagnostic value of local anesthesia. (Pathogenetic effects of novocaine solution).
116. Disconnection of soft tissues (rules and methods). Disconnection types: depending on shape, direction and depth.

117. General principles of tissue joining. (Types of surgical sutures: intermittent, continuous and special).
118. The value of desmurgy in veterinary surgery.
119. Characteristics of dressing materials.
120. Immobilizing dressings: splints, plaster, their types and methods.
121. Anatomical and topographic structure of the head.
122. Blockade of the caudal sympathetic ganglion in horses.
123 Technique of ovariectomy
124 Anatomical and topographic structure of the ear.
125 Blockade of the stellate ganglion.
126. Creation of an artificial anal opening (lamb, calf, anus, rectum).
127. Anatomical and topographic structure of the horn.
128. Suprapleural block according to V.V. Mosin (pneumonia, novocaine, 35o).
129. Technique of gastrotomy:
130. Blockade of the cranial and caudal sympathetic node.
131. Technique of rumenotomy: indications, fixation, anesthesia, instruments, technique.
132. Anatomical and topographic structure of the brain.
133. Blockade of the caudal sympathetic ganglion in horses.
134. Technique of eye exterpation: instruction, fixation, anesthesia, tools, techniques.
135. Anatomical and topographic structure of the eyes
136. Suprapleural block according to V.V. Mosin (pneumonia, novocaine, 35o).
137. Creation of an artificial anus (lamb, calf, anus, rectum).
138. Anatomical and topographic structure of the tooth.
139. Blockade of the caudal sympathetic ganglion in horses.
140. Ways to remove the horn: instructions, fixation, anesthesia, tools, methods.
141. Anatomical and topographic structure of the language.
142. Blockade of the cranial-caudal sympathetic nerve node.
143. Anatomical and topographic structure of the knee, hip and hock joints: boundaries.
144. Anatomical and topographic structure of the neck.
145. Nerve block of the lower jaw.
146. Technique of castration of stallions: instruction, fixation, anesthesia, used instruments, open and closed method (ligature, ligature).
147. Anatomical and topographic structure of the neck organs.
148. Suprapleural novocaine blockade according to V.V. Mosin (pneumonia, novocaine).
149. Technique of rumenocentesis: instructions, anesthesia, instruments, techniques.
150. Anatomical and topographic structure of the chest.

4.5 Written Questions for 2 PCs (150)

1. Application of the method of firing (thermocauterization) in surgery.
2. The concept of the science of operative surgery: its goals, objectives and relationship with other disciplines.
3. Sterilization of dressings, linen and surgical materials: (autoclave, flowing steam, ironing).
4. Blockade of the star node.
5. Special seams, technique and execution.
6. Anesthesia for horses: number of doses and administration.
7. Basics of preparing hands for surgery, the use of surgical gloves.
8. Types of bleeding and its characteristics.
9. Separation of soft tissues: rules and methods, requirements for a comfortable cut, shape, direction.
10. Blockade of the caudal sympathetic ganglion in horses.
11. Ways of infection of surgical wounds.
12. The role of desmurgy in veterinary surgery. Link materials and requirements.
13. Methods of plaster cast
14. The structure of the biological properties of the skin of the hands. Ways to prepare hands for surgery.
15. Types of local anesthesia: superficial, infiltration.
16. Methods of sterilization of surgical instruments.
17. Classification of anesthesia and drug requirements.
18. Ways to temporarily stop bleeding.
19. The concept of asepsis and antiseptics and its significance in surgery:
20. Discontinuous and continuous seams: methods and types.
21. Bandages: technique and types.
22. Types of bleeding and their prevention: drugs, their number.
23. Complete cessation of blood flow: chemical, biological methods.
24. Anesthesia for ruminants: substances used, amount, route of administration.
25. Injection, infusion, bloodletting: instruments, types and techniques.
26. Plaster bandages, techniques and methods of its application.
27. Ways to bring down the horses.
28. Types of bleeding and their prevention: drugs, their number.
29. Complete cessation of blood flow: mechanical
30. Splint bandages.
31. Complications after anesthesia and methods of their elimination.
32. Topographic anatomy and its importance in operative surgery
33. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold.
34. Methods of felling cattle (Hess, Italian).
35. Preparation of the operating field: importance, stages (mechanical cleaning and degreasing, chemical disinfection and duplication)
36. Methods for stopping bleeding: mechanical, physical.
37. Special seams and technique and execution
68. Anesthesia for dogs and cats.

69. The concept of local anesthesia: indications and contraindications.
70. Types of local anesthesia: conduction, epidural.
71. The order and methods of preparing hands for surgery (Spasokukovsky-Kochergin, Alfela, Zabludovsky-Tatarinov).
72. Dressings: technique.
73. Methods of sterilization, disinfection of suture materials.
74. Fixation of animals, its meaning.
75. Suture materials and description. Suture sterilization methods.
76. The importance of preparing the operating field. Principles of preparation of the operating field
77. Methods of preparation of the operating field.
78. Types of continuous seams. Intestinal sutures and vips.
79. Methods of preparing animals for anesthesia (diet, premedication, medical examination).
80. Sterilization of dressings, linen and surgical materials: (autoclave, flowing steam, ironing).
81. Blockade of the star node.
82. Special seams and technique and execution.
83. Suprapleural block according to V.V. Mosin (pneumonia, novocaine).
84. Blockade of the caudal sympathetic ganglion.
85. Component of a surgical operation: stages.
86. Disconnection of soft tissues: rules and methods, requirements for a comfortable cut, shape, direction.
87. Splint bandages.
88. Methods of plaster cast
89. Types of local anesthesia: superficial, infiltration.
90. Anesthesia: description, requirements.
91. Methods of sterilization of surgical instruments.
92. Equine anesthesia: number of delivery routes.
93. The value of anesthesia, pain and its effects on the body: changes in organs and systems.
94. Methods for stopping bleeding.
95. The concept of asepsis and antiseptics and its significance in surgery.
96. Bandages: techniques and types, methods of bandaging
97. Methods for stopping blood flow: chemical, biological methods.
98. Anesthesia for ruminants: substances used, amount, route of administration.
99. Injection, infusion, bleeding: instruments, types and techniques.
100. Ways to bring down the horses: Russian, German, Reshetnik.
101. Types of bleeding and their prevention: drugs, their number.
102. Complete stopping of bleeding: mechanical and physical methods.
103. Discontinuous and continuous seams: methods and types.
104. Complications after anesthesia and methods of their elimination.
105. Topographic anatomy and its importance in operative surgery:

106. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold.
107. Substances used for local anesthesia: enhance and prolong the effect.
108. The concept of operative surgery: its purpose, objectives and relationship with other disciplines (anatomy, physiology, pharmacology, clinical diagnostics, microbiology).
109. Preparation of the operating field: importance, stages (mechanical cleaning and degreasing, chemical disinfection and tanning) and methods (Filonchikova, Pirogova, Grossikha).
110. Special sutures and their technique: intestinal, vascular, nerve and articular sutures.
111. The concept of local anesthesia: indications and contraindications.
112. Types of local anesthesia: conduction, epidural.
113. Para-lumbar anesthesia of the abdominal nerves.
114. Forms from binding materials: technique. Glue joints: traces of glue, advantages, gluing methods.
115. Forms of dressings
116. Blockade of the cranial sympathetic node.
117. Anatomical and physiological features of the skin of the hands.
118. Preparation of the operating field.
119. Methods for stopping bleeding.
120. Injection and its methods (intramuscular, subcutaneous, subcutaneous).
121. The role of head surgery in injury prevention. (General anatomical and topographic data).
122. Prevention of horn formation in calves and dehorning, anatomical and topographic structure.
123. Operations on the brain. (Anatomical and topographic information).
124. Surgical treatment of coenurosis in sheep.
125. Operations in the eye area. (Anatomical and topographic information, technique of ocular exterpation).
126. Technique of tracheotomy (in the larynx). (Anatomical and topographic information).
127. Jugular vein resection. (Anatomical and topographic information, surgical techniques).
128. Operation of the esophagus. (Anatomical and topographic information, treatment).
129. Techniques of intratracheal and intracarotid administration.
130. Anatomical and topographic data of the chest wall
131. Anesthesia of the chest wall. (Anesthesia of the borderline sympathetic trunk and abdominal nerves).
132. Pleurocentosis, rib resection technique.
133. Anatomical and topographic structure of the abdominal region.
134. Technique of laparotomy. (Instruction, fixation, pain relief).
135. Ruminotomy technique. (Instruction, fixation, pain relief).

136. Technique of gastrotomy. (Instruction, fixation, pain relief).
137. Technique of enterotomy - intestinal rupture. (Instruction, fixation, pain relief).
138. Intestinal resection. (Instruction, fixation, pain relief).
139. Rectum incision (anatomical and topographic structure, GM Olivkov, Mueller-Frick method).
140. Creation of an artificial anal opening. (Instruction, fixation, pain relief).
141. Surgical treatment of abdominal hernia. (Classification of hernias).
142. Technique of an umbilical hernia operation. (Fixation, anesthesia, treatment).
143. Technique of the operation of the groin area. (Fixation, anesthesia, treatment).
144. The value of castration in the prevention of injuries, indications and contraindications.
145. Preparing an animal for castration.
146. General characteristics of castration. (castration for various types of animals).
147. Technique of ovariectomy of female pigs. (Fixation, anesthesia, treatment).
148. The structure of the genital organs and nerve pain relief.
149. Surgical treatment of phimosis and paraphimosis.
150. Amputation of the penis in horses. (Anatomical and topographic information, surgical techniques).

4.6 Written Questions for IC (500)

1. The concept of the science of operative surgery and its relationship with other disciplines.
2. Goals and objectives of the science of operative surgery. The role of science in the transition to a market economy.
3. Brief history of the science of operative surgery.
4. Topographic anatomy, importance in operative surgery.
5. Teaching about surgery. (The concept of surgery).
6. Indications and contraindications for surgery.
7. Classification of surgical operations. (An integral part of the operation).
8. Preparation of the animal for surgery and postoperative observation.
9. Fixation of animals and its meaning.
10. The structure and biological properties of the skin of the hands.
11. Basics of preparing hands for surgery: mechanical cleaning, chemical disinfection and tanning. Use of surgical gloves.
12. Basics of preparation of the operating field and disinfection of mucous membranes.
13. Organization of surgical work in the preparation of animals for surgery and production.
14. Ways of penetration of infection into the operating wound.
15. Methods of sterilization of surgical instruments after operations and their storage.
16. Characteristics of suture materials and methods of sterilization.

17. Methods for sterilizing clothes and linen.
18. The value of anesthesia in surgery, the effect of pain on the body.
19. Concept of anesthesia and instructions for use.
120. Classification of anesthesia and drug delivery methods.
21. Preparing animals for anesthesia. (Anesthesia in various animal species).
22. Concepts of local anesthesia.
23. Anesthetics for local anesthesia.
24. Types of local anesthesia.
25. Diagnostic value of local anesthesia. (Pathogenetic effects of novocaine solution).
26. Separation of soft tissues (rules and methods). Separation types: depending on the shape, direction and depth.
27. General principles of tissue joining. (Types of surgical sutures: intermittent, continuous and special).
28. The value of desmurgy in veterinary surgery.
29. Characteristics of the dressing material.
30. Immobolization dressings: splints, plaster, and types.
30. Anesthetics for local anesthesia (methods and administration).
31. Application of the method of firing (thermocauterization) in surgery.
32. The concept of the science of operative surgery: its goals, objectives and relationship with other disciplines.
33. Sterilization of dressings, linen and surgical materials: (autoclave, flowing steam, ironing).
34. Blockade of the star node.
35. Special seams, technique and execution.
36. Anesthesia for horses: number of doses and administration.
37. Basics of preparing hands for surgery, the use of surgical gloves.
38. Types of bleeding and its characteristics.
39. Disconnection of soft tissues: rules and methods, requirements for a comfortable cut, shape, direction.
40. Blockade of the caudal sympathetic ganglion in horses.
41. Ways of infection of surgical wounds.
42. The role of desmurgy in veterinary surgery. Link materials and requirements.
43. Methods of plaster cast
44. The structure of the biological properties of the skin of the hands. Ways to prepare hands for surgery.
45. Types of local anesthesia: superficial, infiltration.
46. Methods of sterilization of surgical instruments.
47. Classification of anesthesia and drug requirements.
48. Ways to temporarily stop bleeding.
49. The concept of asepsis and antiseptics and its significance in surgery:
50. Discontinuous and continuous seams: methods and types.
51. Bandages: technique and types.
52. Types of bleeding and their prevention: drugs, their number.

53. Complete cessation of blood flow: chemical, biological methods.
54. Anesthesia for ruminants: substances used, amount, route of administration.
55. Injection, infusion, bloodletting: instruments, types and techniques.
56. Plaster bandages, techniques and methods of its application.
57. Ways to bring down the horses.
58. Types of bleeding and their prevention: drugs, their number.
59. Complete cessation of blood flow: mechanical
60. Splint bandages.
61. Complications after anesthesia and methods of their elimination.
62. Topographic anatomy and its importance in operative surgery
63. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold.
64. Methods of felling cattle (Hess, Italian).
65. Preparation of the operating field: importance, stages (mechanical cleaning and degreasing, chemical disinfection and duplication)
66. Methods for stopping bleeding: mechanical, physical.
67. Special seams and technique and execution
68. Anesthesia for dogs and cats.
69. The concept of local anesthesia: indications and contraindications.
70. Types of local anesthesia: conduction, epidural.
71. The order and methods of preparing hands for surgery (Spasokukovsky-Kochergin, Alfela, Zabludovsky-Tatarinov).
72. Dressings: technique.
73. Methods of sterilization, disinfection of suture materials.
74. Fixation of animals, its meaning.
75. Suture materials and description. Suture sterilization methods.
76. The importance of preparing the operating field. Principles of preparation of the operating field
77. Methods of preparation of the operating field.
78. Types of continuous seams. Intestinal sutures and vips.
79. Methods of preparing animals for anesthesia (diet, premedication, medical examination
80. Sterilization of dressings, linen and surgical materials: (autoclave, flowing steam, ironing).
81. Blockade of the star node.
82. Special seams and technique and execution.
83. Suprapleural block according to V.V. Mosin (pneumonia, novocaine).
84. Blockade of the caudal sympathetic ganglion.
85. Component of a surgical operation: stages.
86. Disconnection of soft tissues: rules and methods, requirements for a comfortable cut, shape, direction.
87. Splint bandages.
88. Methods of plaster cast
89. Types of local anesthesia: superficial, infiltration.

90. Anesthesia: description, requirements.
91. Methods of sterilization of surgical instruments.
92. Equine anesthesia: number of delivery routes.
93. The value of anesthesia, pain and its effects on the body: changes in organs and systems.
94. Methods for stopping bleeding.
95. The concept of asepsis and antiseptics and its significance in surgery.
96. Bandages: techniques and types, methods of bandaging
97. Methods for stopping blood flow: chemical, biological methods.
98. Anesthesia for ruminants: substances used, amount, route of administration.
99. Injection, infusion, bleeding: instruments, types and techniques.
100. Ways to bring down the horses: Russian, German, Reshetnik.
101. Types of bleeding and their prevention: drugs, their number.
102. Complete stopping of bleeding: mechanical and physical methods.
103. Discontinuous and continuous seams: methods and types.
104. Complications after anesthesia and methods of their elimination.
105. Topographic anatomy and its importance in operative surgery:
106. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold.
107. Substances used for local anesthesia: enhance and prolong the effect.
108. The concept of operative surgery: its purpose, objectives and relationship with other disciplines (anatomy, physiology, pharmacology, clinical diagnostics, microbiology).
109. Preparation of the operating field: importance, stages (mechanical cleaning and degreasing, chemical disinfection and tanning) and methods (Filonchikova, Pirogova, Grossikha).
110. Special sutures and their technique: intestinal, vascular, nerve and articular sutures.
111. The concept of local anesthesia: indications and contraindications.
112. Types of local anesthesia: conduction, epidural.
113. Para-lumbar anesthesia of the abdominal nerves.
114. Forms from binding materials: technique. Glue joints: traces of glue, advantages, gluing methods.
115. Forms of dressings
116. Blockade of the cranial sympathetic node.
117. Anatomical and physiological features of the skin of the hands.
118. Preparation of the operating field.
119. Methods for stopping bleeding.
120. Injection and its methods (intramuscular, subcutaneous, subcutaneous).
121. The role of head surgery in injury prevention. (General anatomical and topographic data).
122. Prevention of horn formation in calves and dehorning, anatomical and topographic structure.
123. Operations on the brain. (Anatomical and topographic information).

124. Surgical treatment of coenurosis in sheep.
125. Operations in the eye area. (Anatomical and topographic information, technique of ocular exterpation).
126. Technique of tracheotomy (in the larynx). (Anatomical and topographic information).
127. Jugular vein resection. (Anatomical and topographic information, surgical techniques).
128. Operation of the esophagus. (Anatomical and topographic information, treatment).
129. Techniques of intratracheal and intracarotid administration.
130. Anatomical and topographic data of the chest wall
131. Anesthesia of the chest wall. (Anesthesia of the borderline sympathetic trunk and abdominal nerves).
132. Pleurocentosis, rib resection technique.
133. Anatomical and topographic structure of the abdominal region.
134. Technique of laparotomy. (Instruction, fixation, pain relief).
135. Ruminotomy technique. (Instruction, fixation, pain relief).
136. Technique of gastrotomy. (Instruction, fixation, pain relief).
137. Technique of enterotomy - intestinal rupture. (Instruction, fixation, pain relief).
138. Intestinal resection. (Instruction, fixation, pain relief).
139. Rectum incision (anatomical and topographic structure, GM Olivkov, Mueller-Frick method).
140. Creation of an artificial anal opening. (Instruction, fixation, pain relief).
141. Surgical treatment of abdominal hernia. (Classification of hernias).
142. Technique of an umbilical hernia operation. (Fixation, anesthesia, treatment).
143. Technique of the operation of the groin area. (Fixation, anesthesia, treatment).
144. The value of castration in the prevention of injuries, indications and contraindications.
145. Preparing an animal for castration.
146. General characteristics of castration. (castration for various types of animals).
147. Technique of ovariectomy of female pigs. (Fixation, anesthesia, treatment).
148. The structure of the genital organs and nerve pain relief.
149. Surgical treatment of phimosis and paraphimosis.
150. Amputation of the penis in horses. (Anatomical and topographic information, surgical techniques).
151. Technique of the operation of the groin area. (Anatomy - topographic data, urethrotomy, urethrostomy).
152. Operations on the organs of the urinary system. (Anatomy - topographic information, cystotomy).
153. Anatomical and topographic structure of the forelimbs. (Innervation and pain relief).
154. Anatomical and topographic structure of the hind limbs. (Innervation and pain relief).

155. Anatomical and topographic structure of the head (innervation and anesthesia).
156. Blockade of the caudal sympathetic ganglion in horses.
157. Technique of ovariectomy: indications, fixation, anesthesia, technique (ovary, uterus, novocaine, chlorpromazine).
158. Anatomical and topographic structure of the ear.
159. Blockade of the star node.
160. Creation of an artificial anal 161. Anatomical and topographic structure of the horn.
162. Suprapleural block according to V.V. Mosin (pneumonia, novocaine,).
163. Technique of gastrotomy: indications, fixation, anesthesia, instruments, technique.
164. Blockade of the cranial sympathetic node.
165. Technique of rumenotomy: indications, fixation, anesthesia, instruments, technique.
166. Anatomical and topographic structure of the brain.
167. Blockade of the caudal sympathetic ganglion in horses.
168. Technique of Exterpation of Eyes
169. Anatomical and topographic structure of the eyes.
170. Suprapleural block according to V.V. Mosin (pneumonia, novocaine).
171. Creation of an artificial anus
172. Anatomical and topographic structure of the tooth.
173. Blockade of the caudal sympathetic ganglion in horses.
174. Prevention of horn formation in calves and dehydration, anatomical and topographic structure.
175. Anatomical and topographic structure of the language.
176. Blockade of the cranial and caudal sympathetic node.
177. Anatomical and topographic structure of the knee, ankle and hock joints.
178. Anatomical and topographic structure of the ventral neck.
179. Blockade of the mandible nerve.
180. Technique of castration of stallions: instruction, fixation, anesthesia, used instruments, open and closed method (bream, ligature).
181. Anatomical and topographic structure of the organs of the neck.
182. Suprapleural block according to V.V. Mosin (pneumonia, novocaine).
183. Techniques of rumenocentesis: instructions, anesthesia, instruments, techniques.
184. Anatomical and topographic structure of the chest wall.
185. Blockade of the cranial and caudal sympathetic node.
186. Castration of pigs: fixation, method of anesthesia.
187. Anatomical and topographic structure of the abdominal wall.
188. Blockade of the mandible nerve.
189. Methods of bowel resection: instructions, fixation, anesthesia, instruments, treatment.
190. Anatomical and topographic structure of the inguinal canal.

191. Paralumbar novocaine blockade.
192. Anatomical and topographic structure
193. Anatomical and topographic structure of the tooth.
194. Blockade of the ulnar nerve.
195. Surgical treatment of umbilical hernia.
196. Anatomical and topographic structure of the rectum.
197. Central nerve block.
198. Castration of a bull: fixation, anesthesia, methods.
199. Division of the abdominal region.
200. Blockade of the volar nerve. 201.. Anatomical and topographic structure of the nose
202. Anatomical and topographic structure of the ovary of pigs.
203. Sciatic nerve block.
204. Jugular vein resection
205. Anatomical and topographic structure of the inguinal region of males.
206. Blockade of the mandible nerve.
207. Amputation of the rectum: indications
208. Anatomical and topographic structure of the forelimb.
209. Paralumbar novocaine blockade.
210. Technique of rumenocentesis
211. Anatomical and topographic structure of the elbow joint area, wrist and metacarpus
212. Epidual blockade.
213. Topography of the auxiliary nasal cavities (forehead, upper jaw).
214. Anatomical and topographic structure of the metacarpus and fingers.
215. Horn blockade.
216. Laparotomy: methods of incision of the abdominal wall.
217. Anatomical and topographic structure of the hind leg pelvis.
218. Small leg nerve block.
219. Prevention of horn formation in calves and dehorning, anatomical and topographic structure.
220. Anatomical and topographic structure of the knee, ankle and hock joints.
221. Tibial nerve block. (Instructions and methods)
222. Technique of enterotomy. (Instructions, fixation, anesthesia, tools, techniques).
223. Anatomical and topographic structure of the toe of the hind limb.
224. Technique of rumenocentesis. (Instructions, analgesics, instruments, techniques).
225. Anatomical and topographic structure of the abdominal organs.
226. Blockade of the pudendal nerve. (Instructions and methods)
227. Technique of extirpation: indications, fixation, anesthesia, instruments, technique.
228. Anatomical and topographic structure of the genital organs.
229. Blockade of the optic nerve. (Instructions and methods)

230. The structure of the spermatic cord: layers, vessels and nerves.
231. Anatomical and topographic structure of the inguinal canal of males.
232. Blockade of the upper jaw of the nerve.
233. Creation of an artificial anus
234. Technique of ruminant gastrotomy.
235 Dropping the ears of dogs.
236. Eye Extirpation Technique
237. Anatomical and topographic structure of the nose
238. Trepanation of the forehead and upper jaw.
239. Anatomical and topographic structure of the language.
240. Amputation of the tongue. (Instructions and methods)
241. Dental operations (anatomical and topographic data, tooth extraction).
242. History and founders of operative surgery in veterinary medicine. (Theory of surgery).
the concept of activity, its goals and objectives.
244. Instructions for surgery and contraindications. (Operation classification).
245. Ways of infection of surgical wounds. (Teachings on antisepsis and asepsis).
246. Methods of sterilization and disinfection of surgical instruments before and after surgery and their storage.
247. Characteristics of suture materials and methods of sterilization.
248. Methods for sterilizing clothes, dressings (autoclave, iron).
249. The structure and biological properties of the skin of the hands. (Use of surgical gloves).
250. Preparing the hand for surgery. (Mechanical cleaning, chemical disinfection and tanning).
251. Basics of preparation of the operating field and disinfection of mucous membranes.
252. Organization of surgical operations in conditions of preparation of animals for surgery.
253. The importance of anesthesia in surgery. (General and local anesthesia).
254. Instructions for the use of anesthesia (general anesthesia) (Premidication).
255. Classification of anesthesia and methods of drug administration. (Anesthesia of various types of animals).
256. Concept of local anesthesia and instructions for its use. Use of premedication for local anesthesia.
257. Types of local anesthesia. (Conductive, infiltrative).
258. Diagnostic value of local anesthesia.
259. Rules and methods of soft tissue separation.
260. Types of tissue separation depending on the shape, direction and depth.
261. Types of bleeding.
262. Prevention of bleeding. Temporary stopping of bleeding. (Clamp, ligature, swab).
263. Mechanical method for stopping blood flow (vascular ligation).

264. A physical method for stopping bleeding. (Use of local hypothermia (cold water, ice, ethyl chloride) and hyperthermia (thermocauterization).
265. Biological methods for stopping bleeding. (Cloth, catgut)
266. Types of surgical sutures. (discontinuous, continuous seams).
267. Characteristics of seams for use.
268. Special seams.
269. Seams connecting joints, nerves, blood vessels. (Removal of skin sutures).
270. Anatomical and topographic structure of the head, division into parts, boundaries. 271. Horn operations. (Methods to prevent the growth of calf horns).
272. Methods for removing horns in small and large horned animals.
273. Operations on the brain: anatomical and topographic data. (Surgical treatment of coenurosis in Karakol sheep).
274. Dental operations. (Anatomical and topographic information).
275. Tooth extraction. (Instruction, innervation and treatment).
276. Operations in the eye area. (Anatomical and topographic data).
277. Surgical treatment of volvulus and eyelid retraction.
278. Extirpation of the century. (Instruction, innervation and treatment).
279. Operations in the area of the outer ear of dogs: anatomical and topographic data.
280. Operations in the ventral part of the neck. (Anatomical and topographic data).
281. Blockade of caudal, cranial, sympathetic and vagonosympathetic nodes in horses and cattle.
282. Technique of larynx resection.
283. Anatomical and topographic data of the chest wall organs
284. Blockade of the star node.
285. Pleurosynthesis. Rib resection technique.
286. Anatomical and topographic structure of the abdominal wall of the abdomen. (Paranephral novocaine blockade of cattle and horses).
287. Operations on the stomach and pancreas in ruminants. (Anatomical and topographic information, instructions for the operation).
288. Ruminotomy. (innervation and treatment).
289. Surgery on the intestines. (Anatomical and topographic data, enterotomy of large and small animals, intestinal resection).
290. Surgical treatment of hernias.
291. Resection of the rectum.
292. Types of hernias and surgical treatment.
293. Operations on the genitals of males
294. Castration of horses.
295. Technique of ovariectomy
296. Anatomical and topographic structure of the inguinal canal.
297. Technique of rumenocentesis
298. Operations on the organs of the urinary system. (Anatomy - topographic information, cystotomy).

299. Anatomical and topographic structure of the forelimbs in horses and cattle. (Borders, division into regions, topography of regions).
300. Methods of amputation and disarticulation of the limb (Surgical indications and contraindications, method of amputation surgery.
301. Explain the technique of subcutaneous injection.
302. Describe the technique of intramuscular injection of different animals.
303. Name the points of intravenous administration to the animals.
304. When is the infusion performed?
305. What are the methods and benefits of intravenous injection?
306. Technique of rumenocentesis
307. Explain the points and amount of bleeding in animals.
308. What methods of anesthesia in animals do you know
309. Explain the importance of anesthesia in surgical practice.
310. The effect of pain on the body.
311. What is anesthesia and what is its classification?
312. What is the premixing for?
313. Describe the methods of administering anesthesia to horses.
314. What drugs are used for anesthesia in cattle?
315. Explain the anesthesia of small horned animals.
316. Explain the anesthesia of dogs and cats.
317. Explain the measures of preparation of animals for anesthesia and elimination of its complications.
318. Explain the instructions and contraindications for the use of local anesthetics.
319. The value of local anesthesia in surgical practice.
320. What is local anesthesia and how is it classified?
321. Explain the mechanism of action of local anesthesia on the body.
322. What pharmacological preparations are used for local anesthesia?
323. Method of surface anesthesia.
324. Explain the technique of infiltration analgesia.
325. What is epidural anesthesia and what types are there?
326. When conducting anesthesia, novocaine is delivered to which parts of the body?
327. Explain the mechanism of the pathogenetic action of novocaine.
328. What are the stages of a surgical operation?
329. What groups of instruments are used in surgery?
330. What tools are used to sever tissue?
331. Describe devices that stop bleeding.
332. List the rules for the separation of soft tissues.
333. What determines the shape and size of the cut?
334. Define a comfortable cut.
335. An incision into the bone tissue?
336. What is trepanation and amputation?
337. What is the significance of the division of the fabric into layers?
338. What are the stages of a surgical operation?

339. What groups of instruments are used in surgery?
340. What tools are used to sever tissue?
341. Describe devices that stop bleeding.
342. List the rules for the separation of soft tissues.
343. What determines the shape and size of the cut?
344. Describe the structure of the inguinal canal in animals?
345. Explain the anatomical structure of sperm.
346. Anatomical and topographic structure of the palate organ in males?
347. What is the purpose of orchiectomy?
348. What are the types of castration?
349. Castration value?
350. Castration technique. 351. The technique of castration of bulls and rams.
352 Technique of castration of dogs and cats.
353. Pig castration technique?
354. Explain the complications of castration?
355. The structure of the female palate organ
356. Anatomical structure of the ovary.
357. Describe the structure of the vagina?
358. What is the purpose of a cesarean section?
359. How is the caesarean section performed in large animals?
360. Explain the technique of cesarean section in small animals.
361. What is the purpose of ovulation in females?
362. Explain the technique of ovarioetomy in pigs.
363. Explain the technique of ovariectomy in dogs.
364. Explain the technique of ovarioetomy in cats.
365. Explain the mechanism of the pathogenetic action of novocaine
366. Describe the structure into which areas the limb is divided.
367. Describe the structure of the joints of the front leg?
368. Describe the boundaries of the shoulder.
369. Describe the boundaries of the wrist and elbow joints.
370. Describe the boundaries of the carpal joint.
371. Describe the boundaries of the joints.
372. What is the main purpose of limb nerve pain relief?
373. Explain the technique of cattle fingers anesthesia
374. What are the methods of pain relief of the nerves in the lower limb of the horse?
375. Count the bones of the hind limbs.
376. Describe the areas and boundaries of the hind limbs.
377. Describe the structure of the hind limb joints?
378. Describe the boundaries of the area of the front extremities.
379. Describe the boundaries of the knee joint.
380. Indicate the boundaries of the hock joint.
381. Anatomical and topographic structure of the head.

382 Determine the points of blockade of the branches of the trigeminal nerve in horses and cattle.
383 Nasal region: nasal passages, turbinates, connection with the paranasal sinuses; nasolabial speculum in cattle and the technique of operation on it.
384. Describe the indications, the technique of trepanation of the walls of the nose and paranasal sinuses.
385. The structure, blood supply and innervation of the horn in cattle; decornation.
386. Topography of the cerebral part of the skull in sheep; operation for coenurosis.
387. Describe the boundaries of the ventral region of the neck and its layered structure in horses and cattle, drawing attention to the topography jugular vein, trachea and esophagus.
388. Blockade of the cranial cervical sympathetic ganglion and stellate ganglion in large animals.
389. Tracheotomy and esophagotomy; puncture of the anterior vena cava in svnnya.
390. Describe the boundaries, layered structure, innervation and blood supply of the lateral chest wall.
391. Conduction anesthesia of the lateral chest wall; rib resection and rules of pleurocentesis.
392. Blockade of celiac nerves and borderline sympathetic trunks according to V.V. Mosin and aortic puncture.
393. What is the danger of opening the pleural cavity; what is pneumothorax and measures for its urgent elimination?
394 The boundaries and structure of the abdominal wall, its innervation and blood supply.
395. Osteotopic projection of the attachment of the diaphragm, position of the scar, mesh, book, abomasum, liver, spleen.
396. Methods of local anesthesia of the abdominal wall.
397. Classification of methods of laparotomy.
398. Rumenocentesis, rumenotomil, abomasum operations.
399. Liver biopsy.
400. Enterotomy in small animals, intestinal suture technique.
401. Bowel resection
402. What are abdominal hernias, ways of their prompt elimination?
403. Topography of the rectum.
404. Resection of the rectum.
405. Describe the operations that correct the developmental anomalies of the anus and rectum.
406. The structure of the scrotum, testicular sac, testes and spermatic cord; their blood supply and innervation.
407. What is castration, sexual sterilization, orchidectomy; time and age of castration; economic significance of castration?
408. Methods and ways of male castration.

409. Fixation and anesthesia of animals during castration.
410. How males are castrated with intravaginal hernia?
411. What is ovariectomy; in which animals it is performed, its economic significance?
412. What operative approaches are used for oophorectomy in different animals?
413. What biological, clinical and economic significance is unilateral oophorectomy or partial resection of ovaries in cows?
414. Describe the structure of the penis and preputial sac in a horse and a bull. 415. How is local anesthesia performed during operations on the penis in different species of animals?
416. What are the main operations performed on the penis and preputial sac in large animals, the technique of their performance?
417. Excision of the "cuff" on the penis in a horse and amputation of the penis in various animals.
418. Topography of the male perineum and what operations are performed in this area?
419. Give the definitions of the concepts: urethrotomy, urethrostomy, cystotomy, describe the indications and the technique for their implementation.
420. What suture is applied to the bladder wall during cystotomy?
421. Division of limbs into regions.
422. Areas of cutaneous innervation, blood supply to the thoracic (pelvic) limb of horses and cattle.
423. What are the main protrusions and depressions (grooves) on the chest (pelvic) limbs; their surgical significance?
424. Nerve block of the thoracic (pelvic) extremity for pain relief during operations andfor diagnostic purposes.
425. What synovial formations of the extremities are the object of the operation?
426. What is tenotomy; in which areas and for what indications is it performed?
427. What is desmotomy for what reason and in what area is it performed?
428. What operations are performed with spar?
429. In what species of animals and for what indications is disarticulation or amputation of the phalanges of the fingers performed?
430. For what indications and how is amputation of limbs in small animals carried out? 431. Methods and administrations used for local anesthesia.
432. Application of the firing method in surgery (thermocauterization).
433. The concept of the science of operative surgery: its goals, objectives and relationship with other disciplines.
434. Sterilization of dressings and surgical materials: (autoclave, flowing steam, ironing).
435. Blockade of the star knot.
436. Special seams and their technique. (Stitches in the intestines, blood vessels, nerves, and joints.)
437. Anesthesia for horses: methods of administration.
438. Basics of preparing hands for surgery, the use of surgical gloves.

439. Types of bleeding and their characteristics.
440. Disconnection of soft tissues: rules and methods.
441. Equine caudal sympathetic ganglion block.
442. Introduction of infection into surgical wounds.
443. The value of desmurgy in veterinary surgery.
444. Techniques and methods of applying plaster
445. The structure of the biological properties of the skin of the hands. Ways to prepare hands for surgery.
446. Types of local anesthesia: superficial, infiltration.
447. Methods for sterilizing surgical instruments.
448. Classification of anesthesia and drug requirements.
449. Methods for stopping bleeding.
450. The concept of asepsis and antiseptics and its significance in surgery
451. Discontinuous and continuous seams: methods and types.
452. Bandages: techniques and types
453. Types of bleeding and their prevention
454. Complete cessation of blood flow: chemical, biological methods.
455. Anesthesia for ruminants: substances used, amount, route of administration.
456. Injection, infusion, bleeding: instruments, types and techniques.
457. The imposition of plaster casts (techniques and methods of its application.)
458. Methods for fixing horses.
459. Types of bleeding and their prevention: drugs, their number.
460. Complete cessation of bleeding: mechanical and physical methods.
461. Types of dressings.
462. Complications after anesthesia and methods of their elimination.
463. Topographic anatomy and its significance in operative surgery: a concept, scientists who contributed to it, the difference from anatomy, its significance.
464. Methods for preparing surgical instruments: hot (boiling, burning, hot air), cold (sterilization).
465. Methods of felling cattle (Hessa, Italian, Latipova).
466. Preparation of the operating field: methods (mechanical cleaning and degreasing, chemical disinfection and duplication).
467. Methods for stopping bleeding: mechanical, physical.
468. Special seams and techniques for their implementation
469. Anesthesia for dogs and cats.
470. The concept of local anesthesia: indications and contraindications.
471. Types of local anesthesia: conduction, epidural.
472. The order and methods of preparing hands for surgery (Spasokukoski-Kochergin, Alfela, Zabludovsky-Tatarinov).
473. Preparation of dressings.
474. Methods of sterilization, disinfection of suture materials.
475. Fixation of animals, its meaning.
476. Suture materials and their description. Suture sterilization methods.

477. Significance of preparation of the operating field. Principles of preparation of the operating field Methods of preparation of the operating field. Disinfection of mucous membranes.
478. Injection and its methods.
479. Types and methods of a continuous seam.
480. Methods of preparing animals for anesthesia, the technique of introducing anesthesia (diet, premedication, clinical examination).
481. Sterilization of dressings and surgical materials: (autoclave, flowing steam, ironing).
482. Blockade of the star knot.
583. Special seams: technique for their implementation. (Stitches in the intestines, blood vessels, nerves, and joints.)
584. Suppleural block according to V.V. Mosin (pneumonia, novocaine, 35o).
485. Blockade of the caudal sympathetic ganglion.
486. Component of a surgical operation: consists of several stages.
487. Disconnection of soft tissues: rules and methods.
488. Splint bandages:
489. Methods of applying plaster casts
490. Types of local anesthesia: superficial, infiltration.
491. Anesthesia: its description.
492. Methods of sterilization of surgical instruments.
493. Anesthesia for horses
494. The value of anesthesia, pain and its effects on the body.
495. Ways to temporarily stop bleeding.
496. The concept of asepsis and antiseptics and its significance in surgery
497. Bandages: types and technique of imposition
498. Methods for stopping bleeding: chemical, biological methods.
499. Anesthesia for ruminants: substances used, amount, route of administration.
500. Injection, infusion, bleeding: instruments, types and techniques.

4.7 Test questions for 1 pc (200)

1. What does the science of "Operative surgery and anesthesiology" study?
A. All types of injuries and their prevention
B. Rules and methods of performing a surgical operation
C. The mechanism of development of surgical diseases
D. Carrying out an operation in individual organs
2. What does the word "surgery" mean?
A. Hand movement
B. Manual processing
C. Impact
D. Section
3. Significance of topographic anatomy in operative surgery?
A. Creating the conditions for a good reference point

B. Performing Correct Tissue Separation
C. Anatomical rationale and thinking of the operation
D. Information on the location of organs and tissues
4. The concept of the word "Operation" is ..
A. The set of mechanical effects on organs and tissues
B. Separation for tissue processing purposes
C. Removal of the formed pathological process
D. Organ and tissue transplant
5. What main group is the operation subdivided into?
A. Bloody, bloodless
B. Therapeutic, diagnostic
C. Urgent, delayed
D. Plastic, cosmetic
6. What is the antiseptic method based on?
A. Destruction of microbes by ultraviolet rays
B. Destruction of microbes by chemicals
C. Killing germs by dressing
D. Killing germs with high temperature
7. How to sterilize instruments after purulent surgery?
A. Boil in an alkaline solution for an hour with the addition of lysol
B. Boil for an hour
C. Dried and stored separately
D. Dry and smear with alcohol
8. What is suture sterilization based on?
A. Boiling
B. Disinfection in chemical solutions
C. High temperature and pressure resistance
D. Degreasing and disinfection
9. What does the science of "Operative surgery and anesthesiology" study?
A. All types of injuries and their prevention
B. Rules and methods of performing a surgical operation
C. The mechanism of development of surgical diseases
D. Carrying out an operation in individual organs
10. What does the word "surgery" mean?
A. Hand movement
B. Manual processing
C. Impact
D. Rezrez
11. Significance of topographic anatomy in operative surgery?
A. Creating the conditions for a good reference point
B. Performing Correct Tissue Separation
C. Anatomical rationale and thinking of the operation
D. Information on the location of organs and tissues
12. The concept of the word "Operation" is ..?

A. The set of mechanical effects on organs and tissues
B. Separation for the purpose of tissue processing
C. Removal of the formed pathological process
D. Organ and tissue transplant
13. What main group is the operation subdivided into?
A. Bloody, bloodless
B. Therapeutic, diagnostic
C. Urgent, delayed
D. Plastic, cosmetic
14. What is the “antiseptic” method based on?
A. Destruction of microbes by ultraviolet rays
B. Destruction of microbes by chemicals
C. Killing germs by dressing
D. Killing germs with high temperature
15. What is the "asepsis" method based on?
A. Destruction of microbes by chemicals
B. Killing germs by hand washing
C. Killing germs at high temperature and pressure
D. Killing microbes at low temperatures
16. How to sterilize instruments after purulent surgery?
A. Boil in an alkaline solution for an hour with the addition of lysol
B. Boil for an hour
C. Dried and stored separately
D. Dried and treated with alcohol
17. How is the material sterilized in an autoclave?
A. Due to high pressure and temperature
B. Due to high steam in the boiler
C. Due to the high temperature
D. Due to tightness
17. What is suture sterilization based on?
A. Boiling
B. Disinfection in chemical solutions
C. High temperature and pressure resistance
D. Degreasing and disinfection
18. What steps do you know to prepare your hands for surgery?
A. Wash hands with soap and towel
B. Mechanical cleaning, chemical disinfection and tanning
C. Mechanical cleaning and chemical disinfection
D. Hand washing and chemical disinfection
19. Is leather tanning?
A. Increased skin elasticity
B. Prevention of microflora development
C. Reduce hand sweating
D. Closing the exits of the sebaceous and sweat glands

20. For what purposes are rubber gloves used?
A. Preventing Hand Contamination Before Surgery
B. Prevents germs from entering the wound
C. Reduces the time of surgical intervention
D. Reduces hand washing time
21. What steps do you know for preparing the operating field?
A. Mechanical cleaning, disinfection, tanning and separation
B. Mechanical cleaning and chemical disinfection
C. Mechanical cleaning and tanning of leather
D. Hair removal, rinsing, chemical disinfection
21. In what order are solutions on the skin of animals lubricated during purulent surgery?
A. Bottom up
B. From top to bottom
C. From center to edge
D. Edge to center
22. Which of the Central Asian scientists contributed to the development of surgery?
A. Ahmad Yassawi
B. Ali Kushchi
C. Abu Ali Ibn Sina
D. Jaloliddin Rumi
23. What are the contraindications for the operation?
A. All of the above answers
B. High temperature
C. Bear in mind the pregnancy of animals
D. Presence of an infectious disease in the farm
24. What do you understand when you mean an (absolute) reference to an operation?
A. When the pathological process is dangerous to the health of the animal
B. When animal productivity declines
C. When purulent exudate begins to accumulate in the cavity
D. When peristalsis stops
25. What should the surgeon observe during the operation?
A. Caution in relation to the organ and tissues
B. Number of drug administration (dosage)
C. Rules of asepsis and antiseptics
D. To the rule of correct placement of surgical sutures
26. What does a surgical clinic do?
A. With the reception and treatment of sick animals
B. With the treatment of sick animals
C. With student training
D. During surgical operations
27. What is the purpose of the science of operative surgery?

A. Reception of sick animals
B. Putting scientific evidence into practice
C. Increased productivity
D. Training in surgical procedures
28. What is the main function of the science of operative surgery?
A. Restoring and improving the performance of the animal
B. Development and implementation of new methods of operations
C. Increase in the number of animals in the herd
D. Improve the quality of meat, milk and wool products
29. With whom to coordinate for the operation?
A. With a legal entity
B. With an individual
C. With the farm administration
D. With the union
30. What is done at the final stage of the operation?
A. Surgical sutures
B. The animal comes in a state
C. 5% glucose is poured into the vein
D. Antibiotics are sent around the injury
31. What is the value of fixation during the operation?
A. Safeguard the surgeon
B. The movement of the animal will be reduced
C. During surgery, free and safe movement is ensured
D. The animal does not injure itself and the participants in the operation
31. By whom and when was the “asepsis” method proposed?
A. Bergman-1891
B. Abu Ali ibn Sina - 975
C. Vishnevsky-1942
D. Shimelbusch-1892
32. How to carry out cold sterilization of devices?
A. Pour chemical solutions.
B. Put in cold water
C. Grabbing Instruments in Glacier Mode
D. Liquid nitrogen
33. How is the temperature regime in the autoclave determined?
A. With indicator
B. Using the monomer
C. Using a thermometer
D. Using a monomer and a thermometer
34. What is the purpose of preparing hands before surgery?
A. Do not introduce microbes into your body
B. In order not to cause inflammation
C. In order not to let the microbe to the instruments
D. To prevent the penetration of microbes into the operating injury

35. For what purposes are the surgical fields prepared?
A. To remove hair
B. Preventing the entry of germs into the wound and contamination
C. Cleanse the skin from impurities
D. Wound recovery after surgery
36. What is the purpose of connecting the fabric?
A. Stop bleeding
B. Preventing the entry of microbes
C. Preventing excitation of the nervous system
D. Shortening the end time of injury
37. Continuous seam methods?
A. The needle is injected at a distance of 0.5-1.5 from the wound, at a distance between nodes 0.75-1.5
B. The needle is injected at a distance of 0.2-0.5 from the wound, at a distance between nodes 0.5-0.75
C. The needle is injected at a distance of 0.5-0.75 from the wound, at a distance between nodes 0.75-1.
D. The needle is injected at a distance of 0.75-1 from the wound, at a distance between nodes 1-1, 5
38. Which of the following sutures is considered a skin suture?
A. Mattress seam
B. Circular seam
C. Circular seam
D. Fur seam
39. In what way, the needle is clamped, starting from only one edge of the wound, each suture is applied at the same distance and continues to the end?
A. Mattress seam
B. Circular seam
C. Circular seam
D. Fur seam
40. What type of suture is used to superimpose the tendon?
A. Pirogova-Cherni
B. Plakhotina
C. Tikhonina
D. Schmiden
41. How many types are intestinal sutures divided into?
A. 4
B. 5
C. 3
D. 2
42. For what purpose are seams established, by what type are they subdivided?
A. Discontinuous and continuous
B. Connecting and special
C. Intestinal and skin sutures

D. Leather and special seams
43. What type of seam is mainly applied to the surrounding areas?
A. Mattress seam
B. Shove Witsel
C. Circular seam
D. Kissset suture
44. When are situational seams applied?
A. In case of incompatibility of the wound edges
B. The edge of the injury is far from each other.
C. Seams that are in danger of breaking
D. Minor injuries
45. What kind of intestinal suture is used on the scar and the large intestine?
A. Lambert
B. Schmiden
C. Plakhotin-Sadovsky
D. Pirogova-Cherni
46. What are the requirements for dressings?
A. Softness, elasticity and hygroscopicity
B. Softness and density
C. Elasticity and hygroscopicity
D. Density and elasticity
47. What is the purpose of applying the bandage?
A. Protection against infection and blood arrest
B. Immobilization of bones
C. Applying tire and backing materials
D. Protection against secondary injury and infection
48. The procedure for applying bandages
A. From top to bottom along the muscle fibers
B. From bottom to top in the direction of lymph and blood vessels
C. From bottom to top along the folds of the skin
D. From top to bottom along the cavities of connective tissue
49. What kind of bandage increases the local body temperature?
A. Warming wrap bandage
B. Pressure bandage
C. Wet suction dressing
D. Bandage
50. How to apply a bandage to enhance the absorption process?
A. Impenetrable
B. Dry suction
C. Pressing
D. Wet suction
51. Which dressing is considered economical?
A. Bintovaya
B. Kosynochnaya

C. Wooden
D. Kleevaya
52. Teaching about bandages and how to apply them, is this?
A. Desmology
B. Desmotology
C. Desmurgy
D. Desmology
53. It is a binder dressing that is applied to protect against
mechanical action, absorption of blood, wound fluid and pus
and is not absorbed into the wound, releasing inflammatory infiltrates ...
A. Original
B. Fixing
C. Immobilization
D. Bintovaya
54. How many types of bandages are applied?
A. 4
B. 5
C. 3
D. 2
55. How are plaster casts applied?
A. After first wrapping the bandage around the limb
B. After that, plaster is sifted into the bandage, plastering is started
C First, a solid cast plaster cast is prepared and wrapped around the limb
D. First, plaster is adjusted, then wrapped with a bandage
56. When is the plaster cast removed?
A. In large animals after 5-6 weeks, in small animals after 3-4 weeks
B. In large animals 5-6 weeks, in small animals after 1-2 weeks
C. In large animals 8-10 weeks, in small animals after 4-5 weeks
D. In large animals 2-3 weeks, in small animals after 1-2 weeks
57. What substances can be added to soften gypsum?
A. Hot sugar juice
B. A solution of hot sodium chloride
C. 1% solution of potassium permanganate
D. Hot milk
58. How many parts are examined for head surgery?
A. 13
B. 10
C. 2
D. 3
59. Through which nerve the head region is innervated.
A. Optic nerve
B. Buccal nerve
C. Nerve of the upper jaw
D. Trigeminal nerve

60. Which nerve is anesthetized during the operation in the area of the upper lip, nasolabial cavity, upper jaw cavity.
A. Optic nerve
B. Infraorbital nerve
C. Subblock nerve
D. Frontal nerve
61. Determine the point of the needle in the technique of the maxillary nerve blockade in cattle.
A. 2 lines: 1-vertical line through the premolar and a cross-section of lines running from the posterior edge of the eyeball to the nose;
B. average distance from the posterior edge of the eye to the root of the horn
C. midpoint of a line from the outer corner of the eye to the root of the auricle
D. Anterior lower bone angle inside the jaw fossa
62. At what depth is the needle injected into the orbital nerve block in horses and into the amount of novocaine solution?
A. 6-8 cm 10 ml 3% l
B. 2-3 cm, 5 ml 3% leaf
C. 8-9 cm 10 ml 3%
D. 6.5-7 cm 20-25 ml 3%
63. Who developed the stratum corneum blockade technique?
A. A. S. Studentsova
B. A. P. Senkina
C.C. Sadovsky
D. Voronina
64. What is decornation?
A. removal of horns
B. removal of the eyeball
C. perforation of the brain cavity
D. tooth extraction
65. How many teeth do dogs and cattle have?
A. 40-36
B. 42-32
C. 40-44
D. 32-42
66. What is trepanation?
A. dehydration
B. removal of the eyeball
C. the formation of the opening of the brain cavity
D. tooth extraction
67. What nerves are anesthetized during an operation to remove the upper jaw and remove teeth from the upper jaw?
A. nerve of the mandible
B. nerve of the upper jaw
C. optic nerve

D. hallucinogenic nerve
68. What are the main two sections of the head part?
A. Upper jaw and lower jaw
B. Brain and occipital
C. Brain and mandible
D. Face and brain
69. The method of removing the third eyelid?
A. Holding with tweezers to cut off the base with scissors
B. Holding with tweezers, cut off the protruding part with a scalpel,
C. Hold with a Kocher clamp pull
D. Holding with tweezers, detach from the tissue and apply a suture
70. The technique of applying an ear bandage for amputation of the auricle
A. At an angle to the ear below the auricle pocket
B. On the underside of the auricle, above the pocket
C. On the edges of the upper and middle part of the auricle below the pocket,
D. On the edges of the upper and lower parts of the auricle
71. What to do with the surgical treatment of coenurosis?
A. Removing the bubble with the liquid
B. Extraction of liquid and introduction of 5% iodine solution
C. Extraction of liquid and scolexes
D. Fill the gap with gelatin and paraffin by removing the bag
72. In dogs, the trigeminal nerve is divided into ..
A. Eye, upper jaw, lower jaw nerve
B. Facial, mandibular nerve
C. infraorbital, upper jaw, auditory nerves
D. Lower jaw, zygomatic nerves
73. What method allows you to determine the exact location of the coenure bladder during the operation?
A. Garms
B. Gertsen
C. Roznina
D. Pirogova
74. Is the dose of novocaine administered for superficial anesthesia during excision of the third eyelid?
A. 5%
B. 2%
C. 0.5%
D. 0.25%
75. Doses of novocaine are administered to anesthetize the optic nerve?
A. 2% -20ml
B. 3% - 10 ml
C. 4% -10 ml
D. 0.5% -20 ml
76. Which nerve is anesthetized by C.C. Sadovsky and C.F. Kiselevsky?

A. Infraorbital nerve
B. Optic nerve
C. Corneal nerve
D. Alveolar nerve of the mandible
77. According to Sadovsky's method, in case of subblock nerve blockade, in what area is it injected in cattle?
A. at the front edge of the cup of the eyes
B. The lower jaw in the terminal fibers of the alveolar - alveolar inferior nerve
C. Above the inner corner of the eye
D. Into the orbital cavity and corneous processes.
78. Which nerve is anesthetized by C.C. Sadovsky and C.F. Kiselevsky?
A. Optic nerve
B. Infraorbital nerve
C. Corneal nerve
D. Alveolar nerve of the mandible
79. Doses of novocaine according to the method of N.C. Sadovsky for anesthesia of the subblock nerve?
A. 2% x 20ml
B. 3% th 10 ml
C. 4% 10 ml
D. 3% nd 5 ml
80. How many stages are the preparation of hands for the operation divided into?
A. Stage 4
B. Stage 5
C. Stage 3
D. Stage 2
81. What is recommended to use S.I. Spasokukovsky and I. Kochergin instead of soap?
A. 0.5% aqueous solution of ammonia
B. 5% - iodine alcohol
C. 2% bleach
D. 5% solution of carbolic acid
82. What solution is used for hand disinfection?
A. 3% zinc sulfate solution
B. 5% alcohol
C. 2% bleach
D. 5% solution of carbolic acid
83. What is the name of the temporary cessation of the activity of sweat and sebaceous glands on the skin of the hands?
A. Leather tanning
B. Mechanical cleaning
C. Chemical disinfection
D. Skin restriction
84. Who first recommended the use of surgical gloves and in what year?

A. American surgeon Halstead in 1891
B. English physician Lister in 1891
C. Bergman in 1888
D. Ruini 1558
85. What is the final stage of preparation of the operating field?
A. field limitation
B. mechanical cleaning
C. degreasing,
D. chemical disinfection
86. What should be done to prepare the contaminated field for emergency operations?
A. 0.5-1% solution of ammonia is cleaned and degreased with ether.
B. 0.5-1% solution of ammonia is cleaned and degreased with iodine.
C. Lubricated with alcohol, smeared with iodine.
D. 0.5-1% solution of novocaine is cleaned and defatted with iodine
87. What solutions are used to disinfect the conjunctiva?
A. 0.1% ethacridinelactate, 3% boric acid 2% protolgol
B. 0.1% potassium permanganate, 1% lactic acid, 1: 1000 lactate ethacridine, 2% lysol solution,
C. 1% solution of potassium permanganate, 2% solution of lysol
D. 0.5-1% solution of ammonia
88. How many hours is the animal kept on an incomplete diet if the operation is performed as planned?
A. 12-24 hours
B. 8-12 hours
C. 6-8 hours
D. 12-24 hours
89. For which mucous membranes is 1% lactic acid solution used?
A. Vaginal mucosa
B. Conjunctiva
C. Oral mucosa
D. Rectum
90. What is the name of the science of pain relief?
A. Anesthesiology
B. Analgesia
C. Anesthesia
D. Caprology
91. What substances are formed in the body when exposed to pain?
A. Histamine, acetylcholine
B. Histamine, adenine
C. Histamine, thymine
D. Histamine, guanine, urasil
92. What is the name of the process of pharmacological preparation of animals for anesthesia?

A. Premedication
B. Analgesia
C. Anesthesia
D. Flombation
93. What substances are used for premedication?
A. Aminazin
B. Vikasol
C. Etamzilat
D. carbolic acid solution
94. What methods did Abu Ali Ibn Sino use during the operation for pain relief?
A. Cold effect
B. giving drugs and afjun
C. giving alcohol
D. dacha ether
95. Who originally used nitric oxide as a pain reliever?
A.P. Wales
B. Lister
C. Morton
D. Niemann
96. In what answer are the types of anesthesia indicated?
A. Deep and superficial
B. Simple and complex
C. Permanent and temporary
D. Primary and secondary
97 What is an inhaled narcotic substance?
A. ether, chloroform
B. hexanal, thiopental sodium,
C. chloral hydrate, narcolan,
D. propanadide, predion
98. Is pure anesthesia ....?
A. introduction of one narcotic substance
B. the introduction of two different or several drugs at the same time.
C. first introduction of one drug and then another
D. administration of a local anesthetic after superficial anesthesia
99. Select a description for combined anesthesia?
A. first introduction of one drug and then another
B. introduction of one narcotic substance
C. administering two different or more drugs at the same time
D. administration of a local anesthetic after superficial anesthesia
100. How many stages does anesthesia take?
A. 4
B. 5
C. 6
D. 3

101. At what stage of anesthesia can the operation be performed?
A. surgical, tolerant stage
B. stage of analgesia
C. stage of arousal
D. stage of excitement or indifference
102. Select a substance that is used as the main narcotic substance in horses
A. Chloral hydrate
B. Chloroform
C. Oxyburates
D. Barbiturates
103. What drug was used in horses for pre-dosing before anesthesia?
A. 1% atropine sulfate
B. 0.1% atropine sulfate
C. Aminazin
D. Colipsol
104. What kind of anesthesia is used mainly for dogs and cats?
A. Inhalation anesthesia
B. Chloral hydrate
C. Ftorotan
D. Ether
105. What amount of adrenaline is injected into the heart of an animal in order to remove the animal from the state of collapse?
A. 0.25-1 ml for small animals, 10 ml for adults
B. 5-10 ml for small animals, 100 ml for adults
C. 1-3 ml for small animals, 10 ml for adults
D. 0.25-1 ml for small animals, 25 ml for adults
106. What substance is used 16 times more toxic than novocaine, mainly at a dose of 5-10% for surface anesthesia, for regional anesthesia at a dose of 2-4%?
A. Cocaine
B. Lidocaine
C. Sovkain
D. Supercain
107. How much percentage solution of novocaine is used for local anesthesia
A. 0.25% to 10% solution
B. 0.25% to 4-5% solution
C. 0.25% to 8% solution
D. 0.25% to 1% solution
108. Indicate a substance, the analgesic effect of which is 4 times stronger than novocaine, but 2 times more toxic.
A. Lidocaine
B. Cocaine
C. Sovkino
D. Supercain

109. What substance is added to novocaine for the long-term preservation of its effect?
A. Sunflower oil or fish oil
B. Adrenaline
C. Camphor
D. Antibiotic
110. How many types of local anesthesia do you know?
A. 4
B. 5
C. 6
D. 8
111. What is the name of the method of pain relief, which makes it possible to determine the dose of 2% novocaine injected into 1/3 of the region of the macula to the apex of the coccyx.
A. Sacral anesthesia
B. Lumbo-sacral anesthesia
C. Lumbar anesthesia
D. Conductive anesthesia
112. With a needle, 20-30 ml of a 3% solution of novocaine is injected into the interval between the last lumbar and the first pelvic vertebra. What is the name of this method of pain relief?
A. Lumbo-sacral anesthesia
B. Sacratic anesthesia
C. Lumbar anesthesia
D. Conductive (regional) anesthesia
113. 10 ml of 4% novocaine is injected with a needle to a depth of 6-9 cm between the 1st and 2nd lumbar vertebrae. What is this method of pain relief?
A. Lumbar anesthesia
B. Lumbo-sacral anesthesia
C. Sacratic anesthesia
D. Conductive (regional) anesthesia
114. What dose of novocaine is used for pathogenetic therapy?
A. 0.25-0.5% novocaine
B. 0.5-5% novocaine
C. 2-4% novocaine
D. 1-5% novocaine
115. The main element in performing surgical operations?
A. Tissue erosion, blood flow arrest and tissue adhesion.
B. Corrosion of tissues, carry out the operation
C. Tissue erosion, removal of pathological foci and suturing
D. tissue erosion, suturing
116. What to look for when cutting tissue in the direction of the cut?
A. Consideration should be given to the layer of the skin, the direction of the coat and the neurovascular fibers.

B. Skin layer and muscle fibers should be taken into account
C. The depth of the tissue must be taken into account
D. Consider the type of scalpel and the size of the scissors.
117. What types of bleeding according to clinical manifestations do you know?
A. External and internal
B. Arterial and venous
C. Parenchymal and arrizion
D. Capillary and venous
118. What amount of calcium chloride solution is prescribed to animals before surgery to increase blood clotting?
A. 30-40 ml for large animals, 2-4 ml for small animals
B. 300-400 ml for large animals, 20-40 ml for small
C. 100-200 ml for large animals, 2-4 ml for small animals
D. 30-40 ml for large animals, 10-20 ml for small animals
119. How much blood should be administered to animals before surgery to increase blood clotting?
A. large 500-1000 ml, small-300 ml
B. 300-400 ml large, 20-40 ml small
C. 100-200 ml large, 2-4 ml small
D. 30-40 ml large, 10-20 ml small
120. How many groups are the methods of stopping bleeding divided into?
A. 4
B. 5
C. 6
D. 3
121. After how many hours is it recommended to remove tampons with hemostatic agents?
A. 48
B. 24
C. 6
D. 2
122. Doses of blood for bleeding during surgery in horses and dogs?
A. 400-500 ml for horses, 40-500 ml for dogs
B. 100-200 ml for horses, 40-50 ml for dogs
C. 400-500 ml for horses, 10-20 ml for dogs
D. 150-200 ml for horses, 4-5 ml for dogs
123. Types of stitches in surgical practice?
A. Fasteners and special
B. Primary and secondary
C. Simple and complex
D. Temporary and permanent
124. How many days after the operation should the stitches be removed?
A. 7-10 days
B. 5-6 days

C. 25-30 days
D. 1-2 days
125. What is the correct answer to the names of intestinal sutures.
A. Methods of Lambert, Schmiden, Pirogov-Cherni, Plakhotin-Sadovsky
B. Vitsel, in adults - Tikhonin's method
C. seam for sewing fur and knotted
D. seam for sewing fur and mattress
126. What is the meaning of the word desmurgy?
A. Greek desmos-connection, ergon-execution
B. Greek desmos-leg, ergon-breeding methods
C. English desmos-bindingbreeding, ergon breeding methods
D. Italian desmos-binding, ergon-breeding methods
127. How much liquid per hour absorbs hygroscopic cotton?
A. 287.6%
B. 196.2%
C. 350%
D. 263.1%
128. What is the shape of the bandage if the gauze, measuring 25-100 cm2, is folded into a rectangle?
A. sling
B. Compress
C. Napkin
D. Tampon
129. A piece of gauze or material is cut in the form of a wide tape from 2 sides, not reaching the middle. What is the shape of the bandage?
A. Compress
B. Napkin
C. Prascha
D. Tampon
130. For what purpose is trepan used?
A. For the formation of holes in the skull
B. To cut the rib
C. To fix the large abdomen
D. For fixing cows
131. Choose a topical chemical to stop bleedinD.
A. Hydrogen peroxide, 1: 1000 adrenaline fluid
B. Efidrin, Ergetin 10% liquid
C. 10% calcium chloride, furacillin
D. vitamin C (Vikasol), dicinone
132. What stitches are used for stitching seams?
A. Witsel's method in small animals, and in large-Tikhonin
B. Tikhonin's method in small animals, and in large Tikhonin
C. Plakhotin's method in small animals, and in adults - Tikhonin
D. Witsel's method in small animals, and in large animals - Sapozhnikov

133. After how many days are sutures imposed on a skin wound removed?
A. 7-10 days
B. 5-6 days
C. 25-30 days
D. 1-2 days
134. When can seams be primary seams?
A. suturing within 6-12 hours
B. suturing within 18-24 hours
C. suturing within 48 hours
D. suturing within 24 hours
135. The continuous seam is divided into ...?
A. 4
B. 3
C. 5
D. 6
136. Which seam is discontinuous?
A. Knotted seam
B. Mattress seam
C. Fur seam
D. Circular seam
137. Types of continuous seams?
A. 3
B. 4
C. 5
D. 6
138. Which of the following is a continuous seam?
A. Mattress seam
B. Seam with roller
C. knotted suture
D. Ring shock
139. What seams are the seams of Lambert, Schmiden, Pirogov-Cherny, Plakhotina-Sadovsky?
A. Intestinal suture
B. Tendon suture
C. Vascular suture
D. Suture of the nerve
140. What is co-optation?
A. matching the edges of the wound to each other
B. cleaning and disinfection of the wound
C. wound measurement
D. cutting the wound
141. How many grams do bulls weigh the testes?
A. 300-350g
B. 250-300 g

C. 200-300 g
D. 350-400 g
142. What needle holders are used for stitching surgical wounds?
A. Mathieu, Gegara
B. Kocher, Pean
C. Deschan, Gegara
D. Mattier, Pean
143. What knots are used in veterinary practice?
A. Simple and surgical
B. Simple and complex
C. Primary and secondary
D. Permanent and temporary
144. What methods are used to sterilize silk and cotton threads?
A. N.C. Sadovsky, Denis.
B. Sadovsky-Kotilevsky, Pokotilo.
C. Amneva, Plakhotina
D. Gubareva, Amneva
145. In what solution is boiled using the Denis method to sterilize silk threads?
A. 1: 1000 solution of Mercuric chloride
B. 0.5% solution of novshadil
C. in an equal portion of a solution of 8% formalin and 5% tannin
D. formalin aqueous solution ~ 4%
146. In what solution is catgut immersed for 72 hours by the Pokotilo method?
A. 4% formalin solution
B. 0.5% solution of new alcohol
C. in an equal portion of a solution of 8% formalin and 5% tannin
D. 20% aqueous solution of pharmaline
147. What are the ways to prepare hands for surgery?
A. Alfred, Spasokukosky-Kochergin's method
B. Sadovsky-Kotilevsky, Pokotilo method
C. Amnev, Plakhotin's method
D. N.C. Sadovsky, Denis method
148. What solution do they wash their hands with when preparing hands for an operation according to the Kiyashov method?
A. 3% zinc sulfate solution
B. 0.5% solution of novshadil alcohol
C. in an equal portion of a solution of formalin 8% and 5% tannin
D. 20% formalin aqueous solution
149. Specify the method of preparation of the operating field using the Pirogov method
A. when processing the operating field, a 5% solution of iodine is ground twice from the central part to the periphery. The first rubbing is performed 10 minutes before the operation, and the second when the tissue is cut.

B. when treated with a solution of potassium permanganate 5% of the operating field, washed twice.
C. Usually, a 5% formalin solution is used if operations are performed in the groin, distal part of the limb, and others.
D. Initially rinse with water, tanning with iodine
150. Pigs' blood is taken from ..?
A. Tip of tail
B. Jugular vein
C. Ear artery
D. Ear veins
151. Indicate the amount of permissible bloodletting in large animals.
A. 2-6 l
B. 1-2 l
C. 500-1000 ml
D. 2-3 l
152. What is intubation?
A. insertion of a tube in the larynx region for inhalation anesthesia
B. Insertion of the tracheotubus during laryngeal surgery
C. Fixation of the large abdomen
D. Put rings on the nose
153. In which organs is surface anesthesia performed?
A. Mucous membranes
B. Nerve trunks
C. Skin and skin integuments
D. Cerebellum
154. Types of conduction anesthesia?
A. Central and peripheral
B. Previous and next
C. Short and long
D. Primary and secondary
155. What solution of novocaine is administered by the method of conduction anesthesia?
A. 2-6%
B. 0.25-0.5%
C. 1-5%
D. 2-4%
156. Choose the correct answer, which indicates the standard size of the bandage.
A. length 7 meters, width 10 cm
B. length 10 meters, width 7 cm
C. length 25 meters, width 10 cm
D. length 7 meters, width 15 cm
157. What are the two large groups of bandages?
A. Soft and hard
B. Primary and secondary

C. Compresses and drains
D. Simple and complex
158. What is the name of the method of applying a bandage to cone-shaped parts of the body, in which wrapping is carried out 1800 times and the bandage is folded strictly along the line?
A. winding
B. Eight-shaped
C. Circular
D. turtle
159. This method is mainly applied to the joints of the legs. The wrapping is generally wrapped two to three times over the distal portion, and then gradually wrapped in succession in the upper portions of the joint. What is the name of the features of this bandage?
A. Eight-shaped
B. winding
C. Circular
D. turtle bandage
160. On what part of the body is a tortoiseshell bandage applied?
A. Mainly used to connect the elbow and hock joints.
B. to fix the bandage on the body
C. Used for wrapping tapered body parts.
D. Wide winding of a part of the body
161. From the following dressing materials, select the one that is highly absorbent.
A. Lignin
B. Cotton
C. gauze
D. cellophane
162. What is the purpose of bandaging in first aid?
A. Protection of the wound from secondary trauma and infectious pathogens.
B. Calming the animal
C. Painkillers
D. for the purpose of local temperature rise
163. What is an occlusive dressing?
A. is applied to open wounds of the chest or abdominal cavity to prevent the entry of air, infection and dust.
B. to absorb wound exudate, infections and dead tissue that are continuously secreted from the wound
C. is used for the rapid absorption of liquids.
D. is used to create simultaneous squeezing on a certain part of the animal's body
164. What are the types of immobilization dressings?
A. Tire and plaster
B. Tortoiseshell
C. Simple and complex
D. Special and permanent

165. Gypsum substance is obtained by ..?
A. heating albaster at 130-1400ts
B. heating albaster 100-1200ts
C. boiling lime
D. is used in kind
166. How long does it take to remove the plaster cast?
A. In large, after 5-6 weeks, in small-3-4 weeks
B. after 5-6 months in large animals, 3-4 months in small
C. 3-4 months in large animals, 1-2 months in small
D. 10 weeks in large animals, 5 weeks in small animals
167. Types of plaster casts?
A. Closed, window, pavement, stepped
B. Tortoiseshell, circular
C. Simple and complex, pavement and window
D. Special ...., Circular
168. How many layer plaster casts are used in surgical practice for animals?
A. 4-5 layers for small animals and 10-15 layers for large animals
B. 10-15 layers for small animals and 25-30 layers for large animals
C. 8-10 layers for small animals and 10-15 layers for large animals
D. 40-50 layers for small animals and 100-150 layers for large animals
169. What types of adhesive bandages do you know?
A. Kleevoy, two-layer, three-layer and corded.
B. Tortoiseshell, circular
C. Simple and complex, pavement and window
D. Special ..., circular
170. What is the purpose of using a dry suction dressing?
A. to absorb the exudate of the wound, microflora and dead tissue that are continuously released from the wound
B. is applied to open wounds of the chest or abdominal cavity to prevent air penetration, infections and dust.
C. to stop the bleeding
D. to increase the local temperature in the tissue
171. What changes occur in an animal's body when pain is felt?
A. decrease in productivity
B. Metabolic disorders
C. The secretion of the gastrointestinal glands is cleared
D. shock
172. "Narcosis" is ...?
A. State of deep and reversible decrease in central nervous system function
B. Deep decline in central nervous system function
C. Loss of all reflexes
D. Loss of sensitivity to pain of the whole organism
173. What do you mean by premedication?
A. Pharmacological preparation of the animal for anesthesia

B. General preparation for the use of anesthesia in animals
C. Use of various drugs
D. Administration of anesthesia in different ways
174. Local anesthesia is ..?
A. Temporary loss of sensitivity
B. Loss of reflexes
C. Loss of motion function
D. Arousalnerve receptors
177. Infiltration pain relief is ..?
A. Introduction of a solution of novocaine into the skin and deeper layers
B. Introduction of a solution of novocaine into the chest cavity
C. The introduction of a solution of novocaine into the intermuscular fascial cavity
D. Introduction of a solution of novocaine into the cavity of the bone marrow canal
178. For what purposes is the fabric severed?
A. for prompt entry
B. For the operation
C. To remove accumulated fluid
D. To remove foreign matter
179. What pharmacological substances are used to stop blood flow?
A. Hydrogen peroxide, adrenaline, Vikasol, antipyrine
B. Hydrogen peroxide, iodine, analgin
C. Vikasol, ascorbic acid
D. Adrenaline, Vikasol, novocaine
180. What is the main purpose of tissue joining?
A. Shortening of wound regeneration time
B. Stopping bleeding
C. Prevention of entry of microbes
D. Prevention of nervous system excitation
181. Continuous seam technique
A. The needle is inserted at a distance of 0.5-1.5 from the lips of the wound, the distance between the nodes is 0.75-1.5
B. The needle is inserted at a distance of 0.2-0.5 from the lips of the wound, the distance between the nodes of the wound from the lips is 0.5-0.75
C. The needle is inserted at a distance of 0.5-0.75 from the lips of the wound, the distance between the nodes is 0.75-1.
D. The needle is inserted at a distance of 0.75-1 from the lips of the wound, the distance between the nodes is 1-1, 5
182. What determines the length of the cut?
A. from the depth of the location of the pathological process
B. Size of the pathological process
C. Position of the animal
D. The age of the animal
183. What are the requirements for dressings?
A. Softness, elasticity and hygroscopicity

B. Softness and density
C. Elasticity and hygroscopicity
D. Density and elasticity
184. For what purpose are seams fixed?
A. Protection against secondary injury and infection
B. Protection against infection and blood arrest
C. immobilization of bones
D. for fastening splints and bandages
185. The procedure for applying a bandage
A. From the bottom up towards the lymph node and blood vessels
B. From top to bottom along the muscle fibers
C. From bottom to top along the folds of the skin
D. From top to bottom along the cavities of connective tissue
186. What kind of dressing leads to an increase in local temperature?
A. Hot compress
B. Squeezer
C. Suction
D. Bintovy
187. What dressing is applied to enhance the absorption process?
A. Wet suction
B. Impenetrable
C. Dry suction
D. Squeezing
188. What type of anesthesia is called paravertebral?
A. anesthesia of the nerve at the exit from the intervertebral foramen.
B. anesthesia of the epidural nerve
C. anesthesia of the nerve serving the area between the last thoracic and first lumbar vertebra
D. anesthesia of the nerve serving the area between the lumbar and pelvic vertebra
189. What kind of anesthesia is called paralumbar?
A. anesthesia in the area of the transverse processes of the lumbar spine
B. anesthesia at the site of the exit of the nerve from the lumbar spine
C. anesthesia in the lateral upper abdominal wall
D. anesthesia in the epidural cavity of the lumbar vertebrae
190. Who was the first to use novocaine?
A. Eingorn
B. Niemann
C. Pirogovo
D. Vishnevsky
191. What determines the origin of superficial or deep anesthesia?
A. Amount of preparation
B. The state of the animal's body
C. Massy
D. Administration of the drug

192. How is alcohol given to cattle?
A. Oral cavity, intravascular
B. through the oral cavity
C. through the rectum
D. Intravascular
193. What does the word "anesthesia" mean?
A. Complete loss of sensitivity
B. Loss of sensitivity to pain
C. Loss of sensitivity to temperature
D. Loss of tactile (motor) sensitivity
194. What substance was discovered by Niemann in 1860?
A. Cocaine
B. Novocain
C. Ether
D. Chloral hydrate
199. Who first proposed anesthesia by the freezing method?
A. Ibn-Sina
B. Hippocrates
C. Pirogovo
D. Plakhotino
200. What solution of novocaine is used for infiltration anesthesia?
A. 0.25-1%
B. 0.25-0.5%
C. 1-2%
D. 2-5%

4.8 Test Questions for 2 PCs (200)

1. What type of local anesthesia can be used for pathogenetic therapy?
A. Provodnikovy
B. Infiltration
C. Superficial
D. Epidural
2. What does the word "amputation" mean?
A. Removal of the peripheral part of the organ
B. Complete removal of the organ
C. Partial organ removal
D. Removal of soft tissue

3. What kind of bleeding is dangerous
A. Internal
B. External
C. Parenchymatosis

D. Arrison
4. How is blood circulation restored after vascular connection?
A. Through collateral blood vessels
B. Not restored
C. It is necessary to sew vessels with prostheses
D. It is necessary to connect the ends of the vessels
5. What do you mean by "injection"?
A. Introduction into the body of a small amount of drugs
B. Introduction of solutions into the body
C. Introducing a large amount of drugs into the body
D. Introducing the solution into the cavity
6. Which dressings are considered economical?
A. Kleevy
B. Bintovoy.
C. Kosynochny
D. plank
7. What types of dressings are widely used in surgical practice?
A. Cotton, gauze, lignin, cellophane
B. Silk, tarpaulin, synthetic material
C. Liang, canopic,
D. Cotton, cellophane, synthetic material
8. Specify the property that the dressing should have
A. Hygroscopicity, capillarity, elasticity,
B. Wax, softness, elasticity,
C. Hygroscopicity, elasticity, density
D. Capillarity, hardness, consistency
9. Specify the order of sterilization of dressings in an autoclave
A. 40 minutes at a pressure of 1, 1.5 atm. 30 minutes, 2 atm. 20 minutes
B. at atmospheric pressure 1.60 minutes; 1.5 atm. 40 minutes, 2 atm. 30 minutes
C. at atmospheric pressure 1.20 min, 1.5 atm. 15 min, 2 atm. 10 min
D. at atmospheric pressure1, 40 min, atm.d. - 2, 30, atm. Pressure-3, 20 min
10. What should be the temperature of the iron during sterilization by ironing
A. 150C
B. 175C
C. 100C
D. 190S
11. For what purposes is suture material used?
A. All answers are correct
B. To stop bleeding
C. To combine the fabric
D. In order to protect the wound from external influences
12. What are the steps for sterilizing suture materials?
A. Degreasing and disinfection
B. Disinfection and tanning

C. Disinfection and restriction
D. Sterilization and firing
13. What solution is used to sterilize silk threads according to the Sadovsky method?
A. 0.5% alcohol solution
B. 5% iodine solution
C. 2% formalin solution
D. 15li creoline solution
14. Who suggested storing catgut threads for 3 hours in a solution of 8% formalin and 5% tannin, taken in half?
A. Ginkovsky
B. Sadovsky
C. Tour
D. Alfred
15. What method is used to sterilize catguts?
A. Pokotilo Method
B. Sadovsky method
C. Tour Method
D. Ginkovsky method
16. What drugs are prohibited for subcutaneous administration?
A. Suspension solutions, hypertonic and excitatory
B. Exciting solutions
C. Aqueous and fatty solutions
D. All types of solutions can be administered
17. Doses of bled blood in animals?
A. 1-2 liters in large animals, 200-300 ml in small animals, 50-60 ml in dogs, 20-600 ml in pigs, 10-40 ml in chickens.
B. 2-3 liters in large animals, 600-800 ml in small horned animals, 50-200 ml in dogs, 20-600 ml in pigs, 10-40 ml in chickens.
C. 2-6 liters in large animals, 200-600 ml in small horned animals, 50-200 ml in dogs, 20-600 ml in pigs, 10-40 ml in chickens.
D. 2-6 liters in large animals, 200-600 ml in small horned animals, 50-200 ml in dogs, 200-600 ml in pigs, 100-400 ml in chickens.
18. What animals are generally given intraosseous injections?
A. pigs
B. cattle
C. horses
D. dogs
19. What part of the heart is the medicine injected into?
A. Left ventricle
B. Right ventricle
C. Left atrium
D. Right atrium
20. What solution is prescribed for premedication before anesthesia in horses?

A. 1% solution of atropine sulfate
B. 0.1% solution of atropine sulfate
C. 2.5% chlorpromazine
D. 2% ketamine
21. What is the maximum dosage of chloral hydrate for horses?
A. 75 g
B. 100 gr
C. 100-150 g
D. 50-75 gr
22. What is the dose of xylanit for cattle?
A. 0.25 - 1.5 ml per 100 kg of live weight
B. 100 kg of live weight 1-1.5 ml
C. 0.25-0.5 ml per 100 kg of live weight
D. 100 kg of live weight 2.5-3.5 ml
23. What solution is prescribed to pigs before anesthesia for the purpose of premedication?
A. 2.5% chlorpromazine
B. 1% solution of atropine sulfate
C. 0.1% solution of atropine sulfate
D. 2% ketamine
24. By what method is 15% chloral hydrate in 40-45% glucose solution per 1 kg of live weight administered to pigs in a dose of 1 ml?
A. method S.D. Isaeva
B. Yakova
C. KryuchkoC.
D. Pirogova
25. What drugs are prescribed for inhalation anesthesia in dogs?
A. ether, chloroform and isoflurane
B. Hexanal, propofol
C. Methodon, rometar, rompun
D. Sedavet, butorfonol
26. Find the answer that gives the correct dose of ketamine for dogs.
A. 0.1-0.2 ml / kg
B. 0.5-0.75 ml / kg
C. 1-2 ml / kg
D. 3-5 ml / kg
27. Which answer correctly indicates the thickness of the frontal bone in sheep?
A. in rams 14-22 mm, in sheep 7-8 mm;
B. in rams 18-25 mm, in sheep 7-8 mm;
C. in rams 14-22 mm, in sheep 12-14 mm;
D. in rams 12-15mm, in sheep 5-6 mm;
28. What kind of helminth is considered a disease caused during the period of larval development?
A. Multiseps

B. Ascaris
C. Toksakara
D. Tenerinhous
29. With respect to which animal does the coenurosis infection come from?
A. Dogs.
B. Cats
C. Rats
D. Birds
30. Who proposed a diagnostic method for an allergic reaction of coenurosis?
A. T. I. Roznina
B. Gersen
C. Pirogovo
D. Tikhonino
31. From what liquid was the emulsion prepared and used as an allergic reaction?
A. From the liquid in the bubble
B. Blood serum of a sick animal
C. Scolexes in the bubble
D. In a sick animal from the lymph nodes
32. What symptoms go away if the bladder is located on the right back of the brain?
A. The animal often whirls and then falls to the ground on the right side, but the ability to see is not impaired.
B. The animal rotates frequently and then falls to the ground on the left side, but the ability to see is not impaired.
C. The vision of the animal is sharply reduced or the left eye becomes blind altogether.
D. The animal's vision is sharply reduced or the right eye becomes blind altogether.
33. What symptoms go away if the bladder is located on the left anterior end of the brain?
A. The vision of the animal is sharply reduced or the right eye becomes blind altogether.
B. The animal rotates frequently and then falls to the ground on the right side, but the ability to see is not impaired.
C. The animal rotates frequently and then falls to the ground on the left side, but the ability to see is not impaired.
D. The sight of the animal is sharply reduced or the left eye becomes blind altogether.
34. How many tracheal rings do cattle and horses have?
A. in cattle 45-55, in horses 48-60
B. in cattle 55-58, in horses 48-60
C. in cattle 45-55, in horses 48-60
D. in cattle 45-55, in horses 48-52
35. How is the blood supply to the ventral part of the neck ensured?

A. Common carotid artery, cranial thyroid artery
B. Jugular vein and common carotid, cranial artery of the thyroid gland
C. Common carotid artery, external and internal carotid artery, maxillary artery
D. Cranial thyroid artery
36. Indicate the point of the needle in the blockade of the stellate ganglion in cattle according to the Shakalov method
A. anterior edge of the tubercle of the first rib
B. 7 below the transverse costal process of the cervical spine and 3.5-4 cm below the cranial needle
C. To the posterior edge of the tubercle of the first rib
D. 7-transverse costal process of the cervical spine and the first costal range
37. Which nerves connects the stellate ganglion?
A. Tail and first thoracic nerve of the neck
B. Middle and first thoracic nerve of the neck
C. Borderline sympathetic nerve and first pectoral nerve
D. Rotating nerve and glossopharyngeal and sympathetic nerve
38. What blockade of the nerve node is used for chest injuries, diseases, mainly in diseases of the heart and lungs in ungulates.
A. Sympathetic ganglion of the neck
B. Star ganglion
C. Vagosympathetic ganglion
D. Border sympathetic ganglion
39. What substance and in what quantity is it sent during the blockade of the stellate nerve ganglion?
A. 0.5% solution of novocaine per 1 kg of live weight in an amount of 0.5 ml
B. 0.25 ml per 1 kg of live weight from 0.5% novocaine solution
C. 0.5% solution of novocaine in 1 ml per 1 kg of live weight
D. 0.5% solution of novocaine per 1 kg of live weight in an amount of 2 ml
40. Where does the jugular vein flow?
A. cranial sac vein
B. caudal sac vein
C. left atrium
D. ravom atrium
41. What needle is used for ligation and bandage for cervical vein resection?
A. Deschamps Needle
B. Igla Bobrova
C. Ligature needles
D. Injection needles
42. In what cases is the operation for the resection of the cervical veins performed?
A. In case of damage to blood vessels
B. Venous induction
C. Vascular hyperemia
D. When placing a catheter on a blood vessel
43. In which nerve node is blockade used to treat eye diseases in animals?

A. Cranial sympathetic ganglion
B. Star ganglion
C. Vagosympathetic ganglion
D. Border sympathetic ganglion
44. Which answer correctly indicates the name of the tracheal resection operation?
A. Tracheotomy
B. Tracheotubus
C. Tracheectomy
D. Tracheal resection
45. What is the size of the diameter of the jugular vein in cattle?
A. 3 cm
B. 5 cm
C. 1 cm
D. 2 cm
46. What is an esophageal diverticulum?
A. Dilation of the esophagus
B. Blockage of the esophagus
C. Inflammation of the esophagus
D. Rupture of the esophagus
47. Who are the authors of the technique of blockade of the cranial nerve ganglion in cattle?
A.N. Golikovo, S.T. Shitovo
B. N. C. Sadovsky, A. I. Tikhonino
C. A. N. Golikovo, N. C. Sadovsky
D. S. T. Shitovo, C. P. Voronino
48. From which side is the incision performed during esophagotomy?
A. Left of the neck
B. To the right of the neck
C. Dorsal part of the neck
D. Lateral part of the neck
49. Dose of novocaine for blockade of the cranial sympathetic ganglion in cattle?
A. 0.5%, 60-80 ml
B. 0.25%, 50-60 ml
C. 3%, 10 ml
D. 3%, 15-20 ml
50. With purulent thrombophlebitis, what is the operation being carried out?
A. Resection of the cervical vein
B. Tracheostomy
C. Esophagotomy
D. Laryngeal injection
51. The line drawn from the caudal angle of the chest to the ulnar tubercle is the border of the chest cavity.
A. Front
B. Rear

C. High
D. Low
52. What cerous membrane is stuck to the inner wall of the chest?
A. Pleura
B. Parietal layer
C. Deep fascia
D. Peritonium
53. How much of novocaine is used for intercostal nerve blockade?
A. 2%
B. 0.5%
C. 0.25%
D. 4%
54. What is the purpose of the border sympathetic node and suprapleural novocaine blockade according to the Mosin method?
A. Treatment of inflammation in organs located in the abdominal and pelvic cavity
B. Treatment of eye diseases
C. Incision of the chest area
D. Incision of the abdominal region
55 Specify the point of the needle of the border sympathetic ganglion and internal nerves of the suprapleural blockade of novocaine in horses and cattle according to the Mosin method?
A. Front side of the last rib
B. Back side of the last rib
C. Between the vertebrae
D. Between 4-5 ribs
56. What is pleurocentesis?
A. Pleural puncture
B. Inflammation of the pleura
C. Accumulation of pleural exudate
D. Pleural cavity
57. What is pneumothorax?
A. Puncture of the chest wall
B. Collection of fluid into the chest cavity
C. Puncture of the chest cavity
D. Rib cut
58. What actions are carried out with pneumothorax?
A. The opening in the chest wall closes and absorbs air from the inside
B. Puncture of the pleura fluid is drawn out
C. Give the animal artificial respiration
D. Rib resection and air aspiration
59. According to Mosin's method, what is the dose of novocaine for suprapleural blockade of the sympathetic node and internal nerves?
A. 0.5 ml of 0.5% novocaine per 1 kg of live weight
B. 0.5 ml of 0.25% novocaine per 1 kg of live weight

C. 1 ml of 0.5% novocaine per 1 kg of live weight
D. 1 ml of 0.25% novocaine per 1 kg of live weight
60. Which chest muscles are not located on the wall?
A. Skin and subcutaneous muscles of the neck
B. Serratus dorsal muscle
C. External oblique muscle of the abdomen
D. Serratus ventral muscle
61. In which area is the trocar pierced when performing left side thoracentesis in horses?
A. Between 7-8 ribs
B. Between 5-6 ribs
C. Between 7-8 ribs
D. Between 8-9 ribs
62. How many ribs do horses have?
A. 17-19
B. 12-13
C. 13
D. 13-14
63. How many ribs do cattle have?
A. 13
B. 17-19
C. 12-13
D. 13-14
64. Needle point and direction, with suprapleural blockade of the sympathetic trunk and abdominal nerves in large animals?
A. The needle is injected at an angle of 35 of the last rib
B. 30 corners behind the first rib
C. 45 corners behind the last rib
D. 25 angles around the last spinal cord
65. What to do if pneumothorax develops during rib resection?
A. It is necessary to close the hole in the chest wall and extract air with a syringe
B. The operation must be terminated
C. It is necessary to close the opening in the chest wall
D. It is necessary to prevent the development of pleural pulmonary shock.
66. What is the name of the opening of the cerebral cavity?
A. Trepanation
B. Decorating
C. Amputation
D. Cauterization
67. How can the dura mater of the brain be cut?
A. Simple injection needle
B. Ophthalmic scalpel
C. Simple scissors
D. Bobrovskaya needle

68. In what diseases can the disease of coenurosis be differentiated?
A. Epilepsy
B. Rabies
C. Sinusitis
D. Frontit
69. Indicate the anterior border of the ventral part of the neck?
A. Angle of the mandibular bone
B. Long neck muscle
C. Shoulder-head muscle
D. Tumor of the cervix
70. How many fascia is there in the ventral part of the neck?
A. 5
B. 4
C. 3
D. 6
71. Indicate the anterior border of the abdominal cavity.
A. the place of attachment of the chest part of the body to the dome of the diaphragm
B. entrance to the pelvic cavity
C. spine and surrounding muscles
D. Ribs
72. Choose the correct answer, which indicates the parts of the abdomen.
A. Part of the epigaster, mesogaster and hypogaster
B. Surface, middle and bottom
C. Cranial, medial, caudal
D. Craniogaster, mediagaster, caudagaster
73. What is formed from the aponeurosis of the abdominal muscles, yellow and transverse fascia?
A. White line of the abdomen
B. Navel
C. Abdominal wall
D. Inguinal canal
74. Which area is innervated by the thoracic nerves by their ventral branches and also by the dorsal and ventral branches of the lumbar?
A. Abdominal wall
B. Stomach
C. Chest wall
D. Internal organs of the abdominal region
75. Which fascia is available only in the abdomen?
A. Fascia yellow
B. Serratus fascia
C. Superficial fascia
D. Deep fascia
76. How many muscles make up the soft abdominal wall?

A. 4
B. 6
C. 5
D. 8
77. Indicate the name of the abdominal cavity.
A. Peritonium
B. Umblicalis
C. Linia alba
D. Pleura
78. In case of acute aseptic and purulent inflammation, postoperative complications of castration, non-healing wounds, what blockade of novocaine is carried out in the ducts?
A. perirenal blockade of novocaine
B. paravertebral blockade of novocaine
C. Paralumbar blockade of novocaine
D. epidural blockade of novocaine
79. Where is the puncture point of the needle, in perirenal novocaine blockade in horses?
A. posterior edge of the last rib and the outer edge of the longest back muscle
B. first and second lateral costal process
C. transverse costal process of the first lumbar vertebra
D. the posterior edge of the last rib and the inner edge of the longest back muscle
80. In cattle, perirenal novocaine blockade according to what method is carried out and how much novocaine is administered?
A. According to the method of M.M. Senkin, 200-400 ml
B. According to the method of M.M. Senkin, 20-40 ml
C. According to the method of C.C. Mosin, 200-400 ml
D. According to the method of N.C. Sadovsky, 200-400 ml
81. What part of the abdomen, limited by the posterior edges, the last pair of ribs and the anterosuperior corners of the macloc?
A. region epigasterica
B. region mesogasterica
C. region hupogasterica
D. region umblica
82. In what part of the abdomen are the right and left hypochondria?
A. regio hypochondriaca
B. region epigasterica
C. region mesogasterica
D. region umblica
83. Select the answer, which correctly shows the order of the location of the digestive organs in ruminants.
A. Rumen, reticulum, omasum, abomasum
B. Rumen, omasum, reticulum, abomasum
C. Rumen, omasum, abomasum, reticulum

D. Rumen, abomasum, reticulum, omasum
84. Capacity, belly book in cattle?
A. 7-18
B. 2-5
C. 20-30
D. 7-12
85. What is rumenocentesis?
A. Puncture of the scar through the soft abdominal wall
B. Abdominal wall
C. Inflammation of the abdominal wall
D. Internal abdominal wall
86. Where is the rumenotomy incision performed?
A. On the left side of the ventral surface of the abdomen
B. On the right side of the ventral surface of the abdomen
C. Left ventricle on the ventral surface of the abdomen
D. Right ventricle on the ventral surface of the abdomen
87. What is laparotomy?
A. Introduction to the abdominal cavity
B. Skin cut
C. Incision of the abdomen
D. Puncture of the abdomen
88. What sutures are applied when opening the scar?
A. Two-layer, continuous by the Schmiden and Lambert method
B. Single layer, continuous by the Schmiden and Lambert method
C. Two-layer, discontinuous according to the Schmiden and Lambert method
D. Double layer fur seam
89. How many types of laparotomy are there?
A. 3
B. 2
C. 4
D. 5
90. What is gastrotomy?
A. Stomach incision
B. Stomach puncture
C. Gastric lavage
D. Stomach check
91. In what part of the abdominal cavity is the stomach in dogs?
A. In the front of the abdominal cavity, more in the left hypochondrium and adjacent to the diaphragm
B. In front, in the left hypochondrium
C. In the middle, on the right under the spine 4-5 waist
D. In the middle part, on the left under the spine 4-5 waist
92. What site is chosen for incision during gastrotomy?
A. Area without large vessels

B. Fundamental part
C. From the Pilorus part
D. From the depths of the stomach
93. How are sutures fixed in case of stomach ulcers?
A. Two-layer, continuous by the Schmiden and Lambert method
B. Single layer, continuous by the Schmiden and Lambert method
C. Two-layer, discontinuous according to the Schmiden and Lambert method
D. Double layer fur seam
94. What is the stomach volume in dogs?
A. 2-2.5 l
B. 5-7 l
C. 3-5 l
D. 7-9 l
95. Where is the median laparotomy performed?
A. Along the white line
B. On the left side of the abdominal surface of the abdomen
C. Right ventricle on the ventral surface of the abdomen
D. Right side in the hungry hole
96. How does the gastrotomy instruction work?
A. Introduction of foreign bodies into the stomach
B. Gastritis
C. Accumulation of gas in the stomach
D. Blocked food in the stomach
97. Where is the incision performed during the operation to open the abomasum in sheep?
A. Along the white line
B. On the left side of the abdominal surface of the abdomen
C. Right ventricle on the ventral surface of the abdomen
D. Right lateral surface of the abdomen
98. The method of anesthesia during the operation "rumenotomy"?
A. Paralyumbal
B. Paracostal
C. Paranefral
D. Paramedial
99. The small intestine is made up of ..?
A. Blind, Colored and Straight
B. Duodenal, lateral and iliac
C. Duodenal, skinny and blind
D. Duodenal, skinny and straight
100. The large intestine is made up of ..?
A. Blind, Colored and Straight
B. Duodenal, lateral and iliac
C. Duodenal, skinny and blind
D. Duodenal, skinny and straight

101. The length of the duodenum in animals?
A. 90 - 120 cm in cattle, 25 - 40 cm in sheep, 40 - 80 cm in pigs, up to 1 meter in a horse.
B. 50 - 60 cm in cattle, 20 - 30 cm in sheep, 40 - 80 cm in pigs, up to 1 meter in a horse
C. 90 - 120 cm in cattle, 25 - 40 cm in sheep, 80-100 cm in pigs, up to 1 meter in horses
D. 120-150 cm in cattle, 25-40 cm in sheep, 40-80 cm in pigs, up to 1 meter in a horse
102. What is enterotomy?
A. Opening of the intestine
B. Bowel puncture
C. Inflammation of the intestines
D. Checking the bowel
103. What kind of laparotomy is performed for enterotomy in small animals?
A. Posadumbilical medial laparotomy
B. Pre-umbilical medial laparotomy
C. Paramedial transrectal laparotomy
D. Paramedian laparotomy
104. How does enerotomy instruction work?
A. Due to blockage of foreign bodies in the intestine
B. Enteritis
C. Gas formation in the intestine
D. In case of impaired digestion of food
105. In what animals is the colon of the intestine actively involved in digestion?
A. In horses
B. In dogs
C. In birds
D. In rodents
106. What is intestinal intussusception?
A. The introduction of one part of the intestine into the lumen of the other.
B. Bowel perforation
C. Intestinal overflow
D. Intestinal rupture
107. If the outer part of the rectum undergoes necrosis, then by what methods is the bowel resection performed?
A. Olivkovy or Müller-Phryne
B. Tikhonin and Gersen
C. Sadovsky and Magda
D. Olivkovy and Gersen
108. The length of the rectum in large animals?
A. 20-30 cm.
B. 40-50 cm
C. 50-60 cm

D. 15-20 cm
109. How many elements (components) of the hernia?
A. 3
B. 4
C. 5
D. 6
110. By origin, hernias are divided into ...?
A. Congenital and acquired
B. Primary and secondary
C. Congenital and infectious
D. Simple and complex
111. What hernias are considered dangerous?
A. Strangulated hernia
B. Slipshiye
C. Congenital
D. Diaphragmatic
112. For the diagnosis of a hernia ..
A. Through palpation
B. Through punctures
C. By auscultation
D. Through light motivation
113. The main clinical sign of a hernia is ...?
A. When pressing the finger, a fossa is formed
B. Softness of the tumor
C. Lack of local temperature
D. All answers are correct.
114. The prolapse of organs through artificial, natural or pathological openings, which leads to their displacement outside the anatomical cavity together with the membrane lining them?
A. Hernia
B. Prolapsus
C. Aponeurosis
D. Mechanical injury
115. What diseases should be distinguished from hernias?
A. Abscesses
B. Hematomas
C. Tumors
D. All answers are correct.
116. What is the main goal of hernia surgery?
A. Close the hernia opening
B. Directing the organ into place
C. Removal of the hernia sac
D. Reduction of the hernia sac
117. How to close the opening if the hernia opening is larger?

A. Closed with alloplastic material
B. Suturing with catgut
C. Suturing with the Lambert method
D. Close by the Gutmann method
118. For the diagnosis of a hernia ..
A. Through palpation
B. Through punctures
C. By auscultation
D. Through light attachment
119. Local anesthesia is ...?
A. temporary removal of sensitivity in the area of the operated area
B. complete elimination of body sensitivity
C. deep reversible depression of the functions of c.s.s.
D. a and c the options are correct
120. Types of local anesthesia?
A. 3
B. 4
C. 2
D. 5
121. What solution and in what quantity is used for surface anesthesia in the conjunctival area?
A. 3% cocaine
B. 1% th sovkain
C. 0.25-0.5% novocaine
D. 5% cocaine
122. The natural method of anesthesia is divided into ...
A. 2
B. 4
C. 5
D. 3
124. Amount of novocaine with infiltration anesthesia for the management of fractures?
A. 10 ml for small animals, 20-50 ml for large animals
B. ml for small animals, 10-40 ml for large animals
C. 10 ml for small animals, 30-50 ml for large animals
D. 15 ml for small animals, 20-50 ml for large animals
125. Sacral anesthesia can be performed ....?
A. cattle and horses
B. small and large.
C. pigs and horses
D. only small animals
126. Depending on the place of injection of the solution, what methods distinguish epidual anesthesia?
A. 3

B. 2
C. 6
D. 4
127. What is the word "paranephral"?
A. greek., Close
B. lat., Distant
C. greek., Work hard
D. lat., Close
128. What amount of novocaine solution is recommended for large and small animals?
A. 400-800, 50 ml
B. 300-500, 50 ml
C. 400-800, 30 ml
D. 200-600, 80 ml
129. Anelgesia and anesthesia is it?
A. complete loss of general condition
B. loss of pain, decreased sensitivity of the body
C. temporary elimination of sensitivity in the area of the operated area
D. all options are correct
130. Indicate the anterior border of the abdominal cavity.
A. the place of attachment of the chest part of the body to the dome of the diaphragm
B. entrance to the pelvic cavity
C. spine and surrounding muscles
D. Ribs
131. Choose the correct answer, which indicates the parts of the abdomen.
A. Part of the epigaster, mesogaster and hypogaster
B. Surface, middle and bottom
C. Cranial, medial, caudal
D. Craniogaster, mediagaster, caudagaster
132. What is formed from muscle aponeurosis yellow and transverse fascia?
A. White line of the abdomen
B. Navel
C. Abdominal wall
D. Inguinal canal
133. What area are innervated by the thoracic nerves by their ventral branches and also by the dorsal and ventral branches of the lumbar?
A. Abdominal wall
B. Stomach
C. Chest wall
D. Internal organs of the abdominal region
134. Which fascia is available only in the abdomen?
A. Fascia yellow
B. Serratus fascia

C. Superficial fascia
D. Deep fascia
135. How many muscles are there in the soft abdominal wall?
A. 4
B. 6
C. 5
D. 8
136. Indicate the name of the abdominal cavity.
A. Peritonium
B. Umblicalis
C. Linia alba
D. Pleura
137. In case of acute aseptic and purulent inflammation, postoperative complications of castration, non-healing wounds, what blockade of novocaine is carried out in the ducts?
A. perirenal blockade of novocaine
B. paravertebral blockade of novocaine
C. Paralumbar blockade of novocaine
D. epidural blockade of novocaine
138. Where is the puncture point of the needle, in perirenal novocaine blockade in horses?
A. posterior edge of the last rib and the outer edge of the longest back muscle
B. first and second lateral costal process
C. the transverse costal process of the first lumbar vertebra
D. the posterior edge of the last rib and the inner edge of the longest back muscle
139. In cattle, perirenal novocaine blockade according to what method is carried out and how much novocaine is administered?
A. According to the method of M.M. Senkin, 200-400 ml
B. According to the method of M.M. Senkin, 20-40 ml
C. According to the method of C.C. Mosin, 200-400 ml
D. According to the method of N.C. Sadovsky, 200-400 ml
140. What part of the abdomen, limited by the posterior edges, the last pair of ribs and the anterosuperior corners of the macloc?
A. region epigasterica
B. region mesogasterica
C. region hupogasterica
D. region umblica
141. In what part of the abdomen are the right and left hypochondria?
A. regio hypochondriaca
B. region epigasterica
C. region mesogasterica
D. region umblica
142. Choose the answer, which correctly shows the order of the location of the digestive organs in ruminants.

A. Rumen, reticulum, omasum, abomasum
B. Rumen, omasum, reticulum, abomasum
C. Rumen, omasum, abomasum, reticulum
D. Rumen, abomasum, reticulum, omasum
143. Capacity, belly book in cattle?
A. 7-18
B. 2-5
C. 20-30
D. 7-12
144. What is ruminosynthesis?
A. Puncture of the scar through the soft abdominal wall
B. Abdominal wall
C. Inflammation of the abdominal wall
D. Internal abdominal wall
145. Where is the rumenotomy incision performed?
A. On the left side of the ventral surface of the abdomen
B. On the right side of the ventral surface of the abdomen
C. Left ventricle on the ventral surface of the abdomen
D. Right ventricle on the ventral surface of the abdomen
146. What is laparotomy?
A. Introduction to the abdominal cavity
B. Skin cut
C. Incision of the abdomen
D. Puncture of the abdomen
147. What sutures are applied when opening the scar?
A. Two-layer, continuous by the Schmiden and Lambert method
B. Single layer, continuous by the Schmiden and Lambert method
C. Two-layer, discontinuous according to the Schmiden and Lambert method
D. Double layer fur seam
150. How many types of laparotomy are there?
A. 3
B. 2
C. 4
D. 5
151. What is gastrotomy?
A. Stomach incision
B. Stomach puncture
C. Gastric lavage
D. Stomach check
152. In what part of the abdominal cavity is the stomach in dogs?
A. In the front of the abdominal cavity, more in the left hypochondrium and adjacent to the diaphragm
B. In front, in the left hypochondrium
C. In the middle, on the right under the spine 4-5 waist

D. In the middle part, on the left under the spine 4-5 waist
153. What site is chosen for incision during gastrotomy?
A. Area without large vessels
B. Fundamental part
C. From the Pilorus part
D. From the depths of the stomach
154. How are sutures fixed in case of stomach ulcers?
A. Two-layer, continuous by the Schmiden and Lambert method
B. Single layer, continuous by the Schmiden and Lambert method
C. Two-layer, discontinuous according to the Schmiden and Lambert method
D. Double layer fur seam
155. What is the volume of the stomach in dogs?
A. 2-2.5 l
B. 5-7 l
C. 3-5 l
D. 7-9 l
156. Where is the median laparotomy performed?
A. Along the white line
B. On the left side of the abdominal surface of the abdomen
C. Right ventricle on the ventral surface of the abdomen
D. Right side in the hungry hole
157. How does the instruction for gastrotomy work?
A. Introduction of foreign bodies into the stomach
B. Gastritis
C. Accumulation of gas in the stomach
D. Blocked food in the stomach
158. Where is the incision performed during the operation to open the abomasum in sheep?
A. Along the white line
B. On the left side of the abdominal surface of the abdomen
C. Right ventricle on the ventral surface of the abdomen
D. Right lateral surface of the abdomen
159. The method of anesthesia during the operation "rumenotomy"?
A. Paralyumbal
B. Paracostal
C. Paranefral
D. Paramedial
160. The small intestine consists of ..?
A. Blind, Colored and Straight
B. Duodenal, lateral and iliac
C. Duodenal, skinny and blind
D. Duodenal, skinny and straight
161. The large intestine consists of ..?
A. Blind, Colored and Straight

B. Duodenal, lateral and iliac
C. Duodenal, skinny and blind
D. Duodenal, skinny and straight
162. The length of the duodenum in animals?
A. 90 - 120 cm in cattle, 25 - 40 cm in sheep, 40 - 80 cm in pigs, up to 1 meter in a horse.
B. 50 - 60 cm in cattle, 20 - 30 cm in sheep, 40 - 80 cm in pigs, up to 1 meter in a horse
C. 90 - 120 cm in cattle, 25 - 40 cm in sheep, 80-100 cm in pigs, up to 1 meter in horses
D. 120-150 cm in cattle, 25-40 cm in sheep, 40-80 cm in pigs, up to 1 meter in a horse
163. What is enterotomy?
A. Opening of the intestine
B. Bowel puncture
C. Inflammation of the intestines
D. Checking the bowel
164. What kind of laparotomy is performed for enterotomy in small animals?
A. Posadumbilical medial laparotomy
B. Pre-umbilical medial laparotomy
C. Paramedial transrectal laparotomy
D. Paramedian laparotomy
165. How does enerotomy instruction work?
A. Due to blockage of foreign bodies in the intestine
B. Enteritis
C. Gas formation in the intestine
D. In case of impaired digestion of food
166. In what animals is the colon of the intestine actively involved in digestion?
A. In horses
B. In dogs
C. In birds
D. In rodents
167. What is intestinal intussusception?
A. The introduction of one part of the intestine into the lumen of the other.
B. Bowel perforation
C. Intestinal overflow
D. Intestinal rupture
168. If the outer part of the rectum undergoes necrosis, then by what methods is the bowel resection performed?
A. Olivkovy or Müller-Phryne
B. Tikhonin and Gersen
C. Sadovsky and Magda
D. Olivkovy and Gersen
169. The length of the rectum in large animals?
A. 20-30 cm.

B. 40-50 cm
C. 50-60 cm
D. 15-20 cm
170. How many elements (components) of the hernia?
A. 3
B. 4
C. 5
D. 6
171. By origin, hernias are divided into ...?
A. Congenital and acquired
B. Primary and secondary
C. Congenital and infectious
D. Simple and complex
172. What hernias are considered dangerous?
A. Strangulated hernia
B. Slipshiye
C. Congenital
D. Diaphragmatic
173. For the diagnosis of a hernia ..
A. Through palpation
B. Through punctures
C. By auscultation
D. Through light motivation
174. The main clinical sign of a hernia is ...?
A. When pressing the finger, a fossa is formed
B. Softness of the tumor
C. Lack of local temperature
D. All answers are correct.

175. The prolapse of organs through artificial, natural or pathological openings, which leads to their displacement outside the anatomical cavity together with the membrane lining them?
A. Hernia
B. Prolapsus
C. Aponeurosis
D. Mechanical injury
176. What diseases should be distinguished from hernias?
A. Abscesses
B. Hematomas
C. Tumors
D. All answers are correct.
177. What is the main goal of hernia surgery?
A. Close the hernia opening
B. Directing the organ into place
C. Removal of the hernia sac
D. Reduction of the hernia sac
178. How to close the opening if the hernia opening is larger?
A. Closed with alloplastic material

B. Suturing with catgut
C. Suturing with the Lambert method
D. Close by the Gutmann method
179. For the diagnosis of a hernia ..
A. Through palpation
B. Through punctures
C. By auscultation
D. Through light attachment
180. What parts does the appendage consist of?
A. head, body, tailB. body, top, head
B. medium, large, small
C. empty, intermediate, tail
D. tail
181. How many grams do bulls weigh the testes?
A. 300-350g
B. 250-300 g
C. 200-300 g
D. 350-400 g
182. Which way of excretion of the gland is connected by the seminal route?
A. bladder gland;
B. onion gland
C. prostate gland
D. piriform gland
183. What is the function of the seed system?
A. testis lifter
B. seed removal
C. seed breeding
D. moving seeds
184. From what organ does the vas deferens begin?
A. From the tail of the epididymis
B. On the epididymis
C. Head of the testis
D. From the body of the epididymis
185. On what layers is the common vaginal membrane divided?
A. external fibrosis and internal cerosis
B. middle fibrosis and top layer
C. internal cerous and middle muscles
D. middle muscle and external fibrosis
186. What organ is a component of the scrotum?
A. testicular sac;
B. vaginal membrane;
C. inguinal canal;
D. muscular layer;
187. Expression-castration is ..?
A. removal of testicular parenchyma only
B. resection of the tails of the epididymis
C. Castration in a bloodless way
D. Compression of the spermatic cord

188. What method and on what animals is percutaneous castration performed?
A. Bloodless method, in bulls
B. Removal of testis parenchyma only, in bulls
C. Resection of the tails of the epididymis, in horses, in bulls
D. Bloody method, in pigs
189. What forceps are used for bulls in the bloodless method?
A. Telyatnikova, Burdizzo
B. Burdizzo, Zonda
C. Telyatnikova, Emasculator
D. Probe, Emasculator
190. What kind of forceps is used for the castration of horses?
A. Zonda, Emasculator
B. Telyatnikova, Burdizzo
C. Burdizzo, Zonda
D. Telyatnikova, Emasculator
191. What method is used to castrate camels?
A. Bloody, open way
B. Bloody, closed way
C. Percutaneous method
D. Elastication Method
192. A phenomenon that is the release of an egg from the ovary into the fallopian tube as a result of rupture of a mature follicle?
A. Ovulation
B. Evacuation
C. Involution
D. Maturation
193 What layers does the uterine wall consist of?
A. endometrium, myometrium, perimetrium
B. myometrium, epicardium, endocardium
C. metritis, perimetritis, myometritis
D. myocardium, endocardium, pericardium
194. Types of uterus?
A. paired uterus paired sheaths, double uterus, bipartite uterus, bicornuate uterus
B. paired uterus paired sheaths, complex, divided, simple
C. simple, complex, two-part, two-horned
D. simple, complex, bipartite
195. What is called a mature follicle-keeper egg?
A. Graaf's bubbles
B. Gunther Bubbles
C. Highmore's body
D. corpus luteum
196. What are the parts of the ovaries?
A. follicles and vessels
B. follicular and vestibular
C. follicular and cortical
D. vestibular and blood vessels
199. What is the back wall of the vagina?
A. With rectum

B. With the cervix
C. With the urinary canal
D. With the body of the uterus
200. How many zones does the kidney consist of?
A. 3
B. 2
C. 4
D. 5

4.9 Test questions for IR (500)
401. For what purpose is ovariectomy prescribed?
A. Loses the ability to reproduce
B. Increasing milk feeding
C. Increased productivity
D. Calm the animal
402. What is the name of the operation to remove the mammary glands
A. Mastectomy
B. Mastopathy
C. Lactotomy
D. Hysterotomy
403. To which area is an incision for a cesarean section performed in cattle?
A. Left lateral ventral abdomen
B. Right lateral lateral part of the abdomen
C. Left lateral lateral part of the abdomen
D. Right ventricle in the ventral part of the abdomen
404. What bones are included in the stylopodia department?
A. humerus, femur
B. humeral, wrist
C. shovel, femoral
D. femoral, shin
405. What animals do not have the first bones of the lower line of the carpal bone?
A. KRS
B. Dogs
C. Pigs
D. Horses
406. What part of the metacarpals is better developed in horses?
A. 3
B. 2
C. 3-4
D. 2-3
407. Choose the correct answer, which contains the name of the phalanx of the fingers?
A. Root, coronal, hoof
B. Round, putty, hoof
C. Putty, nipple, rocky
D. Phalanges of fingers, putovy, round
408. How many sections are the forelimbs divided into?
A. 4
B. 3

C. 5
D. 2
409. What does the science of "Operative surgery and anesthesiology" study?
A. All types of injuries and their prevention
B. Rules and methods of performing a surgical operation
C. The mechanism of development of surgical diseases
D. Carrying out an operation in individual organs
410. What does the word "surgery" mean?
A. Hand movement
B. Manual processing
C. Impact
D. Section
411. The importance of topographic anatomy in operative surgery?
A. Creating the conditions for a good reference point
B. Performing Correct Tissue Separation
C. Anatomical rationale and thinking of the operation
D. Information on the location of organs and tissues
412. The concept of the word "Operation" is ...
A. The set of mechanical effects on organs and tissues
B. Separation for the purpose of tissue processing
C. Removal of the formed pathological process
D. Organ and tissue transplant
413. What main group is the operation subdivided into?
A. Bloody, bloodless
B. Therapeutic, diagnostic
C. Urgent, delayed
D. Plastic, cosmetic
414. What is the antiseptic method based on?
A. Destruction of microbes by ultraviolet rays
B. Destruction of microbes by chemicals
C. Killing germs by dressing
D. Killing germs with high temperature
415. How to sterilize instruments after purulent surgery?
A. Boil in an alkaline solution for an hour with the addition of lysol
B. Boil for an hour
C. Dried and stored separately
D. Dry and smear with alcohol
416. What is the sterilization of suture material based on?
A. Boiling
B. Disinfection in chemical solutions
C. High temperature and pressure resistance
D. Degreasing and disinfection
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A. Bloody, bloodless
B. Therapeutic, diagnostic
C. Urgent, delayed
D. Plastic, cosmetic
422. On what is the "antiseptic" method based?
A. Destruction of microbes by ultraviolet rays
B. Destruction of microbes by chemicals
C. Killing germs by dressing
D. Killing germs with high temperature
423. What is the "asepsis" method based on?
A. Destruction of microbes by chemicals
B. Killing germs by hand washing
C. Killing germs at high temperature and pressure
D. Killing microbes at low temperatures
424. How to sterilize instruments after purulent surgery?
A. Boil in an alkaline solution for an hour with the addition of lysol
B. Boil for an hour
C. Dried and stored separately
D. Dried and treated with alcohol
425. How is the material sterilized in an autoclave?
A. Due to high pressure and temperature
B. Due to high steam in the boiler
C. Due to the high temperature
D. Due to tightness
426. What is suture sterilization based on?
A. Boiling
B. Disinfection in chemical solutions
C. High temperature and pressure resistance
D. Degreasing and disinfection
427. What steps do you know to prepare hands for surgery?

A. Wash hands with soap and towel
B. Mechanical cleaning, chemical disinfection and tanning
C. Mekhanchemical cleaning and chemical disinfection
D. Hand washing and chemical disinfection
428. Why Tanning Leather?
A. Increased skin elasticity
B. Prevention of microflora developmentCB. Reduce hand sweating
D. Closing the exits of the sebaceous and sweat glands
429. For what purposes are rubber gloves used?
A. Preventing Hand Contamination Before Surgery
B. Prevents germs from entering the wound
C. Reduces the time of surgical intervention
D. Reduces hand washing time
430. What stages do you know to prepare the operating field?
A. Mechanical cleaning, disinfection, tanning and separation
B. Mechanical cleaning and chemical disinfection
C. Mechanical cleaning and tanning of leather
D. Hair removal, rinsing, chemical disinfection
431. In what order are solutions on the skin of animals lubricated during purulent surgery?
A. Bottom up
B. From top to bottom
C. From center to edge
D. Edge to center
432. Which of the Central Asian scientists contributed to the development of surgery?
A. Ahmad Yassawi
B. Ali Kushchi
C. Abu Ali Ibn Sina
D. Jaloliddin Rumi
433. What are the contraindications to the operation?
A. All of the above answers
B. High temperature
C. Bear in mind the pregnancy of animals
D. Presence of an infectious disease in the farm
434. What do you understand when you mean an (absolute) reference to an operation?
A. When the pathological process is dangerous to the health of the animal
B. When animal productivity declines
C. When purulent exudate begins to accumulate in the cavity
D. When peristalsis stops
435. What should the surgeon observe during the operation?
A. Caution in relation to the organ and tissues
B. Quantity of medicines shipped (dosage)

C. Rules of asepsis and antiseptics
D. To the rule of correct placement of surgical sutures
436. What does a surgical clinic do?
A. With the reception and treatment of sick animals
B. With the treatment of sick animals
C. With student training
D. During surgical operations
437. What is the purpose of the science of operative surgery?
A. Reception of sick animals
B. Putting scientific evidence into practice
C. Increased productivity
D. Training in surgical procedures
438. What is the main function of the science of operative surgery?
A. Restoring and improving the performance of the animal
B. Development and implementation of new methods of operations
C. Increase in the number of animals in the herd
D. Improve the quality of meat, milk and wool products
439. With whom to agree for the operation?
A. With a legal entity
B. With an individual
C. With the farm administration
D. With the union
440. What is being done at the final stage of the operation?
A. Surgical sutures
B. The animal comes in a state
C. 5% glucose is poured into the vein
D. Antibiotics are sent around the injury
441. The value of fixation during the operation?
A. Safeguard the surgeon
B. The movement of the animal will be reduced
C. During surgery, free and safe movement is ensured
D. The animal does not injure itself and the participants in the operation
442. Who and when proposed the "asepsis" method?
A. Bergman-1891
B. Abu Ali ibn Sina - 975
C. Vishnevsky-1942
D. Shimelbusch-1892
443. How to sterilize devices by the cold method?
A. Poured into chemical solutions.
B. Put in cold water
C. Grabbing Instruments in Glacier Mode
D. Liquid nitrogen
444. How is the temperature regime in the autoclave determined?
A. With indicator

B. Using the monomer
C. Using a thermometer
D. Using a monomer and a thermometer
445. For what purpose is the preparation of the hands before the operation?
A. Do not introduce microbes into your body
B. In order not to cause inflammation
C. In order not to let the microbe to the instruments
D. To prevent the penetration of microbes into the operating injury
446. For what purposes are the operating fields prepared?
A. To remove hair
B. Preventing the entry of germs into the wound and contamination
C. Cleanse the skin from impurities
D. Wound recovery after surgery
447. For what purpose is the tissue connected?
A. Stop bleeding
B. Preventing the entry of germs
C. Prevention of excitation of the nervous system
D. Shortening the end of the injury
448. Methods of a continuous seam?
A. The needle is injected at a distance of 0.5-1.5 from the wound, at a distance between nodes 0.75-1.5
B. The needle is injected at a distance of 0.2-0.5 from the wound, at a distance between nodes 0.5-0.75
C. The needle is injected at a distance of 0.5-0.75 from the wound, at a distance between nodes 0.75-1.
D. The needle is injected at a distance of 0.75-1 from the wound, at a distance between nodes 1-1, 5
449. Which of the following sutures is considered a skin suture?
A. Mattress seam
B. Circular seam
C. Circular seam
D. Fur seam
450. In what way, the needle is clamped, starting only from one edge of the wound, each suture is applied at the same distance and continues to the end?
A. Mattress seam
B. Circular seam
C. Circular seam
D. Fur seam
451. What type of suture is used to superimpose a tendon?
A. Pirogova-Cherni
B. Plakhotina
C. Tikhonina
D. Schmiden
452. How many species are the kish divided into?

seams?
A. 4
B. 5
C. 3
D. 2
453. For what purpose are seams established, by what type are they subdivided?
A. Discontinuous and continuous
B. Connecting and special
C. Intestinal and skin sutures
D. Leather and special seams
454. What type of seam is mainly applied to the surrounding areas?
A. Mattress seam
B. Shove Witsel
C. Circular seam
D. Kissset suture
455. When are situational seams applied?
A. In case of incompatibility of the wound edges
B. The edge of the injury is far from each other.
C. Seams that are in danger of breaking
D. Minor injuries
456. What intestinal suture is used on the scar and the large intestine?
A. Lambert
B. Schmiden
C. Plakhotin-Sadovsky
D. Pirogova-Cherni
457. What are the requirements for dressings?
A. Softness, elasticity and hygroscopicity
B. Softness and density
C. Elasticity and hygroscopicity
D. Density and elasticity
458. What is the purpose of applying the bandage?
A. Protection against infection and blood arrest
B. Immobilization of bones
C. Gripping tire and backing materials
D. Protection against secondary injury and infection
459. The order of applying bandages
A. From top to bottom along the muscle fibers
B. From bottom to top in the direction of lymph and blood vessels
C. From bottom to top along the folds of the skin
D. From top to bottom along the cavities of connective tissue
460. What bandage increases the local body temperature?
A. Warming wrap bandage
B. Pressure bandage
C. Wet suction dressing

D. Bandage
461. How to apply a bandage to enhance the absorption process?
A. Impenetrable
B. Dry suction
C. Pressing
D. Wet suction
462. What dressing is considered economical?
A. Bintovaya
B. Kosynochnaya
C. Wooden
D. Kleevaya
463. Teaching about bandages and how to apply them, is this?
A. Desmology
B. Desmotology
C. Desmurgy
D. Desmology
464. It is a binder dressing that is applied to protect against
mechanical action, absorption of blood, wound fluid and pus
and is not absorbed into the wound, releasing inflammatory infiltrates ...
A. Original
B. Fixing
C. Immobilization
D. Bintovaya
465. How many types of bandages are applied?
A. 4
B. 5
C. 3
D. 2
466. How are plaster casts applied?
A. After first wrapping the bandage around the limb
B. After that, plaster is sifted into the bandage, plastering is started
C. First, a solid cast plaster cast is prepared and wrapped around the limb
D. First, plaster is adjusted, then wrapped with a bandage
467. When is the plaster cast removed?
A. In large animals after 5-6 weeks, in small animals after 3-4 weeks
B. In large animals 5-6 weeks, in small animals after 1-2 weeks
C. In large animals 8-10 weeks, in small animals after 4-5 weeks
D. In large animals 2-3 weeks, in small animals after 1-2 weeks
468. What substances can be added to soften gypsum?
A. Hot sugar juice
B. A solution of hot sodium chloride
C. 1% solution of potassium permanganate
D. Hot milk
469. How many parts are examined for head surgery?

A. 13
B. 10
c 2
D. 3
470. Through which nerve the head region is innervated.
A. Optic nerve
B. Buccal nerve
C. Nerve of the upper jaw
D. Trigeminal nerve
471. Which nerve is anesthetized during the operation in the area of the upper lip, nasolabial cavity, upper jaw cavity.
A. Optic nerve
B. Infraorbital nerve
C. Subblock nerve
D. Frontal nerve
472. Determine the point of the needle in the technique of the maxillary nerve blockade in cattle.
A. 2 lines: 1-vertical line through the premolar and a cross-section of lines running from the posterior edge of the eyeball to the nose;
B. average distance from the posterior edge of the eye to the root of the horn
C. midpoint of a line from the outer corner of the eye to the root of the auricle
D. Anterior lower bone angle inside the jaw fossa
473. At what depth is the needle injected into the orbital nerve blockade in horses and into the amount of novocaine solution?
A. 6-8 cm 10 ml 3% l
B. 2-3 cm, 5 ml 3% leaf
C. 8-9 cm 10 ml 3%
D. 6.5-7 cm 20-25 ml 3%
474. Who developed the technique of corneal nerve blockade?
A. A. S. Studentsova
B. A. P. Senkina
C.C. Sadovsky
D. Voronina
475. What is decornation?
A. removal of horns
B. removal of the eyeball
C. perforation of the brain cavity
D. tooth extraction
476. How many teeth do dogs and cattle have?
A. 40-36
B. 42-32
C. 40-44
D. 32-42
477. What is trepanation?

A. dehydration
B. removal of the eyeball
C. the formation of the opening of the brain cavity
D. tooth extraction
478. What nerves are anesthetized during an operation to remove the upper jaw and remove teeth from the upper jaw?
A. nerve of the mandible
B. nerve of the upper jaw
C. optic nerve
D. hallucinogenic nerve
479. What are the main two sections of the head?
A. Upper jaw and lower jaw
B. Brain and occipital
C. Brain and mandible
D. Face and brain
480. How to remove the third eyelid?
A. Holding with tweezers to cut off the base with scissors
B. Holding with tweezers, cut off the protruding part with a scalpel,
C. Hold with a Kocher clamp pull
D. Holding with tweezers, detach from the tissue and apply a suture
481. The technique of applying an ear bandage for amputation of the auricle
A. At an angle to the ear below the auricle pocket
B. On the underside of the auricle, above the pocket
C. On the edges of the upper and middle part of the auricle below the pocket,
D. On the edges of the upper and lower parts of the auricle
482. What to do during the operative treatment of coenurosis?
A. Removing the bubble with the liquid
B. Extraction of liquid and introduction of 5% iodine solution
C. Extraction of liquid and scolexes
D. Fill the gap with gelatin and paraffin by removing the bag
483. In dogs, the trigeminal nerve is divided into ..
A. Eye, upper jaw, lower jaw nerve
B. Facial, mandibular nerve
C. infraorbital, upper jaw, auditory nerves
D. Lower jaw, zygomatic nerves
484. What method allows you to determine the exact location of the coenurose bladder during the operation?
A. Garms
B. Gertsen
C. Roznina
D. Pirogova
485. Is the dose of novocaine administered for superficial anesthesia during excision of the third eyelid?
A. 5%

B. 2%
C. 0.5%
D. 0.25%
486. Doses of novocaine are administered to anesthetize the optic nerve?
A. 2% -20ml
B. 3% - 10 ml
C. 4% -10 ml
D. 0.5% -20 ml
487. Which nerve is anesthetized by C.C. Sadovsky and C.F. Kiselevsky?
A. Infraorbital nerve
B. Optic nerve
C. Corneal nerve
D. Alveolar nerve of the mandible
488. According to Sadovsky's method, in which subblock nerve blockade is injected in cattle?
A. at the front edge of the cup of the eyes
B. The lower jaw in the terminal fibers of the alveolar - alveolar inferior nerve
C. Above the inner corner of the eye
D. Into the orbital cavity and corneous processes.
489. Which nerve is anesthetized by C.C. Sadovsky and C.F. Kiselevsky?
A. Optic nerve
B. Infraorbital nerve
C. Corneal nerve
D. Alveolar nerve of the mandible
490. Doses of novocaine according to the method of N.C. Sadovsky for anesthesia of the subblock nerve?
A. 2% x 20ml
B. 3% th 10 ml
C. 4% 10 ml
D. 3% nd 5 ml
491. How many stages are the preparation of hands for the operation divided into?
A. Stage 4
B. Stage 5
C. Stage 3
D. Stage 2
492. What do SI recommend using? Spasokukovsky and I. Kochergin instead of soap?
A. 0.5% aqueous solution of ammonia
B. 5% - iodine alcohol
C. 2% bleach
D. 5% solution of carbolic acid
493. What solution is used for hand disinfection?
A. 3% zinc sulfate solution
B. 5% alcohol

C. 2% bleach
D. 5% solution of carbolic acid
494. What is the name of the temporary cessation of the activity of sweat and sebaceous glands on the skin of the hands?
A. Leather tanning
B. Mechanical cleaning
C. Chemical disinfection
D. Skin restriction
495. Who first recommended the use of surgical gloves and in what year?
A. American surgeon Halstead in 1891
B. English physician Lister in 1891
C. Bergman in 1888
D. Ruini 1558
496. What is the final stage of preparation of the operating field?
A. field limitation
B. mechanical cleaning
C. degreasing,
D. chemical disinfection
497. What should be done to prepare the operating field in emergency operations?
A. 0.5-1% solution of ammonia is cleaned and degreased with ether.
B. 0.5-1% solution of ammonia is cleaned and degreased with iodine.
C. Lubricated with alcohol, smeared with iodine.
D. 0.5-1% solution of novocaine is cleaned and defatted with iodine
498. What solutions are used to disinfect the conjunctiva?
A. 0.1% ethacridine lactate, 3% boric acid 2% protolgol
B. 0.1% potassium permanganate, 1% lactic acid, 1: 1000 lactate ethacridine, 2% lysol solution,
C. 1% solution of potassium permanganate, 2% solution of lysol
D. 0.5-1% solution of ammonia
499. How many hours is an animal kept on an incomplete diet, if the operation is carried out as planned?
A. 12-24 hours
B. 8-12 hours
C. 6-8 hours
D. 12-24 hours
500. For which mucous membranes is 1% lactic acid solution used?
A. Vaginal mucosa
B. Conjunctiva
C. Oral mucosa
D. Rectum

V. Evaluation criteria for the subject

Criteria for assessing the knowledge of bachelor students on a 5-point system

Rating 5 (excellent):

make decisions and draw conclusions;

think creatively;

independently analyze the situation

apply the knowledge gained in practice;

understand the principle;

know, reveal the essence;

have an idea;

Rating 4 (good):

analyze independently;

apply the knowledge gained in practice;

understand the principle;

know, reveal the essence;

have an idea;

grade 3 (satisfactory);

understand the principle;

know, reveal the essence;

have an idea;

2 (unsatisfactory):

not master the program of the subject;

not know the essence of the subject;

not have a specific idea;

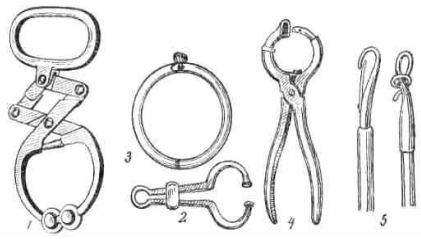
not be able to think independently.

VI Handouts on the subject

VI Handouts on the subject
Practical lesson
Research methods of surgically sick animals
Target. To work out and master the technique of fixing animals of different species in a standing and lying position.
Materials and equipment. Bridle, rope, harness belts, fetlock belt with a ring, tarpaulin twisting, Dyachenko nasal forceps, Garms nasal forceps, nose rings, sticks for bulls, cotton wool, gauze, bandage, iodine solution, alcohol, experimental animals, fixation machines, surgical tables, bundles of straw.

Exercise 1

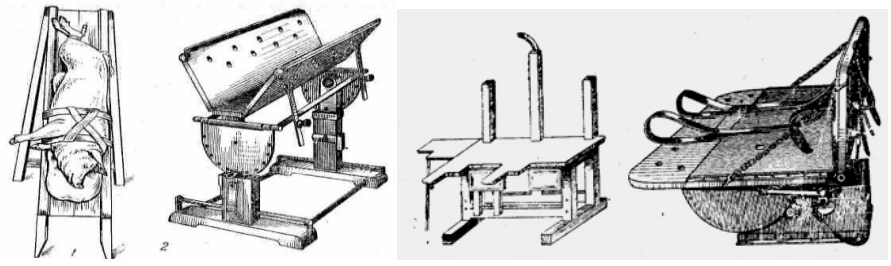
Learn the tools for restraining livestock and familiarize yourself with restraining tables for farm animals.



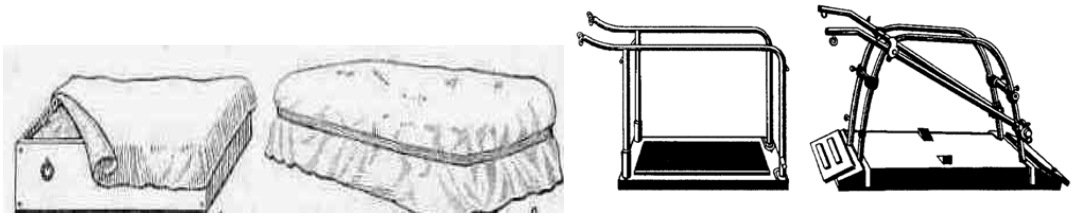
Mark the cattle fixation tools in the figure and describe them.

1._____
2._____
3._____
4._____
5._____

2. Indicate in the figure tables for fixing agricultural animals and indicate which animals are used for.



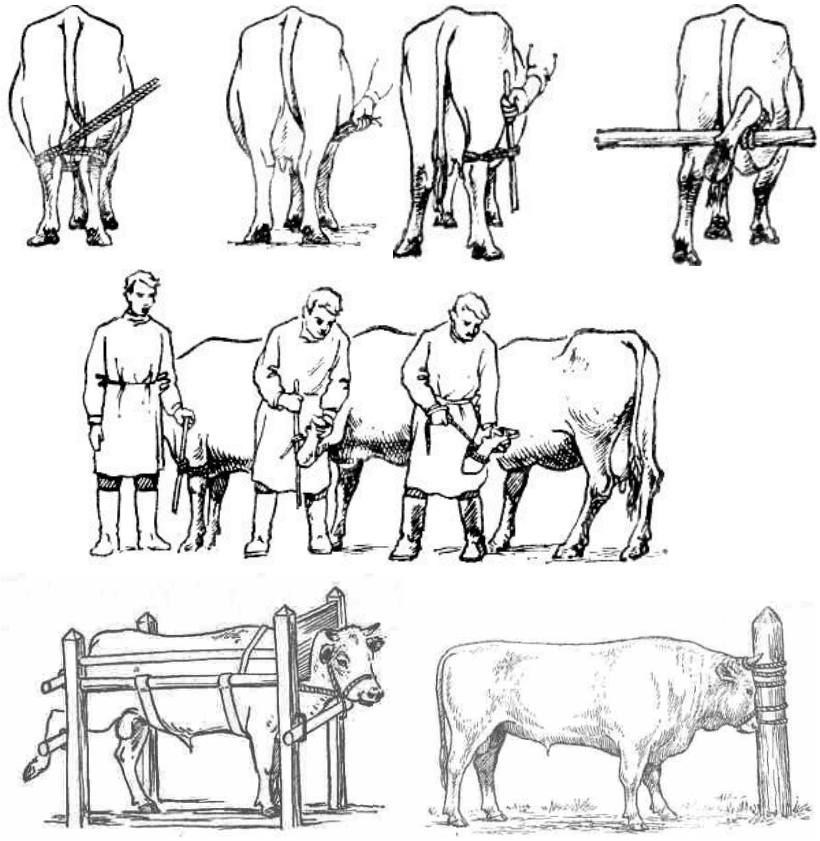
1 2 3 4

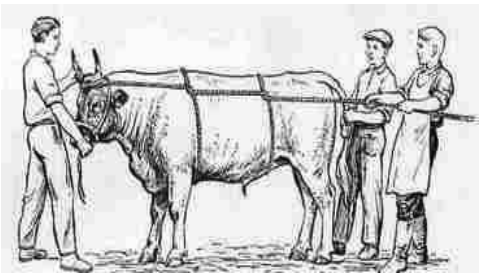


5 6 7 8

Assignment 2

Fix the cattle in a standing position (designate and write)





Carry out the fall of cattle according to the Hess method (briefly describe)._____

_____

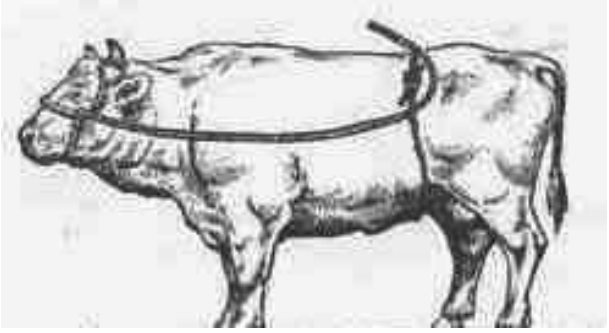
_____

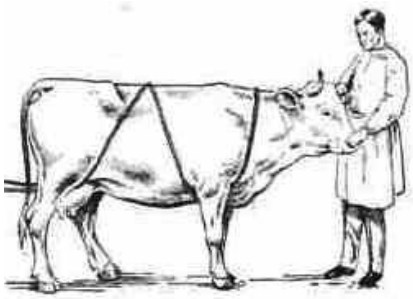
Carry out cattle felling in the Caucasian way (briefly describe)

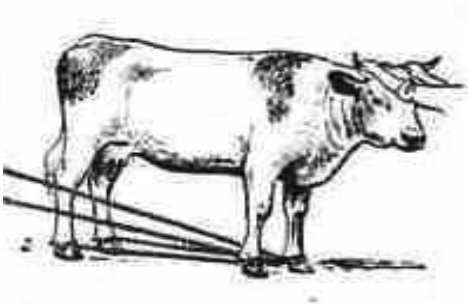
_____

_____

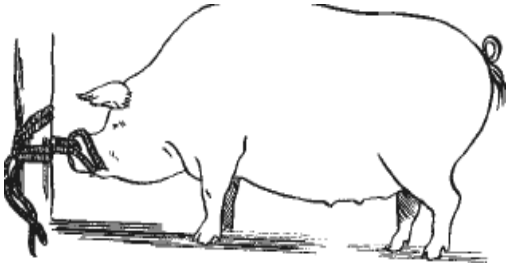
_____





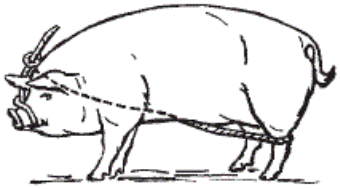


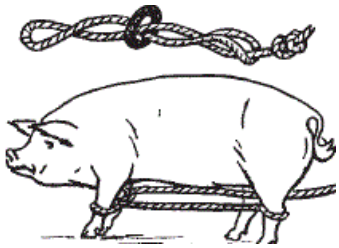
exercise 3

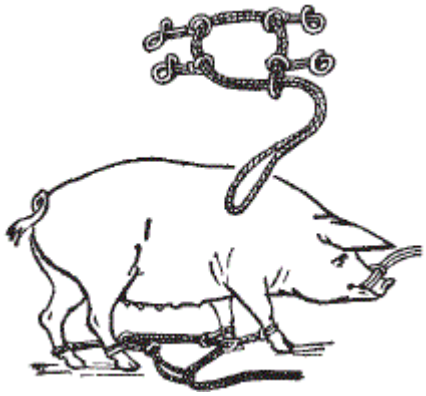


Fix pigs in a standing position (describe)

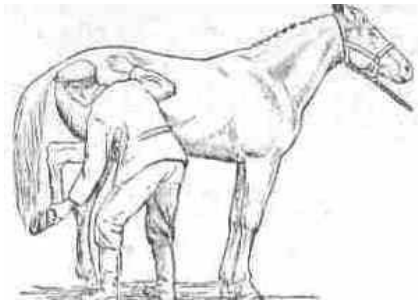
Fell down the pigs, fix them in a supine position (describe)

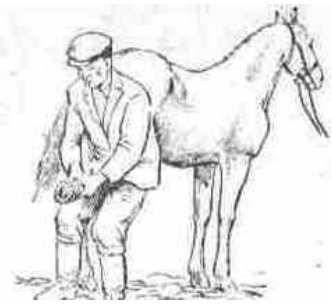


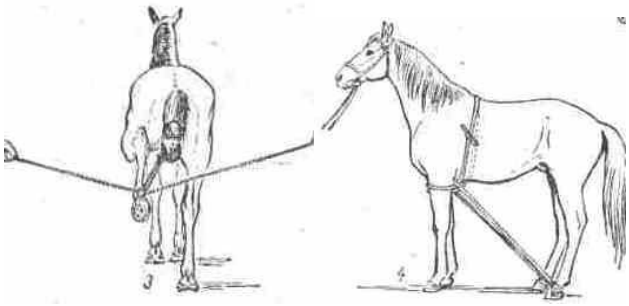




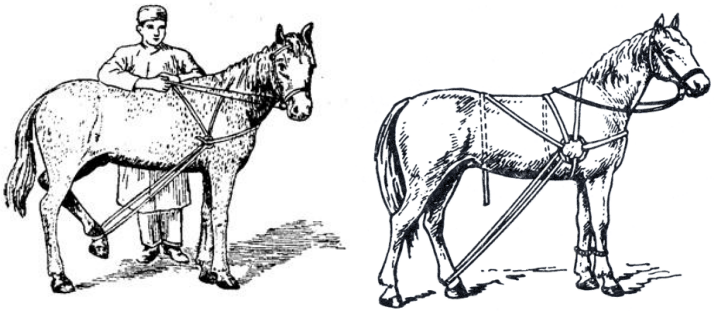
Fix the horses in a standing position (describe)







Carry out the felling of the horses and fix them in a supine position (describe)



Assignment 4

Get acquainted with the methods of fixation and carry out fixation of dogs, cats and wild fur-bearing animals.

Control questions

1.What is the purpose of fixing animals during operations and diagnostic studies?

2. Methods for fixing cattle, horses, pigs and small animals.

3. What complications arise during the fixation of animals?

4. Ways to prevent complications.

Practical lesson

Local application of novocaine blockade

Target. Learn to prepare anesthetic solutions and use different types of anesthesia.

Materials and equipment. 0.75% sodium chloride solution, novocaine powder, 2.5 ml and 20 ml syringes, injection needles, tape measure, alcohol solution of iodine, alcohol, cotton wool, gauze, sterilizer, distilled water, towel, soap, 0.25% novocaine solution, scissors.

Exercise 1

Prepare anesthetic solutions and describe the preparation methods.

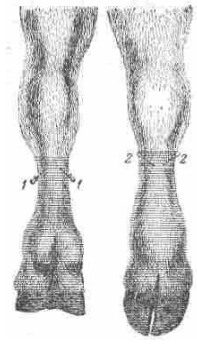
0.25% solution of novocaine (100 ml)

0.5%	solution	of	novocaine	(150 ml)
1-1.5%	solution	of	novocaine	(150 ml)
2%	solution	of	novocaine	(180 ml)

Methodical instructions

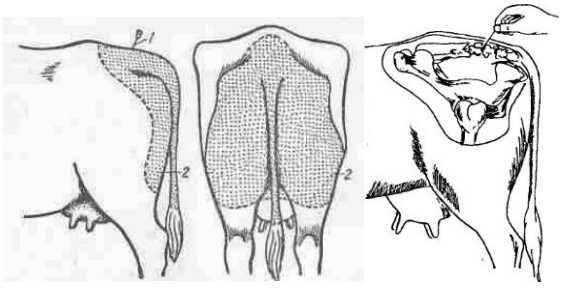
A measured amount of 0.7% sodium chloride solution is poured into a neutral glass flask and boiled for 10-15 minutes. The required amount of novocaine is poured into a boiled isotonic sodium chloride solution and the solution is brought to a boil again, after which the flask is removed from the heat. If the solution contains mechanical impurities, it is filtered and reheated to boiling.

Assignment 2
Apply infiltration anesthesia along the incision line (describe).
Assignment 3
Conduct conduction anesthesia of the metacarpal nerves in cattle according to GM Shabrov (describe).
In the figure, mark the injection site



Assignment 4
Perform low sacral epidural anesthesia for cattle (describe). Show the injection site in the figure.

Methodical instructions
Anesthesia of the tail, rectum, anus, external genitalia of females, vagina, perineum, posterior croup and thigh occurs 10-15 minutes after injection and lasts 30-90 minutes.



Control questions
1. What substances are used for cattle anesthesia?
2. Describe the methods of local anesthesia.
3. Technique of infiltration, conduction and spinal anesthesia.

Practical lesson

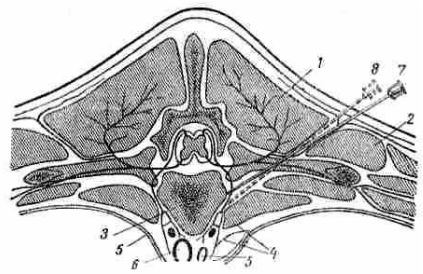
The use of novocaine blockages in systemic diseases

Target. To acquire practical skills in the technique of performing novocaine blockades.
Materials and equipment. Injection needles 10-15 cm, Beer's needle, Bobrov's needle, Janet's syringe for 15-200 ml, Record syringe for 200 ml, Bobrov's apparatus, Cooper's scissors, razor, 0.25-0.5% novocaine solution, 5% alcohol solution iodine, denatured alcohol, collodion, dressings, fixing agents.

Exercise 1
To acquire practical skills in the technique of performing novocaine blockades (describe).

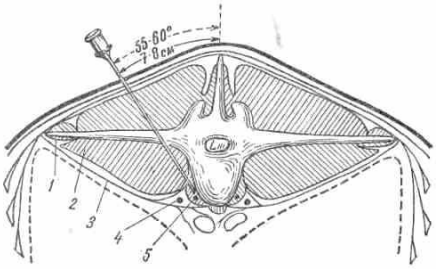
Methodical instructions
The mechanism of action of novocaine therapy is very complex. It distinguishes between two main methods: turning off (blocking) and weak irritation of the nervous system. Novocaine blockade protects the cerebral cortex from pain impulses, replaces "strong" irritations with "weak" ones. With such a favorable effect, novocaine blockade restores the balance between the processes of excitation and inhibition and restores the relationship between the cerebral cortex and internal organs. All this improves tissue trophism and has a beneficial effect on the inflammatory process.

Assignment 2
To acquire practical skills in the technique of performing lumbar (perirenal) novocaine blockade (describe)
Assignment 3
To acquire practical skills in the technique of suprapleural blockade of the celiac nerves and borderline sympathetic trunks according to V.V. Mosin (describe).



Assignment 4

To acquire practical skills in the technique of performing udder nerve blockade in cows. Describe the technique of nerve blockade according to B.O. Bashkirov.



Control questions

1. Name the types of novocaine therapy.
2. Technique for different types of novocaine blockades.

Practical lesson

Treatment of acute purulent inflammation

Target. Master the methods of examination and treatment of animals with aseptic and purulent diseases.

Materials and equipment. Sick animal, thermometers, phonendoscope, plessimeters, percussion hammer, centimeter ruler, injection needles, scalpel, scissors, cotton wool, bandage, alcohol tincture of iodine, alcohol, penicillin, streptomycin, furacilin solution (1: 500), syringe.

Exercise 1

Examination of animals for aseptic and purulent diseases (describe)

Assignment 2

Treatment of animals for aseptic and purulent diseases (describe)

Assignment 3

A 6-month-old calf has a frustrating swelling in the navel, which is limited, painful and hot. At the same time, there was a general depression of the animal, an increase in body temperature, in the blood - a decrease in hemoglobin and the number of erythrocytes, hyperleukocytosis with a shift of the nucleus to the left. Diagnose and prescribe treatment.

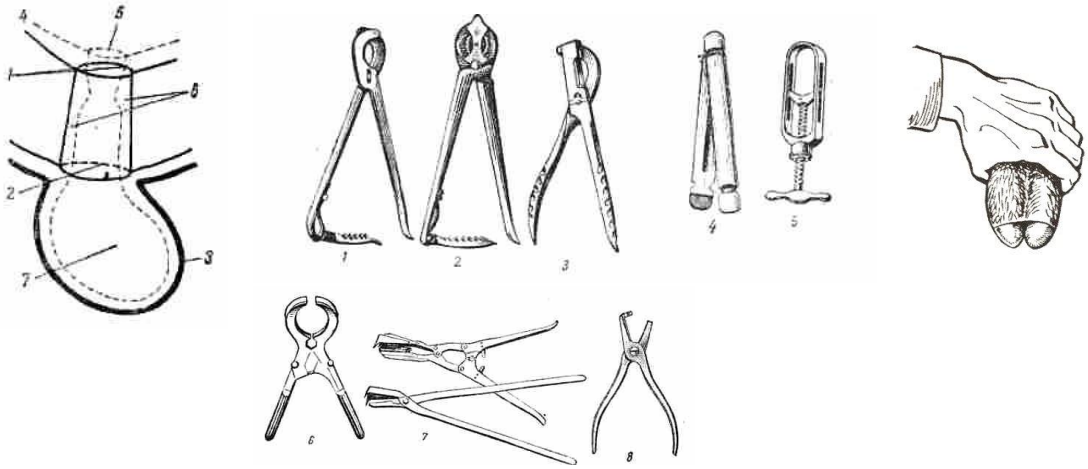
Control questions
1. What is a surgical infection and how does it manifest itself?
2. What are the types of surgical infection?
3. In what forms does purulent infection appear?
4. Pathogens of different types of infections.

Practical lesson Male castration Target. Master the skills of organizing, preparing and conducting male castration.
Materials and equipment. 5% alcohol solution of iodine, 0.25 and 0.5% solutions of novocaine, surgical instruments, forceps for castration, fixing agents, animals.

Exercise 1
Describe a diagram of the structure of the testicle sac.

_____
_____
_____

Topography of the vaginal and inguinal canals.



VII. Electronic variant