ORIGINAL RESEARCH PAPER
Volume - 10 | Issue - 06 | June - 2021 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

IMMEDIATE IMPLANT PLACEMENT AT ANTERIOR MAXILLARY REGION

Dental Science

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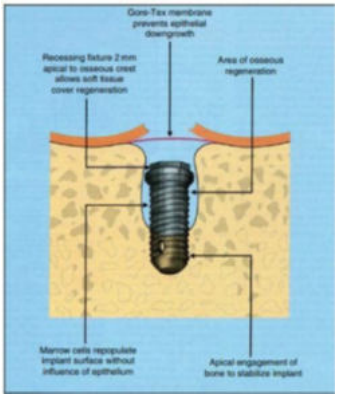
ABSTRACT

INTRODUCTION: Immediate dental implants have greatly reduced the treatment time and the number of surgical interventions. Recently it has been noted that this treatment modality can be used in aesthetically demanding cases especially the anterior maxilla.
CASE REPORT: In the present case report a 24 year old male patient reported to our institution with fractured upper front teeth. After careful examination and treatment planning immediate implant treatment was initiated. The teeth were extracted atraumatically. We placed three implants into the extraction sockets. The prosthetic rehabilitation was done with metal ceramic crowns.
CONCLUSION: It was found that the immediate implant therapy has several advantages such as reduced treatment length, preservation of soft and hard tissues surrounding the implant and reduced number of operations. Immediate implant treatment therefore has a great future in the treatment of aesthetic zones.

KEYWORDS

INTRODUCTION

The goal of modern dentistry is to prevent tooth loss and provide a healthy dentition with optimal functional efficiency, structural balance, and esthetic harmony. With the ever-increasing success rates of dental implants, clinicians have turned their approach toward making the duration of treatment shorter and more comfortable for the patient.Several options are available for the replacement of a single missing tooth. Most recent choice is implant which gradually reduces the acceptability of removable and fixed partial denture. The reasons behind this breakthrough popularity are- minimum operating time, cost effectiveness, supreme aesthetics. There is also no harm to adjacent tooth structure like FPD. There has been increasing interest in the placement of implants at the time of tooth removal. Implants placed in this manner, either with or without simultaneous restoration, are advocated to preserve soft tissue form and contour, preserve bone dimensions, reduce the period of edentulism, reduce the overall treatment time and to optimize esthetic results (Lazzara 1989; Becker et al. 1998; Wheeler et al. 2000; Kan et al. 2003b). The demand for immediate implant placement is driven by a desire to retain alveolar volume for the patient .The placement of dental implant into fresh extraction sockets was introduced in 1970 and is a well-established treatment option for replacing missing teeth, allowing the restoration of masticatory function, speech, and esthetics (Schwartz et al).In the esthetic zone, a key challenge for the restorative dentist is to provide patients with a crown and periimplant mucosa that is in harmony with the adjacent teeth, thus restoring both function and esthetics. From a surgical perspective, the current concept is to plan for implants to be placed in a position to optimize the emergence profiles of the restoration, thereby achieving proper soft tissue form and symmetry (Belser et al. 1998).



Original diagram of immediate implant placement protocol[1]

CASE REPORT

A 24 years old male patient reported to the department of oral and maxillofacial surgery, Gurunanak institute of dental sciences and research with a complaint of fractured front teeth due to trauma. Relative medical history was sound. The following teeth were fractured – 11, 12 and 21. Unfavourable prognosis for the teeth was explained to the patient. The patient was informed about various treatment options. The patient being conscious about esthetics and early rehabilitation opted for immediate implant placement.

Pre surgical radiographic evaluation was carried out with Cone beam computed tomography for appropriate treatment planning. After measuring the socket lengths implants (COWELL MEDI) of size 4.5×14 mm were selected for 11 ,4×14mm selected for 12 and 4.5 ×14mm selected for 21.After injecting 2% lignocaine (1:80,000 conc.), the fractured teeth were atraumatically extracted using a periotome. The extraction sockets were evaluated for any osseous defects, infection or granulomatous tissue. The sockets were thoroughly debrided with saline solution and after sequential drilling with copious irrigation, the implants were placed. The closure of the site was done using 3-0 silk sutures.Following implant placement IOPA and CBCT radiograph was done. The second stage surgery was done after a healing period of 4 months. The implants were exposed carefully, without damaging the surrounding bone. The gingival former was placed and kept in place for 2 weeks, then removed. A closed tray impression was made, using implant analogues and transfer coping, using addition silicone impression material. The shade of the prosthesis was matched with Vita 3D Shade Guide. A metal ceramic prosthesis was fabricated. The crowns were cemented with Glass Ionomer luting cements on the abutment. Follow up was done over a period of 18 months.After 6 month of post loading CBCT and IOPA xray was done.\

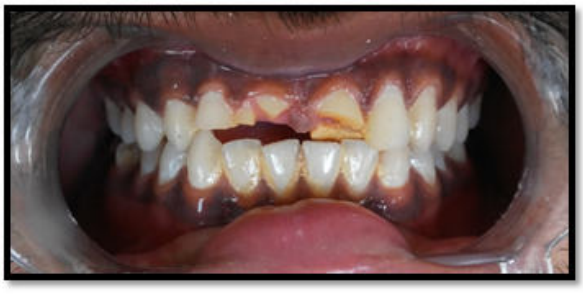


Fig 1: Fractured anterior teeth

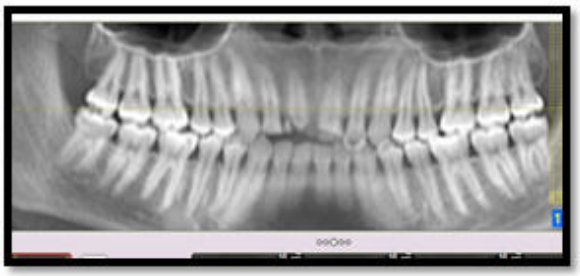


Fig 2:CBCT

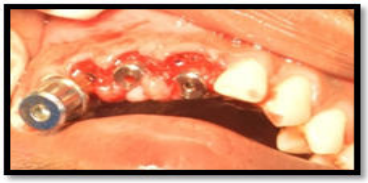


Fig 3: Implant placement in to osteotomy site

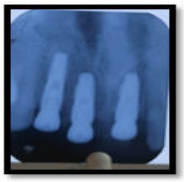


Fig4:IOPA radiograph

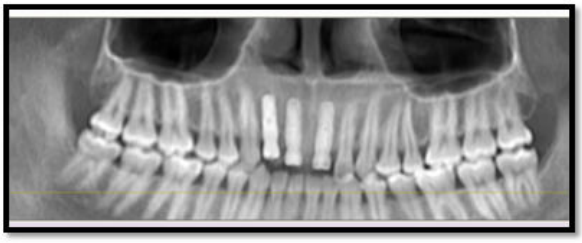
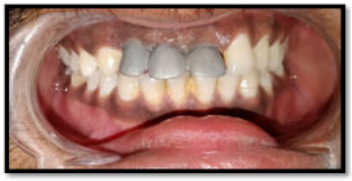


Fig 5:CBCT radiograph



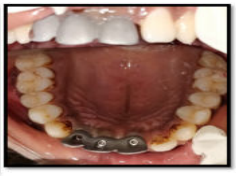


Fig6: Metal try-in

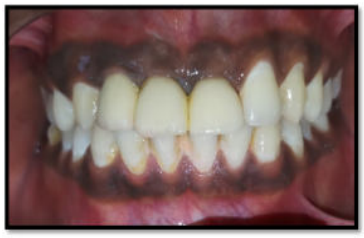


Fig7:After final prosthesis

Fig8:IOPA radiograph

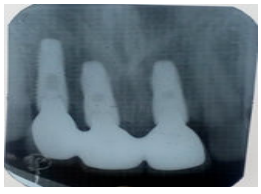


Fig9:6 month post op IOPA

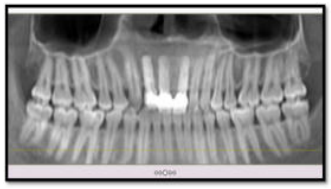


Fig10: 6month post op CBCT

DISCUSSION

Immediate implant placement is defined as the placement of an implant into the extraction socket at the time of tooth extraction.[2]
Block and Kent, 1991 summarized the indications as [3] -
(1) traumatic loss of teeth with a small amount of bone loss
(2) tooth lost because of gross decay without purulent exudates or cellulites
(3) inability to complete endodontic therapy
(4) presence of severe periodontal bone loss without purulent exudates
(5) adequate soft tissue health to obtain primary wound closure.

The contraindications are [3]:-

(1) presence of purulent exudates at the time of extraction
(2) adjacent soft tissue cellulites and granulation tissue
(3) lack of an adequate bone apical to the socket
(4) adverse location of the mandibular neurovascular bundle, maxillary sinus and nasal
cavity
(5) poor anatomical configuration of remaining bone..

Criteria for immediate implant placement[2]

- Low-risk patient
- Low esthetic expectations
- Adequate quality and quantity of soft tissue
- Adequate quality and quantity of socket bone
- Absence of diffuse infection
- Healthy condition of adjacent teeth and supporting structures
- Primary stability

The most predictable method of successful immediate implant placement are maintenance of the soft tissue architecture with conservative tissue manipulation (ie, leaving the periosteum intact) to preserve the blood supply, maintenance of the buccal plate, and firm implant stability with a minimum torque value of 30 Ncm and an implant stability quotient of at least 60.[2]

There are several controversies about local pathology having an adverse effect on the treatment outcome. Chronic infection is not an absolute contraindication, but debridement of the alveolus is recommended. The use of antibiotic prophylaxis is useful in medically compromised patients. In the present study local pathology was not present.[4]Buccal wall changes are dependent mostly on the thickness of the buccal plate, which should be at least 1.8- to 2-mm thick, to prevent this buccal wall modeling/remodeling, the implant should be placed more palatally to avoid pressure against the buccal plate[5]. For adequate primary stability, immediate implants should be placed few millimeters beyond the socket or 3 to 5 mm past the apex. The diameter of the implant should exceed the root diameter, and primary stability must be obtained with a pristine apical and lateral socket wall. If the clinician believes that the existing socket precludes the attainment of primary stability for an appropriately sized implant in an ideal restorative position, immediate implant placement should be avoided, and guided bone regeneration and delayed implant placement can be undertaken. The implant should not touch the buccal plate of the socket wall in the maxillary anterior teeth, because such touching could cause resorption of buccal plate and esthetic risk. The implant must be placed at least 1 mm subcrestally, especially if the buccal or lingual plates are thin, or 2 to 3 mm below the gingival margin. The extraction and the placement of the implant should be flapless, when possible, or can use a sulcular incision, 1 tooth mesial and 1 tooth distal to the implant site, which could help to expose the buccal bone.[2]

Micromovement of the implant can grind and slowly smooth the bone surface, thereby reducing the interlock between bone and titanium and ultimately resulting in a loss of primary stability. It is critical that there are no occlusal implant overloads during the early healing stage. Primary stability is important during the first days after implant installation. The first weeks are a crucial period because primary stability can decrease to critical levels before secondary stability develops. Any micromotion of more than 150 mm causes fibrous encapsulation of the implant. Therefore, patients should be compliant and should avoid high masticatory forces by eating only soft foods for at least for 6 weeks postoperatively.[2]

Therefore,extra caution must be exercised while working on the anterior maxillary region, especially with respect to bone preservation.[6]There are multiple advantages of immediate implants, including reduction in the number of operations and the overall length of treatment. Other suggestive advantages include ideal orientation of the implant, preservation of the bone at the extraction site and other optimal soft tissue esthetics.[7]

CONCLUSION

In this case, our patient met all the indications for immediate implant placement. Using this technique, we were able to provide the patient with a desirable aesthetic and functional outcome. Immediate implant placement may be a highly technique sensitive procedure. However, careful case selection and treatment planning usually result in good success rates.

CONFLICT OF INTEREST :-none.

CONSENT :- Written informed constent were obtained from the patients for publication of this case report and accompanying images

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