ACHIEVING OPTIMAL AESTHETICS WITH IMMEDIATE IMPLANT PLACEMENT

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ABSTRACT

The loss of tooth in the aesthetic area is often a traumatic experience for the patient. Dental implant offers the most cost-effective and long-term solution for replacement of missing teeth with high average life expectancy, providing the patient with the best sense of security and well-being. Recently, immediate implant placement after extraction of tooth with early loading has become more common. The advantages of this procedure include fewer surgical interventions, reduction in overall treatment time, reduced soft and hard tissue loss, and psychological satisfaction to the patient. This case report describes the procedure for immediate implant placement in aesthetic zone and rehabilitation with screw retained prosthesis.

KEYWORDS: Aesthetic Rehabilitation, Immediate Placement, Dental Implants.

INTRODUCTION - Oral health and oral health care are very important to maintain proper mastication, digestion, phonation, appearance, and psychological well-being. The loss of one or more teeth due to any reason may adversely affect the oral health with an affected appearance being the most serious consequence for the patient. Tooth loss can occur for a variety of reasons which includes congenital absence, trauma, diseases of the dentition (e.g., caries or periodontal disease), as well as mechanical failure. Tooth loss can also occur secondary or concomitantly to various systemic diseases such as cancer,¹ cardiovascular disease,² diabetes mellitus, and osteoporosis.³ Therefore, it is important to not only maintain good oral hygiene, but also overall health. Patients may suffer real or perceived detrimental effects following the loss of one or more teeth. Tooth loss contributes to loss of confidence, avoidance of laughing in public, reluctance to form close relationship, especially when anterior teeth are missing.⁴

There are three basic approaches to replace a missing tooth or teeth including removable dental prosthesis, fixed dental prosthesis, and dental implants. Each alternative has its own benefits and shortcomings. It is important to consider the patient's financial, medical, and emotional condition for the best treatment.

Most advanced way to replace missing teeth is dental implant which is designed to replicate the natural tooth root and crown of the natural tooth. This
procedure preserves the gingival mucosa and bone with no damage to adjacent teeth. Conventional procedure for implant placement involves extraction of offending tooth, waiting 2–4 months for extraction socket to heal, insertion of implant, and again waiting for 3–6 months for integration of implant with surrounding bone; after this procedure, another surgery is necessary to expose the implant and to place a prosthetic abutment. Taking into consideration the prosthetic treatment, the patient had to wait up to 4–6 months for a lost tooth to be replaced. Because of these shortcomings related to conventional technique, strategies were developed to substantially shorten the entire treatment by placement of implant immediately after extraction of tooth.

Present case reports the immediate placement of implant in esthetic rehabilitation of maxillary anterior teeth followed by extraction with preservation of soft and hard tissue architecture.

CASE REPORT

A 45-year-old male patient was reported to Department of Prosthodontics, with the chief complaint of poor appearance owing to fracture of tooth in the upper front region of the jaw since 3 months. Clinical examination revealed root stump in relation to 11 tooth region. Radiographic examination of teeth revealed poor prognosis. The patient was aware of the poor condition of teeth, and willing for extraction of teeth followed by fixed replacement. Patient was explained about all the treatment options available with possible drawbacks of each. He was very concerned about her esthetics and was willing for earliest possible replacement of teeth in question. Hence, he had readily opted procedure of immediate implant. Treatment plan includes oral prophylaxis, extraction of tooth 11 and immediate placement of implant followed by fixed prosthesis.

Presurgical radiographic evaluation was done with panoramic radiograph along with dentascan. (Figure 1). Appropriate length and width of available bone were determined with the help of dentascan and accordingly dental implant (Touareg-S, ADIN Dental Implant System, Afula, Israel) was selected for insertion. Patient was premedicated with 2 g amoxicillin, 1 h before surgery. Following injection of 2% lignocaine local anesthetic solution, the tooth were atraumatically removed while preserving the labial bone plate (Figure 2). Extraction socket was thoroughly debrided and inspected with the help of periodontal probe for any defect or possible perforation of cortical plate. Osteotomy sites were prepared with sequential order of drills recommended by the manufacturer. Implant was inserted in the prepared osteotomy sites with insertion torque of 35 NCm, and adequate primary stability was obtained. (Figure 3) The remaining jump space was filled with platelet-rich plasma and autograft to promote bone healing and vertical augmentation.

Appropriate antibiotic and analgesic were prescribed, and standard postoperative instructions were given to the patient.

After 3 months, an impression was made with closed tray technique using light body and putty polyvinyl siloxane rubber base material (Aquasil, Dentsply, Surrey, UK). Impression was sent to the laboratory for fabrication of screw retained porcelain fused to metal (PFM) crown. A PFM crown was fabricated and attached to the abutment.
(Figure 4) Postoperative intraoral periapical radiograph was taken, confirming the accuracy of placement of implant. Follow-up was done after 3, 6, and 12 month's interval. (Figure 5)

DISCUSSION

In the modern era, immediate implant concept is gaining popularity for replacing missing teeth, especially when anterior teeth are missing. Krump and Barnett reported high success rates with dental implants placed at the time of extraction. Evidence has shown that immediate implant placement presents more advantages as compared to delayed implant insertion, which are implants in fresh extraction sites can be placed in the same location as the extracted tooth thereby minimizing the need for angled abutments, osseointegration is more favorable, the bony receptors are preserved by preventing atrophy of the alveolar ridge thereby preventing recession of the mucosal and gingival tissues, immediate placement of implants keeps contaminants away from the extraction socket, waiting times for primary healing of the soft tissues, and regeneration of the osseous structure are eliminated, immediate restorations can be provided for better esthetics. Elias and Sheiham carried out a review of available literature and found that, in general, patients were more willing for replacement of missing anterior tooth than a posterior tooth, and they rated esthetics above function in their priority for replacement of tooth.

Immediately placed and immediate loading implants are more predictable and successful than before; however, this approach cannot be applied to every immediate implant patient. In comparison to conventional implant treatment, the immediate loading procedure requires more chair-side time at the time of implant placement for both the restorative dentist and the patient. Careful patient screening and selection are required when an immediate implant placement with immediate loading procedure is a treatment consideration. The ideal state for immediately loaded implants would include adequate bone quality (D2 or D3 bone), screw-shaped implants, rough implant surface, and minimum implant length of 10 mm, adequate primary stability and avoidance of lateral forces. Primary stability of immediately placed implant seems to be the most important factor in immediate loading.

In the present report, primary stability (35 NCm) was achieved by extending osteotomy 3 mm beyond the apex of socket and by selecting width of implant that closely matches the width of extraction socket.

Attard and Zarb carried out a review and concluded that the success of early loading implants may not be compromised by placement in fresh extraction sockets as long as history of marginal periodontitis is avoided, while Quirynen et al. concluded that the incidence of implant failure is significantly higher when combining immediate implant insertion with immediate loading. Ferrara et al. conducted a study combining immediate placement and early loading of 33 implants and they found satisfactory aesthetic and functional results from patient's point of view.
CONCLUSION

Based on the outcomes of the present report and short review of the literature, it can be concluded that immediate implant placement following extraction may be a viable treatment option for cases requiring earliest restoration of teeth to be extracted. However, this approach is considered highly technique sensitive and requires expert dental implant team for its execution. Careful selection of cases, proper treatment plan and follow-up of surgical and prosthetic protocols are the keys to success.

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In the present report after completion of treatment excellent aesthetic rehabilitation was observed and patient was very satisfied with the outcome of treatment.

Figure 1: Pre- Surgical Denta-Scan

Figure 2: Atraumatic Extraction Preserving Labial Plate

Figure 3: Implant Placement in Extraction Socket

Figure 4: Final Prosthesis
Figure 5: Post-Operative Radiograph

REFERENCES


