

Immediate Implant Placement Following Extraction in Maxillary Anterior Region – A Case Report

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Abstract- Replacement of missing anterior tooth is the most esthetic challenging situation. Following tooth loss, reduction in bone height is often accompanied by alteration in gingival architecture. Immediate implant placement in freshly extracted socket is said to decrease these. This case report describes the step by step procedure for the same. Implant placement was followed by early implant loading by cementing a zirconia crown. Review check up were done till 36 months and showed implant to be functional. In addition to reduced treatment time and fewer surgeries, good esthetics and patient satisfaction are obvious advantage of immediate implant placement.

Index Terms- Early loading, immediate implant placement, indications.

I. INTRODUCTION

Placement of dental implants for replacing missing teeth is a well-established treatment option [1]. According to the traditional protocol, as given by Branemark et al. and Adell et al. a 6- to 12-month healing period after tooth extraction and prior to implant placement was suggested [2,3]. This time frame and the additional 3 to 6 months required for osseointegration of the implants, along with the time necessary for loading and fabrication of the restoration, often resulted in a treatment time of 1 to 2 years before the patient received the final implant supported restoration [4]. Attempt to shorten the overall treatment time has focussed on approaches like early or immediate implant loading and immediate or early implant placement [5-7].

Esposito MA et al, defined implant placed in a fresh extraction socket is as an immediate implant, an implant placed in an extraction socket within 8 weeks after tooth extraction was called immediate-delayed and later placed implants were called delayed implants [8]. Immediate placement of a dental implant in an extraction socket was initially described more than 33 years ago by Schulte and Heimke in 1976 [9].

Apart from reducing the time period and the number of surgical interventions, other advantages of immediate or early (immediate-delayed) implant placement in the extraction socket has been suggested, such as better implant survival rates, better aesthetics, maintenance of the hard and soft tissues at the extraction site, and higher patient satisfaction compared with delayed (late) placed implants. On the other hand, because of the nature of this treatment method, a higher risk of complications and failures may be expected [1]. In this case report the harmony of hard and soft tissues was preserved by immediate implant placement with early loading.

II. CASE REPORT

A 23 year old male patient reported to the Department of Prosthodontics, Meenakshiammal Dental College with chief complaint of fractured upper front tooth due to trauma. On clinical and radiographic examination, it was found that the tooth was previously endodontically treated and was restored with post and core followed by crown (Fig – 1- 4). The patient was explained about unfavourable prognosis for the tooth and the need for extraction. The patient was explained about alternative treatment options and the proposed procedure of extraction followed by immediate implant placement. The patient being conscious about esthetics and early restoration opted for immediate implant placement option.

FIG 1: PRE-OPERATIVE INTRAORAL PICTURE- FRONTAL VIEW



FIG 2: OCCLUSAL VIEW



FIG 3: PREOPERATIVE IOPA

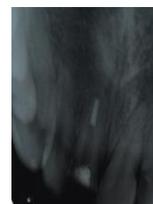


FIG 4: PREOPERATIVE OPG SHOWING SUFFICIENT BONE APICAL TO ROOT APEX



Presurgical radiographic evaluation were carried out with IOPA for appropriate treatment planning. With the help of radiographs the diameter of the fractured tooth at the most coronal portion was measured as 4mm and length of the root was measured as 12mm. After meticulous treatment planning, endosseous implant (S1, Safe & Simple implant system) of size 4*12mm was selected.

Following an injection of 2% lignocaine (1: 80,000 conc.), the fractured tooth was atraumatically extracted (fig 5). The extraction socket was evaluated for any osseous defects and infection / granulomatous tissue. The four walls of socket were intact. The extracted tooth dimensions were measured with vernier calliper to ascertain about the size (6). The socket was thoroughly debrided with saline solution and after sequential drilling with copious irrigation, the implant was placed with insertion torque of 45Ncm (fig 7& 8). The implant platform was placed in level with crestal bone. Post operative radiograph was

taken. Abutment was placed and checked for clearance (fig 9) . The abutment was milled (fig 10 & 11) followed by abutment level impression made with polyvinyl siloxane material. Cast was poured and mounted on semi- adjustable articulator. The permanent restoration fabricated with Cercon zirconia crown (Dentsply Ceramco) was cemented within a week of implant placement (fig 12).

FIG 5: TOOTH EXTRACTED ATRAUMATICALLY



FIG 6: MEASURING DIMENSIONS OF EXTRACTED TOOTH



FIG 7 & 8: SHOWS IMPLANT PLACED IN THE EXTRACTION SOCKET



FIG 9: ABUTMENT TRIED- IN



FIG 10: MILLING OF ABUTMENT



FIG 11: MILLED ABUTMENT



FIG 12: FINAL RESTORATION IN PLACE



III. DISCUSSION

Immediate implant placement is indicated in cases of tooth extraction due to trauma, root fracture, root perforation, root resorption, unfavourable crown: root ratio and with no dehiscence or fenestration defect^[10]. Contraindications include site with active infection, insufficient bone apical to tooth socket apex (<3mm) and wide or long gingival recession^[11].

A vast number of studies on immediate implant placement are present however, only a few randomized controlled trials (RCT) or long-term prospective trials exist. Review of the literature show that the survival rates of immediately, early, or delayed placed implants are comparable with those of implants placed in healed alveolar bone in short perspective^[11]. In general, approximately 5% of implants are expected to be lost regardless the protocol being used. The success rate in maxilla has been stated as 66- 95.5% and in mandible is 90 – 100%^[12].

No statistically significant differences in mean crestal bone loss and mean probing pocket depth between the protocols was found. Immediate implant placement was initially said to preserve alveolar bone. However this is said to be controversial since morphologic changes of the post-extraction site may occur despite immediate / early implant placement. Buccal wall of socket being thin, slightly palatal / lingual placement of the implant in the extraction socket is recommended to avoid exposure of the implant surface. And also for preservation of bone, careful extraction is recommendable and it is advised to section multi-rooted teeth before removal^[11].

Controversies exist on whether local pathology has an adverse effect on the outcome. Chronic infection is not an absolute contraindication for immediately placed implants, however, thorough debridement of the alveolus should be made. The use of antibiotics prophylactically, is recommended in medically compromised patients. In the present study no local pathology was present^[11].

Small gaps between implant surface and socket wall have a potential for spontaneous healing. GBR and grafting perform successfully for augmentation of dehiscences and fenestrations; however, no evidence exists that one technique or material is superior to others. In the present study, no osseous defect had warranted the use of any graft material^[11].

In the present case report, the patient's need for immediate replacement and good esthetics were addressed. Thus immediate implant placement may be a good treatment option for missing anterior tooth.

IV. CONCLUSION

Immediate implant placement though a technique sensitive procedure, has a good success rate when careful case selection and treatment planning are performed. In this case report, the immediate implant placement with early loading had resulted in acceptable esthetics and patient satisfaction.

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