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CASE REPORT

Immediate Implant Placement in Fresh Extraction Socket with Immediate Loading

[1]Sapna Bhat, [2]Vidya V Adoni, [3]GS Amarnath, [4]CS Shruthi

ABSTRACT

This case report describes extraction of a decayed right maxillary central incisor tooth, followed by immediate placement of a dental implant in the freshly extracted socket and temporization. The tooth was atraumatically extracted, the socket was prepared to the required depth, and dental implant was inserted and immediate loading was done. An impression was made 4 months after implant insertion and a definitive restoration was placed. The atraumatic operating technique and the immediate insertion of the implant resulted in the preservation of the hard and soft tissues at the extraction site. The dental implant and provisional restoration provided the patient with immediate esthetics, function, comfort, and most importantly preservation of tissues.

Keywords: Atraumatic extraction, Immediate loading, Immediate placement, Implant.

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INTRODUCTION

Loss of a tooth in the esthetic zone is a traumatic experience for the patient. Hence, in the esthetic zone, implant-supported single tooth replacement is one of the most challenging situations for a clinician to handle.

Endosseous dental implant therapy is rapidly becoming the prosthetic standard of care for a vast array of clinical applications. Despite the high success rate of endosseous implant therapy, it has yet to achieve wide public acceptance and utilization. Endosseous implant therapy in the mandible (parasymphyseal mandible) has repeatedly been reported at a success rate of 95% or better, yet public utilization of endosseous implant therapy has not exceeded 5%. An obvious area of focus has been to decrease the amount of time necessary to complete implant therapy. Approaches to achieve this goal have dominated clinical research and practice.[1]

With the extraction socket as a guide, the surgeon can also more easily determine the appropriate parallelism and alignment relative to the adjacent and opposing residual dentition. The surgical requirements for immediate implantation include extraction with the least trauma possible, preservation of the extraction socket walls, and thorough alveolar curettage to eliminate all pathological material. Primary stability is an essential requirement and is achieved with an implant exceeding the alveolar apex by 3 to 5 mm or by placing an implant of greater diameter than the remnant alveolus. Esthetic emergence in the anterior zone is achieved by 1 to 3 mm subcrest implantation.[2]

CASE REPORT

A 28-year-old male presented to the Department of Prosthodontics, MR Ambedkar Dental College and Hospital, Bengaluru, with a chief complaint of tooth discoloration (Fig. 1). A detailed case history was recorded in the form of a questionnaire. Thorough intraoral and radiographic examination revealed a root canal-treated maxillary right central incisor tooth with adequate alveolar bone, absence of periapical pathology but presence of caries, which extended beyond the crest of the alveolar bone. Hence, it was decided to extract and place endosseous implant immediately and provide a provisional restoration to

Fig. 1: Preoperative view of right maxillary central incisor

[1,2]Postgraduate Student, [3]Professor and Head, [4]Professor

[1-4]Department of Prosthodontics, MR Ambedkar Dental College and Hospital, Bengaluru, Karnataka, India

Corresponding Author: Sapna Bhat, Postgraduate Student Department of Prosthodontics, MR Ambedkar Dental College and Hospital, Bengaluru, Karnataka, India, Phone: +919916536244, e-mail: sapnabhat89@gmail.com

Fig. 2: A 3.7×13 mm tapered self-threaded implant was inserted to the desired depth

Fig. 3: After gingivoplasty

Fig. 4: Labial view of definitive implant restoration

avail the benefits like preservation of bone and emergence profile. After administering appropriate antibiotic and analgesics, induction of local anesthesia was carried out using lignocaine with adrenaline.

As preservation of alveolar bone is key to success of immediate implants, extraction of tooth has to be atraumatic, so using periotomes and small periosteal elevators, the tooth was luxated without excessive enlargement of the socket. The socket was debrided with a curette and a Hitec (tapered self-threaded, Life Care Devices Private Limited, Israel) implant measuring 3.7 × 13 mm was placed (Fig. 2). Plasma-rich fibrin was separated from the patient's blood and was packed between the implant and the labial socket wall. Implant abutment was placed and secured with interrupted sutures. Once the initial postoperative bleeding stopped, an irreversible hydrocolloid impression material was used and impression was made. Postoperative instructions were given to the patient and an acrylic temporary restoration was fabricated and luted the same day with zinc oxide eugenol cement. The sutures were removed after 7 days and an intraoral periapical radiograph was made.

The patient was recalled after 4 months and an opinion was sought with the periodontist who performed a gingivoplasty procedure, to further enhance the esthetics (Fig. 3). After a week, final impression was made and an all-ceramic crown was fabricated and cemented with type I glass ionomer cement (Fig. 4).

DISCUSSION

Implant placement in maxillary anterior region has the most esthetic challenges in implant dentistry, as tooth loss can lead to bone resorption and collapse of the gingival architecture, which can lead to poor esthetics and inadequate bone for implant placement. Immediate implant placement into fresh extraction socket reduces the treatment time and cost and preserves the soft tissues and increases the comfort of the patient.

Immediate implant and early loading may be a good treatment option in the loss of anterior teeth.[3] Its success rate in the maxilla is 66 to 95.5% and in mandible is 90 to 100%.[4] Immediate implant placement is most commonly indicated when tooth extraction is due to trauma, endodontic lesion, root fracture, root resorption, root perforation, unfavorable crown to root ratio, and when the bony walls of alveolus are still intact.[5]

This article describes the procedure for immediate implant placement in fresh extraction socket and immediate loading of implant with an all-ceramic crown. Clinical and radiographic examination revealed width and length of the tooth for selecting implant size and design. Cement-retained crown was used for implant loading.

In this case, immediate placement and immediate loading of dental implant provided advantages like fewer surgical procedures, shorter treatment time, improved esthetics, and psychological confidence to the patient.

Thus, the harmony of soft and hard tissues was preserved with this procedure.

CONCLUSION

Implant therapy must fulfill both functional and esthetic requirements to be considered as a primary treatment modality. Accurate diagnosis, meticulous treatment planning together with dedicated interdisciplinary team-based approach is necessary for its success. Treatment planning includes assessment of patient psychology, socioeconomic status, and type and severity of the condition. Though this procedure is technique sensitive, it aims at reducing the alveolar bone resorption and treatment time, compared with the delayed placement. Regular recall appointments must be planned to periodically evaluate the success of the restoration.

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