### SURGICAL 3D ANATOMY OF TRANSCONDYLAR ACCESS IN THE SURGICAL TREATMENT OF BRAIN TUMORS

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***Key words:*** *access, transcondylar, tumor, brain, anatomy*

**Aim.** Improvement of the results of surgical treatment of tumors of craniovertebral transition using transcondylar access.

**Material and Methods.** An anatomical study of surgical approaches of cadaveric material with silicone filling of arteries and veins was done Clinical cases are represented by surgical treatment of tumors of the craniovertebral transition in 23 patients using this access.

**Results and Discussion.** The results of a study of the surgical anatomy of transcondylar access are presented. It is shown that for adequate access a transposition of the vertebral artery is necessary. Based on the study, patients undergoing transcondylar access with transposition of the vertebral artery and removal of the jugular tubercle were performed in a seated or recumbent position, which allowed for the radical removal of tumors without neurological deficits.

**Conclusions.** Transcondylar access with transposition of the vertebral artery is an alternative method of surgical treatment of ventral craniovertebral tumors.

### GLOMUS APPARATUS IN THE HUMAN PALATAL MUCOSA

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***Key words:*** *glomus apparatus, palatal mucosal, human cadaver*

**Introduction.** Precapillary arteriovenous shunts, or Sucquet—Hoyer canals, of the skin play a significant role in thermoregulation. Glomus bodies are frequently found in the reticular layer of the dermis within the fingers, toes, or the external ear. Although less frequently mentioned, similar glomeral apparatuses, composed of endothelium lined lumina surrounded by «epitheloid» cells and a thick connective tissue capsule, also are apparent in the palatal mucoperiosteal tissue.

**Material and Methods.** Palatal mucosal blocks were harvested from 10 formadehyde fixed human cadaver heads and 15 micrometer paraffin sections were stained with haematoxylin eosin or AZAN. The basement membrane was visualized by periodic acid Schiff (PAS) reagent. For immunocytochemistry parallel sections were reacted against vimentin and tyrosine hydroxylase.

**Results.** The subepithelial connective tissue of the hard palate contains a peculiar course of vascular network deriving from the descending palatine arteries. Small precapillary arterioles, giving rise to the arteriovenous shunts and surrounded by a tyrosine hydroxylase reactive neural plexus are embedded in a dense connective tissue network intermingling with seromucous palatal glands. The endothelial lining of the glomera is separated from the «epitheloid» cell mass by a PAS reactive basement membrane. Most of the «epitheloid» cells exhibit vimentin positivity thus suggesting a mesenchymal/pericyte origin.

Glomus bodies are obligatory components of the deeper dermal layer of skin, however, they are mostly discussed with relevance to forming solitary or multiple benign tumors.

**Conclusions.** The oral representation of glomeral bodies is very rarely taken into account and only in association with inflammatory diseases or benign masses. However, these complex entities may act not only as thermoregulatory but also as mechanical schock absorbing units of the lining of the oral cavity proper.

### TYPES OF THE POSTERIOR PART OF THE CEREBRAL ARTERIAL CIRCLE AND ASSOCIATED ARTERIAL VARIATIONS IN HUMAN ADULT CADAVERS

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***Key words:*** *human cadaver, base of the brain, cerebral arterial circle — posterior part, types*

**Background.** There is a high incidence of variations of the posterior part of the cerebral arterial circle (CAC), but there is an insufficient data about types of the posterior part of the CAC in adult period or its association with specific arterial variations.

**Aim.** This morphological study had as the aim to add new facts about angioarchitecture of the CAC.

**Material and Methods.** Classification of the posterior part of the CAC into types and subtypes, by already formed types from literature, was performed on 388 human adult brains during the forensic autopsies.

**Results and Discussion.** Incidences of transitory type was 4.9%; fetal — 14.94%; adult — 79.97% without statistical significance by side. Incidence

of symmetric types was 75.27% (with predominance of the bilateral adult type). Incidence of asymmetric types were: adult-transitory — 6.18%, fetal-transitory — 1.35% and adult-fetal — 17.2%. The most of the arterial variations were left sided and excess artery (a. communicans intermedia*) in the posterior part of the CAC was associated with the fetal type of the CAC.

**Conclusions.** Investigation proved domination of symmetrical types of the posterior part of the CAC configuration, independent of age, gender or cause of death.

### THE METHOD OF FORENSIC FACIAL RECONSTRUCTIONS

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***Key words:*** *facial reconstruction, facial anatomy, skull, muscles*

**Aim.** Forensic facial reconstruction is the anatomical method of recreating the face of an individual based on their skull. The forensic experts can study the skull to build a biological profile of a person.

**Material and Methods.** The basic knowledge and expertise are needed in the facial reconstruction process. This includes the muscle groups and the location and tissue depth of each of these muscles. Before explore the muscles to be assembled, the experts need to prepare the skull. The skull is levelled to ensure it is parallel to the ground by placing the 'Frankfurt plane' and attach a series of osteometric markers to the skull that can act as an indication of the depth of each of the muscles. The muscles are: Occipitofrontalis, Temporalis, Buccinator, Masseter, Mentalis, Depressor labii inferioris, Orbicularis Oris, Levator Anguli Oris, Levator Labii Superioris, Depressor Anguli Oris, Levator Labii Superioris Alaeque Nasi, Zygomatic Major and Minor, Orbicularis Oculi and Risorius.

**Results and Discussion.** Forensic experts refer to facial reconstruction as a «tool for recognition» rather than accurate identification process. Many features of facial morphology can be determined using scientific methods. However, some features, such as the lips, eyes, and ears, require a degree of artistic interpretation. Also, lifestyle and external factors can influence the appearance in idiosyncratic ways. For example, facial ageing can be accelerated by cigarette smoking, sun damage or weight loss.

**Conclusions.** Forensic facial reconstruction is a powerful tool that significantly enhances the chances of identification. The knowledge of facial anatomy is vital to be able to reconstruct a face from a skull.

### IMAGING OF THE FIRST RIBS: VARIANT ANATOMY, PATHOLOGY, CLINICAL VALUE

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***Key words:*** *first rib, x-ray, chest, variant anatomy*

**Aim.** To study the features of the first ribs during digital chest X-ray screening, taking into account variant anatomy and anomalies in timely recognition and differential diagnosis of tuberculous and oncological pathologies at the level of the first sternocostal segment of the upper aperture of the thorax.

**Material and Methods.** imaging of the first ribs of patients undergoing digital chest X-ray screening, 14 344 women and 8949 men aged 16 to 93 years (mean age 62.5±3.4 years) in Kursk during 2016–2017.

**Results and Discussion.** We didn't reveal any racial-ethnic differences in results of the primary analysiswith X-ray morphometry of the first ribs. In the randomized groups we noted sexual and age-related dimorphism of the size and structure of the first ribs, predominantly asymmetric ossification of the cartilages often mimic the focus of tuberculosis and hides the lung tumor node, leading to a late misdiagnosis.

Asymmetric synostosis and hypo- and aplasia dominated the spectrum of anomalies of the first ribs. The primary pathology of the first ribs is represented by dystrophic changes in the posterior segments and stress fractures in the middle segments.

**Conclusions.** Unified methodology for interpreting digital chest X-ray images, taking into account the features of the first ribs significant improves screening in early detection of tuberculosis and lung cancer.

### AN ANATOMICAL STUDY OF THE COURSE OF LUMBAR PLEXUS NERVES PASSING AT LEVEL OF THE QUADRATUS LUMBORUM BLOCK

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***Key words:*** *lumbar plexus, anatomical study, block*

**Background.** The quadratus lumborum block (QLB) is an often-used regional anaesthetic block technique at level of L3 but it remains unclear which nerves of the lumbar plexus are reached.

**Aim.** Therefore, the topography and course of nerves (subcostal nerve, SCN; iliohypogastric nerve, IHN; ilioinguinal nerve, IIN) passing ventral