

BOGOMOLETS NATIONAL MEDICAL UNIVERSITY

Department of human anatomy

**GUIDELINES**

<i>Academic discipline</i> дисципліна	HUMAN ANATOMY
Module №	1
Content module №	12
The theme of the lesson	<b>Sphenoid and temporal bones.</b>
Course	I
The number of hours	3

Kyiv 2017

### **1. Specific objectives:**

As a result of the classes a student should know and be able to:

- Classify the cranial bones.
- Determine the location of temporal and sphenoid bones on the preparation.
- Describe the details of the structure (parts, surfaces, edges, angles, certain anatomical lesions) of the temporal and sphenoid bones.
- Analyze which surface of the temporal bone and sphenoid bone are involved in the formation of the walls of the eye socket, nasal bone, nasal septum.
- Identify the holes on the temporal and sphenoid bone containing blood vessels and nerves, and others.
- Show the rocky surface of the temporal bone.

### **2. Basic training level:**

After the independent preparation for the class, the student should know and be able to:

- Apply knowledge of the lecture on "The bones and their connections."
- Classify bones (in structure and form).
- To determine the structure of long and short, flat, spongy and tubular, mixed, pneumatic, atypical bone.
- Know the anatomical planes of the human body and anatomical terms to locate the temporal and sphenoid bones about these planes.
- Demonstrate to the preparation and communication of the temporal bone wedge with other cranial bones (frontal, occipital, parietal, ethmoidal).

### **3. Organization of educational content material.**

Teaching material is described in a logical sequence with using of anatomical preparations, involving structural logic, tables, figures that reflect the content of the main topics of practical lessons.

### **4. The content of the material.**

**The skull is the most important part of the human skeleton and is divided into the following sections:**

Neurocranium - cranial;

Viscerocranium - facial skull, visceral skull.

For the convenience of studying of a skull consider it from several sides:  
 Norma superior, norma verticalis (upper rule, vertical rule);  
 Norma occipitalis (occipital norm), Norma lateralis (lateral norm);  
 Norma inferior, norma basalis (the lower the rate, the main rate);  
 Norma facialis, norma frontalis (facial rule, frontal norm).

**In the study of individual bones cranial advisable to stick to this plan:**

- **The name of the bone (Ukrainian and Latin).**
- **Location of the bones in the skull.**
- **The orientation of the bones in the skull to the definition of the right or left (for the pair).**
- **Name and show the main part of the bone.**

**Sphenoid bone** (Os sphenoidale) - odd bone, participates in the vault and skull base, walls anterior and middle cranial fossa, fossa lateral rules walls eye socket, nasal bone, nasal septum, Joan; her chewing muscles attached has povitroonosnu cavity, numerous channels and holes through which blood vessels and nerves.

**Orientation:**

1. **The body (corpus);**
2. **Big Wing (Ala major);**
3. **Small Wing (Ala minor);**
4. **pterygoid process (Processus pterygoideus).**

**The body has six surfaces: top, bottom, front, back and 2 sides.**

**Body surfaces:**

**1. Superior surface (facies superior):**

Prechiasmatical groove	Sulcus prechiasmaticus
Turkish saddle	Sellaturcica
Tubercle saddle	Tuberculum sellae
Pituitary fossa	Fossa hypophysialis
The back of the seat	Dorsum sellae
Optical channel	Canalis opticus

**2. Задня поверхня (facies posterior)**

The back of the seat	Dorsum sellae
Clivus	Clivus

**3. Передня поверхня (facies anterior)**

Sphenoidal sinus	Sinus sphenoidalis
Sphenoidal concha	Concha sphenoidalis
Aperture of the sphenoidal sinus	Apertura sinus sphenoidalis

#### 4. Lateral surfaces (facies lateralis)

Carotic sulcus	Sulcus caroticus
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#### 5. Inferior surface (facies interior)

Great wing	<b>Ala major</b>
Infratemporal crest	Crista infratemporalis
Foramen rotundum	Foramen rotundum
Foramen ovale	Foramen ovale
Foramen spinosum	Foramen spinosum
Lesser wing	<b>Ala minor</b>
Optic channel	Canalis opticus
The upper orbital fissure	Fissura orbitalis superior
Pterygoid process	<b>Processus pterygoideus</b>
The lateral plate	Lamina lateralis
The medial plate	Lamina medialis
Pterygoid fossa	Fossa pterygoidea
Pterygoid canal	Canalis pterygoideus

**Temporal bone (os temporale)** - participates in the vault and skull base, side walls pits rules, forms temporomandibular joint, it is located in the organ of hearing and balance canals of the temporal bone.

Pars petrosa	The rocky part
Processus mastoideus	Mastoid process
Sulcus sinus sigmoidei	Sulcus of the sigmoid sinus
Sulcus arteriae occipitalis	Sulcus of the occipital artery
Foramen mastoideum	Mastoid foramen
Facies anterior partis petrosae	The front surface of the stony part
Facies posterior partis petrosae	The back surface of stony part
Meatus acusticus internus	Internal acoustic meatus
Fossa jugularis	Jugular fossa
Foramen stylomastoideum	Stylo-mastoid hole
Cavitas tympani	Tympanic cavity
Pars tympanica	Tympanic part
Porus acusticus externus	External acoustic opening
Meatus acusticus externus	External acousticus meatus
Pars squamosa	Squamous part
Facies temporalis	Temporal surface
Fossa mandibularis	Mandibular fossa

Facies articularis	Articular surface
Tuberculum articulare	Articular tubercle
Fissura petrotympanica	Fissure petrotympanica
Fissura petrosquamosa	Fissure petrosquamosa
Fissura tympanosquamosa	Fissure tympanosquamosa
Fissura tympanomastoidea	Fissure tympanomastoidea
Facies cerebrialis	Cerebral surface

## **5. Methods of educational process on a practical lesson.**

### **5.1. Preparatory stage.**

At the preparatory stage, it should be emphasized that the cranial or Neurocranium forms a vault, the skull base, has a direct link with the brain and Obolon of the brain involved in the formation of the whole configuration of the skull. Emphasising that the sphenoid and temporal bones are fixed chewing muscles and fascia, acting on the temporomandibular joint, providing the act of chewing, speech articulation and others.

Sphenoid and temporal bones involved in the formation eye socket, nasal bone (the location of the vision, smell, beginning airways, throat), lateral pits rules: wing-palatal, temporal, infratemporal; forming external and internal surface of the skull base.

The explanation that the through holes and channels formed by these bones, passing vessels and nerves and forming connections with neighboring cavities (conditions for the spread of inflammation). The attention to the presence in the sphenoid bone pneumatic sinuses, which are often damaged by purulent process that requires surgery and the possibility of complications of these processes due to the proximity brain coverings and projection of the body of sphenoid bone pituitary (extremely important endocrine gland).

Determining the clinical significance of the temporal bone, that contains such creations as the organ of hearing and balance, through its channels where there are vital nerves and blood vessels, which leads to damage of pathology, and sometimes - to death.

Emphasizing the frequency of injury face, distortions bone nasal septum, injuries base and cranial vault, the walls of which form a wedge and temporal bones, it also requires surgery. The study of the structural features of each individual bone cranial necessary for the doctor of any specialty, especially neurosurgeon, neonatologist, ophthalmologist, otolaryngologist, plastic surgeon, traumatologist, neurologist, dentist. Students meet specific goals and plan lessons.

A control entry-level training of students.

### **5.2. Practical work of students.**

Discussion of the basic laws of the cranial and origin of the temporal and sphenoid bones that form this skull. Classification of the bones. On preparation of the skull and on radiographs – determine the location of temporal and sphenoid bones. Description of the details of their structure (the main part surfaces, edges, angles, certain anatomical lesions - holes, pits, promotion, channels, ridges, cutting, processes, etc.).

Analysis of the place of attachment of the chewing muscles, surfaces and description of parts that form the temporomandibular joint. The explanation of the sphenoid bone that form the top and the side wall of the nasal cavity of the bone, especially the bone formation of the nasal septum; of the sphenoid bone involved in the formation of the walls of the eye holes, pits side rules base and cranial vault. Defining holes and fissures on the temporal and sphenoid bone that contains blood vessels and nerves emphasis channels temporal bone. Describe osteofication, age and sex characteristics. Explanation mobile communications skull with lower jaw. In order to form new knowledge and skills, practical skills according to specific objectives classes students have to show their own teacher all anatomical formations each individual bones. Oral survey is accompanied by a demonstration of anatomical structures in the skull, skeletons, corpses and solving situational problems and tests, maximally brings students to the clinical situation. The answers are discussed and students and teachers.

### **5.3 The final stage.**

A standardized final control of knowledge. We estimate the current success of each student during classes, score is assigned to the log of visits and success. Estimates are announced and elder groups simultaneously puts them in the roll of the success of attendance of students and their teacher certifying his signature.

Students are informed about the topic of the next classes and instructional techniques to prepare for it.

### **6. Attachments. Means of control:**

- Questions to control the entry level of students' knowledge.
- Questions to control the final level of training.

- Tests of format (STEP 1).
- Practical tasks on illustrations in the manual "Human Anatomy"

Questions to control the entry level of students' knowledge:

- What bones form the cranial skull?
- List the even and odd cranial bones.
- Which bone consists the porus acusticus externus?
- What cranial bone has Zygomatic process?
- What cranial bone has papillary process?
- What cranial bones are pneumatic?
- What cranial bone has wings?
- What parts does the temporal bone have? Show them.
- Which of the sphenoid bone has pneumatic sinuses?
- Display the surface of the pyramid of the temporal bone.
- Name and show the surfaces of the temporal bone.

Questions to control the final level of training:

- Name and show on the preparation the sphenoid bone.
- Name and show on preparation skull pterygoid process of sphenoid bone.
- Describe and show on preparation the large wing of sphenoid bone.
- Describe and show pterygoid process of sphenoid bone.
- Show the optic channel on preparation.
- Show on preparation skull plate medial pterygoid bone sphenoid bone.
- Which of the sphenoid bones are involved in the formation of the upper orbital fissure?
- Show the papillary process of the temporal bone.
- Describe the surface involved in the formation of the temporomandibular joint.