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**TYPES OF IMPLANTS: CLASSIFICATION, INSTRUMENTATION, AND  
MEDICATION SUPPORT**

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Dental implants can be divided into 3 main groups:

- Intraosseous (endosseous).
- Subperiosteal.
- Transosseous.

Intraosseous implants Intraosseous implants, depending on their shape, can be root-shaped, plate-shaped (plate-shaped), or combined. Root-shaped implants are usually used when there is sufficient bone volume for their installation. The vertical height of the bone should be more than 8 mm, the bone thickness in the buccal-lingual direction more than 5.25 mm, the bone width in the medial-distal direction for each implant - more than 6.5 mm. Root-shaped implants have intraosseous and extraosseous parts. The intraosseous part of the implant can be cylindrical and screw-shaped, as well as disassemblable and non-disassemblable. Cylindrical implants. Due to the smooth surface, the intraosseous part of the cylindrical implant has the smallest surface area. Therefore, cylindrical implants must have a geometrically developed, textured surface or a bioactive coating. All currently known cylindrical implants are manufactured disassemblable, designed for a two-stage application technique. Screw implants. The most common screw implants have a large number of modifications, differing in the thread profile. Screw implants can be disassemblable and non-disassemblable, one- and twostage, have a smooth, rough surface or a coating of bioactive materials. An obligatory element of the design of these types of implants are anti-rotation locks, which are anchors, recesses, platforms, longitudinal grooves in the apical part of the endosseous implant. Plate implants. The requirements for the surface of plate and cylindrical implants are the same. Plate implants can be disassemblable and non-disassemblable and must have a textured surface and (or) a macorelief in the form of a "snake" or a corrugated plate, as well as holes for bone tissue ingrowth. Plate implants are usually used when the bone is so narrow that it is not possible to use root-shaped implants. The plate implant is flat and long, which allows it to fit into the narrow jawbone. For a plate implant, the vertical bone height should be more than 8 mm, the bone thickness in the buccolingual direction more than 3 mm, the bone width in the mesial-distal direction more than 10 mm, (exception: in case of a single tooth design, less is required). Combined implants Combined implants include disc, transmandibular (transosseous ), ramus-frame , as well as implants whose intraosseous part can combine several forms. Disc implants are installed when it is impossible to implant a screw-shaped or cylindrical prosthesis. Usually, a progressive surgical technique of direct installation of a disc implant is used for this. The main advantage of such an operation is the possibility of prosthetics in almost any state of the jaw bone tissue, since the degree of atrophy of the



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tooth socket after its extraction does not matter. Another important advantage of disc implants is the shortest possible engraftment time and possible use of the finished prosthesis. Thus, if the installation of several root-shaped implants with prosthetics can take at least six months, then disc implants are completely “ready for use” in a week. The ramus- frame implant belongs to the category of intraosseous implants, although their appearance differs from implants of this category. It has the form of a branched plate and is surgically implanted into the jaw bone in three places: in the frontal section and in the area of the left and right halves of the jaw (approximately in the area of the wisdom teeth). This implant is used in cases of extremely atrophied lower jaw, when the bone height is insufficient for installing root-shaped implants, and can serve as a support for both removable and fixed dentures. The vertical bone height should be more than 6 mm, the bone thickness in the buccal-lingual direction should be more than 3 mm. Subperiosteal implants Subperiosteal ( subperiosteal ) implants do not have an intraosseous part of the structure and are installed on the bone (Fig. 24). More precisely, as the name suggests, under the periosteum, that is, between the bone itself and the thin connective tissue plate covering the bone. The inner layer of the periosteum is osteogenic, it contains a large number of osteoblasts and few blood vessels and is involved in the formation of young bone tissue. Subperiosteal implants are installed between the periosteum and bone, on the one hand, so as not to damage the periosteum itself, and on the other, to achieve the strongest and most reliable connection of the implant with the bone tissue. Subperiosteal implants are essentially cast cobalt-chrome or titanium saddle-shaped structures that perform the same functions as implants installed in the bone. This is a complex in shape and fairly thin structure, which allows for installation when the alveolar part is not high enough . But, at the same time, it is quite long, which, in turn, ensures the reliability and functionality of the structure. A full subperiosteal implant is placed on the bone as a monolithic frame and can serve as a reliable support for both removable and fixed prostheses. The implant is made using a preliminary impression of the jaw bone tissue and is placed under the periosteum during surgery.

The requirements for bone size for this type of implantation are minimal: at least 5 mm in height. Subperiosteal implantation can be performed using a one-stage or two-stage method. The one-stage method uses computed tomography of the jaw. Based on the data obtained in this way, a jaw model is formed, which is processed by a dental laboratory, where an implant of the required shape is manufactured. Then the actual implantation takes place - preparation of the jaw bone, insertion of the implant and application of several sutures to the gum. This method differs from the two-stage method in that the doctor does not have to perform an operation to obtain a cast of the bone structure, which requires separating the periosteum from the bone. Further actions are similar to the one-stage method: an individual implant is made based on the cast, which is then inserted under the periosteum. Transosseous ( transmandibular ) implants are a collapsible implant structure. It consists of an arc-shaped bracket that is surgically installed on the lower edge of the body of the lower jaw, through extraoral access. Two pins implants are inserted 55 into the bone, passing through it. Protruding into the oral cavity, they serve to fix removable

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dentures. To install transmandibular implants, the vertical height of the bone must be more than 6 mm, the thickness of the bone in the buccolingual direction more than 5 mm.

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