Topic 2. Characteristic of masticatory oral mucosa. Gums. Hard palate.

Structure of oral cavity		
Oral cavity	**Vestibule**	It is the space between the lips, cheeks, and teeth.
	Oral cavity proper	It lies behind the teeth and is bounded by the hard and soft palates superiorly, the tongue and the floor of the mouth inferiorly, and the entrance to the oropharynx posteriorly.

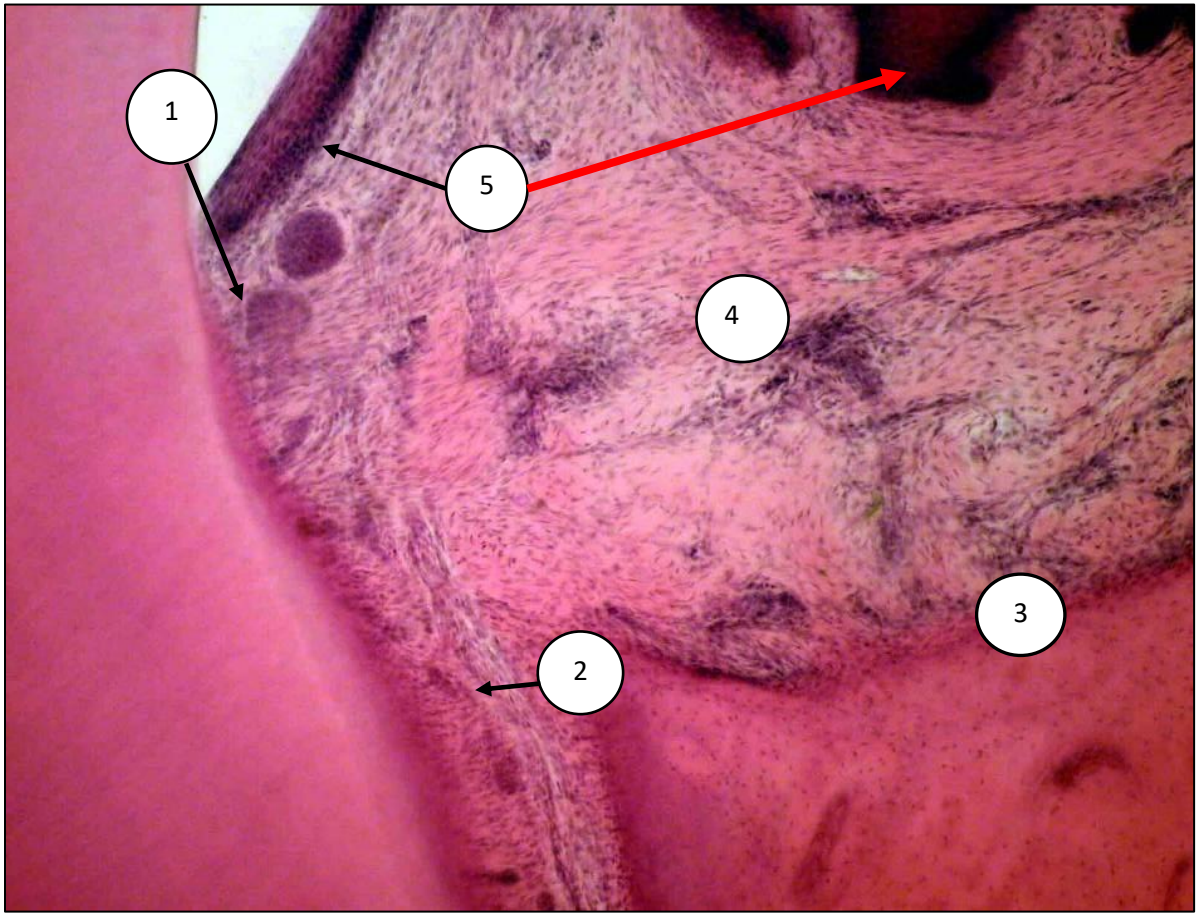
Types of oral mucosa			
Types		**Localization**	**Type of epithelium**
1.	**Mastigatory mucosa**	Hard palate, gums, medial area of the cheek (white line).	Stratified squamous keratinized
2.	**Lining mucosa**	Bottom of the oral cavity, the ventral surface of the tongue, maxillary and mandibular areas of the cheek, soft palate, lips.	Stratified squamous nonkeratinized
3.	**Specialized mucosa**	Dorsal surface of the tongue.	Stratified squamous keratinized

Hard palate consists of a bone base covered by mastigatory oral mucosa			
Hard palate		**Structural features**	
1.	**Mucosa**	Most developed in the posterior parts of hard palate	Consists of stratified squamous keratinized epithelium and lamina propria. Lamina propria includes connective tissue and forms finger-shaped papillae.
2.	**Submucosa**	In the **fatty zone** there is **adipose connective tissue.** In the **glandular zone** there are small salivary glands. In the **marginal zone** and **palatine raphe zone** submucosa is absent and lamina propria fused with periosteum.	
3.	**Bone base**	Formed from the palatine processes.	

Hard palate		
Parts		**Structural features**
1.	**Fatty zone**	forms the anterior one third of hard palate
2.	**Glandular zone**	forms the posterior two thirds of hard palate
3.	**Marginal zone**	the area which adjacents to the gums
4.	**Palatine raphe zone**	forms the middle line of hard palate

Gums (gingiva)		
1.	**Mucosa**	Consists of stratified squamous nonkeratinized (mostly keratinized) epithelium and lamina propria. Lamina propria includes dense connective tissue and connects with alveolar processes of the upper and lower jaws.
2.	**Submucosa**	is absent.
Gingiva is connected with bone base. **Bone base** is formed by the alveolar processes of the upper and lower jaws.		

Parts of gums (gingiva)		
1.	**Free gingiva**	Superior free part of the gingiva which does not attach to the cervix of the tooth. It is separated from the tooth surface by gingival sulcus.
2.	**Attached gingiva**	It is part of the gingiva which firmly attaches to the underlying hard tissues (alveolar bone, cementum, and edge of the enamel).
3.	**Interdental gum**	It is triangular region of gums is located between adjacent teeth



Dento-gingival junction
Magnification X 40, hematoxylin-eosin staining.

On the preparation of dento-gingival junction (1) there are periodontium (2), interradicular bone (3), lamina propria of gums (4) and epithelium of gum (5) The gums consist of epithelium and lamina propria.

VOCABULARY

Oral vestibule. The vestibule of the oral cavity is a slit-shaped space bordered on the outside by the cheeks and lips; from the inside - by teeth and gums. Above and below it is enclosed by the mucous membrane of the lips, cheeks and gums, belonging respectively to the upper and lower alveolar arch.

Oral cavity proper (*cavum oris proprium*) is bounded laterally and in front by the alveolar arches with their contained teeth; in the back, it connects to the pharynx by means of a narrowed opening called the isthmus faucium. It is covered by hard and soft palate, whereby most of the floor is formed by the tongue, the rest - by the mucous membrane protruding from the sides and under the lingual surface to the gums lining the inside of the lower jaw.

Oral mucosa. The lining of the oral cavity is mucous membrane, which is composed of two layers: an epithelium (stratified squamous epithelium) and subjacent connective tissue (lamina propria). Oral mucosa can be divided into three main types: masticatory, lining, and specialized.

Lining mucosa is found in most regions of the oral cavity, and is not involved significantly with mastication. These are regions more important for speech and swallowing. They are therefore mostly non-keratinized. They may have higher levels of elastic fibers within the lamina propria. It has small or no visible dermal papillae and rete pegs between the epithelium and connective tissue layers.

Masticatory mucosa is found in regions of high abrasion caused by mastication, such as the attached gingiva. The epithelium is either be ortho-keratinized or para-keratinized, which are both partially keratinized. Because this mucosa is generally under higher levels of stress, it has more pronounced dermal papillae and rete pegs than lining mucosa.

Specialized mucosa is found on the dorsal surface of the tongue. More important than its level of keratinization is the precense of specialized structures, such as lingual papillae and taste buds.

Filiform papillae are the majority of the tongue’s dorsal surface, giving it avelvety appearance. They contain an ortho-keratinized or para-keratinized stratified squamous epithelium. These papillae function to provide friction only, their mucosa contain no taste buds.

Fungiform papillae are shaped like a mushroom and are dotted throughouot the dorsal surface of the tongue. They contain an ortho-keratinized or para-keratinized stratified squamous epithelium over a highly vascular sub-mucosa, giving these structures a more reddish-appearance than neighboring filiform papillae. The epithelial layer contains taste buds.

Circumvallate papillae are found in a V-formation on the bordering between the anterior and posterior part of the tongue, the sulcus terminalis. They contain an ortho-keratinized or para-keratinized stratified squamous epithelium with minor salivary glands and taste buds.

Foliate papillae are found on the outer margins of the tongue. They are made up of ortho-keratinized or para-keratinized stratified squamous epithelium with taste buds.

Ortho-keratinized epithelium has visible nuclei and partly keratinized epithelial cells.

Para-keratinized epithelium does not display visible nuclei, with partly keratinized epithelial cells.

TESTS

1. The histologic specimen shows an **organ of the oral cavity**, the **basis of which is bone tissue**. It is covered with a mucous membrane, which shows a **multilayered squamous epithelium**. The **formation includes fatty, glandular and marginal zones**. In all areas of the **mucosa's own lamina propria, collagen fibers form a powerful bundle that intertwines with the periosteum**. What structure is represented in the sample?

Hard palate
Gums
Lips
Cheek
Tongue

2. During the biopsy **of the oral mucosa**, morphological signs of **gingival** lesions were found. What are the **normal features of the gums** structure?
Quiescent adherent to the periosteum, lamina propria forming high papillae, absent of muscular plate
Loose adhesion to periosteum, well defined muscle plate
Muscle plate is absent, submucosa is well developed
Muscular plate and the lamina propria are absent
Contains many small salivary glands

3. The histological preparations showed the **structure of the oral cavity**, **composed of a mucous membrane, which is loosely attached and strongly fused to the periosteum**. The **epithelium is a stratified squamous keratinized epithelium**. The **lamina propria forms long papillae deeply immersed in the epithelium**. What is this structure?
Gums
Hard palate
Lip
Cheek
Tongue

4. The dentist has found an enlarged space in the **gingival pocket caused by the separation of the epithelium from the tooth surface**. What type of epithelium was damaged?
Stratified squamous non keratinized
Stratified flat keratinized
Stratified cuboidal nonkeratinized
Stratified columnar nonkeratinized
Pseudostratified columnar epithelium

5. Examining the mucous membrane of the **hard palate**, the dentist found a rounded formation located in the mucous membrane's **lamina propria** in the suture. What kind of cells have formed?
Epithelial cells
Lymphocytes

Adipocytes
Pigment cells
Mucous cells

6. When performing a first-class cavity filling without a pre-fixed matrix, the filling material got into the **interdental space** and injured the **interdental papillae**. What structures were damaged?
Epithelial cells and lamina propria
Epithelial cells and submucosa
Epithelial cells and bone
Epithelial cells and glands
Epithelial cells and muscles

7. During the preparation of the chewing surface of an untreated tooth crown, the boron slipped and **injured the soft gingival tissue**. What tissue was broken?
Epithelial cells and lamina propria
Epithelial cells and submucosa
Epithelial cells and pulp
Epithelial cells and glands
Epithelial cells and muscles

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