

**STRUCTURAL CHARACTERISTICS OF PERI-IMPLANT SOFT TISSUE
FACTORS INFLUENCING THE DEVELOPMENT OF INFLAMMATION IN
THE IMPLANT CAVITY AND PERI-IMPLANT**

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Annotation: A modern understanding of the influence of the structural characteristics of peri-implant soft tissues and nonspecific factors of protection of the oral mucosa on their relationship with the development of inflammatory processes and biodegradation of the material is analyzed . Issues are discussed that reveal the features that determine the function of the structural elements of the implant, their contact with the gingival epithelium and the health of the peri-implant lumen. The characteristics of the peri-implant lumen and periodontal ligament are compared. Both general characteristics of soft tissues and specific features of peri-implant tissue are considered. The risk of complications depending on the implant material and the etiology of diseases such as implant mucositis and peri-implantitis are considered. Comparisons with periodontitis will be made to identify specific and nonspecific features that characterize these diseases. The clinical manifestations of these diseases and their correlation with the materials used in the manufacture of the superstructure are described. Issues of preventing complications arising from prosthetics on implants are also discussed.

Key words: *dental implant, epithelium of the gingival cuff, inflammation, osseointegration, peri-implantitis*

Introduction

Wednesday cavities mouth, properties prosthetic constructs play a central role in maintaining process osseointegration implant. Obviously, that the characteristics of the part of the implant located inside the gums, significantly influence the success of implantation And deadlines services established on implants of orthopedic structures. Until now time there are still a lot of questions related to understanding the relationships between soft tissues cavities mouth And implant.

Target - summarize knowledge O structural characteristics of the tissues surrounding the implant, their etiology, pathogenesis, clinical picture and differential diagnostics pathologies.

Materials And methods

The study is based on the search and analysis of original domestic and foreign articles covering issues related to the structural characteristics of peri-implant tissue, etiology, clinical, diagnostic and preventive aspects of diseases caused by the penetration of a foreign body into mucoperiosteal tissue.

Research results.

The relationship between oral soft tissue and implants is similar to that of the marginal periodontal ligament, but such comparisons are relative. Simultaneously with the process of installing the implant into the bone, changes occur in the mucous membrane and periosteum in the area adjacent to the implant, creating a mechanical barrier between the implant and the oral cavity. An endplate forms under the mucous membrane of the periosteum. Many authors point to the formation of a barrier by dense fibrous tissue, which is facilitated by changes in the surface of the implant, i.e. well polished neck. The resulting connecting zone acts as a lock and prevents the epithelium from growing into the bone [5-7]. Previous studies have shown that transitional epithelium is attached to the implant surface in the form of thin sheets of hemodesmosomes similar to those found on natural teeth. However, true attachment does not occur even if the fibers are perpendicular to the implant surface [4, 8-12]. When a foreign body is implanted into the body, an inflammatory reaction occurs, which is a manifestation of the protective and reparative function of connective tissue, aimed at removing or sequestering damaged material and restoring damaged tissue [13-19].

The most important features of the structural organization of soft tissue elements (epithelium) are

The most important structural feature of soft tissue elements (epithelium, bundles of collagen fibers) located on the abutment is that there is practically no direct epithelial and fibrous contact between the dental implant and the tissue elements located here.

The gingival components of the implant neck influence the formation of the epithelial attachment.

However, various factors have been identified that may be associated with the development of peri-implant inflammatory lesions. These complications require special attention, since studies have shown that peri-implant inflammatory lesions do not seal, as is typical for inflammatory periodontal diseases, but penetrate into the bone tissue.

In addition, the lack of true connective tissue attachment facilitates the growth of bacterial plaques deep into the bone. Bone defects that form around implants usually spread in a circle, so when peri-implantitis develops, the stability of the implant in the bone is quickly lost. Therefore, unlike periodontitis, peri-implantitis develops faster, and the process itself is characterized by pronounced aggressiveness [29-34].

However, many authors note the clinical similarity of peri-implantitis with chronic localized periodontitis. However, the aspect of inflammatory changes in peri-implantitis may differ significantly from that in periodontitis, since peri-implantitis and periodontal tissues differ in their structure and resistance to bacterial infection. However, in both groups of diseases, an infectious-inflammatory reaction of tissues to the pathogenicity of microbial biofilms (microbial plaque) is observed, which ultimately leads to bone destruction. Plaque can also accumulate and contribute to inflammation if the keratinized gingiva is not attached and there is significant soft tissue mobility around the polished necks of implants and abutments, leading to the formation of spaces.

Mucositis at the implant site is an inflammation of the surrounding soft tissues that does not interfere with osseointegration. Dental peri-implantitis is an inflammatory reaction of the osseointegrated peri-implant tissue, accompanied by significant loss of supporting bone.

Epidemiological studies have established that peri-implant mucositis and peri-implantitis occur in most patients. In the near future, inflammatory phenomena in peri-implant tissues will become as widespread as periodontal diseases [4, 36, 43-45].

Peri-implantitis and subsequent progressive loss of soft tissue around implants can be caused by soft tissue failure, i.e. failure or lack of adhesion to the head of the implant [46-48].

The main tissues involved in peri-implantitis and periodontitis are connective tissues. Comparative studies of oral cavity homeostasis during periodontitis and peri-implantitis have shown the unidirectional nature of this process, however, peri-implantitis has more pronounced inflammatory and destructive signs [24, 35, 49]. The intensity of inflammation depends on the degree of biocompatibility of the tissues on which the implants are installed [13, 22,

25, 50, 51]. Although absolute conclusions cannot be drawn for humans, there are a number of materials that are biocompatible. Modification of the surface of titanium implants by applying bioactive or bioinert coatings is aimed at improving biocompatibility, for example, by increasing the corrosion resistance of the product, preventing electrochemical reactions and facilitating the interaction of the implant with biological tissue by stimulating biochemical processes [24, 52-55]. Biocompatible ceramic materials based on zirconium dioxide are currently well known among medical materials. Ceramics based on zirconium dioxide occupy a special place among candidates for the development of medical ceramics. The benefits of zirconia in "supragingival" areas are widely recognized by many years of implant experience .

The material has a number of advantages, including high biomechanical compatibility and the absence of metabolic reactions with body structures.

The use of zirconium oxide enhances the adhesion of fibroblasts and osteoblast-

like cells to the surface of the implant neck, promoting their proliferation and distribution, which improves the clinical fixation of the implant.

conclusions

Dental implant prosthetics are becoming increasingly popular, and their number is growing every year. Understanding the processes occurring in the tissues surrounding the implant and in the implant itself is necessary to predict treatment results. Implantation of a foreign body into the body causes a characteristic reaction in the form of a septic or aseptic inflammatory process, depending on the presence or absence of microbial contamination.

The presence or absence of microbial contamination depends on the implant material.

Moreover, peri-implant mucositis and peri-implantitis can develop several years after prosthetics.

Prevention of inflammatory changes in peri-implant tissues requires a number of complex measures, including understanding the influence of surgical and orthopedic procedures, structural elements of the prosthesis and materials used in its manufacture.

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