



IMMEDIATE LOADING OF DENTAL IMPLANT IN THE MAXILLARY SECOND PRE MOLAR REGION WITH THE ZIRCONIA CROWN – A CASE REPORT

Dental Science

P Sindhu

Resident, Department of Prosthodontics, Tagore Dental College and Hospital, Chennai, India. - Corresponding Author

Dr. Narasimman

MDS, Reader, Department of Prosthodontics, Tagore Dental College and Hospital, Chennai, India.

Dr. C J Venkatakrishnan

MDS, Research Scholar Bharath University, Vice Principal, Professor and Head, Department of Prosthodontics, Tagore Dental College and Hospital, Chennai, India.

ABSTRACT

Immediate loading of implants have gained popularity recently where implants are loaded immediately after its placement. It requires a high degree of clinical experience. Excellent esthetics, reduction in time, cost and number of surgical interventions are the advantages of immediate loading protocol. In this case full thickness flap was elevated and osteotomy drills placed. Implant was inserted and healing cap placed. Immediate loading with Zirconia crown was done within 12 hours. A review after one month, 6 months and one year revealed an esthetic and a well functional implant restoration. The patient was satisfied in terms of esthetics and function.

KEYWORDS

Dental implant, Immediate loading, Maxillary second pre molar, Zirconia crown

INTRODUCTION:

Implant placement and loading protocols have evolved with advancements in clinical techniques and biomaterials. Immediate loading of implants are gaining popularity in recent times. As the name implies, implants are loaded immediately after its placement^[1].

The conventional protocol includes a healing period of 8-12 months post-extraction for socket ossification and a further 4-6 month period of osseointegration. Whereas, immediate implant protocol eliminates the socket ossification period or positively combines ossification and osseointegration, thereby significantly reducing the treatment period^[2].

IMMEDIATE IMPLANTS:

Immediate loading of implant is a case-sensitive procedure which requires a high degree of experience and clinical competency. Presence of systemic diseases; medication compromising bone healing; diabetes; smoking; Para-function and unfavorable occlusal scheme make the treatment inadvisable^[3].

The advantages of this technique are reduction in bone Resorption, lesser time consumption and reduced number of surgical interventions. Also, excellent esthetics increases patient acceptance by many folds^[4].

The immediate loading protocol is technique sensitive and hence consideration regarding alveolar bone quality, proximity of vital structures and anatomy of the implant site becomes essential^{[2][5]}.

Implant placement and immediate loading ensure promising results, provided appropriate case selection and precise treatment protocol are observed.

CASE REPORT:

A 40 year old male patient reported to the department of Prosthodontics at Tagore Dental College and Hospital, Chennai, India with a Chief complaint of difficulty in chewing due to missing tooth in the upper right back tooth region.

At the first appointment, patient's medical and dental history was recorded. Intraoral and extra oral examinations were performed. Intraoral examination revealed missing tooth in 15 region (Figure 1). Diagnostic radiograph was taken (Figure 2) and diagnostic impressions were made.

The following treatment options were explained to the patient for the replacement of 15.

1. Removable Partial Denture

2. Fixed Partial Denture (tooth supported)
3. Implant supported crown

The patient selected the 3rd option because he wanted a fixed prosthesis and also was not willing for tooth preparation in the adjacent teeth.

TREATMENT:

A prophylactic dose of 1 Gram of Amoxicillin was administered and patient was asked to use Chlorhexidine mouthwash 30 minutes prior to the procedure. Under local anesthesia, a full thickness flap was elevated and osteotomy drills were performed at the implant site (Figure 3). A 4.3 × 13mm implant (Myriad-Equinox, Amersfoort, Netherlands) was placed and impression was made immediately.

Healing cap was placed (Figure 4) and sutures were not required due to minimal flap elevation (Figure 5). Tissue healing was observed (Figure 6). Zirconia crown was fabricated to replace 15 (Figure 7). Within 12 hours immediate loading of the implant was done with Zirconia crown (Zen International Dent, Chennai, India) (Figure 8). Implant protected occlusal scheme was provided (Figure 9). An IOPA was taken after Zirconia crown placement (Figure 10). Post-operative instructions were given and the patient was advised on a soft diet for 3 weeks. A review after one month, six months and one year revealed an esthetic and a well functional implant prosthesis.

DISCUSSION:

In this case, immediate loading was chosen because the number of appointments required is lesser than the conventional protocol and also the conventional method needs more time for osseointegration.

Immediate loading of dental implants are usually carried out in the mandibular anterior region due to its high bone density. In this case, successful immediate loading of the dental implant was done in the maxillary premolar region and a one year review revealed a predictable outcome.

Immediate loading can be carried out using single stage surgery and flap approach depending on whether extraction is involved or not, or using single stage surgery with a punch or flapless procedure^{[3][6]}. A full thickness flap was raised in this case. This will allow the healing soft tissues to fill the embrasure space between the teeth and implant supported crown thus providing a natural healthy appearance. Whereas, surgical procedure with a punch might result in an interdental gap deficient in soft tissues.

Zirconia crown was used in this procedure since they provide better esthetics and strength than metal-ceramic crowns.

Immediate loading protocol has a shortened time interval between the

surgical and prosthetic phase. The acquisition of osseointegration is a main pre-requisite for immediate loading of implants^[7].

The prosthesis will apply considerable pressure on the implant during the healing phase. Factors such as primary implant stability, osteoconductive implant surface and controlled functional loading of the implant dictate the success of the treatment^{[8][9]}. Implant protected occlusal scheme was provided in this case. Immediate loading offers a great advantage not only in the esthetic zone, but also in terms of function. Immediate loading is a viable alternative to the conventional method provided the advantages and risks are evaluated for each individual^{[5][10]}. Thus an esthetic, sound and economic treatment can be provided.

CONCLUSION:

Implants eliminate the need for adjacent tooth reduction. Due to advancements in clinical techniques the surgical procedure was simplified. Immediate loading of implants significantly reduced the treatment period for the patient thus offering a pleasant dental experience. In this case, the patient was satisfied in terms of esthetics and function.

FIGURES



Figure 1: Pre-operative photograph revealing missing 15.

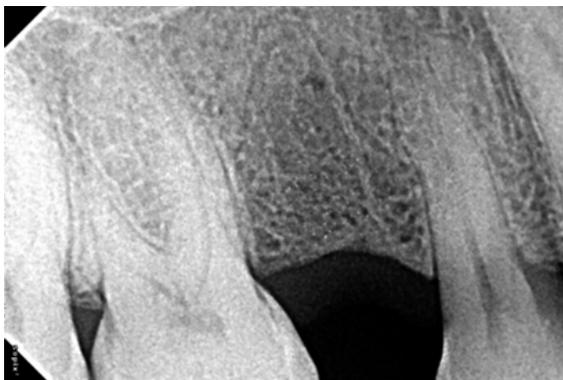


Figure 2: Diagnostic radiograph

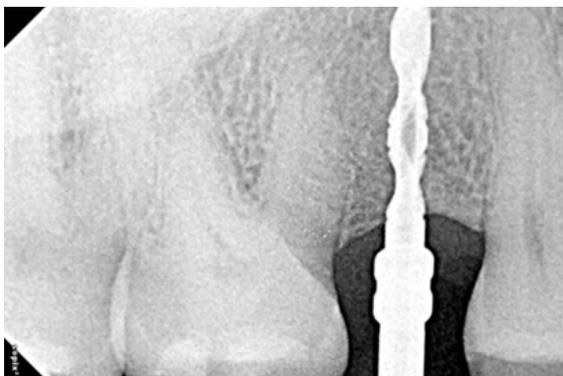


Figure 3: Pilot osteotomy drill

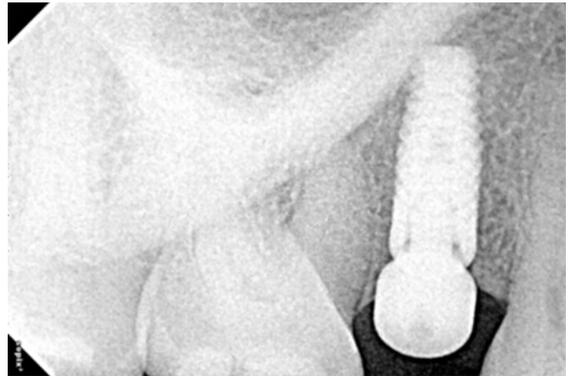


Figure 4: Implant placement with healing cap in 15 region



Figure 5: Immediately after implant placement



Figure 6: Tissue healing in 15 region after 6 hours



Figure 7: Zirconia crown in model



Figure 8: Immediate loading of implant with zirconia crown



Figure 9: Implant protected occlusal scheme

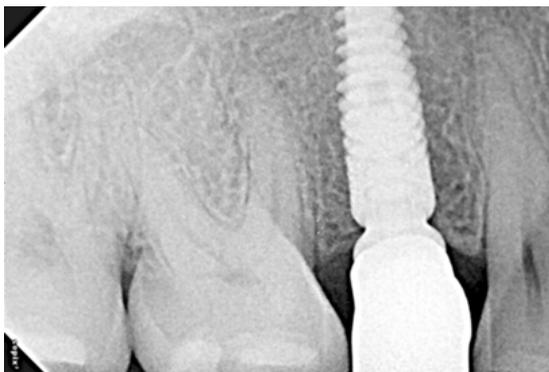


Figure 10: Post-operative radiograph

REFERENCES:

1. Jordi Ortega-martinez, Tania Perez-pauscal, Santiago Mareque-Bueno, Federico Hernandez-Alfaro, Edward Ferres-Padro, Immediate implants following tooth extraction – A systematic review, med oral Patol oral Cir Bucal, 2012 Mar 1;17(2):e251-61, doi: 10.4317/med.oral.17469.
2. Deepthi Chaitanya Tadikonda, Sasikala Pagadala, Immediate implant placement – a review, Sch.J.Dent.Sci. 2015;2(4):296-301, ISSN 2394-496x.
3. PJ Henry, GJ Liddelow, Immediate loading of dental implants, Australian Dental Journal 2008; 53: (1 suppl):S69-S81, doi: 10.1111/j.1834-7819.2008.00044x
4. Archana Singh, Aratee Gupta, Ashish Yadav, Chaturvedi, Atul Bhatnagar and B.P Singh, Immediate placement of implant in fresh extraction socket with early loading, Contemp Clin Dent. 2012 Sept; 3 (Suppl 2): S219-S222. doi:- 10.4103/0976-237X.101099, PMID:PMC3514938
5. Mithridade Davarpanah, Serge Szmukler-Moncler, Immediate loading of Dental implants Theory and Clinical Practice, Quintessence International, ISBN 978-2-91255-050-7
6. Misch CE, Hahn J, Judy KW, et al. Workshop guidelines on immediate loading in implant dentistry. 7 November 2003. J Oral Implantol 2004;30:283-288.
7. Nikenke E, Fenner M. Indications for immediate loading of implants and implant success. Clin Oral Implants Res 2006;17 Suppl 2:19-34
8. Attard NJ, Zarb GA. Immediate and early loading protocols: a literature review of clinical studies. J Prosthet Dent 2005;94:242-258.
9. Schwartz-Arad D, Chaushu G; The ways and wherefores of immediate placement of implants into fresh extraction sites; a literature review. J Periodontol, 1997;68:915-923.
10. Chen ST, Wilson Tg, Jr., Hammerle Ch. Immediate or early placement of im-plants following tooth extraction; review of biologic basis, clinical procedures and outcomes. Int J Oral Maxillofacial Implants. 2004;19 Suppl:12-25.