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Study of the Structure of Teeth Cells Teeth Histology

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Abstract: Teeth play an important role during human life. They are also involved in cutting food, mechanical grinding, and correct pronunciation of words. Teeth come out twice in a person's life. Teeth develop from 6-7 weeks of pregnancy. Baby teeth come out first, and then they are replaced by permanent teeth. The mechanism of tooth eruption is very complex and has not been fully studied. This article provides information on the study of the structure of tooth cells and the histology of teeth.

Keywords: Tooth histology, epithelial plate, enamel, dentin, cementum, pulp, periodontium.

Teeth are an important part of the chewing apparatus. They have two different generations. Baby teeth (20 pieces) appear first, and then they are replaced by permanent teeth 29 - Histology. Anatomically, the tooth is divided into crown, neck, root parts, and histologically, enamel, dentin, cementum, pulp and periodontium (tissue around the tooth). Progress. In the 7-8th week of embryonic development, the epithelium of the oral cavity penetrates the underlying mesenchyme forming a longitudinal epithelial plate. From the anterior epithelial plate, the vestibular part of the mouth is formed, and from the back plate, the upper and lower tooth plates are formed. During the formation of single-rooted teeth, the epithelium at the bottom of the primary oral cavity penetrates into the mesenchyme and forms a complex epithelial band. Where multirooted teeth appear, the epithelial bands are separate. From the inner surface of the tooth plate, epilelia collections forming enamel organs - tooth buds (hermen dentis) began to appear. Mesenchyme begins to grow from under the tooth bud and sinks into the epithelial organ to form a tooth sucker (papilla dentis). As a result, an enamel organ is formed in the form of an overturned cup or cap. Later, the enamel gradually separates from the tooth plate. There are 3 types of enamel epithelial cells: 1) internal; It is divided into 2) outer and 3) intermediate zone cells. The internal cells touching the toothpick grow and turn into tall prismatic epithelium. These cells later participate in the formation of tooth enamel (enamelium) and are therefore named enameloblasts or ameloblasts. The outer enamel epithelium is flattened during further growth of the organ. The cells of the intermediate layer move away from each other as a result of the accumulation of fluid between them and become star-shaped. This product is called the pulp of the enamel organ, which later participates in the formation of the enamel cuticle (cuticula enameli).

A tooth consists of hard tissues and a single soft tissue. Hard tissues of the tooth: enamel, dentin, cementum. Soft tissue of the tooth: pulp. Enamel. The crown part of the tooth is covered with enamel. Enamel tissue is the hardest tissue in the human body, its hardness is equal to the hardness of diamond. Enamel consists of 96.4% inorganic and 1.2% organic substances and 3.8% water. It consists of mineral salts and hydroxyapatite from inorganic substances, the

average calcium is 37%, phosphorus is 17%. The main structure of the enamel is made up of prisms and inter-prisms. Enamel tissue covers the crown part of the tooth in various thicknesses. For example, the thickness of the enamel in chewing teeth is 0.01 mm in the neck part, 1.7 mm in the tooth bulge, 0.6 mm in the tooth fissure. The cavity between the enamel bumps performs a protective function, that is, it protects the dentin from the impressions of the external environment. Dentin. Dentin tissue is similar to bone tissue. Harder than bone tissue. Dentin consists of 70-72% inorganic substances. The main part of inorganic substances is: phosphate and carbonate calcium salts, calcium fluoride, magnesium, sodium and other trace elements. 15-20% is organic matter: protein, fat, 10-12% is water. Dentin is the main supporting tissue of the tooth and consists of two parts: dentin in the crown and dentin in the root. Dentin enamel tissue in the crown part, cementum tissue covers the dentin in the root part. The number of dentin canals reaches 30,000 to 75,000 per 1 mm2. There is a dentin fluid inside the dentin canals, which participates in the metabolism. Dentin participates in the nutrition of cementum. Consists of primary and secondary dentin. Primary dentin is formed during tooth formation. Secondary dentin is formed after the tooth breaks through the gum. Tertiary dentin is formed under the influence of the protective reaction of the pulp tissue in diseases of the dental hard tissues.

Cement. The tooth root is covered with cement tissue. Cementum tissue is similar to bone tissue and is composed of 60% inorganic and 40% organic matter. Cement constantly appears and changes during a person's life. Cementum is fed at the expense of dentin and periodontium. Cement plays an important role in keeping the tooth in the alveolar cell. According to its histological structure, it consists of two types of cement: primary acellular and secondary cellular cement. Secondary cellular cement is similar to coarse fibrous bone tissue in its structure and composition. Secondary dentin is located at the tip of the root and at the bifurcation. Primary acellular cementum covers the rest of the root surface.

Pulp. The pulp is the only soft tissue of the tooth. Pulp tissue is a connective tissue rich in blood vessels, lymphatic vessels and nerve fibers that fills the tooth cavity. The pulp consists of two parts. Pulp in the crown part and pulp in the root part. The pulp in the crown part is different from the pulp in the root part. The pulp in the root part is tougher because there are more collagen fibers. The pulp connects with the periapical area through the root tip opening. The pulp performs the functions of forming dentine, feeding, participating in the metabolism of enamel, sensing various impressions. The periodontium is located in the space between the tooth cell wall and the root surface. This space is called periodontal fissure. The width of the periodontal crack is not the same at different levels and surfaces of the root and it is 0.35-0.8 mm. In the middle part of the cell, the periodontal fissure is narrowed, so it looks like an hourglass. Fibers of the periodontal tissue have different directions in different parts of the root, and the following groups of fibers are located in it: gingival fibers, alveolar fibers, and interdental fibers. The gingival fibers connect with the gingival tissue in a fan-like direction starting from the edge of the cementum in the gingival pocket. Fiber bundles are well developed on the vestibular and oral surfaces, and poorly developed on the proximal (side) surfaces. Their thickness is 0.1 mm. Tufts of interdental fibers are 1–1.5 mm long, starting from the cementum of one tooth and connecting to the cementum of the adjacent tooth. These fibers are involved in maintaining the integrity of the tooth row. Dental alveolar fibers start from the cementum on the whole surface of the root and attach to the wall of the root cell. At the tip of the root, the fibers have a vertical direction. In the part near the tip of the root, the fibers are horizontal, in the middle and upper 1/3 of the root, the fibers are obliquely oriented. The periodontium performs the following functions: it holds the tooth in the alveolar cell, distributes the pressure on the tooth (damping), acts as a barrier and defense, participates in trophic, i.e. cement nutrition. It also participates in tooth replacement.

Periodontal tissue is a complex consisting of the following tissues: gingiva, alveolar growth, periosteum, periodontal tissue and root cementum. Periodontal tissues are closely related to each other and are anatomically, functionally and genetically integrated. Nerve, lymph and blood vessels of periodontal tissues are also a whole. The periodontist performs the following functions. 1. Trophic. 2. Holder. 3. Depreciation. 4. Barrier. 5. Plastic. 6. Reflective regulation.

The protective function ensures the integrity of the periodontium. This protects the whole organism from the effects of unpleasant pathological factors. The periodontium is resistant to infection, intoxication and increased pressure. The trophic function of the periodontium is one of the main functions. This function is realized because it is provided with a wide network of capillaries and nerve receptors. The plastic function of the periodontium is manifested in the constant restoration of tissues lost due to physiological and pathological influences. Collagen and elastic fibers in the periodontium play an important role in the implementation of the amortization function. These fibers protect the alveolar growth, blood and nerve fibers in the periodontium from injury due to the pressure created during chewing a bite of food.

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