

The Progress of Zygomatic Implants for the Repair of Insufficient Bone Mass in the Posterior Maxilla

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Keywords: Zygomatic implants, insufficient back of maxilla, repair

Abstract: Missing dental implant is a relatively mature technology and has become a conventional restorative choice for patients with missing teeth. However, due to insufficient bone mass and poor bone in the maxillary posterior tooth area, implant restoration in the maxillary posterior tooth area often faces challenges. Current deal with insufficient maxilla posterior bone problem, clinical has put forward a variety of planting repair way, such as: wear zygomatic implants, autologous bone transplantation, etc., among them, to the application of zygomatic implant most, it can effectively avoid patients dependence on bone graft material, and achieve immediate repair, in a relatively short period of time to improve the chewing function, pronunciation function and aesthetic degree, hence this paper is maxilla posterior bone mass The application of zygomatic cultivation for foot repair summarizes the following progress.

1. Introduction

Pygomomatic implants first appeared in 1998, proposed by Professor Branemark. For the lack of jaw patients, wear zygomatic implants has become a more reliable repair, can avoid dependence on bone graft materials, at the same time can shorten the treatment cycle of [1], has been implant repair and surgeons are widely used, make such patients and more than a more acceptable treatment. This paper will explore the value of the zygomatic implant technique in patients with insufficient maxillary posterior dental bone mass.

1. Clinical Application of Zygomatic Bone Implants

1.1 Implantation technique of zygomatic bone implants

Traditional repair technology, provides the necessary basic conditions for the subsequent technical improvement, with the development of diagnosis and treatment technology, clinical to ensure control complications, improve the success rate of wear zygomatic implants and repair effect, make the alveolar ridge are severe atrophy, or implant and bone graft materials, and many other conditions, can obtain the ideal treatment effect [2].

1.1.1 Traditional implantation technology

Poor surgical field and longer surgical time will increase the risk of mucosal damage to the maxillary sinus.

1.1.2 Maxillary sinus groove operation

This method was proposed to improve the positioning of the implant and increase the contact area between the implant and the bone.

1.1.3 External implantation of the transmaxillary sinus

It is suitable for patients with obvious depression in the anterior and lateral wall of the maxillary sinus, which can effectively improve the puncture outline of the prosthesis, avoid the trauma caused by the opening of the maxillary sinus, shorten the operation time and broaden the surgical field of traditional surgery.

1.1.4 Anatomical positioning implant

The implant repair technique can be flexible, including the flat approach through the anterior and lateral wall of the maxillary sinus; the implant along the maxillary wall; the insertion of the lateral wall of the maxillary sinus and the wall into the cheek; obvious horizontal and vertical bone resorption in the atrophic maxilla. Moreover, use a maxillary sinus implant to avoid perforation of the too thin bone plate on the palatal side. This implant repair technique can maximize the use of bone support and significantly alleviate the incidence of maxillary sinus-related lesions.

1.2 Zygomatic implants for repair of jaw defects

Many studies have shown that zygomatic implantation can provide good stability and support for implant restoration, thus improve the chewing ability after the implant, and prolong the use of the implant in the implants combined with vascularized fibular flap, effectively restore the zygomatic pillar, and reduce the stress, so it is a reasonable biomechanical repair method.

1.3 Repair method of insufficient bone loss in maxillary posterior teeth

1.3.1 Autologous bone transplantation

The surgical method is clinically considered to make the "gold standard", it not only has good bone conduction, bone generation, bone induction performance, also has good biocompatibility, but because of the complications of surgery, surgical wound, may appear obvious bone absorption phenomenon, is not conducive to appearance recovery, make its extension limitations.

1.3.2 Bone grafting through the lateral wall of the maxillary sinus

This treatment method is a common diagnosis and treatment method of insufficient bone mass in the maxillary posterior tooth area. Although a certain treatment effect can be obtained, it is easy to increase the risk of complications, and the insufficient initial stability of the implant will lead to the early failure of the implant.

1.3.3 Planting of the wing-maxillary area

Due to the complex anatomy of the maxillary region, the large individual differences of patients, the semi-blind clinical operation and the high technical sensitivity, the operation is difficult to perform unless it is a very experienced doctor.

1.3.4 All-on-4

This method can achieve fixed repair and immediate loading, but this technology involves too long cantilever, which is easily accompanied by large lateral force, and even repair fracture.

1.3.5 Wear zygomatic planting

This technique can obtain the maximum contact rate of bone and implant, ensure the initial stability of the implant, provide the necessary conditions for the immediate load of the implant, so as to improve the chewing, articulatory function and aesthetic effect of patients in the shortest time, and avoid the dependence on [3] on bone graft materials.

2. Auxiliary Technology for Wearing Zygomatic Planting

Due to the complex anatomical structure of the cheekbones, and most areas of the operation can not be looked directly at, doctors are prone to path deviation when implanted with zygomatic implants, resulting in complications. In order to ensure the safety and accuracy of zygomatic implant implantation surgery, computer-assisted surgical navigation, digital guide plate and other technologies have been fully promoted.

2.1 Computer-assisted surgical navigation

This auxiliary technology is a dynamic navigation technology widely used in clinical practice. CT data were imported into preoperative implant planning software for physicians to perform preoperative preparation and protocol design. The intraoperative registration, that is, the preoperative marking points are matched with the computer 3 D image marking points, and the surgical space position and the computer image space position are combined. There is a position sensor on the implant, which can help locate the real-time position of the surgical instruments, and transmit the signal to the computer, so as to facilitate the doctor to observe the situation of the intraoperative patient in real time. If the direction of preparatory implantation is found and the implant implantation path is biased Move, can be adjusted in time, and then improve the safety and accuracy of implantation.

2.2 Digital guide board

Before surgery, patients should undergo a cone-beam computed tomography scan and input the data into the implant planning software to trace the important structures adjacent to the implant site and analyze them. The parameters of the guide plate are involved. After the planting plan is determined, the guide plate is made. During the operation, the appropriate position was selected to fix the guide plate to guide the planting. Currently, digital surgical guide plates are mainly used to confirm the implantation point [4] of zygomatic implants.

The application of the above two auxiliary technologies can facilitate the precise planting of zygomatic implants, especially the dynamic navigation system, which has high accuracy during implant implantation, thus reducing the occurrence of complications, improving the clinical efficacy

and ensuring the best repair effect.

3. Summary

For edentulous patients with insufficient amount of maxillary teeth, zygomatic implant repair can avoid bone grafting, reduce the number of operations, as well as immediate repair, so that patients can immediately have teeth and shorten the course of treatment. In addition, the application of navigation technology, navigation technology and guide plate technology has greatly improved the accuracy of cheekbone implant implantation and has a good development prospect. However, zygomatic implants need to be further improved, such as: the accuracy of surgical assistance technology still needs to be improved to minimize the error. In addition, because the successful criteria for zygomatic implantation have not been established, clinical and shadow need to be established Image learning criteria to evaluate the osseointegration of zygomatic implants.

To sum up, the application value of zygomatic implant repair for patients with insufficient bone mass of the maxilla is high. It is suggested that the clinical technology should be continuously improved so that zygomatic implant can be more widely promoted and applied.

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