

A Novel Approach to Restore a Fractured Maxillary Anterior Tooth by Immediate Implant Placement: A Case Report

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ABSTRACT

In the present scenario, immediate implant placement has become a common treatment modality despite the risks associated with the primary stability of implants. The primary stability of the immediately placed implants was proved to be lower compared to implants placed in healed sites. So in order to achieve a successful outcome with placing implants immediately after tooth extraction, the practitioner needs to evaluate the case very effectively. This case report describes the extraction of a fractured left maxillary lateral incisor tooth, followed by the immediate placement of a dental implant in the socket. The final impression was made after around five months of implant placement for a definitive restoration. The atraumatic extraction technique well-preserved the tissues of the extraction socket. An immediate implant placement followed by temporization provided psychological as well as functional comfort to the patient.

Keywords: Implant, extraction, immediate placement.

INTRODUCTION

Immediate implantation is defined as placement of the implant into alveolus of the extracted teeth immediately after extraction. This procedure offers various advantages to the patients, the most important being that it does not leave the patient without teeth for a long period of time, unlike the conventional Branemark protocol.^[1] But on the other hand, it results in a major insult to the tissues if proper principles are not followed during the procedure. In order to achieve successful results in such cases, the extraction needs to be done very carefully preserving both the bone as well as the surrounding soft tissues. There are various indications and contraindications of immediate implant placement. Immediate implantation is indicated in the cases of teeth compromised by dental trauma, root fractures, endodontic complications, root resorption. The existence of an acute periapical inflammatory process is an absolute contraindication to immediate implantation. The other conditions are the presence of pus, close proximity to anatomical vital structures, lack of bone beyond the apex and clinical conditions that prevent the primary closure.^[3-5] Many studies have cited the presence of at least 3 to 5 mm of residual bone beyond the apex

and a minimum bone height of 10mm to achieve primary implant stability in cases of immediate implant placement.^[2]

CASE REPORT



Figure 1: Pre-operative view



Figure 2: Extracted tooth segment

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Figure 3: Implant placed



Figure 4: Closure of the surgical site



Figure 5: Post-operative IOPA



Figure 6: Post-operative view

This case report describes the extraction of a fractured left maxillary lateral incisor tooth, followed by immediate placement of a dental implant in the prepared socket. The tooth was traumatically extracted, the socket was prepared to the required depth and an adequately sized implant was inserted. A 21-year-old male patient presented to the Department Of Prosthodontics Crown and Bridge, DR. Z.A.D.C A.M.U, Aligarh with a history of trauma and crown fracture at the cervical area of the tooth and requested for a speedy solution. Clinical and radiological evaluation of the tooth revealed adequate alveolar bone, absence of periodical pathology but fracture line was below the crest of alveolar bone and was limited to the tooth. So it was decided to extract the tooth and place an endosseous implant immediately after extraction to gain the benefits like bone preservation and emergence profile. The patient was advised to start an antibiotic coverage a day before surgery. After the administration of proper antibiotics and analgesics, the induction of local anesthesia was carried out using lignocaine with adrenaline. With a 15 no-scalpel blade, the supracrestal fibers were dissected and with the help of small periosteal elevators, the fragment was luxated without excessive enlargement of the socket. [Figure 2] This helped in the preservation of alveolar bone. The socket was debrided with a curette and an implant of size 3.75 by 13mm was placed. The primary stability was achieved by inserting the implant into the bone beyond the apex of the socket and the gap present between the bony wall and the implant was filled with hydroxyapatite graft material. [Figure 3] When a dental implant is placed into a fresh extraction socket, space usually exists between the periphery of the implant and the surrounding bone. This gap can occur on any of the aspects of an immediately placed implant: buccal, lingual, or proximal. This space between the implant periphery and surrounding bone is called the gap or jumping distance.^[6] Finally, the cover screw was placed and interrupted sutures were placed. [Figure 4] All the post-operative instructions were explained to the patient, and he was asked to report after 1 week. The sutures were removed after 7 days and a temporary acrylic crown was given to the patient which was bonded with fiber-reinforced composite to the adjacent teeth. The patient was recalled after five months for the prosthetic procedures and was given porcelain fused to the metal crown over the implant. [Figure 6] The patient was regularly recalled for prophylaxis and follow up.

DISCUSSION

The original Branemark protocol requires a period of around 6 months for the complete healing of the extraction socket. Various studies have shown that

during this healing period, there is definitive resorption of bone, which unfavorably affects the availability of bone for implant placement. In order to reduce this issue of bone loss, implants have been placed immediately into fresh extraction sockets. Lazzara in 1989 first reported immediate implant placement in an extraction socket. The success of dental implant treatment of partially and fully edentulous patients has been recognized widely. This pattern of healing has been termed as "Type 1" implant installation at a consensus conference.^[7,8] In order to achieve successful results while placing immediate implants, the following keys aspects should be considered during the process of treatment planning. They are the presence of a buccal plate of bone, primary stability, implant design, filling of the gap between the buccal plate and the implant, and the tissue biotype. When the treatment planning is done keeping these aspects in mind, immediate implant placement offers many advantages, firstly it reduces the number of surgical procedures so the patient has to undergo fewer surgical interventions. Also, implants can be placed in the same location as the extracted tooth. Osseointegration is also more promising when placing implants immediately following an extraction. The alveolar bone as well as the gingival aesthetics are preserved. A comparatively short period of treatment time adds to the patient's comfort and they don't have to be in a state of without teeth.^[9] Despite the numerous advantages, there are a few limitations as well which include difficulty in achieving the primary stability, inadequate soft tissue coverage, difficulty in preparing the osteotomy site, fracture of the buccal plate of bone, expansion of the extraction socket, or widespread infection etc.^[10]

CONCLUSION

It is concluded that immediate implant placement in fresh extraction sockets is a feasible treatment option. It not only serves to reduce the overall treatment time of the procedure but at the same time fulfills both the functional and esthetic requirements of the patient. It is now a reliable treatment option as the success rates of immediate implant placement are analogous to those obtained by conventional protocol. Thus it must be considered as a primary treatment modality in selected cases.

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