



## Minimally invasive extraction followed by immediate implant placement: A case report.

**Dr. Amit Pokharkar**

Lecturer. Department of Prosthodontics. Department of Prosthodontics. D.Y.PATIL (Deemed to be University) School of Dentistry

**Dr. Gaurang Mistry**

Dean and H.O.D. Department of Prosthodontics. Department of Prosthodontics. D.Y.PATIL (Deemed to be University) School of Dentistry

**Dr. Rajeev Singh**

Professor and P.G. Guide. Department of Prosthodontics. Department of Prosthodontics. D.Y.PATIL (Deemed to be University) School of Dentistry

**Dr. Saba Supariwala**

Postgraduate students. Department of Prosthodontics. D.Y.PATIL (Deemed to be University) School of Dentistry

**Dr. Yash Gujar**

Postgraduate students. Department of Prosthodontics. D.Y.PATIL (Deemed to be University) School of Dentistry

**Dr. Rishabh Shetty**

Postgraduate students. Department of Prosthodontics. D.Y.PATIL (Deemed to be University) School of Dentistry

### Abstract:

In the recent era anterior maxillary region has been increasingly replaced with a dental implant; however post extraction this region is also more prone to bone resorption which impairs the gingival tissue health thereby affecting the implant placement. Implant aesthetics can be anticipated after a thorough examination of the hard and soft tissues around the tooth with poor prognosis. As a result, preserving the osseous support with least invasive extraction is essential for retaining the interproximal papillae. Insertion of an implant immediately after tooth extraction may maintain the emergence profile and hence esthetics. This article discusses a case on implant placed immediately after extraction in anterior maxillary region.

**Keywords:** Bone graft; Immediate implant; Minimally invasive extraction; Peri-implant esthetics; Platform switching.

**DOI Number:** 10.48047/nq.2021.19.2.NQ21026

**NeuroQuantology 2021; 19(2): 123-130**

### Background

A technique known as immediate dental implant (IDI) was created towards the end of the 1970s with the goal of placing a implant immediately after a dental extraction. In today's era, tooth removal followed by immediate placement of an implant is the procedure of

choice for enhancing the stability of the alveolar ridge in cases of tooth loss in the aesthetic area [1]. Bone resorption is few of the main issues encountered after extraction of teeth. When a tooth is extracted, the alveolar bone is naturally remodelled with detrimental consequences on the bone dimensions and quality. This affects



the placement of a dental implants and also necessitates restoration with bone grafts and membranes [2]. Atraumatic extractions techniques (AET) was developed to minimize the number of surgical appointments, hence reduce the complications during and following the surgical sessions as well as preserve the alveolar bone necessary for dental implant placement.

The indications for performing the IDI are tooth fracture, root resorption, sub gingival cavities and poor endodontic management. Pre-requisites for placing implants immediately are thorough examination of the bone quality, periodontium, occlusion pattern and systemic conditions of the patient [3, 4]. IDI is preferred as it helps to decrease treatment time and cost, need for bone augmentation, preserve the soft tissue drape and improves implant positioning [5].

Therefore, the present study aimed at the clinical sequence of a minimally invasive extraction with immediate implant placement using bone graft and guided bone and tissue regeneration technique followed by prosthetic crown placement post osseointegration.

### Case Description

A male patient 23 year old reported with a history of trauma and loss of crown structure of the teeth 11 & 21 (Fig 1) and requested for an instant solution. The clinical and radiographic examinations demonstrated enough alveolar bone and no periapical infection, however the fracture line was below the crest of the alveolar bone and limited to the tooth. So it was decided to extract the teeth and immediately place endosseous implants. An alginate impression was made for the maxillary and mandibular arch before starting the treatment and diagnostic casts were obtained (Fig 2). Implant

planning was done after CBCT and clinical evaluation and blood investigations were done to check medical fitness (Fig 3). Prior to the implant surgery patients blood was collected in 10cc syringe and placed in centrifuge machine to obtain the PRF. Patient was prescribed prophylactic antibiotics and analgesics one day prior to the surgery. Lignocaine with adrenaline was used to induce local anaesthesia. As alveolar bone preservation is necessary for rapid implant success, tooth extraction should be painless and atraumatic. The fragment was luxated without excessive expansion and pushed out of the socket using periostomes and small periosteal elevators. Curettes were used to clean up the sockets and a DENTIUM implant was placed (4 \* 12 mm) in 11 and 21 region. The implants were placed beyond the apex of the socket for primary stability. Sticky bone was made using Demineralized Freeze-Dried Bone Allograft (DFDBA) bone graft and PRF which was packed at the implant site followed by guided tissue membrane (Fig. 4). Interrupted sutures were given after the cover screw was placed (Fig 5&6). Post-operative instructions were given to the patient and recall visit was scheduled after 1 week. During the follow up the sutures were removed, OPG was taken (Fig 7) and the patient received temporary acrylic crown bonded to the adjacent teeth with fiber-reinforced composite. The patient was again recalled after 6 months for the second stage surgery. Open tray impression technique was used for making implant level impression one week after second stage surgery. A porcelain fused to metal crown was fabricated. After occlusal corrections porcelain fused to metal crown was cemented over the implant (Fig 8). The patient was recalled for prophylaxis and follow up every year.





**Fig 1. Intra oral pre-op view**



**Fig 2. Maxillary and mandibular diagnostic cast**

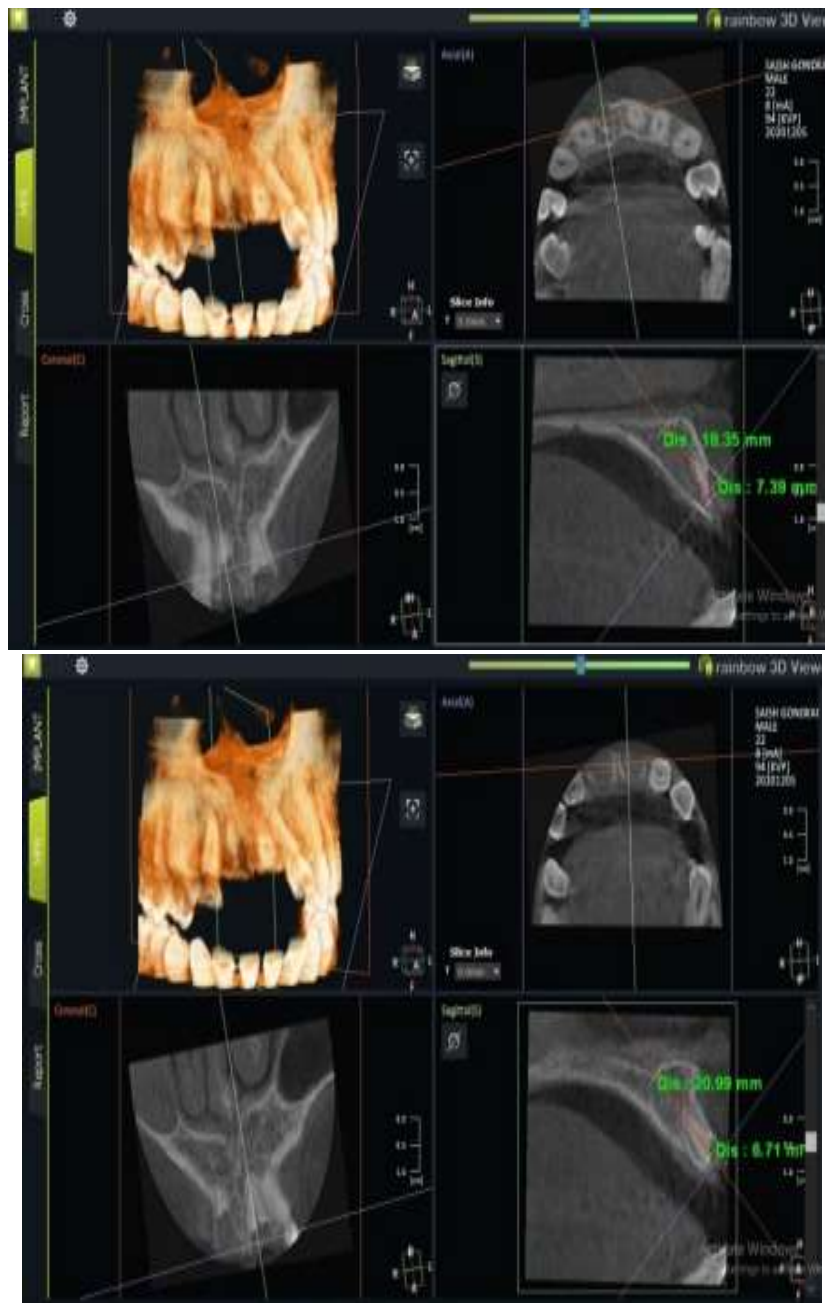


Fig 3. CBCT evaluation for region 11 and 2





**Fig 4. GBR/GTR collagen membrane,  
DFDBA and PRF.**



**Fig 5. Implant placement with sticky bone and  
GBR membrane.**



**Fig 6. Interrupted sutures**



**Fig 7. Post-op OPG**



**Fig 8. Final cementation of prosthesis**

### Discussion

Long-term results have been established with immediate implant placement in the aesthetic zone. [6]. The key to have excellent outcome after placing and maintaining implants placed shortly after tooth extraction is accurate diagnosis and treatment planning. As placement of a immediate implant is a complex procedure, some parameters must be carefully evaluated before the procedure is carried out such as acute infection around the tooth with poor prognosis; deficiency of hard/soft tissue, less bone (3 mm- 5 mm) beyond the tooth socket apex for primary implant stability; and conditions that could seriously affect the aesthetic zone results.

The implant and extraction socket are often a primary concern to the dentists. The form of the alveolus plays a major role at the immediate implant site. There was no particular graft material found superior for immediate placement of an implant [7]. The concept of an osteogenic "jumping distance" was introduced by Knox et al, who believed that the distance between an implant and the alveolar bone surrounding it has biological significance [8]. If this jumping distance is more than 0.5 mm, in particular, it might not allow reliable osseointegration unless a regeneration treatment is used concurrently. Wilson et al. [9] compared wound healing in a human volunteer after immediate placement of a implant post extraction to wound healing after implant placement into a healed extraction site. They came to the conclusion that if the peri-implant bone deficiency is less than 1.5 mm, no bone grafts or membranes are needed. According to Kan and Rungcharassaeng, the need for bone grafts is determined by the labial plate thickness rather than extent of the gap [10]. Despite the fact that a labial plate is thick and often resistant to resorption, bone grafting is frequently utilised to avoid collapse and to maintain the labial plate resorption, irrespective of the gap size.

A great restorative challenge is faced at the extraction sites in the esthetic zone. After a tooth extraction, considerable resorption, remodelling, and deformity are frequently accompanied with the collapse of the hard tissue. It has previously been claimed that DFDBA, with or without a barrier membrane, can preserve ridges [11]. In this case presentation, guided bone regeneration was achieved around the immediate implant when DFDBA and PRF were used.

There is a large set of data that best supports up an idea of platform switching. This idea



refers to the attachment of smaller-diameter abutments to larger-diameter implant platforms. When an implant manufacturer introduced wide-diameter implants positive effects of platform switching were seen. Huerzeler et al [12] discovered that this concept reduced the crestal bone resorption in a recent prospective clinical study. Platform switching is preferred for immediate implant placement protocols because of satisfactory esthetic result. The platform switching design of the implant restoration in this case may have contributed to the aesthetic result.

### Clinical significance

Atraumatic extraction along immediate dental implant placement has shown good functionality and efficiency in osseointegrated dental implants. Thus, in the current case, IDI along with atraumatic extraction seemed to be an excellent treatment option for oral rehabilitation. The patient was satisfied with the outcome for getting back health, function and chewing quality.

### References

1. Miguel Jr H, Genovese JW, Beltrão CFB, Kassardjian F, Cerri A. Implante imediato associado ao enxerto de tecido conjuntivo: relato de caso clínico. *Rev Assoc Paul Cir Dent.* 2016; 70(3):312-6.
2. Qabbani AA, Kawas SA, Enezei H, Razak NHA, Bayatti SWA, Samsudin AR, et al. Biomechanical and radiological assessment of immediate implants for alveolar ridge preservation. *Dent Res J.* 2018; 15(6):420-9.
3. Freitas GB, Silva RLB, Bernardon P, Manhães Jr LRC, Rocha JF, Junqueira JC, et al. Exodontia at-raumática e implante imediato em área

estética: relato de caso. *Braz J Surg Clin Res.* 2019; 27(3):61-4.

4. De Lima Monezi LL, Matos EM, de Moraes Corrêa RC, Cavalcanti TC. Immediate implants: a literature review. *Revista Eletrônica Acervo Saúde.* 2019; (30):e1037.
5. Misch CE. Contemporary implant dentistry. *Implant Dentistry.* 1999 Jan 1; 8(1):90.
6. Andersen E, Haanaes HR, Knutsen BM. Immediate loading of single-tooth ITI implants in the anterior maxilla: a prospective 5-year pilot study. *Clin Oral Implants Res* 2002; 13(3):281-7.
7. Becker W, Clokie C, Sennerby L, Urist MR, Becker BE. Histologic findings after implantation and evaluation of different grafting materials and titanium micro screws into extraction sockets: case reports. *J Periodontol.* 1998;69(4):414-21.
8. Knox R, Caudill R, Meffert R. Histologic evaluation of dental endosseous implants placed in surgically created extraction defects. *Page | 129 Int J Periodontics Restorative Dent* 1991;11(5):364-75.
9. Wilson Jr TG, Schenk R, Buser D, Cochran D. Implant placed in immediate extraction sites: A report of histologic and histometric analyses of human biopsies. *Int J Oral Maxillofac Implants* 1998;13(3):333-41.
10. Kan JY, Rungcharassaeng K. Inter implant papilla preservation in the esthetic zone: a report of six consecutive cases. *Int J Periodontics Restorative Dent* 2003; 23(3):249-60.
11. Fowler EB, Breault LG, Rebitski G. Ridge preservation utilizing an acellular dermal allograft and demineralized freeze-dried bone allograft: Part II. Immediate endosseous implant placement. *J Periodontol* 2000;71(8):1360-4.
12. Hurzeler M, Fickl S, Zuhr O, Wachtel HC. Peri-implant bone level around implants with



platform-switched abutments: Preliminary data  
from a prospective study. J Oral Maxillofac  
Surg 2007;65(7):33-9.

