

Zygoma Implant for Atrophic Maxilla

Dr. Benita.P MDS, Prosthodontist

Dr. Balamurugan. R MDS, Oral and Maxillofacial Surgeon

Corresponding Author: Dr. Balamurugan. R MDS, Oral and Maxillofacial Surgeon

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Abstract

Zygomatic implants are preferred for dental rehabilitation with inadequate bone support more commonly in the posterior maxilla as an alternative to other bone grafting techniques with satisfactory and clinical successful outcomes. A patient 43 years old came to the department of prosthodontics with a chief complaint of missing teeth in the upper and lower arch and desired replacement. On clinical and radiological examination it was found that the patient had atrophic maxilla and since the patient desired a fixed treatment option, zygomatic implant supported denture in the maxillary arch and implant supported hybrid denture in the mandibular arch was planned.

Keywords: atrophic maxilla, zygoma implants.

Introduction

The use of zygomatic bone for implant placement can be a predictable alternative to certain other treatment techniques when rehabilitating the atrophic maxilla. Despite the high success rates of zygomatic implants, there is no consensus in the literature about the ideal surgical technique for their placement. Therefore, the objective of this case report is to describe the outcomes of the rehabilitation of an atrophic maxilla with a fixed prosthesis supported by 4 conventional implants at the anterior region and 2 zygomatic implants at the posterior region, which were placed with distinct surgical techniques intrasinus or extrasinus. After 60 months of

follow-up, both zygomatic implants were considered a success and the patient presented a high level of overall satisfaction with the treatment. Thus, the outcomes of this case report confirm that zygomatic implants can be a predictable alternative to rehabilitate an atrophic maxilla. In addition, as no difference was observed between intra- or extrasinus techniques regarding implant and prosthetic status, the extra sinus technique should be preferable since it is simpler and less invasive than the classic intra sinus technique.

Case Report

A patient 43 years old came to the department of prosthodontics with a chief complaint of missing teeth in the upper and lower arch and desired replacement. On clinical and radiological examination it was found that the patient had atrophic maxilla and since the patient desired a fixed treatment option, zygomatic implant supported denture in the maxillary arch and implant supported hybrid denture in the mandibular arch was planned, the maxilla was planned for a total of 4 implants (2 zygoma implants and 2 anterior implants) and 4 implants in the mandibular arch(inter foramen).

Surgical Phase

The patient was surgically treated under general anesthesia. Crestal and posterior vestibular incisions were made and the mucoperiosteal flaps were raised to expose the alveolar crest and the lateral wall of the maxillary

sinus. In the left side, a 4.0 x 50 mm zygomatic implant was placed in the malar zygoma using the intra sinus technique and in the right side, a 4.0 x 40 mm implant was placed in the same manner [Figure 1.1, 1.2]. In addition to this 2 conventional implants were placed in the anterior region of the maxilla. Four conventional implants were placed in the mandible in the inter foramen region. After the surgical phase, [Figure 2] the patient's prosthesis was relieved and adapted directly on the implants with tissue conditioner. All the implants remained submerged for 6 months.

Figure 1: Surgical Placement of Zygoma Implants.

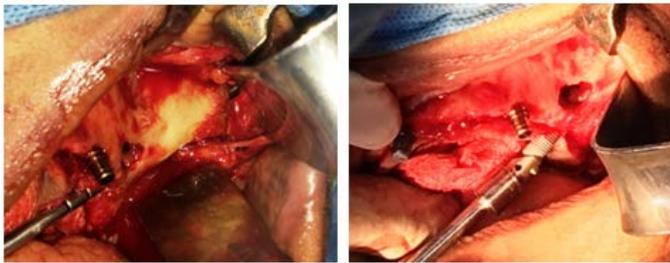


Fig: 1.1

Fig: 1.2



Figure 2: Radiograph after Zygoma Implant Placement

Prosthetic Phase

In the second stage surgery all implants were exposed and cover screws were replaced by multiunit abutments of appropriate length [figure 3.1, 3.2]. A periapical radiograph was made to evaluate the transfers' adaptation on abutments before performing an impression with condensation silicone in an open tray. The master impression was made in the maxillary and mandibular

arch [figure 4.1, 4.2, 5.1, 5.2]. The master cast was poured and a jig verification was done after which jaw relation was done [figure 6]. The models were assembled in the semi-adjustable articulator and a cobalt chromium prosthetic bar was made. The adaptation of this bar on the abutments was confirmed, and acrylic teeth were fixed to the metallic framework. The teeth arrangement was analyzed clinically according to aesthetic and functional requirements before processing the prosthesis [figure 7]. Finally, the fixed implant-supported prosthesis was installed in the patient's mouth, and occlusal adjustments were performed [figure 8.1, 8.2].

Figure 3: Prosthetic Phase Healing Cap Placement



Fig: 3.1

Fig: 3.2

Figure 4: Stage II Impression Making



Fig: 4.1

Fig: 4.2

Figure 5: Maxillary And Mandibular Master Impression



Fig: 5.1



Fig: 5.2



Figure 6: Jaw Relation



Figure 7: Teeth Setting

Figure 8: Pre Op And Post Operative Smile.



Fig: 8.1



Fig: 8.2

Discussion

The edentulous posterior maxilla presents a wide variety of clinical situations, ranging from mild atrophy and sinus pneumatization to extreme 3-D atrophy. Hence, the initial clinical situation of the posterior maxilla to be rehabilitated with implant-supported prostheses should be evaluated since the patterns of bone resorption in this region greatly influence the choice of treatment [1]. The conventional surgical protocol suggested is a Le Fort I osteotomy with downward and forward repositioning of the maxilla with interpositional iliac bone grafts [1,2]. Despite the high success rates, this technique often requires invasive surgeries and long treatment time with delayed implant placement [2]. Use of zygomatic implants which is less invasive can be a treatment of choice for the

rehabilitation of the atrophic maxilla. This treatment reduces the rehabilitation time and eliminates the donor site morbidity associated with bone harvesting [3]. The reason for the high success rate of zygomatic implants could be attributed to the thicker cortical layer of the zygoma bone, which offers a solid and extended anchorage for implants [4]. However, zygomatic implants, when considered in an isolated manner, have been associated with an unfavorable biomechanical situation as they are much longer (35 to 52.5 mm) than conventional implants and must be angulated approximately 45° to engage the zygomatic process [5]. Hence the zygomatic implants used in our case report were splinted with 4 standard implants placed in the anterior maxilla in order to minimize the biomechanical risk. Survival rates ranging from 98% to 100% have been reported in the literature when these tilted implants are connected with 2 to 4 anterior standard implants [6]. However the success rates can be greatly influenced by the type of surgical technique used. In the extra sinus technique, the lateralized placement of the zygomatic implant provides a greater penetration of the implant in the zygomatic bone, increasing the implant-bone contact [7]. However, the zygomatic implants installed with intra- or extrasinus surgical techniques showed similar and favourable results upon analyzing the length of the cantilever, implant position, and post-op pain after 5 years of follow-up. patients did not present any complications in spite of sinus membrane perforation at the left side where the implant was installed using the classic sinus window technique [8]. while authors [9] have reported 0% to 37.5% with maxillary sinusitis and presence of a foreign body as an attributable cause to maxillary sinusitis. To overcome such complications extrasinus implant placement technique could be indicated, as it avoids the introduction of a foreign object into the sinus. However, when the patient

has an over contoured external maxillary sinus wall, the sinus membrane is inevitably perforated, as it is in the pathway of the drill direction [10].

Conclusion

The outcomes of this case report confirm that zygomatic implants can be a predictable alternative to rehabilitate an atrophic maxilla. In addition, as no difference was observed in this particular case between intra- or extrasinus techniques regarding implant and prosthetic status, the extrasinus technique should be preferable since it is simpler and less invasive than the classic intra sinus technique.

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