

## IMMEDIATE IMPLANT PLACEMENT WITH IMMEDIATE LOADING FOLLOWING EXTRACTION OF LOWER INCISORS – A CASE REPORT

Dr. Aniket Gid<sup>1</sup>, Dr. Roshani Thakur<sup>2</sup>, Dr. Vidita Mahesh<sup>3</sup>,  
Dr. Anuraga Sekharamantri<sup>4</sup>.

PG student<sup>1,3</sup>, Prof. & HOD<sup>2</sup>, Senior Lecturer<sup>4</sup>

Department of Periodontology, Saraswati Dhanwantari Dental College & Hospital & Post-Graduate Research Institute, Parbhani, Maharashtra, India.

### Abstract

The loss of teeth in the aesthetic field is a painful event for a patient. Patients can experience actual or potential adverse effects following the loss of one or more teeth. The dental implant offers the most cost-effective and long-term option for high average life span, reconstruction of damaged teeth, providing the patient with the greatest sense of well-being. Recently, immediate implant placement with early loading after tooth extraction has become more accepted. The benefits of this technique include fewer surgical interventions, decreased average recovery time, decreased loss of soft and hard tissue, and patient psychological satisfaction. This case report describes the procedure for immediate implant placement with immediate loading of implants by provisional restorations.

**Keywords:** Early loading, aesthetic rehabilitation, immediate implants, immediate loading

### Introduction

Over the past 40 years, implant-supported bridge prosthetic rehabilitation of an edentulous or partially edentulous patient has become a feasible and predictable treatment choice. High clinical success rates with the original implant protocols<sup>[1]</sup> have provided trust to clinicians and researchers to further improve and refine the osseointegrated procedure, and implants are now used in progressively more difficult circumstances and wider indications.<sup>[2]</sup> The timing of implant loading, for instance. A submerged healing

time of 3-6 months was initially considered a requirement for titanium implant osseointegration.<sup>[3]</sup> However, this conventional protocol has been challenged over the past 10-15 years, and several clinical trials have documented the effects of early and immediate loading of implants in different clinical situations.<sup>[4, 5]</sup> In implant therapy, there was also a change in focus from being initially a purely functional rehabilitation to being a treatment strategy with a significant emphasis on aesthetics.<sup>[6]</sup> The rapid development of new implant designs and treatment concepts is another result of the

widespread use of the osseointegration technique. To restore a missing tooth or teeth, there are three fundamental techniques, including removable dental prosthesis, fixed dental prosthesis, and dental implants. Each alternative has its advantages and disadvantages. For the best possible treatment, it is important to recognize the financial, medical, and emotional state of the patient.

### Case report

A 29-year-old female patient was reported to the Department of Periodontics, with the chief complaint of difficulty in mastication owing to loose teeth in the lower front region of the jaw for the last 3 months. Clinical examination revealed bleeding on probing, gingival recession, and Grade III mobility with respect to tooth 31, 32, 41, and 42. [Figure 1] They were also pathologically migrated due to inadequate bone support. Radiographic examination of teeth revealed poor prognosis for 31, 32, 41, and 42. The patient was aware of the poor condition of teeth and willing for extraction of teeth followed by fixed replacement. Patient was explained about all the treatment options available with possible drawbacks of each. She was very concerned about her aesthetics and was willing for the earliest possible replacement of the teeth in question. Hence, she had readily opted procedure of immediate implant with

immediate loading. The treatment plan includes oral prophylaxis, extraction of tooth 31, 32, 41, and 42, and immediate placement of the implant with immediate loading by the temporary prosthesis. Presurgical radiographic evaluation was done with a panoramic radiograph and a CBCT(Cone Beam Computed Topography). [Figure 2] Appropriate length and width of available bone were determined with the help of CBCT and accordingly dental implants(please add the company of CBCT and implant company u used like this: Touareg-OS, ADIN Dental Implant System, Afula, Israel) were selected for insertion. The patient underwent ultrasonic scaling and root planing. A follow up was done 1 month later and prepared for the extraction. Patient was premedicated with 2 g amoxicillin, 1h before surgery. Following injection of 2% lignocaine local anesthetic solution, both the tooth were atraumatically extracted. [Figure 3]Extraction sockets were thoroughly debrided and inspected with the help of a periodontal probe for any defect or possible perforation of the cortical plate. (mention which flap technique)Flaps were reflected and alveoloplasty was done [Figure 4]. Osteotomy sites were prepared with the sequential order of drills recommended by the manufacturer. Implants were inserted in the prepared osteotomy sites with an insertion torque of

45 Ncm (confirm) and adequate primary stability was obtained. [Figure 5] Postoperative intraoral periapical radiograph was taken, confirming the accuracy of placement of implants. Abutments were attached to the implant body and prepared for parallelism and adequate space. [Figure 6] Appropriate antibiotics and analgesics were prescribed, and standard postoperative instructions were given to the patient. After 3 months,

the impression was made with a closed tray technique using the light body and putty polyvinyl siloxane rubber base material (Aquasil, Dentsply, Surrey, UK). Impression was sent to the laboratory for fabrication of porcelain fused to metal (PFM) bridge. A 4-unit PFM bridge was fabricated and cemented to the abutments. [Figure 7] Follow-up was done after 3, 6, and 12 month's interval.



Figure 1: Preoperative photo



Figure 2: Preoperative CBCT



Figure 3: After Extraction



Figure 4: Alveoloplasty and initial drill

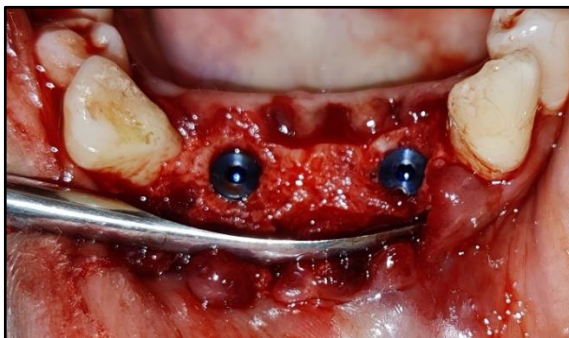


Figure 5: After Implant Placement

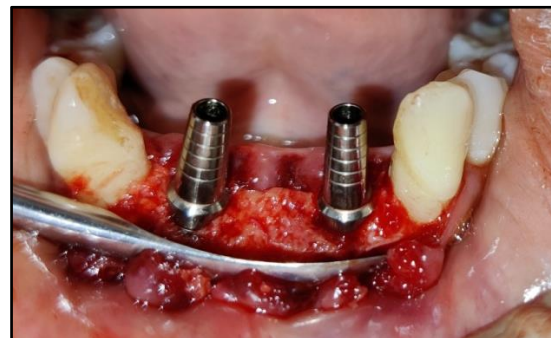


Figure 6: After Abutment placement



Figure 7: After final prosthesis

### Discussion

In the modern age, the premise of immediate implants is gaining popularity to replace missing teeth, especially when there is a shortage of anterior teeth. A stress-free submerged healing period of 3-6 months for osseointegration was required in the original Branemark implant protocol.<sup>[7-9]</sup> In order to prevent fibrous tissue encapsulation around the implants instead of osseointegration, the prolonged undisturbed healing period was thought essential.<sup>[8, 9]</sup> Later clinical and experimental evidence, however, showed that implants osseointegrate during healing even when left exposed to the oral cavity.<sup>[10,11]</sup> Compared to traditional implants, experimental histological studies of clinically recovered implants have shown close, and often enhanced, bone-implant communication with instant implants.<sup>[12,13]</sup> The histology of the non-submerged, unloaded, and early loaded titanium screw implants in monkeys were contrasted by Piattelli et al.<sup>[14]</sup> In all the

samples tested, they found a close contact of the fresh bone to the implant surfaces. However, the lamellar cortical bone that was thicker than that in unloaded implants was observed around the implant neck of early-loaded implants. Evidence has shown that immediate implant placement presents more advantages as compared to delayed implant insertion, which is implants in fresh extraction sites can be placed in the same location as the extracted tooth thereby minimizing the need for angled abutments, osseointegration is more favorable, the bony receptors are preserved by preventing atrophy of the alveolar ridge thereby preventing recession of the mucosal and gingival tissues, immediate placement of implants keeps contaminants away from the extraction socket, waiting times for the primary healing of the soft tissues and regeneration of supported single-tooth restorations. Based on the style, fit, occlusion/articulation, and aesthetics, single implant crowns were assessed. With respect to aesthetics, phonetics, eating ease, and overall satisfaction, patients were very optimistic. It is more predictable and effective than before to immediately position and immediately load implants<sup>[17]</sup>, but this strategy cannot be extended to every immediate implant patient. The immediate loading procedure needs more chair side

time at the moment of implant placement for both the restorative dentist and the patient, relative to traditional implant care. When immediate implant placement with an immediate loading procedure is a treatment concern, careful patient screening and selection are required. Sufficient bone quality (D2 or D3 bone), screw-shaped implants, rough implant surface, and minimum implant duration of 10 mm, adequate primary stability, and avoidance of lateral forces will be the ideal condition for immediately loaded implants.<sup>[18]</sup> The most significant factor in immediate loading tends to be the primary stability of immediately positioned implants. The osseous structure are eliminated, immediate restoration can be provided for better esthetics.<sup>[15]</sup> A retrospective study by Vermeylen et al.<sup>[16]</sup> determined patient opinion and professional evaluation of 43 implant-Primary stability (45 NCm) was achieved in the present report by extending the osteotomy 13mm beyond the socket apex and by choosing the implant distance closely corresponding to the extraction socket width. A total of 10 patients were examined with bilateral partly edentulous posterior mandibles by Schincaglia et al.<sup>[19]</sup> and compared to either a turned surface or a titanium oxide surface, a split-mouth research design compared implants. Forty-two implants, 20 tests, and

22 controls were put within 24 hours and were loaded. In the research group, no implants were missing and two in the control group failed. The overall success rate for implants was 95%. In the fully edentulous mandible, Lindquist et al. reported an immediate implant survival rate of 99 percent after 15 years.<sup>[20]</sup> The use of three instant-loaded implants to hold a fixed prosthesis resulted in 90 to 98 percent survival rates. If an implant is lost, re-treatment and additional expenditures are needed, but a smaller number of implants initially decreases the initial cost of therapy. To sustain a fixed prosthesis in the completely edentulous mandible with a success rate of 95-100 percent, four or more immediate-loaded implants are sufficient. Patient selection, however, must be considered if it is to achieve predictable, high success rates. When considering the advantages of immediate handicap reduction, one-time surgery, and less cumulative visits to the dental clinic, the marginally lower survival rate of immediate-loaded implants compared with the two-stage implant method might be appropriate. Excellent aesthetic recovery was observed in the current case report after completion of the procedure, and the patient was very pleased with the outcome of the treatment.

## Conclusion

It can be inferred, based on the present report and brief analysis of the literature, that immediate implant placement with immediate loading may be a suitable treatment of choice for cases requiring the early restoration of the extraction of teeth. This strategy, however, is perceived to be particularly sensitive to the technique and requires an experienced dental implant team for its implementation. The keys to success are proper analysis of patients, a competent recovery schedule, and follow-up of surgical and prosthetic protocols.

## Conflicts of interest

There are no conflicts of interest.

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**CORRESPONDING AUTHOR:**

Dr. Aniket Gid,  
Department of Periodontology,  
Email: [gidpatil@gmail.com](mailto:gidpatil@gmail.com)

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