Benefits of using artificial bone in implantation

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Abstract: Thus, implantation of bone tissue is a very important and necessary step that allows you to easily implant the implant and put a suitable prosthesis on it. Today, there are many options for the operation. Every year dental implantation becomes more and more popular, bone tissue augmentation is also actively used by dentists, especially if the bone loss is significant.

Keyword: benefits, implantation, patients, tooth, artificial

Bone augmentation, or bone grafting (osteoplasty) is an operation that is performed on patients with insufficient volume of jaw bone to install implants. Osteoplasty may also be required after tooth extraction, in case of periodontal diseases, after a jaw injury. However, bone augmentation is most often associated with implantation, when it is necessary to provide conditions for reliable stabilization of the implant in the bone. During the first year after tooth extraction or bone trauma, jaw bone loss occurs from 20 to 40% of the width of the alveolar process. Therefore, for successful implantation, it often becomes necessary to increase additional volumes of bone tissue.

Atrophy of the jawbone occurs as a result of a long absence of teeth, and, as a result, a decrease in the load on the bone from the dental roots. Less often - due to inflammation or trauma to the jaw. To a greater extent, atrophy prevents dental implantation, but together with missing teeth, the problem also brings a lot of trouble to the patient:

• the contours of the face are distorted, the lips sink into the mouth, a large number of wrinkles appear,

• it is impossible to fully chew food, which can cause diseases of the gastrointestinal tract,

• incorrect facial expressions, articulation, speech disorders,

• violation of the integrity of the dentition, displacement, loosening or complete loss of teeth.

Spongy bone is the central part of the bone tissue where the roots of living teeth are located. It consists of a small number of bony septa, as well as a large number of capillaries. It is she who is more susceptible to atrophy in the absence of teeth, because cells are fed through the blood vessels. The other two sections - the basal base and the cortical bone (this is a kind of shell) - are more durable, since they consist mainly of bony septa. They do not shrink and atrophy, they are sterile compared to the spongy

section. There is also a zygomatic bone located in the region of the chewing teeth behind the basal section (that is, even deeper), as well as buttresses or lines of force of the skull (a kind of bone thickening). They do not undergo atrophic processes, therefore they are used for fixing some models of dental implants.

Some patients are skeptical about bone augmentation surgery. This is explained by the fact that, firstly, this procedure is surgical and after it the patient has to rehabilitate for quite some time. Secondly, these are additional material costs. Thirdly, bone augmentation delays the process of implant placement for 3-4 months, since the bone tissue needs to be restored.

In different people, bone atrophy develops in different ways, for someone faster, for someone a little slower. The rate of development of atrophy also depends on the location of the defect: in the lower jaw, it develops quite slowly, but in the area of the upper jaw, the pathological process proceeds rapidly. Therefore, if you do not have a desire to subsequently build up a bone, if you lose a tooth, urgently think about restoring it.

Principle of the technique: the bone defect is filled with osteoplastic material, covered with a barrier membrane from above and sutured. Bone augmentation is carried out using resorbable and non-resorbable membranes, each type has its own advantages.

Resorbable membranes are well fixed on the surface, dissolve within 2-6 months, therefore, they do not require additional intervention to remove them. Thanks to the use of this type of membrane, rapid healing of soft tissues occurs. The disadvantage of membranes is the inability to support the growth of a significant amount of bone tissue, therefore, bone augmentation with resorbable membranes is used when the recovery volume is not more than 2 mm. Most often, such membranes are used as a protection of the surgical area and a stimulator of soft tissue healing. Non-resorbable membranes are not resorbable, so they must be removed 6-9 months after installation. Despite this inconvenience, non-resorbable membranes are the best way to guide bone regeneration, as they allow bone tissue to be restored in the required direction and volume. There are two types of membranes: frameless and titanium-based. Thanks to the frame non-resorbable membranes, it is possible to create a fixation contour, which allows osteoplasty in large volumes, both vertically and horizontally.

Human teeth are located in the alveolar processes of the upper and lower jaws, which consist of bone tissue. Thanks to the alveolar processes, the dental units firmly occupy their position and there is a thorough chewing of food. With the loss of teeth after 3-6 months, the process of atrophy of bone tissue begins. As a result, the chewing load on this area is lost and the bone tissue decreases until it is completely lost. The function of chewing is disturbed and the chewing load is redistributed to the remaining teeth. They wear out and break down faster. Mimic wrinkles appear, articulation and

chewing function are disturbed, bite is disturbed, and earlier aging occurs. The involution of the bone of the upper jaw occurs much faster than the lower. This process is irreversible. In a year, it will be possible to restore the bone structure only artificially and bone grafting will be required. Bone grafting during implantation allows you to restore the lost dentition and keep your own teeth healthy and beautiful.

Normal immersion of a standard implant into the jawbone is possible only if its height and volume are sufficient for this. But with age and after the removal of teeth, the upper spongy layers of bone tissue begin to atrophy. And this can make it impossible to install artificial roots. And now let's move on to what is basal implantation in dentistry. This is a special technique for immersing rods into the deeper, cortical and basal layers of the bone.

If basal implantation of teeth is performed on the upper jaw, special zygomatic models up to 60 mm long can be used for this. They are installed at an angle of 30-60 degrees. Previously, disc implants were used as part of this technique. But the procedure for their installation is too traumatic, the rehabilitation period after it is delayed, peri-implantitis often develops. Therefore, today such models are no longer used.

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