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DENTAL PROSTHETICS ON IMPLANTS AND THEIR FEATURES

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ABSTRACT

The functionality and aesthetics of implant-based bridges are ensured by the inclusion of teeth adjacent to the defect in the prosthetic structure. Against the background of reproductive periodontitis, the connection of healthy teeth and implants with the help of multicomponent orthopedic structures stabilizes the dentition and prevents the exacerbation of inflammatory-destructive processes in periodontal tissues. Use of materials for implants with important bone-like properties deformation properties, reduces the occurrence of stress zones at the bone-implant interface. Vestibular and intraoral displacement of implants in patients with malocclusion increases resistance to masticatory lateral loading.

KEYWORDS

Atrophy of the alveolar ridge, fixed and removable dentures.

Introduction

Due to the anatomical and morphological features of the jaws, it is not always easy to install dental implants in the prosthetic space. The situation is aggravated by the presence of concomitant risk factors, such as malocclusion, periodontal disease, etc. Sinus lifting, bone grafting and lower alveolar nerve transplantation are complex, traumatic, multi-stage and expensive operations, which makes them unacceptable for many patients. In such cases, The inclusion of natural teeth in the prosthesis is an effective and affordable way to ensure the necessary stability of the system. The degree of use of teeth - from inlays and occlusal onlays to prosthetics of the entire dental arch - varies greatly depending on the clinical situation.Until the 1990s, implantologists around the world had a negative attitude towards the possibility of such a combination. The attitude of implantologists around the world to the possibility of such a combination was negative. It was believed that due to the individual mobility of natural and artificial abutments, various complications were inevitable. These include fracture and destruction of an artificial tooth, peri-implantitis and periodontitis of the tooth-abutment. However, in recent years, with the accumulation of experimental and clinical data, the possibility of joint use of dental implants and teeth is recognized by an increasing number of specialists. The individual mobility of teeth and implants, as well as the restoration capabilities of the periodontal ligament and peri-implant tissues cannot be considered in isolation from such individual characteristics as the structural and functional state of the tissues of the jaw and teeth (prosthesis), antagonist muscles, the deforming properties of implants and prostheses, the degree of tension and development of masticatory muscles, the nature of food and the type of chewing. In "average" anatomical and physiological situations, the general depreciation characteristics of the prosthesis, antagonist teeth, implants and jaw are considered sufficient to neutralize chewing pressure. In

addition, when eating predominantly boiled and chopped food, the functional load on the dentition is far from the limit. Therefore, the real amplitude of the functional movement of teeth in the alveolar bone is many times inferior to the width of the periodontal gap. Thus, there is reason to believe that the indicators of "functional" (physiological) mobility of teeth and implants under load are to a certain extent equivalent and that the use of composite support systems is very effective, rational and expedient. Some implantologists use composite bridges, in which the components of the implant and the tooth are connected by attachments. Such prostheses are very complex and expensive to manufacture, and their use increases the risk of overloading the implant and encapsulating the tooth of the abutment. Therefore, fixed bridges are more often used. If the installation of implants is carried out against the background of a systemic disease of periodontal tissues, then a multicomponent prosthesis that combines preserved teeth and implants is one of the most effective means of stabilizing the dentition and preventing the progression of inflammatory-destructive processes in periodontal tissues. Composite support systems are most widely used in the installation of laminar implants, which are less adapted to autonomous function. Implants can be used as both final and intermediate supports, and the number of teeth included in the prosthesis is usually proportional to the complexity of the situation - from one crown (or inlay) per tooth in contact with the defect to the integration of all existing teeth and implants. This technique was used for prosthetics of more than 150 patients with dental defects of various lengths and topography. In 90% of cases, when installing implants, good functional and aesthetic results were achieved with follow-up for 4-10 years. Some developers have developed an elastic polymer pad between the body and the head of the implant in order to reduce chewing loads and bring the mobility of the prosthesis closer to the mobility of natural teeth (IMZ implants). The experience of clinical use of such implants has not given convincing evidence of their advantages over "rigid" structures. The presence of deformable elements complicates the device of implants, increases the risk of fracture and complicates hygienic procedures. Elastic sleeves require regular and frequent replacement, which creates additional inconvenience for the patient. To compensate for the absence of periodontal tissue in an artificial abutment, the use of implant materials that are mechanically compatible with biological tissues is more promising. A functional implant should be similar in its mechanical behavior to biological tissue. In other words, they must belong to a dissipative elastic system and have feedback. From the point of view of biomechanics, the optimal properties of the material should have stress-strain diagrams similar to biological tissue, and hysteresis values in load-discharge diagrams characteristic of biological tissue. The modulus of elasticity of nitinol is close to the deformation properties of biological bone tissue, which significantly reduces the risk of stress zones at the bone-implant interface and makes it possible to consider nickel-titanium structures as one of the most successful options for artificial racks. The success of implantation is undoubtedly facilitated by high-dose ion modification with molybdenum ions (HDIM) of the surface layer of dental devices with shape memory. The surface modified layer formed by the ion beam method is four to five times thicker than the natural oxide layer (TiO2), with the difference that the adhesion parameters at the alloy-biological surface interface are much higher. According to generally accepted ideas, when installing prostheses on three or more abutment teeth, it is necessary to strive to ensure that all implants are located on the same line, equidistant from the inner and outer compact plates of the jaw. However, from the point of view of biomechanics, this arrangement is not optimal. A figure with a straight line at the base is spatially undesirable. Much more advantageous in this respect is the triangular shape of the basis. Depending on the width of the prosthetic jaw area, if one

of the implants (preferably central) can be installed with vestibular or intraoral displacement, then the resistance of the structure to lateral masticatory loads is significantly increased and a significant stabilizing effect is achieved without complicating the clinical and examination stages of implant placement.

Conclusion:

Thus, the joint use of implants and support systems of healthy teeth contributes to the successful installation of implants. The manufacture of implants from materials biomechanically compatible with tissues reduces the risk of stress zones. The resistance of the prosthetic structure to lateral load is significantly increased due to the spatial redistribution of the implant along the alveolar ridge during vestibular or oral displacement.

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