



IMMEDIATE IMPLANT PLACEMENT FOR ADVANCED AESTHETICS- A CASE REPORT

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ABSTRACT

Implant dentistry's therapeutic goal is whole oral rehabilitation, not only tooth replacement[1]. Single tooth replacement with a dental implant has been a popular treatment option in the anterior maxilla; nevertheless, bone loss following maxillary anterior tooth extraction is common and commonly affects gingival tissue for implant restoration[2]. They provide improved support for fixed or permanent detachable appliances, enhancing function over typical complete dentures[1]. The osseous and gingival tissue around the failing tooth must be adequately recognized and conserved in order to produce predictable peri-implant aesthetics[2]. As a result, maintaining the interproximal papillae necessitates preserving the osseous support by minimally invasive extraction[2].

KEYWORDS :

INTRODUCTION

Following tooth extraction, alveolar ridge resorption is an inevitable event. When a tooth is pulled, predictable bone loss occurs during the first 6 months, with up to 40% of alveolar height and 60% of alveolar breadth loss, which continues at a rate of 0.25%e0.5% each year^[3]. Maintaining a failing tooth's current gingival architecture is critical for getting an optimally cosmetic result^[2]. Implant treatment is currently commonly utilized in clinical practice for tooth replacement as a consequence of advancements in implants and surgical methods. Implants were formerly implanted only after tooth extraction and complete healing of the damaged region of the alveolar ridge, but the appropriateness of implant placement is now examined even before tooth extraction of a hopeless tooth. This article covers a flapless instant implant insertion in the aesthetic zone with a 6-year follow-up that is predictable. The method relies on the osteoconductive capacity of demineralized freeze-dried bone alloplast (DFDBA) to help bridge the osteogenic "jumping distance"^[4]. It does away with the requirement for a barrier membrane. This method also allows for effective osseointegration and the preservation of hard and soft tissue structures with a predictable outcome. . This article covers a flapless instant implant insertion in the aesthetic zone with a 6-year follow-up that is predictable. The method avoids the requirement for a barrier membrane by utilizing the osteoconductive capacity of demineralized freeze-dried bone alloplast (DFDBA) to help in bridging the osteogenic "jumping gap"^[4]. This approach also enables reliable osseointegration and the preservation of hard and soft tissue features.

Case Presentation

A 45-year-old female patient came to our Karpaga Vinayaga Institute of Dental Science in March 2020 and requested implant therapy to replace a tooth that her home dental specialist had assessed as hopeless. She had a complaint of a vertical tooth fracture in her left maxillary canine (tooth no 23). She was advised that the tooth will be pulled and replaced with a fixed implant, as she had previously requested. There is no medical or dental history for the patient. The following were

the intra-oral findings: There were 28 teeth present. A1 according to Eichner's categorization. There was no gingival irritation surrounding the remaining teeth, and the dental hygiene was excellent. A canine-guided occlusion kept the intercuspal location constant. Radiographic and clinical examinations revealed no evident pathology or signs and symptoms of infection. There was no evidence of alveolar bone resorption surrounding the remaining teeth, and no abnormalities in the maxillary bone from the root apex of the upper anterior to the nasal cavity floor on panoramic X-ray imaging. There was no alveolar bone resorption or jawbone abnormalities on CT X-ray imaging.

The alveolar bone's labiolingual breadth near the root apex was around 6 mm, rising in width towards the base. The distance between the root apex and the base of the nasal cavity was 17 mm. We reviewed the treatment possibilities with the patient, and she refused detachable restoration and desired a predictable outcome for this prosthetic therapy as well as a quick treatment duration. The implant therapy was explored in response to the patient's desire. We also discussed the benefits and drawbacks of each prosthetic therapy. We intended to install the implant immediately after extraction. We gently pulled the tooth with the patient under intravenous anaesthesia in May 2020. The removed root exhibited a vertical fracture and soft tissue in the root canal.

The extraction socket had no granulation tissue and no injury to the labial alveolar bone. The vertical distance between the labial gingival edge and the alveolar crest was 3 mm. We determined that immediate post-extraction insertion is an option. For implant placement, we used a non-invasive flapless method that did not need the elevation of a flap in the surrounding soft tissue. We opted to drill from the centre of the extraction socket in the palatal wall, and we drilled the implant placement site slightly to the palatal side. After preparation of the placement site, a root-form roughened-surface implant 4.7 mm in diameter and 13 mm in length (Tapered Screw-Vent: TSVWB13, Zimmer Dentistry Inc.) was implanted with the platform approximately 1 mm below the

labial bone crest . The initial torque was 50 N. The space between the implant's labial surface and the labial alveolar bone wall was about 2 mm. At the same time, autogenous bone pieces obtained during implant site preparation were used for bone grafting . In a single stage, a healing abutment (THCW3/5, Zimmer Dental Inc.) 5 mm in diameter and 3 mm in length was affixed. Throughout the recovery phase, the patient experienced minimal oedema and no pain. After a 4-month healing period, a screw-type implant-supported provisional restoration was inserted in October 2012, and the implant began occlusal loading .

The final superstructure, a platinum-gold alloy cast-on abutment created in our dental laboratory, was cemented in January 2015, followed by a porcelain-fused-to-metal front crown. We made adjustments to the superstructure shortly after cementing.

For the first three months, a routine check-up was done monthly. Following that, the patient was recalled every 6 months and got supportive therapy, namely dental hygiene training and professional plaque management.

Almost 5 years after implant placement, the soft tissue was clinically healthy , with no significant alterations in the surrounding tissue on dental X-ray image. As a result, the supporting bone was present at the cervical section on the labial surface of the implant on cone beam-type CT X-ray imaging in the sagittal plane , but not from the central area through the tip on the labial surface of the implant 23.

Deliberation In general, implant therapy is considered only when the extraction site has healed completely [1], and because appropriate healing is necessary following implant insertion, the whole treatment duration is lengthy. Implant insertion in new extraction sockets has recently been documented, and clinical guidelines incorporating immediate implant placement have been recommended to provide patients with alternatives for achieving the best results [2]. The implant survival rate after immediate installation was 95% for 1-5 years [3,4], indicating that when performed correctly, this is a highly beneficial treatment. In the event of rapid implant insertion with chronic apical periodontitis, however, the implant survival percentage at 12 months was lower than in the phased approach [5].

It appears to imply that reflecting the status of the tooth to the treatment strategy is successful. Preoperative examination of our patient indicated no inflammation around the afflicted tooth root. Also, there was no granulation tissue in the socket following extraction, indicating infection, and no injury to the alveolar bone around the socket.

As a result, we determined that immediate post-extraction installation is feasible in order to reduce the post-extraction wound healing time, which is typically 3-6 months. The labio-lingual breadth of the neck is frequently bigger than the mesio-distal width in maxillary central incisors.



Immediate loading done using provisional after placement



Final Implant crown in 23



Implant crown in 23



Postoperative implant placement after 2yrs

When an implant is placed in an extraction socket, the labial face of the implant towards the neck does not always conform securely to the labial alveolar bone wall, leaving a gap. If the gap is too large, the labial bone wall will continue to resorb, exposing the implant surface. According to Buser and Martin ^[6], if the breadth between the implant and the labial bone wall reaches 2 mm, significant horizontal bone loss can be predicted, necessitating a concomitant bone graft to encourage bone regeneration. The gap in our patient was roughly 2 mm . In order to decrease labial bone loss as much as feasible, we did bone grafting at the same time, utilising autologous bone harvested during implant site preparation. For implant implantation, we also performed a flapless procedure.

Flapless surgery avoids the recession of surrounding hard and soft tissues that is associated with invasive procedures. As a result, this approach has been offered as a therapeutic option for achieving good cosmetic outcomes ^[7]. Yet, because flapless surgery is a "blind" treatment, the risk of problems rises as bone volume decreases. Local evaluation, including CT diagnostic imaging, revealed the presence of appropriate bone volume at the expected location of implant placement in our patient, and there were no anatomical features regarded to be risky in immediate post-extraction insertion. Local assessment, including CT diagnostic imaging, indicated the presence of appropriate bone volume at the expected location of implant placement in our patient, and there were no anatomical features thought to pose a concern in immediate post-extraction implantation. As a result, we chose flapless

surgery for its cosmetic advantages. In this situation, the patient experienced very little post-operative discomfort, and the choice of flapless surgery was helpful in minimising the patient's burden, the sagittal plane. On the labial surface of the implant, a portion of the supporting bone was not visible. As a result, it is believed that the autogenous bone graft to the dead space is successful, and that selecting a narrower body implant may be advantageous for the presence of supporting bone on the labial surface of the implant. It is also thought that dental X-ray examination makes it difficult to evaluate the labial bone state of the implant, whereas cone beam-type CT X-ray examination is extremely effective in terms of treatment plan diagnostic as well as after care for implant therapy. It is also thought that dental X-ray examination makes it difficult to evaluate the labial bone state of the implant, whereas cone beam-type CT X-ray examination is extremely effective in diagnosis of the treatment plan as well as after care on the implant therapy. Throughout the previous five years, the patient's clinical state has been good. The soft tissue around the superstructure is in harmony with the soft tissue surrounding neighbouring teeth. This finding suggests that the rapid implant implantation method in the post extraction socket efficiently shortens treatment times. Conclusion Within the constraints of this instance, the process of immediate implant placement in extraction socket based on appropriate pre-operative evaluation and accurately reflecting their results on the treatment plan would be useful in alleviating the patient's burden in implant treatment. Declaration of Conflict of Interest, The authors claim to have no conflicts of interest. The financing source's role The study did not get any funding.

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