CASE REPORT
Immediate Implant Placement and Loading in Anterior Maxilla: A Case Report
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ABSTRACT
Immediate implantation is a well-acknowledged treatment methodology that has been shown to have high success rates. First introduced in 1976, immediate implantation followed by tooth extraction offers many advantages which include reduced treatment time, preservation of crestal bone, minimizing soft tissue changes in esthetic zone, increased patient satisfaction, and treatment acceptance. Immediate implants are placed in the extracted socket of the tooth to be replaced. The major difficulty of obtaining predictable results could be associated with the tissue’s architectural modification. These changes may occur even before extraction by loss of buccal and/or interproximal tissues, resulting in gingival recession and loss of interdental papilla. This case report describes extraction of fractured maxillary central incisors, followed by immediate implant placement in the prepared socket, and provisional temporization followed by definitive restoration after 4 months of implant placement. Immediate implantation with immediate provisionalization has provided the patient with immediate esthetics and function.

Keywords: Anterior maxilla, Bone graft, Immediate implant, Platelet-rich fibrin.

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INTRODUCTION
Dental implants have a wide variety of use ranging from replacement of a single tooth to oral rehabilitation with a complete prosthesis.1 Dental implants have proven to be a successful and predictable treatment modality in replacing the missing teeth; Branemark has proposed different placement and loading protocols to reduce the surgical treatment times.2 Different approaches in implant placement following tooth extraction include postextraction immediate implant placement, delayed postextraction immediate implant placement, and delayed implantation. The Branemark protocol suggests soft and hard tissue healing period of 3 months following tooth removal and additional 3–6 months of load-free osseointegration period.3 Immediate implantation has given implant dentistry the chance to attain better esthetic and functional outcomes.4 Placement of a dental implant immediately in an extraction socket was initially described over 30 years back by Schulte and Heimke in 1976.2 The major advantage of this treatment approach includes decrease in the number of surgical interventions, it diminishes the treatment time, it provides an ideal three-dimensional positioning of implant, and preservation of alveolar bone and soft tissue esthetics.5

CASE DESCRIPTION
A 48-year-old female patient came to the Department of Periodontology, with a history of crown fracture at the cervical region in relation to 21 and also pain in 11, which was previously root canal treated; the patient was not willing for retreatment and requested for an immediate solution. Hence, immediate implant option was planned. On clinical examination, Ellis class III fracture was observed in relation to 21 (Fig. 1). Preoperative radiographic examination was done using intra oral periapical radiograph (IOPA) and orthopantomogram for appropriate treatment planning (Fig. 2). Clinical and radiological examinations revealed adequate bone support with no periapical and periodontal pathology. So, it was decided to place the implants immediately after the extraction to provide benefits such as preservation of bone and soft tissue esthetics. The procedure was carried out under local anesthesia using 2% lignocaine with 1:200,000 adrenaline. Teeth were extracted atraumatically using root forceps. The extracted sockets were examined for

Fig. 1: Preoperative intraoral view

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any osseous defects and periapical infection. The sockets were completely debrided using curettes, irrigated using povidone iodine solution. Sequential drills starting from 2 mm to 3.2 mm were used and osteotomy sites were prepared (Fig. 3). Guide pin was placed into the extracted socket to check for parallelism with adjacent and opposing tooth (Fig. 4). Two implants of size 3.75 × 11.5 were placed into the socket (Fig. 5). Initial primary stability was obtained. Bone graft (OSSEOGRAFT) and platelet-rich fibrin were used to fill the jumping distance between the implant and the surrounding bone (Fig. 6). 15°-angled abutments were placed, and flaps were approximated using 4-0 vicryl sutures (Fig. 7). Postoperative IOPA was taken to check for angulation and placement of implants (Fig. 8). The patient was provided with temporary acrylic crown postoperatively around the same day (Fig. 9). Postoperative instructions were provided, and the patient was recalled after 1 week for suture removal.
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The patient was asked to report after 4 months for the prosthetic rehabilitation. Open tray impression was made, using open tray coping and addition silicone impression material. Jig trial was done to verify the alignment of abutment with adjacent teeth. Vita classic shade guide was used to decide the shape of the prosthesis. All ceramic prosthesis was fabricated. The crowns were luted with glass ionomer cements (Fig. 10). The patient was reviewed after 9 months, and IOPA was taken. Radiograph reveals no evident of bone loss and periodontal pathology (Fig. 11).

**DISCUSSION**

Immediate implantation has been proven to be a successful and viable treatment modality in replacing the missing teeth. It offers many advantages such as patient acceptability, reduces the treatment time, preservation of alveolar bone, and extracted socket assures for the parallelism and alignment. It also helps in esthetics by preserving the soft tissue envelope. It is indicated in sites with no periodontal or periapical pathology on the tooth that is to be extracted, and in the case of root fracture, root resorption, root perforation, and in tooth with unfavorable crown–root ratio. It is contraindicated in the case of acute periapical infection, bony dehiscence or fenestration, lack of bone support beyond the apex, and in the case of active periodontitis. Although immediate implantation provides many advantages, there are few disadvantages which include difficulty in achieving primary stability, inadequate soft tissue coverage, tooth ankylosis, damage to the cortical plate, and so on.

Jordi-Ortega in a systematic review reported that the use of autogenous bone grafts or xenografts may enhance the bone formation between the implant and the surrounding socket walls. In our case, we have used platelet-rich fibrin along with xenograft to fill the jumping distance between the implant and the surrounding bone.

Calvo-Guirado et al. carried out a study to compare the primary stability between immediate and conventional implants and concluded that there was no significant difference between them.

In this study, good primary stability was achieved.

Covani et al. suggested that implants placed in the extraction sockets, with circumferential defects <2 mm, could heal without using any regenerative procedure. In ITI consensus, they reported that immediate implantation does not prevent vertical or horizontal resorption in postextraction sites. In this case report, there was jumping distance of 0.5 mm in buccal and 1.0 mm in palatal aspect was observed, which was packed with bone graft and platelet-rich fibrin.

**CONCLUSION**

Immediate implant therapy following postextraction is a viable alternative to delayed implant placement in reducing the treatment time and to preserve the alveolar bone resorption. Appropriate case
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Selection and proper treatment planning are required to obtain predictable outcomes.

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