Case Report
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Immediate Implant Placement with Immediate Loading in Mandibular Anterior Region: A Twenty-month Follow Up Report

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ABSTRACT

Immediate implant placement and provisionalisation following tooth extraction have been documented as a predictable treatment modality. This case report illustrates immediate implant placement with immediate loading to replace failing teeth on lower front teeth region. The dental implant and provisional restoration provided the patient with immediate aesthetics, function, comfort, and most importantly preservation of tissues.

Keywords: Immediate implant placement; immediate loading; implant; provisionalisation.

INTRODUCTION

Immediate implants are placed in the site of surgical extraction of the tooth to be replaced.[1] Previously, conventional protocols of implant placement recommended a healing time of 12 months or longer following tooth extraction for implant placement.[2] This extended treatment time left the patient without teeth and usually an interim prosthesis. There are various suggested advantages to immediate implant placement and restoration of a single implant in the aesthetic zone, including overall shorter treatment times, fewer surgical operations, less traumatic surgery, and higher patient satisfaction.[3] However, there are also drawbacks to this treatment procedure, including the requirement for bone grafts, the inability to achieve implant stability, the increased risk of implant failure, and unpredictable soft and hard tissue levels.[4] The placement of dental implants at the time of tooth extraction (immediate implants) can be a viable treatment protocol in implant dentistry today.[5]

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CASE REPORT

A 28-year old male patient reported to the Department of Periodontology and Oral Implantology, Kantipur Dental College, Kathmandu, Nepal, with a chief complaint of loosening of tooth in the lower front region of the jaw. There was no significant medical history of the patient. During the intraoral examination, it was observed that the patient had fair oral hygiene, grade III mobility in relation to tooth 41 (according to two-digit teeth numbering system) and grade II mobility in relation to 31 and 42.

Radiographic examination revealed bone loss around 41, 42, and 31 and periapical radiolucency around 41. A cone beam computed tomography (CBCT) analysis was done to determine width and height of alveolar bone (Figure 1, 2 a-c).

Patient was willing for earliest possible replacement of teeth in question. He was explained about all the treatment options available with possible drawbacks of each after which he chose dental implant therapy. Treatment plan included oral prophylaxis, extraction of 41, immediate placement of implant in relation to 31 and 42 with immediate loading by temporary prosthesis.

After four weeks post extraction, the intraoral examination revealed good soft tissue healing with respect to 41 (Figure 3 a-b).

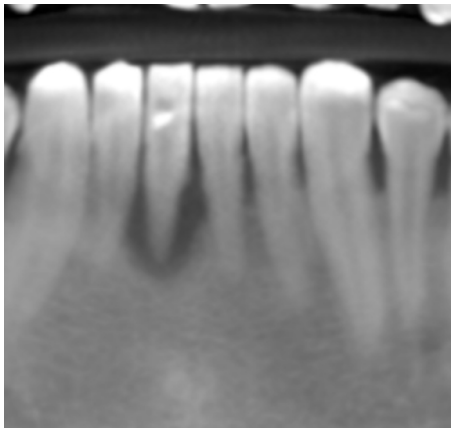

Figure 1: Cone beam computed tomography scan showing sagittal section.

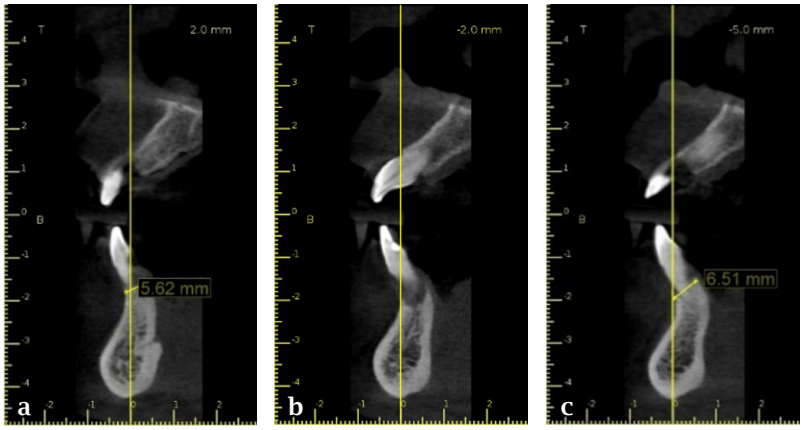

Figure 2 (a-c): Evaluation of alveolar bone support in relation to 31, 41, and 42 respectively.

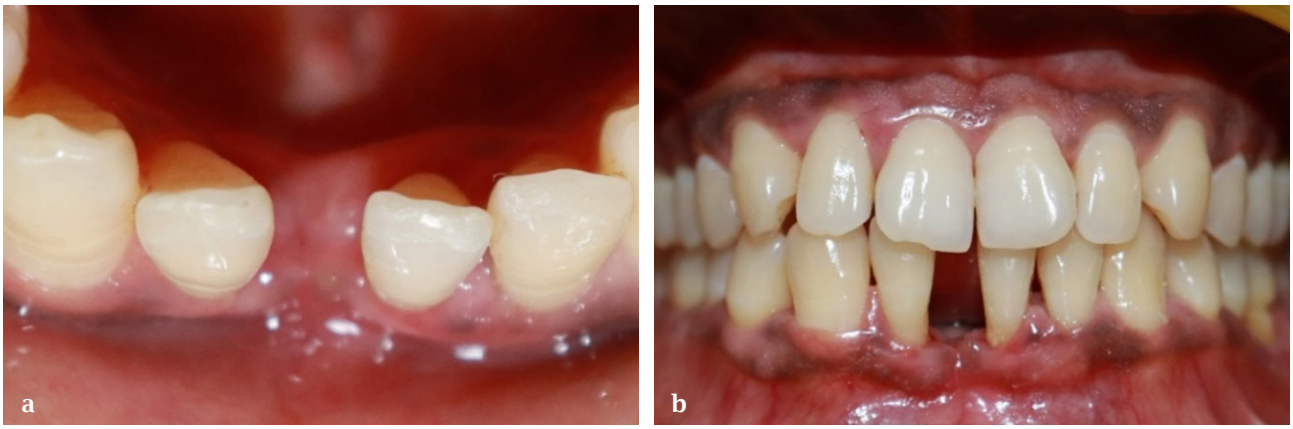

Figure 3 (a, b): Preoperative view of the partially edentulous site with respect to 41.

After evaluation of coagulation profile, blood glucose level and blood pressure of the patient, written consent was taken. One hour before the surgery, the patient was given 2 g of amoxicillin for surgical prophylaxis. Following injection of 2% lignocaine hydrochloride with 1:200,000 epinephrine, intrasulcular incision was placed around tooth 31 and 42 using a 15C Bard Parker (BP) blade to cut the connective tissue fibres above the bone. A midcrestal incision was performed using a number 15 BP blade, and a full-thickness mucoperiosteal flap was gently raised to visualise the available alveolar bone. Atraumatic extraction was performed in 31 and 42 (Figure 4a). The extraction socket was thoroughly debrided to remove any granulation tissue and then irrigated with sterile saline before osteotomy. The osteotomy site preparation was performed with respect to teeth 31 and 42. Initial pilot drill of 2.0 mm was used to penetrate extraction socket that guided the initial preparation of an osteotomy. Then, a guide pin was placed into the osteotomy site to ensure its alignment parallel to the adjacent tooth which was confirmed with intraoral periapical radiograph (Figure 4b). Following sequential drilling, a 3.5×11.5 mm (i-Fix®, Kamal Medtech, India) implant was placed into the osteotomy site with respect to 31 and 42 (Figure 4c). The primary stability of the implant was confirmed by achieving a torque resistance of 40 Ncm.

A customised screw-retained provisional crown was made so its subgingival contour supported the soft tissue emergence profile (Figure 5a). The temporary crown was torqued to 25 Ncm. Provisional prosthesis was relieved from occlusion and intraoral periapical radiograph was taken (Figure 5b). Amoxicillin and Clavulanic acid combination 625 mg eight hourly for seven days, Serratiopeptidase 10 mg six hourly for five days, Paracetamol and Ibuprofen combination eight hourly for three days followed

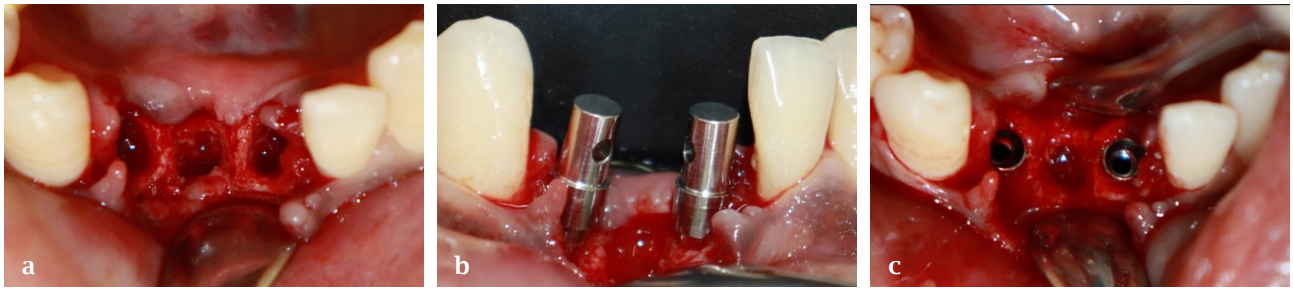

Figure 4: a) Extraction in relation to 31 and 42; b) Parallelism check with guiding pins; c) Implants in relation to 31 and 42.

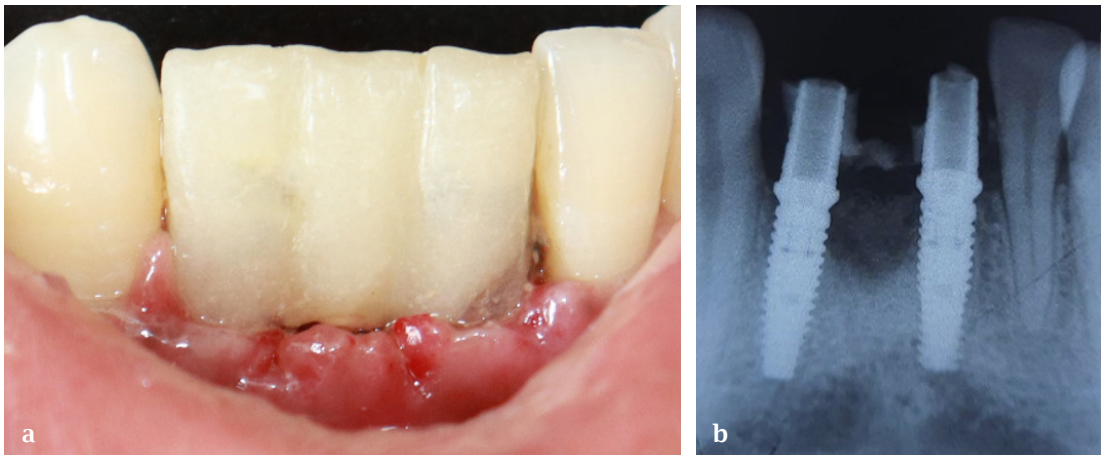

Figure 5: a) Immediate temporary resin prosthesis; b) Post-operative intraoral periapical radiograph.

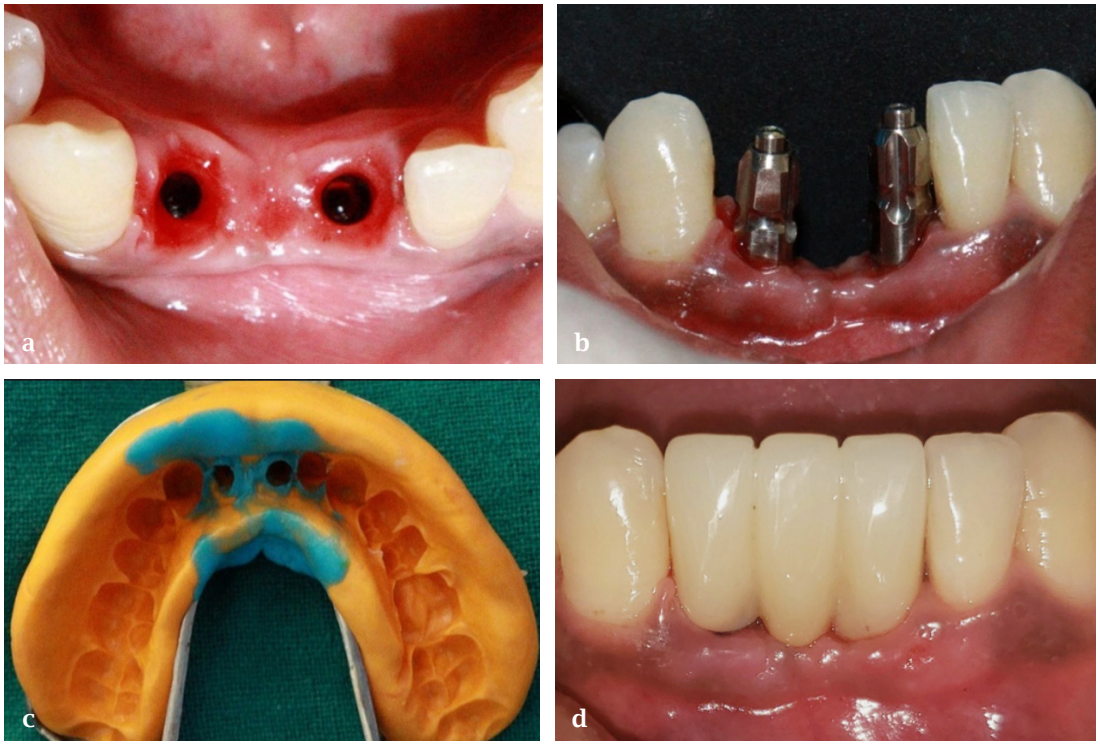

Figure 6: a) Peri-implant mucosa at eight months; b) Impression coping for final prosthesis; c) Impression with putty and light body; d) Final zirconia prosthesis.

Figure 7: Intraoral periapical radiograph showing final prosthesis.

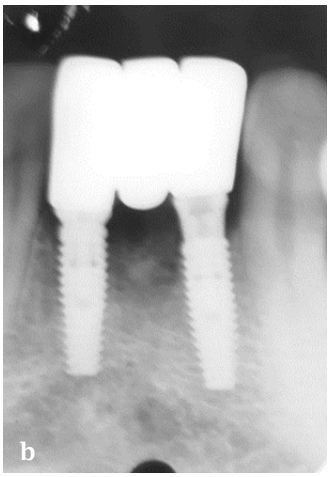

Figure 8: a) Twenty months follow up; b) Intraoral periapical radiograph at 20 months.

by intake if necessary and 0.2% Chlorhexidine mouthwash for two weeks, were prescribed to the patient, with instructions on the proper oral hygiene and maintenance of the surgical site. Patient was assessed after one week, and kept on scheduled follow up visit.

Regular follow up visits at two months and three months were scheduled for the patient. At eight months, the temporary crown was removed and soft tissue healing was found to be satisfactory (Figure 6a). Impression coping was connected to the implant fixture and the final impression was made using putty and light body using a closed tray technique (Figure 6b and 6c). Shade selection was done, and the impression was sent to the lab for the final zirconia prosthesis. After occlusal adjustments, the final prosthesis was cemented with respect to 31, 41, 42 using type I glass ionomer cement (GIC) as a luting agent (Figure 6 d). Intraoral periapical radiograph was taken after final prosthesis (Figure 7). The patient was kept on regular follow up visits. At 20 months follow-up clinical and radiographic examination revealed satisfactory functional and aesthetic conditions without clinical or radiographic signs of alterations or pathologies (Figure 8a, 8b).

DISCUSSION

There have been several reports of successful immediate temporisation of dental implants placed into extraction sites. A careful evaluation is necessary for a better understanding of the survival rates of immediately loaded implants. Lang et al. reported that implants placed immediately in fresh extraction sockets yielded a low annual failure rate of 0.82% translating to a two-year survival rate of 98.4%.[6] Ottoni et al. reported that an insertion torque greater than 32 Ncm is necessary for an implant restored with an immediate provisional prosthesis.[7] In the present case, the primary stability of implant was achieved with an insertion torque >35 Ncm. The most challenging goal for implant therapy in the aesthetic region is achieving soft and hard tissue stability over time. Midfacial mucosal recession has been one of the most commonly reported complications following immediate implant placement.[8] Buser et al. recommended a fully intact buccal bone wall with a thickness of at least 1 mm when considering immediate implant placement.[9] The long-term success of this approach depends on the achievement of primary stability, and the immediate provisionalisation must be designed to avoid any centric and eccentric contact during healing.

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Conflict of interest: None.

REFERENCES

1. Adell R, Eriksson B, Lekholm U, et al. Long-term follow-up study of osseointegrated implants in the treatment of totally edentulous jaws. Int J Oral Maxillofac Implants. 1990 Winter;5(4):347-59.
2. Jung RE, Zembic A, Pjetursson BE, et al. Systematic review of the survival rate and the incidence of biological, technical, and aesthetic complications of single crowns on implants reported in longitudinal studies with a mean follow-up of 5 years. Clin Oral Implants Res. 2012;23:2-21.
3. Khzam N, Arora H, Kim P, et al. Systematic review of soft tissue alterations and aesthetic outcomes following immediate implant placement and restoration of single implants in the anterior maxilla. J Periodontol. 2015;86(12):1321-30.
4. Koh RU, Rudek I, Wang HL. Immediate implant placement: Positives and negatives. Implant Dent. 2010;19(2):98-108.
5. Resnik R. Misch's contemporary implant dentistry. 4th ed. St. Louis, MO: Mosby; 2020
6. Lang NP, Pun L, Lau KY, et al. A systematic review on survival and success rates of implants placed immediately into fresh extraction sockets after at least one year. Clin Oral Implants Res. 2012;23(s5):39-66.
7. Ottoni JMP, Oliveira ZFL, Mansini R, et al. Correlation between placement torque and survival of single-tooth implants. Int J Oral Maxillofac Implants. 2005;20(5):769-76.
8. Lin GH, Chan HL, Wang HL. Effects of currently available surgical and restorative interventions on reducing midfacial mucosal recession of immediately placed single-tooth implants: A systematic review. J Periodontol. 2014;85(1):92-102.
9. Buser D, Chappuis V, Belser UC, et al. Implant placement post extraction in aesthetic single tooth sites: When immediate, when early, when late? Periodontol 2000. 2017;73(1):84-102.