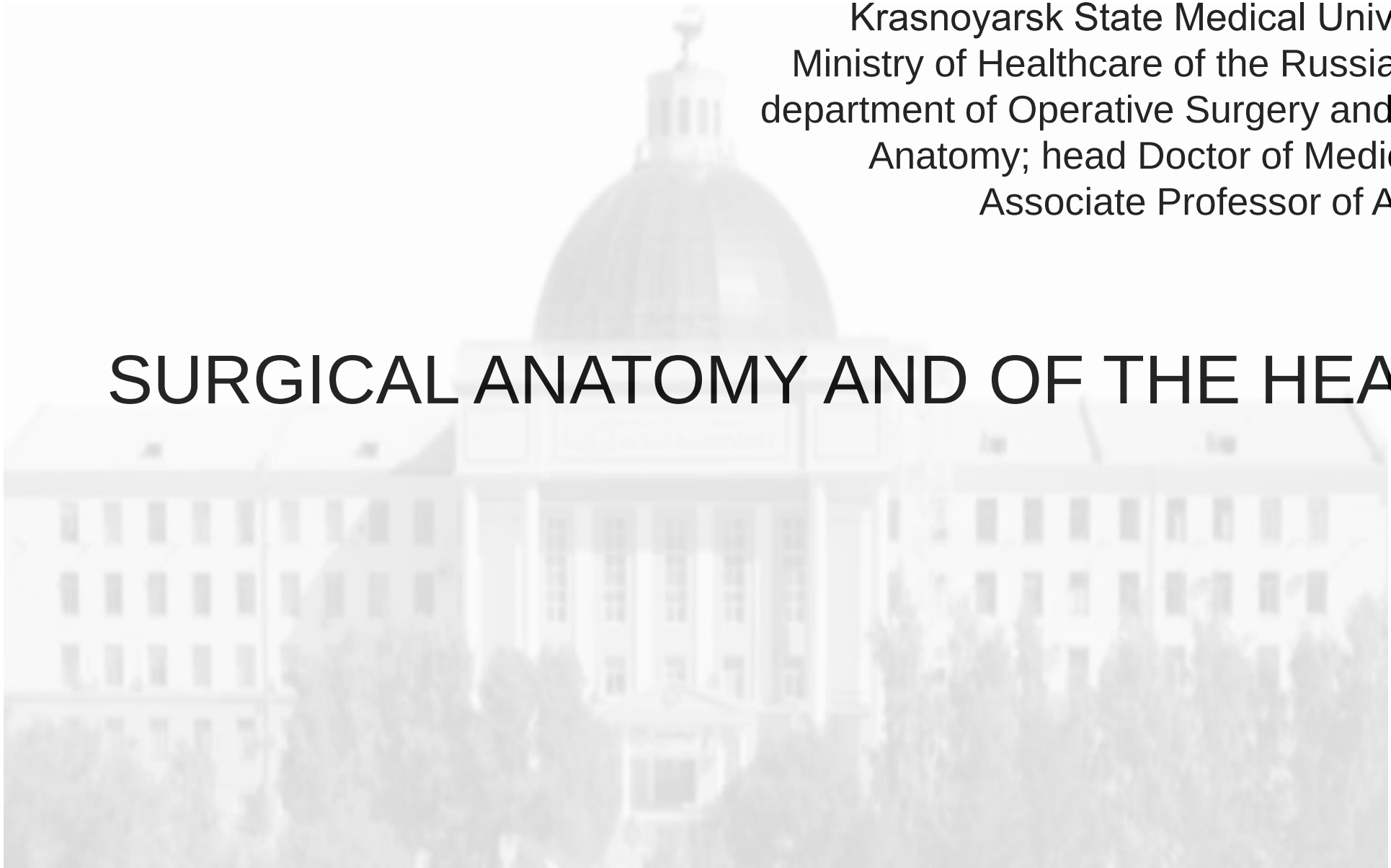
КРАСНОЯРСКИЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ
1942/2022

Federal State Budgetary Educational Institution of Higher Education «Prof. V.F. Voino-Yasenetsky Krasnoyarsk State Medical University» of the Ministry of Healthcare of the Russian Federation department of Operative Surgery and Topographic Anatomy; head Doctor of Medical Sciences, Associate Professor of A.N. Russkikh

SURGICAL ANATOMY AND OF THE HEAD



LECTURE PLAN:

1. History of operations on the head.
2. Layered topography of the covers of the cranial vault.
3. Arterial branches of the external and internal carotid arteries.
4. Nerves of the integuments of the cranial vault.
5. Topographic anatomy of the mastoid process.
6. The cranial cavity. The membranes of the brain.
7. The cerebrospinal fluid system. Circulation of the cerebrospinal fluid.
8. Venous sinuses of the brain. Connection with the integuments of the skull and the veins of the face.
9. Blood supply to the brain. The Willis Circle.
10. Craniocerebral pits. Places of exit from the skull cavity of the CHMN.
11. Typical places of fractures of the base of the skull and their signs.
12. Operative surgery of the cerebral part of the head.

ПЛАН ЛЕКЦИИ:

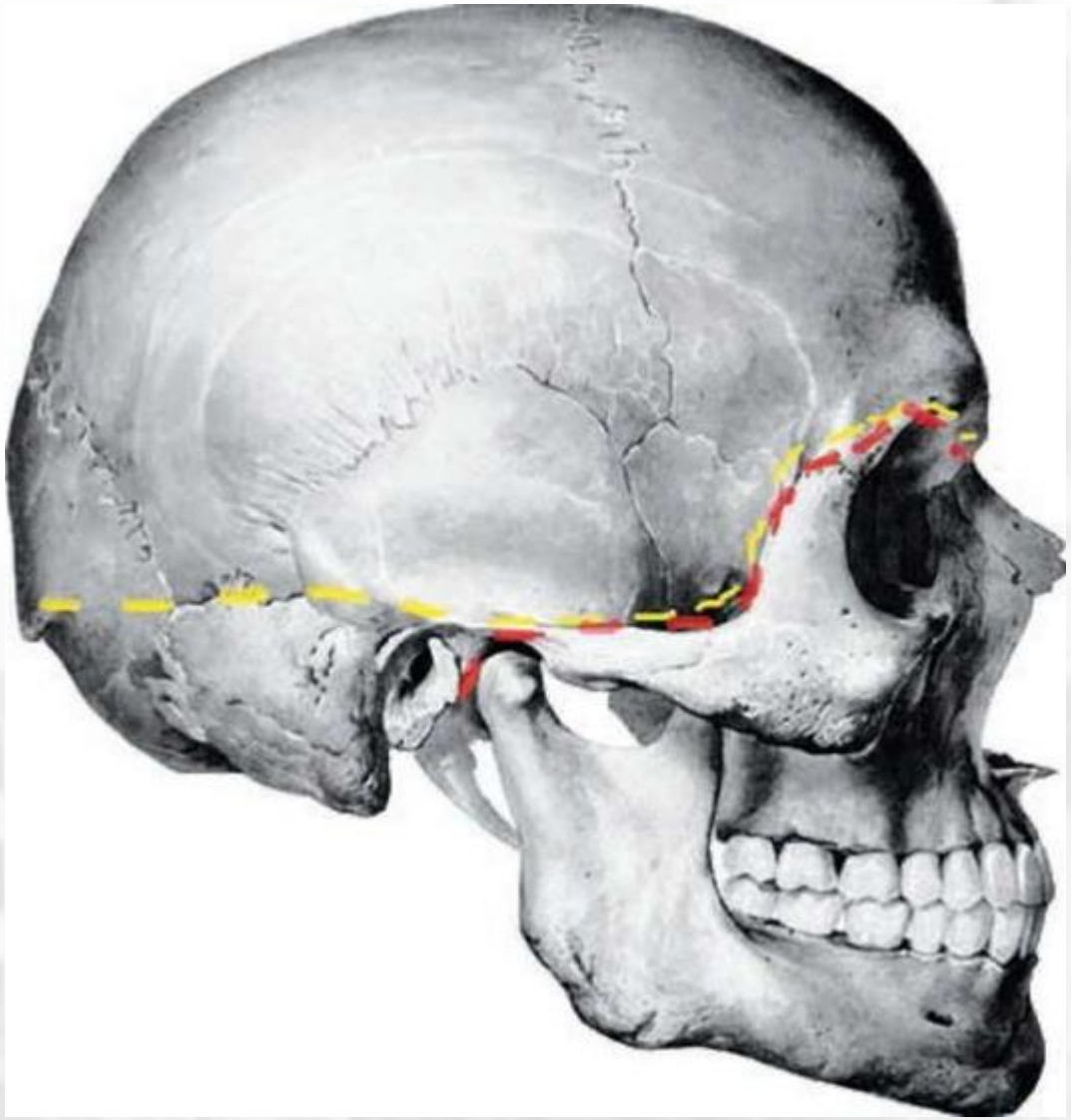
1. История операций на голове.
2. Послойная топография покровов свода черепа.
3. Артериальные ветви наружной и внутренней сонных артерий.
4. Нервы покровов свода черепа.
5. Топографическая анатомия сосцевидного отростка.
6. Полость черепа. Оболочки головного мозга.
7. Спинномозговая ликворная система. Циркуляция спинномозговой жидкости.
8. Венозные синусы головного мозга. Связь с покровами черепа и венами лица.
9. Кровоснабжение головного мозга. Виллизиев круг.
10. Черепно-мозговые ямки. Места выхода из полости черепа ЧМН.
11. Типичные места переломов основания черепа и их признаки.
12. Оперативная хирургия мозгового отдела головы.

Purpose:

To give a topographic and anatomical justification of the basic principles of surgical interventions on the head.

Цель:

Дать топографо-анатомическое обоснование основным принципам оперативных вмешательств

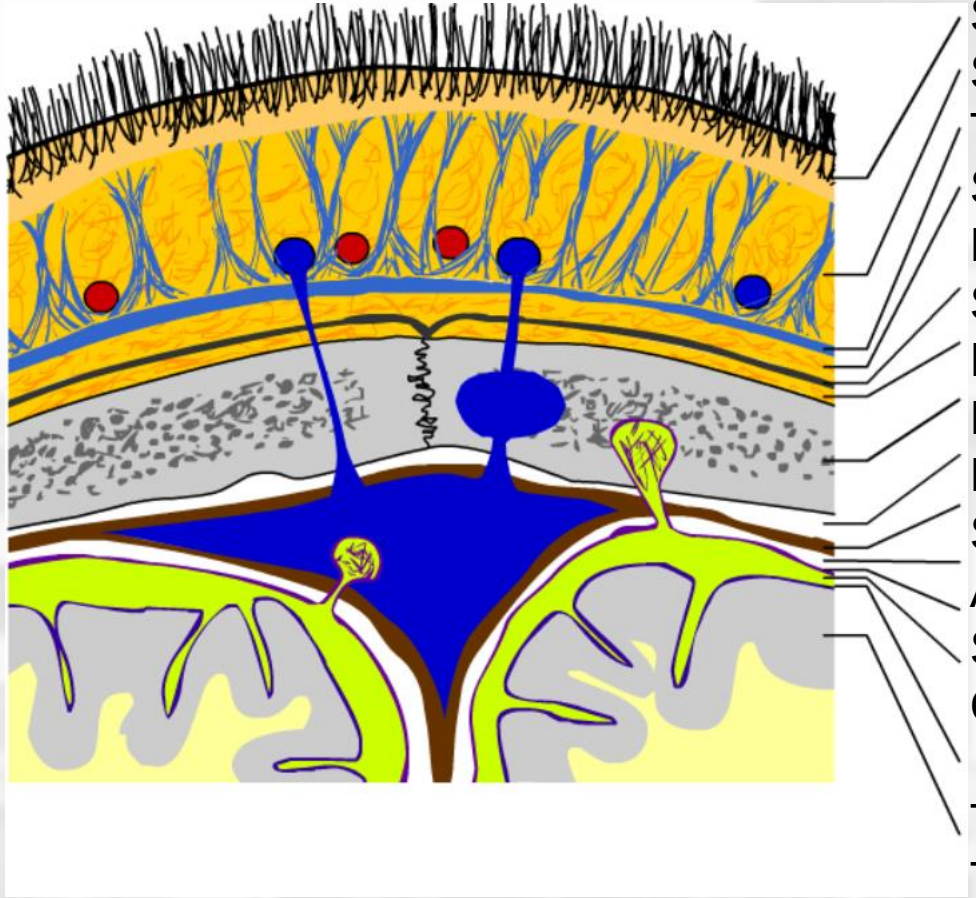


THE LIMIT BETWEEN THE HEAD AND THE NECK IS MADE ALONG THE MARGIN AND ANGLE OF THE MANDIBLE UP TO THE APEX OF THE MASTOID PROCESS AND FURTHER ALONG THE SUPERIOR NUCHAL LINE UP TO PROTUBERANTIA OCCIPITALIS EXTERNA.

THE HEAD HAS THE CRANIAL AND THE FACIAL PART; THE LIMIT BETWEEN THEM GOES ALONG THE SUPRA-ORBITAL MARGIN, THE ZYGOMATIC BONE AND THE ZYGOMATIC ARCH UP TO THE EXTERNAL ACOUSTIC MEATUS

THE LIMIT BETWEEN THE CRANIAL AND FACIAL PARTS OF THE SKULL (RED DOTTED LINE), AND BETWEEN THE CALVARIA AND THE CRANIAL BASE (YELLOW DOTTED LINE)

LAYERED TOPOGRAPHY OF THE COVERS OF THE CRANIAL VAULT.



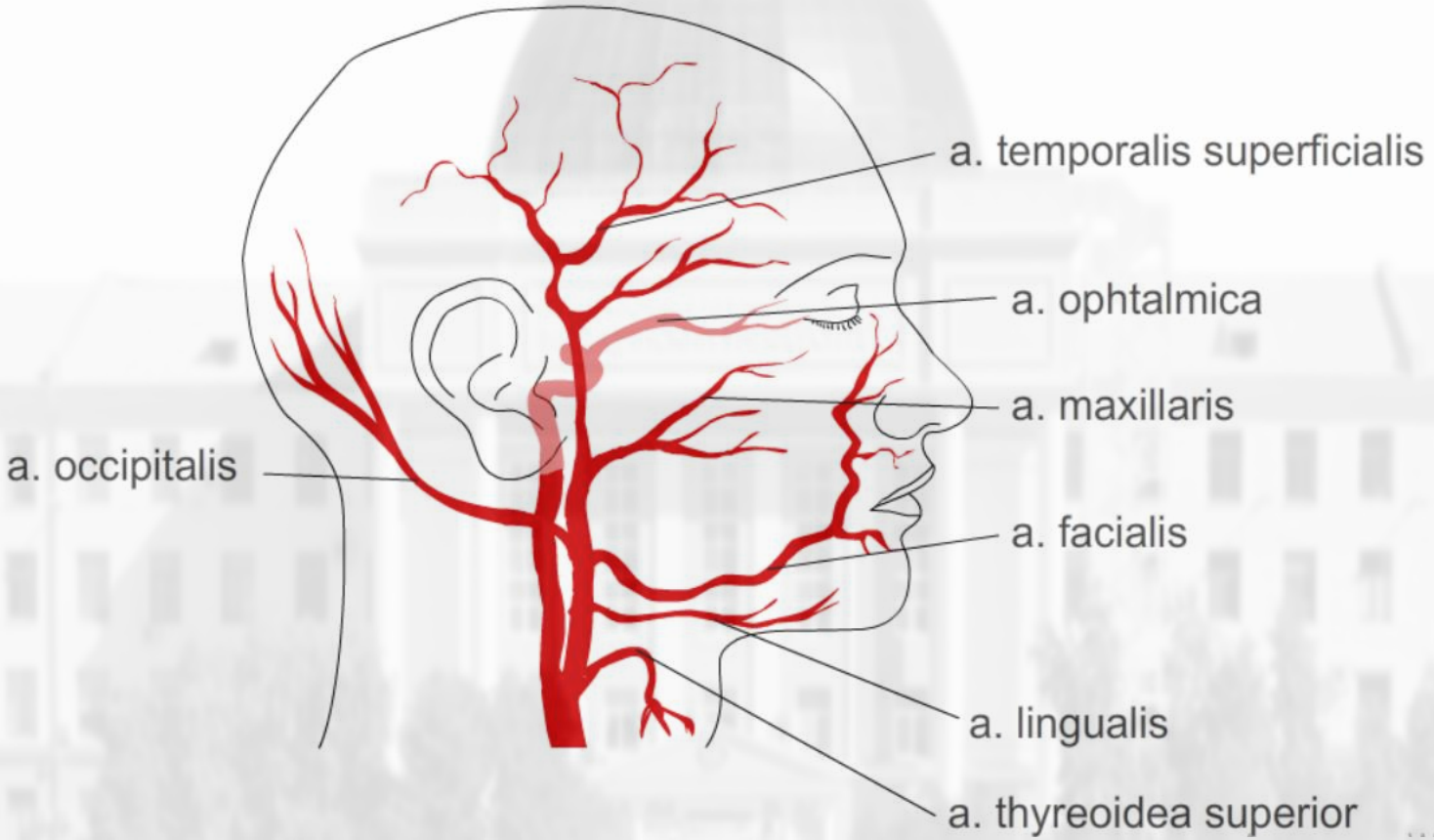
SKIN
SUBCUTANEOUS FAT
TENDON HELMET
SUBAPONEUROTIC FATTY TISSUE
PERIOSTEUM
SUBCOSTAL FATTY TISSUE
BONE
EXTRADURAL SPACE
DURA MATIER
SUBDURAL SPACE
ARACHNID MEMBRANE
SUBARACHNOID SPACE
CEREBROSPINAL FLUID

THE SOFT MENINGES
THE CEREBRAL CORTEX

PECULIARITIES OF ARTERIAL BLOOD SUPPLY

- THE ARTERIES OF THE SOFT TISSUES OF CALVARIA, IN CONTRARY TO ARTERIES IN OTHER REGIONS, RUN IN THE SUBCUTANEOUS TISSUE.
- THE ADVENTITIA OF THE ARTERIES IS CONNECTED WITH THE CONNECTIVE SEPTA UNITING THE SKIN AND THE GALEA APONEUROTICA; THIS IS WHY THE VESSELS DO NOT COLLAPSE BUT GAPE WHEN INJURED. IT RESULTS IN PROFUSE HEMORRHAGE.
- THE ARTERIES RUN FROM BOTTOM UPWARDS (THE RADIAL DIRECTION).
- BLOOD SUPPLIES SOFT TISSUES OF CALVARIA BY THE ARTERIES BOTH FROM THE EXTERNAL CAROTID ARTERY SYSTEM (SUPERFICIAL TEMPORAL, OCCIPITAL ONES) AND FROM THE INTERNAL CAROTID ARTERY SYSTEM (SUPRA-ORBITAL, SUPRATROCHLEAR).
- IN THE SOFT TISSUES OF CALVARIA THERE IS A LARGE PLEXUS OF ANASTOMOSES BETWEEN BRANCHES OF ALL THE ARTERIES TAKING PART IN THEIR BLOOD SUPPLY, WITH THE SAME-NAMED ARTERIES OF THE CONTRALATERAL SIDE AS WELL.

BRANCHES OF THE EXTERNAL AND INTERNAL CAROTID ARTERIES



TRIGEMINAL NERVE

GANGLION OF THE TRIGEMINAL NERVE

THE ORBITAL NERVE (THE FIRST BRANCH)

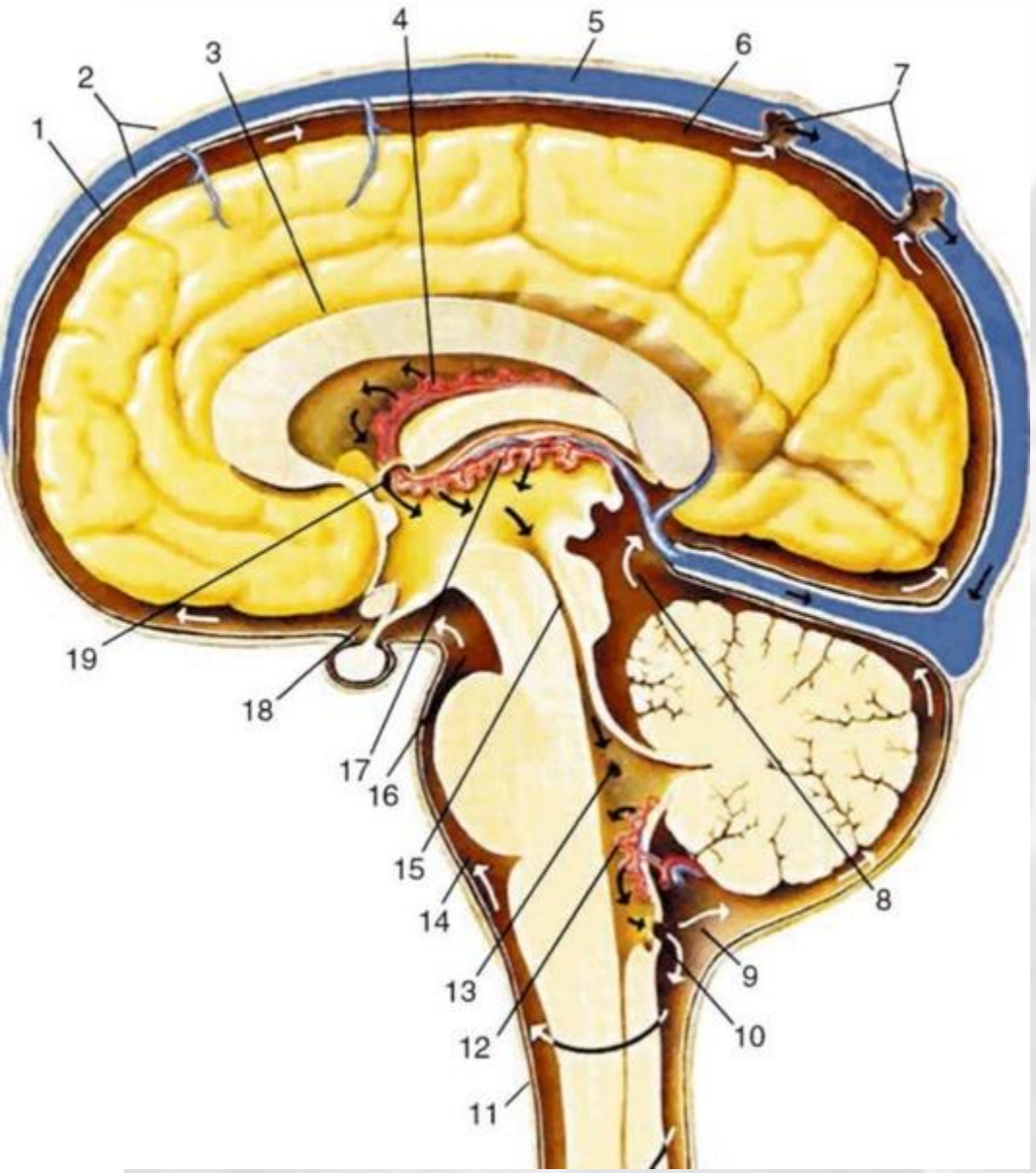
MAXILLARY NERVE (SECOND BRANCH)

MANDIBULAR NERVE(THIRD BRANCH)

THE AREA OF THE MASTOID PROCESS IS THE TRIANGLE OF THE THORN

THE BOUNDARIES OF THE SHIPO TRIANGLE:
IN FRONT - THE POSTERIOR EDGE OF THE EXTERNAL AUDITORY ORIFICE WITH AN AWN LOCATED ON IT (SPINA SUPRAMEATUM); BEHIND - A MASTOID CREST (CRISTA MASTOID); ABOVE - A HORIZONTAL LINE - A CONTINUATION POSTERIORLY OF THE ZYGOMATIC ARCH.
WHEN PERFORMING AN ANTROTOMY, THERE IS A RISK OF DAMAGE:
ANTERIOR - FACIAL NERVE;
BEHIND - SIGMOID SINUS;
FROM ABOVE - THE TEMPORAL LOBE OF THE BRAIN; MEDIAL - LATERAL SEMICIRCULAR CANAL WITH A DEEPENING OF MORE THAN 1.5 CM.

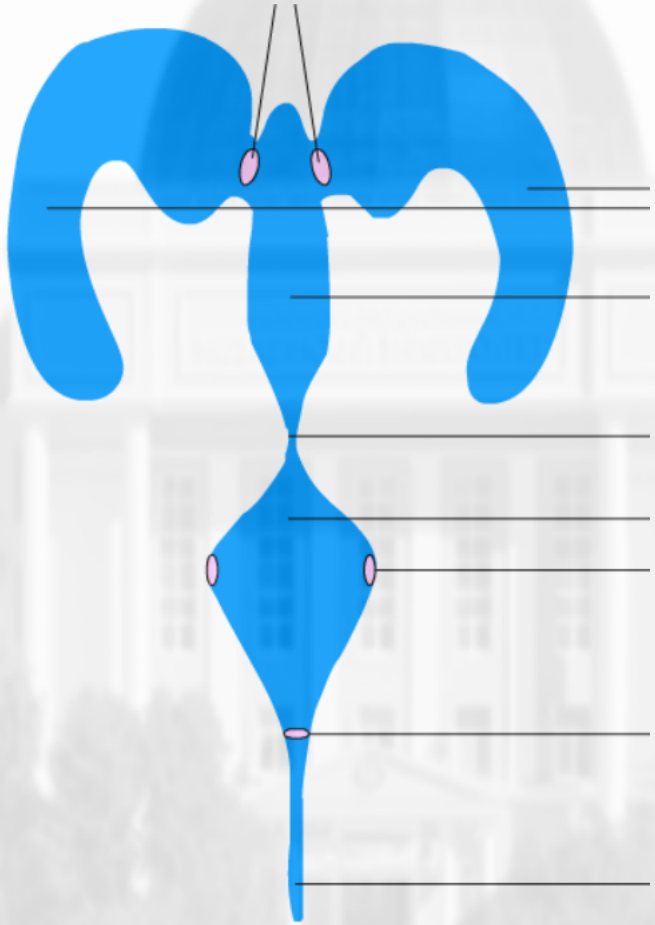
THE SUBARACHNOID SPACE



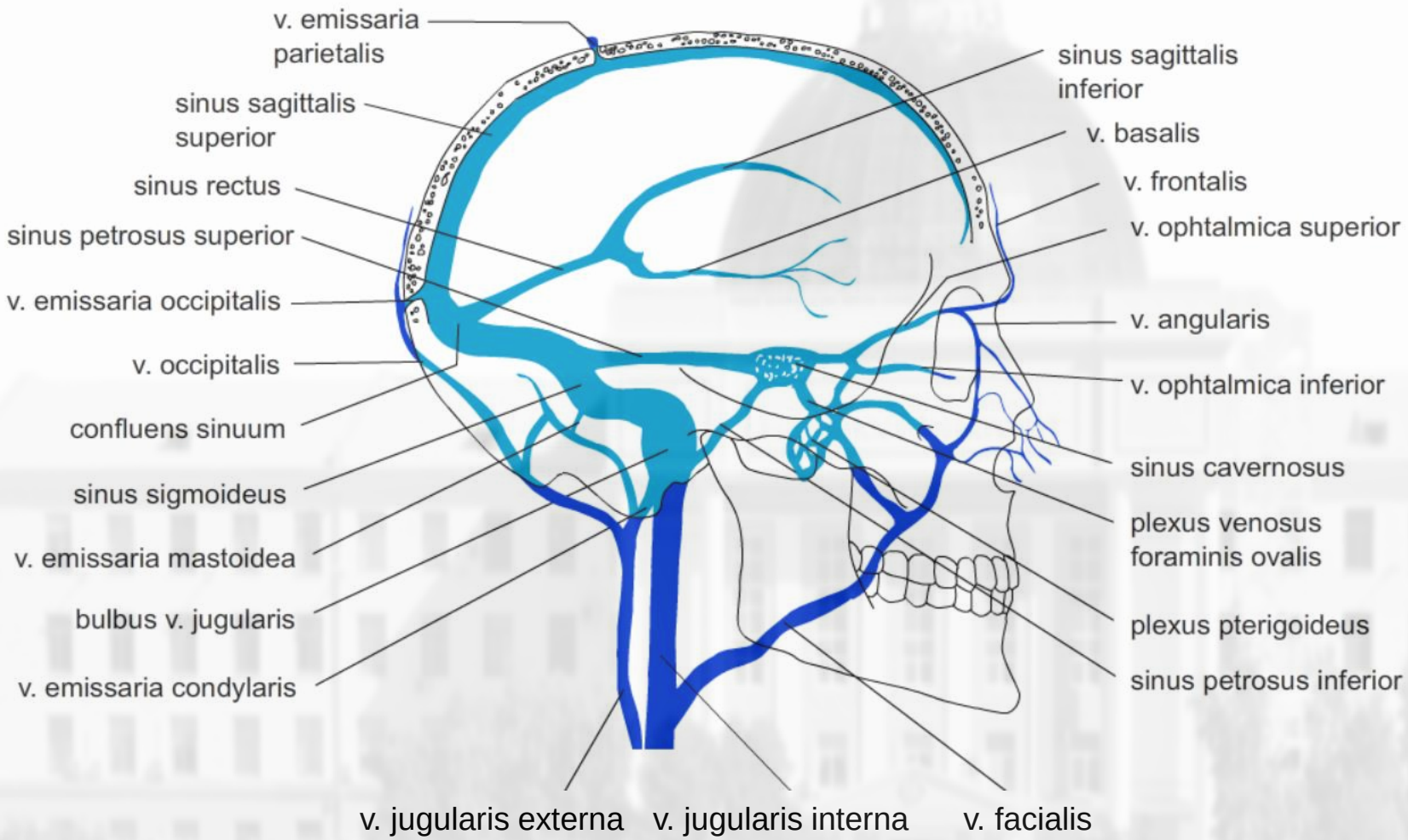
THE WIDENED AREAS OF THE SPACE ARE CALLED SUBARACHNOID CISTERNS.

SUBARACHNOID SPACE. 1 - ARACHNOIDEA MATER; 2 - DURA MATER; 3 - CISTERNA PERICALLOSA; 4 - PLEXUS CHOROIDEUS VENTRICULI LATERALIS; 5 - SINUS SAGITTALIS SUPERIOR; 6 - SPATIUM SUBARACHNOIDEUM; 7 - GRANULATIONES ARACHNOIDEAE (PACCHIONI); 8 - CISTERNA VENAE MAGNAE CEREBRI; 9 - CISTERNA CEREBELLOMEDULLARIS POSTERIOR; 10 - APERTURE MEDIANA (FORAMEN MAGENDIE); 11 - DURA MATER; 12 - VENTRICULUS IV ET PLEXUS CHOROIDEUS; 13 - APERTURE LATERALIS (FORAMEN LUSCHKA); 14 - CISTERNA PONTOCEREBELLARIS; 15 - AQUEDUCTUS MESENCEPHALI (SYLVIUS); 16 - CISTERNA INTERPEDUNCULARIS; 17 - VENTRICULUS III ET PLEXUS CHOROIDEUS; 18 - CISTERNA CHIASMATIS; 19 - FORAMEN INTERVENTRICULARE (MONRO)

THE CEREBROSPINAL FLUID SYSTEM



VENOUS SINUSES OF THE BRAIN

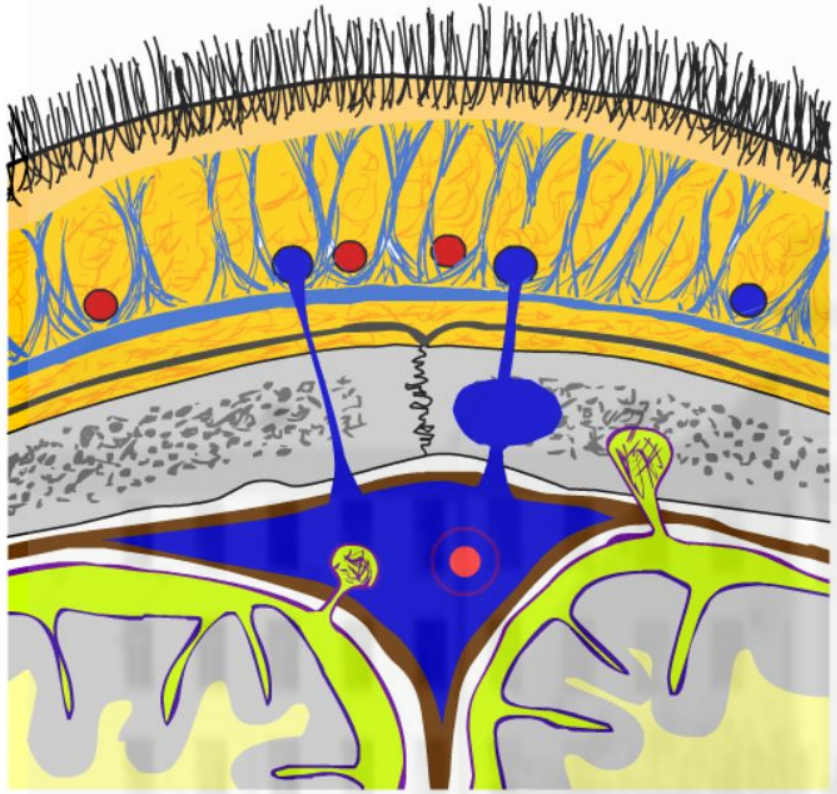


THE SPREADING OF THE INFECTIOUS AGENT THROUGH THE VEINS OF THE FACE CAN BE CARRIED OUT IN ANY DIRECTION DUE TO THE DEVELOPMENT OF INFLAMMATORY EDEMA AND THE ABSENCE OF VENOUS VALVES, ESPECIALLY IN THE UPPER HALF OF THE FACE (BUCCAL AND ZYGOMATIC AREAS, WING AREA AND NASAL CAVITY, UPPER LIP, TEETH OF THE UPPER JAW, MAXILLARY SINUS, ORBIT OF THE EYEBALL). THE OPENING OF A PURULENT FOCUS ABOVE THE UPPER LIP IS DANGEROUS BY MIXING AN INFECTIOUS EMBOLUS AND BLOOD PLASMA, SPREADING RETROGRADE INTO THE AREA OF THE ORBIT AND THE SINUSES OF THE DURA MATER

PECULIARITIES OF VENOUS DRAINAGE

- THE VEINS, LIKE ARTERIES, RUN IN THE SUBCUTANEOUS CELLULAR TISSUE.
- VEINS FORM A LARGE PLEXUS OF ANASTOMOSES.
- VEINS OF THE SOFT TISSUES OF CALVARIA ARE CONNECTED BOTH WITH INTRAOSSEOUS (DIPLOIC) VEINS AND WITH INTRACRANIAL VEINS (DURAL VENOUS SINUSES) THROUGH EMISSARY VEINS.
- VEINS OF THE SOFT TISSUES OF CALVARIA HAVE NO VALVES.
- EMISSARY VEINS ALSO HAVE NO VALVES; THIS IS WHY BLOOD FLOW CAN RUN BOTH IN DIRECTION OF THE SUPERFICIAL AND OF THE INTRACRANIAL VEINS.

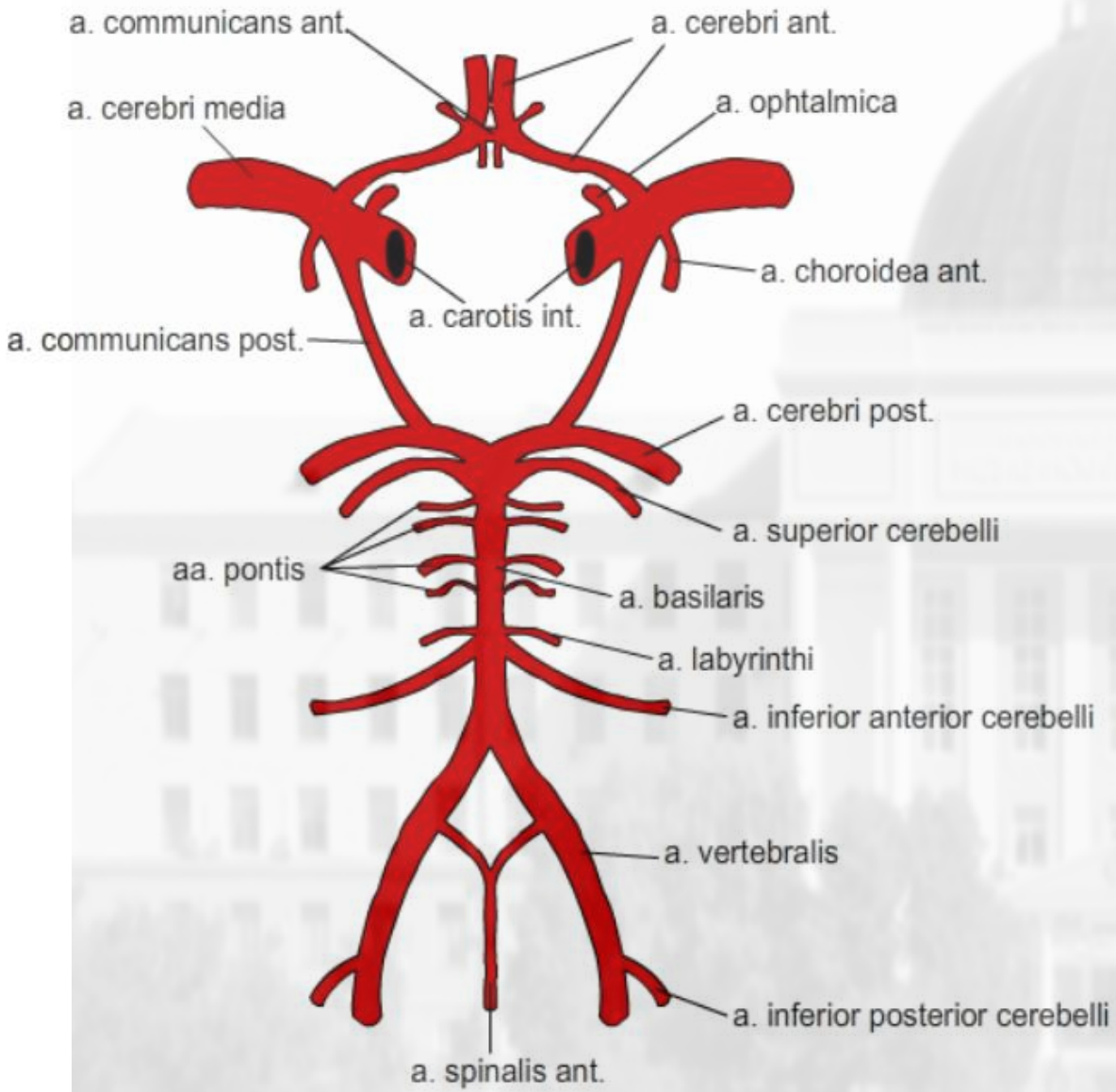
VENOUS SINUSES OF THE BRAIN TRANSMISSION OF INFECTION FROM SUBCUTANEOUS ADIPOSE TISSUE OF THE HEAD TO VENOUS SINUSES



1. Subcutaneous fat
2. Emissary veins
3. Diploetic veins, bone
4. Sinus

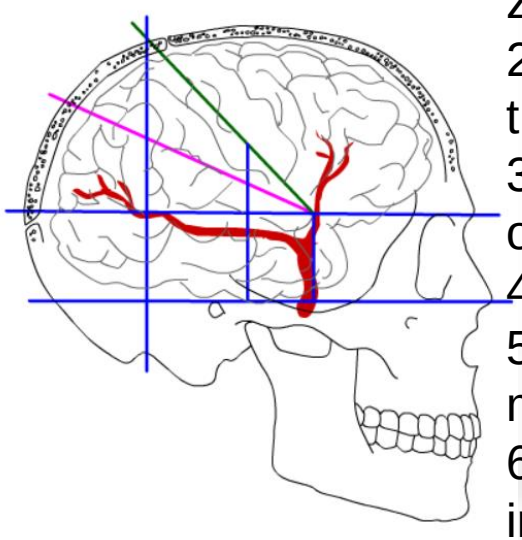
THE SPREAD OF INFECTION FROM SUBCUTANEOUS FAT OCCURS DUE TO THE THREE-TIERED VENOUS SYSTEM: 1ST TIER - SUBCUTANEOUS VEINS OF THE SCALP, TIER 2 – DIPLOETIC VEINS OF THE SPONGY LAYER OF THE FLAT BONES OF THE CRANIAL VAULT, 3RD TIER – SINUSES DURA MATER. EACH VENOUS TIER IS CONNECTED WITH EACH OTHER BY THE GRADUATE VEINS (EMISSARIES). VEINS DO NOT HAVE VALVES,BLOOD FLOW IS CARRIED OUT IN ANY DIRECTION.IN THE CAVITY OF THE SINUSES OF THE DURA MATER AND IN THE SPONGY LAYER OF BONES PACHYONIC GRANULATIONS ARE LOCATED – AN OUTGROWTH OF THE SPIDER SHELL, UNDER WHICH THE CEREBROSPINAL FLUID CIRCULATES. THROUGH THESE GRANULATIONS, THE VOLUME OF CIRCULATING LIQUOR IS REGULATED

BLOOD SUPPLY TO THE BRAIN.WILLIS CIRCLE



THE INTERNAL CAROTID ARTERY PENETRATES INTO THE CRANIAL CAVITY, ITS BRANCHES PIERCE THE LEAVES OF THE DURA MATER CONTAINING NUMEROUS VENULES SURROUNDING THE AREA OF THE TURKISH SADDLE (CAVERNOUS SINUS), THE INTERSECTION OF THE OPTIC NERVES, II-VI TRUNKS OF THE CRANIAL NERVES, THE PITUITARY PEDICLE, THE OPENINGS OF THE BASE OF THE MIDDLE CRANIAL FOSSA, FORM THE WILLIS ARTERIAL CIRCLE. THE INFLAMMATORY PROCESS IN THE CAVERNOUS SINUS AND ITS THROMBOSIS IS THE CAUSE OF ACUTE CEREBROVASCULAR ACCIDENT

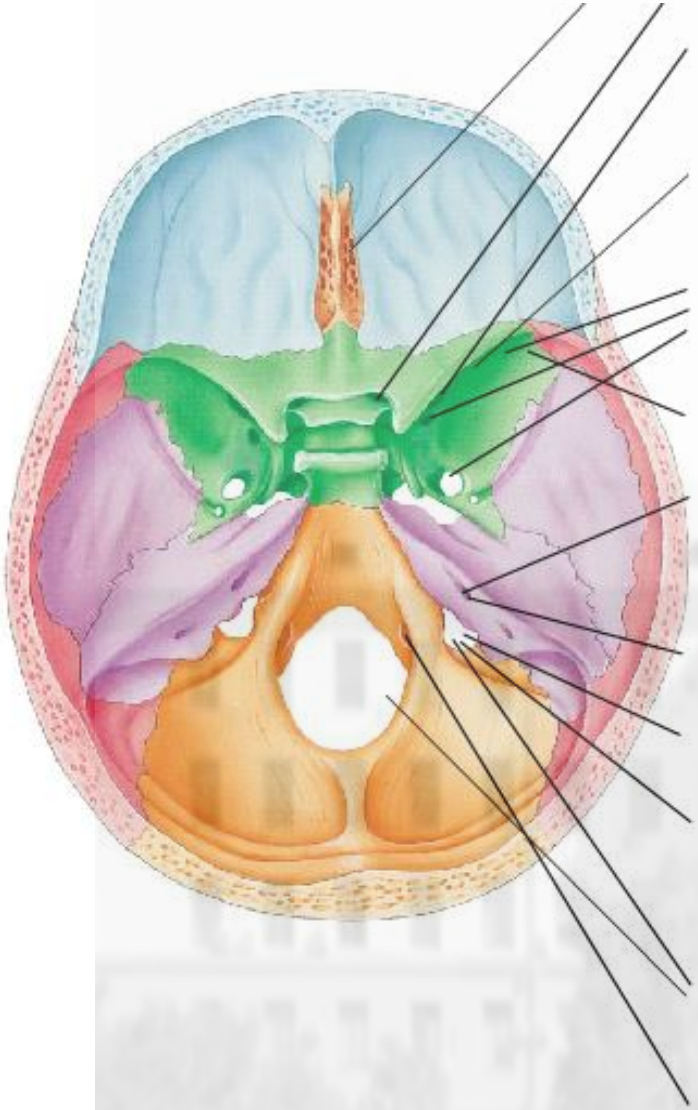
SCHEME OF CRANIAL TOPOGRAPHY OF KRENLEIN-BRYUSOVA



1. The lower horizontal line is from the lower edge of the eye socket along the zygomatic arch and the upper edge of the external auditory canal.
2. The upper horizontal line - through the upper edge of the eye socket parallel to the lower horizontal line.
3. The front vertical line is perpendicular to the horizontal lines through the middle of the zygomatic arch.
4. The middle vertical line is through the joint of the lower jaw.
5. The posterior vertical line is through the posterior point of the base of the mastoid process.
6. The projection of the central (Roland's furrow) is a line drawn from the intersection point of the posterior vertical with the sagittal line to the intersection point of the anterior vertical to the upper horizontal.

7. Projection of the lateral (Sylvian) furrow is the bisector of the angle formed by the projection of the central furrow and the upper horizontal. 8. Projection of the trunk of the middle cerebral artery is the intersection of the anterior vertical with the lower horizontal.
9. Projection of the anterior branch of the middle cerebral artery is the intersection of the anterior vertical with the upper horizontal.
10. Projection of the posterior branch of the middle cerebral artery - the intersection of the posterior vertical with the upper

CRANIAL NERVES. FUNCTIONS. EXIT LOCATIONS.

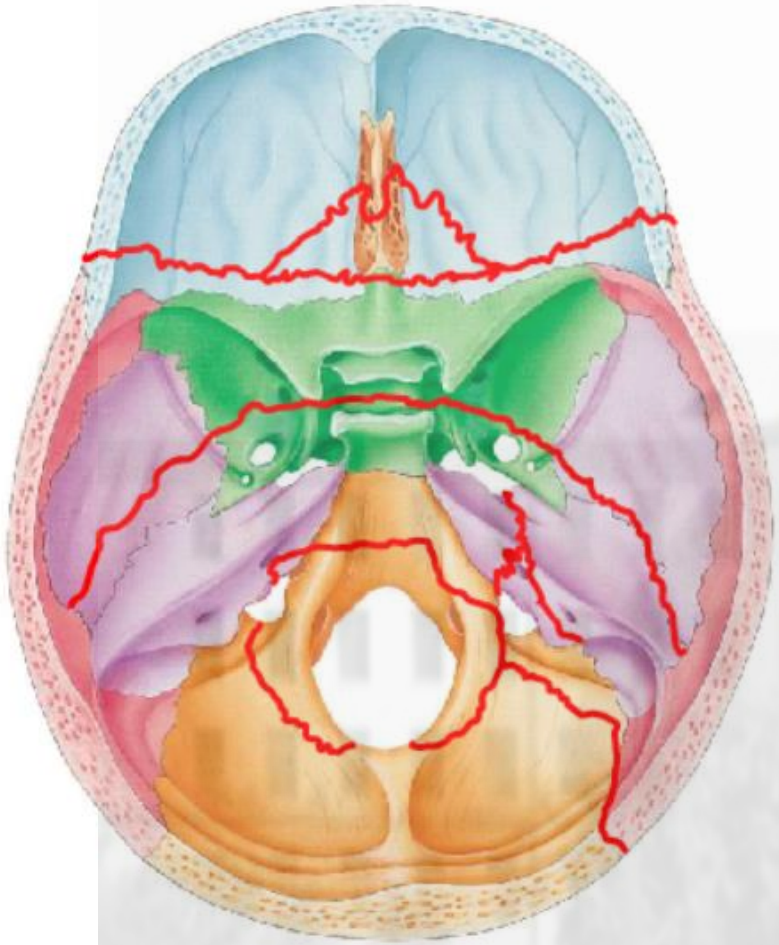


I OLFACTORY NERVE. SENSORY SPECIFIC. FROM THE OLFACTORY EPITHELIUM. LAMINA CRIBROSA.
II VISUAL NERVE. SENSORY SPECIFIC. FROM RETINAL GANGLION CELLS. CANALIS OPTICUS.
III OCULOMOTOR NERVE. MOTOR-VEGETATIVE. FOUR OF THE SIX EXTERNAL MUSCLES OF THE EYEBALL, ACCOMMODATION APPARATUS,PUPIL SPHINCTER. FISSURA ORBITALIS SUPERIOR.
IV BLOCK NERVE. MOTOR-SENSORY. THE UPPER OBLIQUE MUSCLE OF THE EYEBALL, THE SKIN OF THE FOREHEAD, PARIETAL AND TEMPORAL REGIONS. FISSURA ORBITALIS SUPERIOR.
V TRIGEMINAL NERVE. BRANCH (SENSORY-VEGETATIVE) - FISSURA ORBITALIS SUPERIOR; II BRANCH (SENSORY-MOTOR-VEGETATIVE) – FORAMEN ROTUNDUM; III BRANCH (SENSORY-MOTOR-VEGETATIVE) - FORAMEN OVALE.
VI ABDUCTOR NERVE. MOTOR. THE EXTERNAL RECTUS MUSCLE OF THE EYEBALL. FISSURA ORBITALIS SUPERIOR.
VII FACIAL NERVE. MOTOR OUTPUT TO THE FACIAL MUSCLES. SECRETORY INNERVATION OF TASTE RECEPTORS, GLANDS OF THE NASAL MUCOSA,PAROTID, SUBMANDIBULAR, SUBLINGUAL. PORUS ACUSTICUS INTERNUS. OUTPUT: FORAMEN STYLOMASTOIDEUM, CANALIS PTERYGOIDEUS.
VIII AUDITORY NERVE. SENSORY SPECIFIC. FROM THE INNER EAR AND VESTIBULAR ORGAN. PORUS ACUSTICUS INTERNUS.
IX LINGOPHARYNGEAL NERVE. MOTOR-SENSORY-SECRETORY. FROM THE RECEPTORS OF THE TONGUE, PHARYNX, PALATE, CF. EAR. FORAMEN JUGULARE.
X VAGUS NERVE. IN THE HEAD AREA, IT REPEATS THE INNERVATION OF THE LINGOPHARYNGEAL NERVE (IX).FORAMEN JUGULARE.
XI ACCESSORY NERVE. VEGETATIVE-MOTOR OUTPUT TO THE NODDING AND TRAPEZIUS MUSCLES, VESSELS OF THE TRUNK OF THE BRAIN AND UPPER CERVICAL SEGMENTS. FORAMEN JUGULARE, FORAMEN MAGNUM.
XII SUBLINGUAL NERVE. MOTOR OUTPUT TO THE MUSCLES OF THE TONGUE. CANALIS HYPOGLOSSUS

THE OPENINGS OF THE CRANIAL BASE AND THE NEUROVASCULAR STRUCTURES GOING THROUGH THEM

Openings	Structures going through	
Fossa cranii anterior	Lamina cribrosa	N. olfactorius (I)
Fossa cranii media	Canalis opticus	N. opticus (II) A. ophthalmica
	Fissura orbitalis superior	N. oculomotorius (III), n. trochlearis (IV), n. ophthalmicus (V_1), n. abducens (VI) V. ophthalmica
	Foramen rotundum	N. maxillaris (V_2)
	Foramen ovale	N. mandibularis (V_3)
	Foramen spinosum	A. meningea media
	Apertura interna canalis carotici	A. carotis interna
	Porus acusticus internus	N. facialis (VII), n. vestibulocochlearis (VIII) A. labyrinthi
Fossa cranii posterior	Foramen jugulare	N. glossopharyngeus (IX), n. vagus (X), n. accessorius (XI) Bulbus sup. v. jugularis int.
	Canalis n. hypoglossi	N. hypoglossus (XII)
	Foramen occipitale magnum	Medulla oblongata, N. cervicalis I, Aa. vertebrales

TYPICAL PLACES OF FRACTURES OF THE BASE OF THE SKULL



FRACTURE OF THE ANTERIOR CRANIAL FOSSA.

- NOSEBLEED;
- NASAL LIQUORRHEA;
- THE SYMPTOM OF «GLASSES» (ON THE 2ND - 3RD DAY AFTER THE INJURY);
- OLFACTORY DISORDERS;
- SUBCUTANEOUS EMPHYSEMA (IN THE PRESENCE OF CRACKS RUNNING THROUGH THE AIR-BEARING SINUSES OF THE LATTICED, FRONTAL OR MAIN BONES).

FRACTURE OF THE MIDDLE CRANIAL FOSSA.

- BLEEDING FROM THE NOSE AND NASOPHARYNX;
- SYMPTOM OF "GLASSES", PULSATING EXOPHTHALMOS;
- VIOLATION OF THE FUNCTION OF II-VI CRANIOCEREBRAL NERVES.

FRACTURE OF THE PYRAMID OF THE TEMPORAL BONE.

- BLEEDING FROM THE EAR;
- THE OUTFLOW OF CEREBROSPINAL FLUID FROM THE EAR;- TEMPORARY PARALYSIS OF THE FACIAL MUSCLES OF HALF OF THE FACE ON THE SIDE OF THE INJURY (WITH COMPRESSION OF THE FACIAL NERVE);
- PARTIAL OR COMPLETE HEARING LOSS;

FRACTURE OF THE POSTERIOR CRANIAL FOSSA.

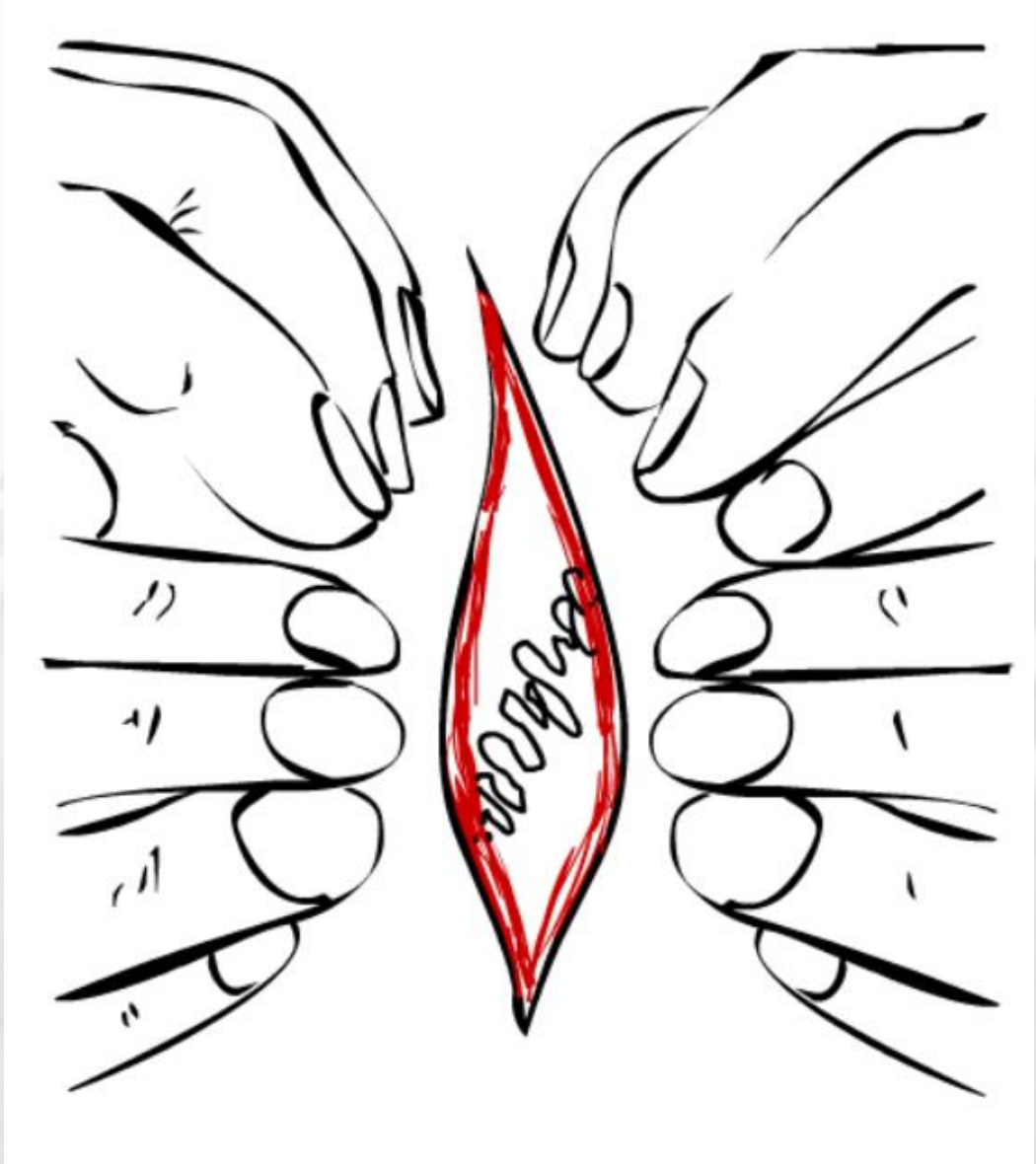
- SUBCUTANEOUS HEMORRHAGES IN THE MASTOID PROCESS;
- COMBINED LESION OF THE FACIAL, AUDITORY AND ACCESSORY NERVES.
- WITH A FRACTURE IN THE REGION OF THE LARGE OCCIPITAL FORAMEN(ANNULAR FRACTURES), THE CAUDAL GROUP OF CRANIAL NERVES IS AFFECTED AND BULBAR SYMPTOMS OCCUR, OFTEN WITH A VIOLATION OF THE FUNCTIONS OF VITAL ORGANS.

STOPPING BLEEDING FROM THE SOFT TISSUES OF THE HEAD

THE USUAL METHODS OF COMBATING BLEEDING, CONSISTING IN THE IMPOSITION OF HEMOSTATIC CLAMPS AND SUBSEQUENT LIGATION OF BLEEDING VESSELS, ARE OF LITTLE USE DURING OPERATIONS ON THE HEAD (THEVESSELS ARE HARDLY GRASPED BY CLAMPS, LIGATURES SLIP OFF). THEREFORE, SOME SPECIFIC METHODS OF HEMOSTASIS ARE USED TO PREVENT AND STOP BLEEDING IN THIS AREA.

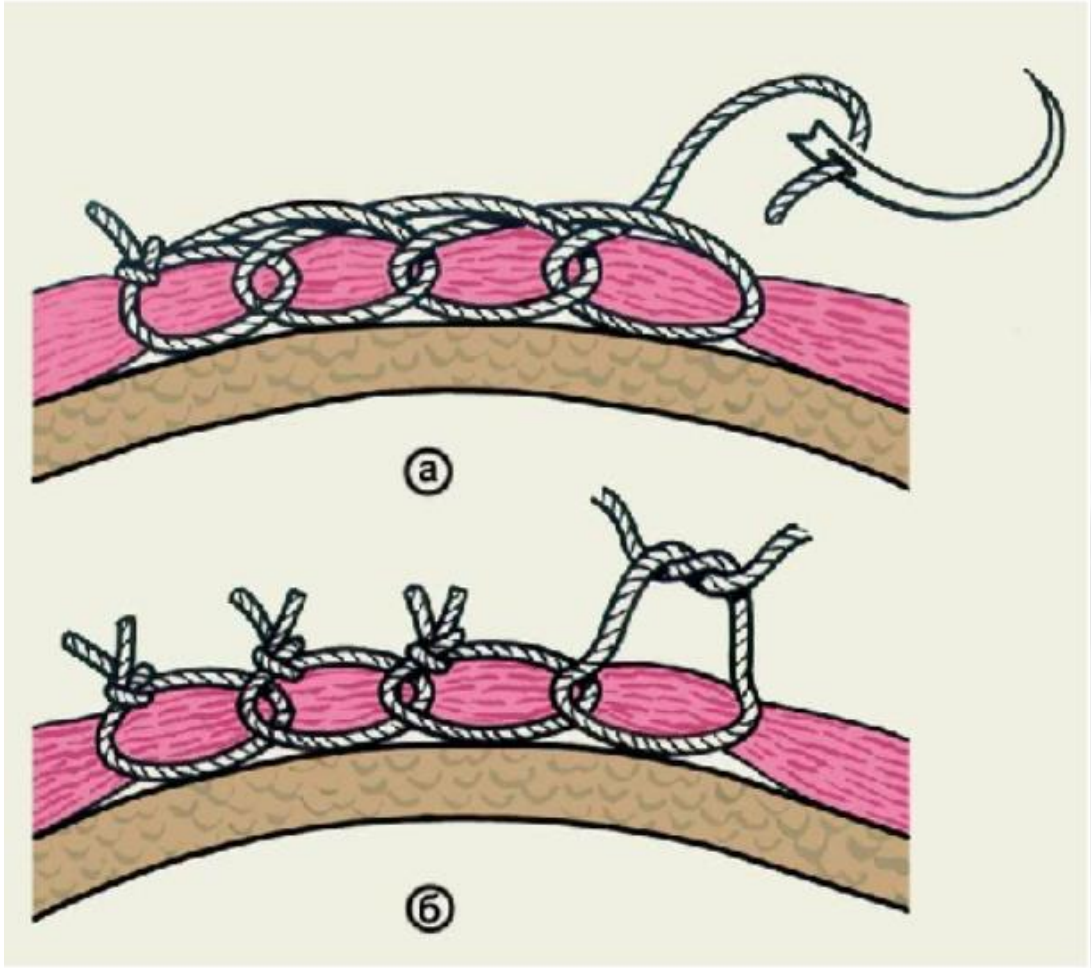
STOPPING BLEEDING FROM THE SOFT TISSUES OF THE HEAD

1. FINGER PRESSING OF THE WOUND EDGES FROM ALL SIDES



STOPPING BLEEDING FROM THE SOFT TISSUES OF THE HEAD

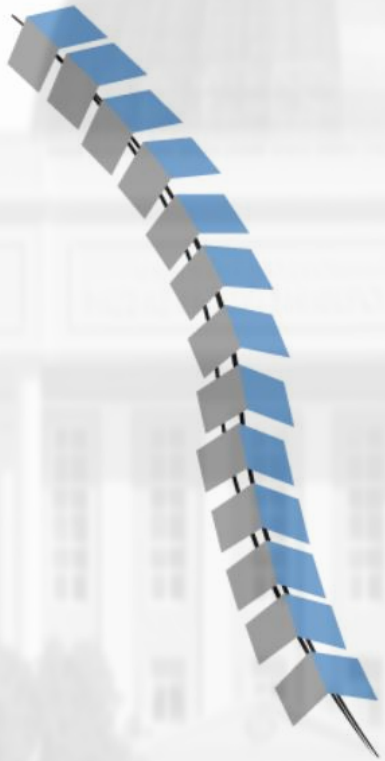
2. APPLICATION OF THE HEYDENHAIN-GACKER SUTURE



THE DIRECTION OF HEMOSTATIC SUTURES, THE DEPTH OF GRABBING AND STITCHING OF TISSUES ARE DETERMINED BY THE RADIAL COURSE OF NUMEROUS VESSELS, THE FIXATION OF THE ADVENTITIA OF VESSELS TO THE TENDON SEPTA CONNECTING ALL THE TISSUES OF THE SCALP. THE NUMBER OF ROWS OF PROVISION SEAMS IS 1 (SEPARATE NODULAR OR CONTINUOUS SEAMS), HEYDENHAIN-GAKKER SUTURES ARE APPLIED LONGITUDINALLY AT A DISTANCE OF 2-3 CM FROM BOTH EDGES OF THE SCALPED WOUND, THE WOUND IS TAMPONED UNTIL THE BLEEDING STOPS COMPLETELY, THEN THE WOUND EDGES ARE CONNECTED WITH SEPARATE NODULAR SUTURES

STOPPING BLEEDING FROM THE SOFT TISSUES OF THE HEAD

3. APPLYING MICHEL BRACKETS



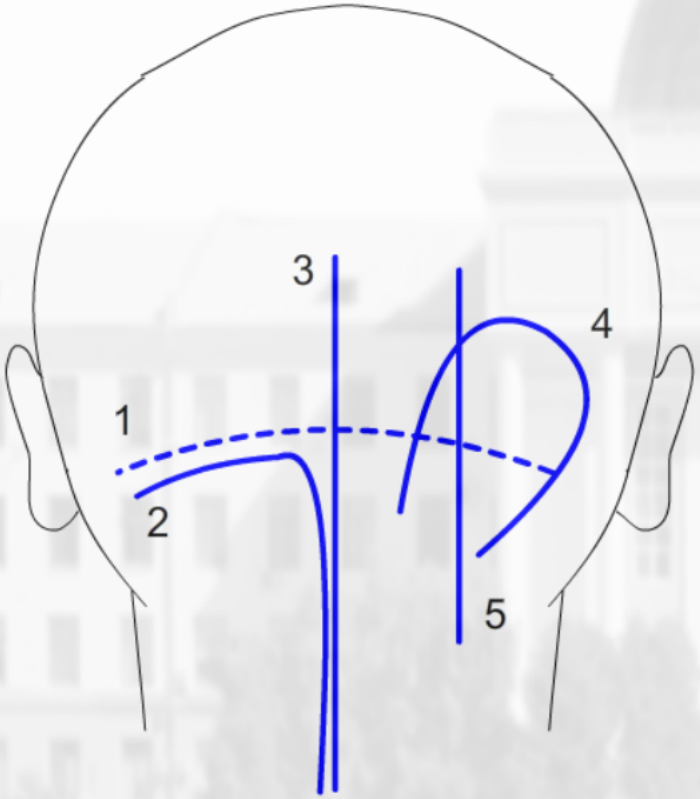
SURGICAL TREATMENT OF THE PENETRATING WOUNDS OF THE SKULL

1. DISSECTION OF THE DURA MATIER.
2. REMOVAL OF BONE FRAGMENTS, BLOOD CLOTS.
3. WITH CEREBRAL DETRITUS - SUCTION, WASHING WITH WARM SALINE SOLUTION. WASHING WITH ANTIBIOTICS IS PROHIBITED - PROVOCATION OF EPILEPTIC SEIZURES!!!
4. COMPRESSION OF THE JUGULAR VEINS - INCREASED PRESSURE - EJECTION OF ADDITIONAL FOREIGN BODIES.
5. THE DURA MATIER IS NOT SUTURED.
6. DRAINAGE FOR 1-2 DAYS.

STOPPING BLEEDING FROM THE VENOUS SINUSES

1. TAMPONED WITH GAUZE TAPE IN THE FOLD, PRESSING THE SINUS FOR 10-14 DAYS.
2. PLASTIC SINUS DURA MATTER.
3. CLOSURE OF THE SINUS WITH A FRAGMENT OF THE TEMPORAL MUSCLE.
4. CLOSURE OF THE SINUS WITH A FRAGMENT OF THE APONEUROTIC HELMET.
5. VASCULAR SUTURE ON THE SINUS (WITH LINEAR INCISIONS).
6. LIGATION OF THE SINUS.

TREPANATION OF THE POSTERIOR CRANIAL FOSSA



1. CUSHING
2. GEIMANOVICH
3. TOWN-NAFZIGER
4. DANDY
5. EGOROV-EDSON

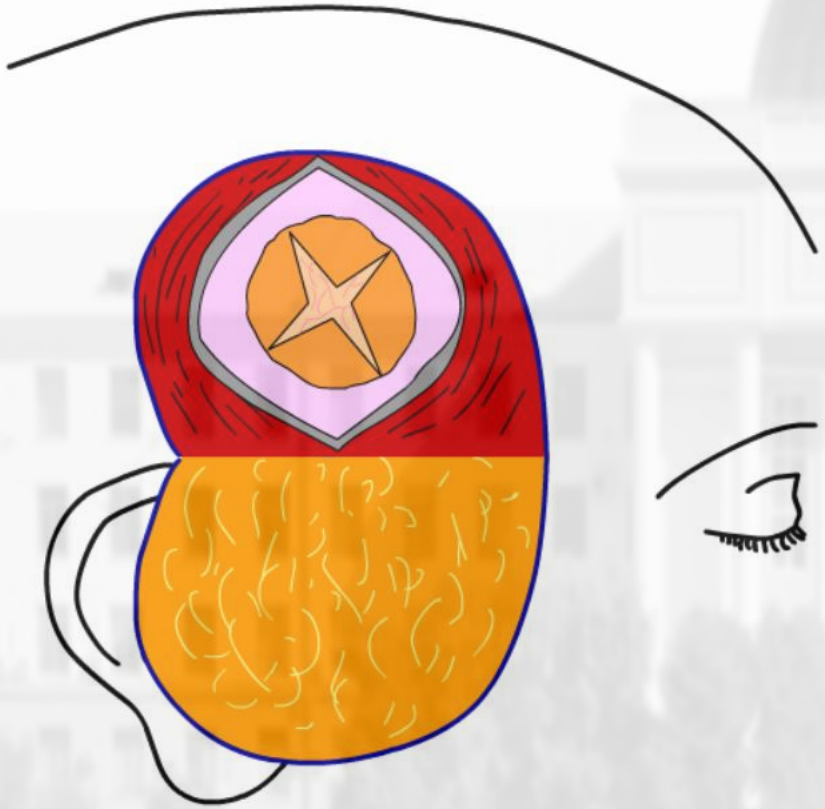
DECOMPRESSION TREPANATION OF THE SKULL

PALLIATIVE SURGERY.

INDICATIONS: INCREASED INTRACRANIAL PRESSURE IN CASES OF INOPERABLE BRAIN TUMORS, WITH PROGRESSIVE EDEMA DEVELOPING AS A RESULT OF TRAUMA.

THE PURPOSE OF THE OPERATION: TO CREATE A DEFECT IN THE BONES OF THE SKULL AND DURA MATTERS IN A CERTAIN AREA OF THE ARCH.

DECOMPRESSION TREPANATION OF THE SKULL



STAGES OF THE OPERATION:

1. A HORSESHOE-SHAPED INCISION OF THE SKIN, THE PANCREAS, RESPECTIVELY, THE LINE OF ATTACHMENT OF THE TEMPORAL MUSCLE.
2. DISSECT THE TEMPORAL APONEUROSIS, THE TEMPORAL MUSCLE TO THE PERIOSTEUM IN THE VERTICAL DIRECTION.
3. THE PERIOSTEUM IS DISSECTED AND SEPARATED WITH A RASP AT A SITE OF 6 CM^2.
4. A MILLING HOLE IS APPLIED IN THE CENTER, THEN IT IS EXPANDED WITH PLIERS.
5. THE DURA MATIER IS OPENED WITH A CRUCIFORM INCISION.
6. THE SURGICAL INCISION IS SUTURED IN LAYERS, WITH THE EXCEPTION OF THE DURA MATIER.

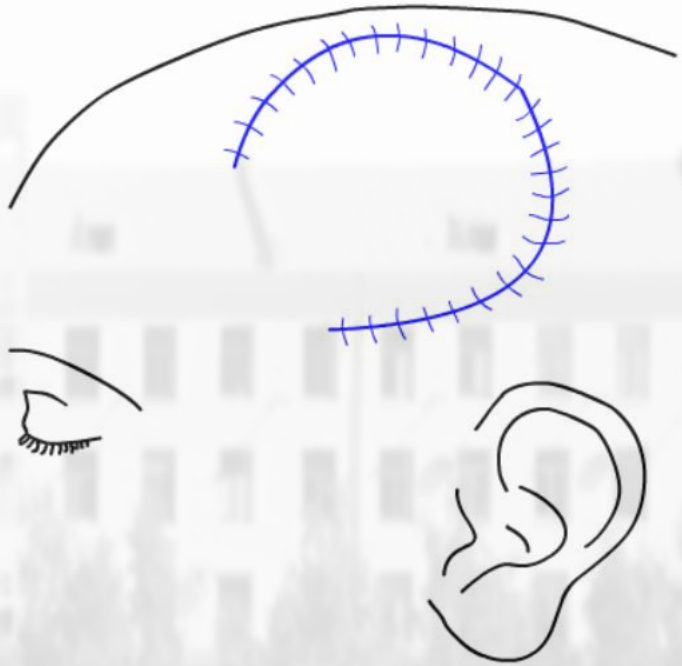
BONE-PLASTIC TREPANATION OF THE SKULL

INDICATIONS. A TEMPORARY OPENING OF THE SKULL CAVITY IN ORDER TO ACCESS ITS CONTENTS FOR SURGERY IN THE CASE OF STROKES, A. MENINGES MEDIA INJURIES, REMOVAL OF HEMATOMAS, INFLAMMATORY FOCI, BRAIN TUMORS

THE PURPOSE OF THE OPERATION. TO CREATE A SUFFICIENTLY WIDE ACCESS TO THE SITE OF SURGERY BY THE TEMPORARY REMOVAL OF A SOFT TISSUE FLAP AND A BONE-PERIOSTEAL FLAP, FOLLOWED BY THEIR RETURN TO THE SITE.

BONE-PLASTIC TREPANATION OF THE SKULL

STAGES OF THE OPERATION:
1. HORSESHOE-SHAPED INCISION OF THE SKIN, PANCREAS, APONEUROSIS.
2. THE PERIOSTEUM IS ARCHED AT A DISTANCE OF 1 CM FROM THE EDGES OF THE SKIN INCISION, THEN EXFOLIATED TO THE SIDES BY A WIDTH EQUAL TO THE DIAMETER OF THE CUTTER.
3. 5-7 HOLES ARE APPLIED WITH A MILLING CUTTER.
4. THE SECTIONS BETWEEN THE MILLING HOLES ARE SAWN THROUGH WITH A SAW GIGLI.
5. THE DURA MATIER IS OPENED ALONG THE EDGE OF THE WOUND.
6. AFTER THE END OF SURGERY, THE WOUND IS SEWN UP IN LAYERS.



THANK YOU FOR YOUR ATTENTION!