Case Report
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Immediate Implant with Immediate Provisionalisation in Posterior Mandible

Dr. Nitesh Kumar Roy,[1] Dr. Sajeev Shrestha[1]

[1]*Department of Periodontology and Oral Implantology, College of Dental Surgery, B.P. Koirala Institute of Health Sciences, Dharan, Sunsari, Nepal.*

ABSTRACT

Immediate implant placement offers advantages such as reduced number of appointments and overall treatment time, preservation of bone at the implant site and optimal soft tissue aesthetics – thus, increased patient acceptance. This report presents a case where immediate implant with immediate provisionalisation was done for right mandibular second deciduous molar. After extracting the ankylosed tooth atraumatically, endosseous root-form titanium implant of 5.0 X 10.0 mm was placed and provisionalisation was done using the patient's own tooth. After four months, final prosthesis was delivered. Soft and hard tissue integrity after six months of prosthesis delivery was well-maintained.

Keywords: Immediate implant placement; immediate provisionalisation; retained deciduous molar.

INTRODUCTION

Dental implant therapy is the treatment of choice for replacement of missing teeth.[1] Implants may be placed in completely healed extraction sockets, sockets with substantial bone fill, partially healed sockets with complete soft tissue healing or immediately after extraction.[2]

All cases are not amenable to immediate implant placement (IIP). However, in suitable cases, IIP offers advantages such as easier definition of implant position, reduced number of appointments and overall treatment time, preservation of bone at the implant site and optimal soft tissue aesthetics – thus, increased patient acceptance. Newer protocols even include the option of immediate provisionalisation and loading.[3]

CASE REPORT

A 22-year-old female medical student was referred to the Department of Periodontology and Oral Implantology, College of Dental Surgery, B.P. Koirala Institute of Health Sciences, Dharan, Sunsari, Nepal, for the replacement of non-salvageable tooth in the right back region of lower jaw. She did not report of any significant medical history. Upon intraoral examination, carious retained right mandibular second deciduous molar was evident (Figure 1). Intraoral periapical radiograph revealed deep caries along with the obliteration of the periodontal ligament space and root resorption (Figure 2). Also, no successor tooth was appreciated.

Extraction of the tooth and if clinical situation favoured, immediate implant placement with immediate provisionalisation was planned and informed to the patient and consent was taken. Complete blood count, bleeding time, clotting time, and prothrombin time of the patient were obtained. Local anaesthetic (2% Lignocaine with 1:200,000 adrenaline) was administered as inferior alveolar and lingual nerve blocks, then the achievement of profound anaesthesia was evaluated objectively with a periodontal probe. The ankylosed tooth was extracted as atraumatically as possible followed by which the buccal (≈ 2 mm) and lingual (≈ 3 mm) bone thickness was measured with a caliper. Extraction socket was curetted, and irrigated with normal saline. Osteotomy was prepared through the interradicular septum with sequential drilling, then endosseous root-form titanium implant (i-Fix®, Kamal Medtech,

Correspondence
Dr. Nitesh Kumar Roy
Email: nits_roy@yahoo.com

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Figure 1: Preoperative clinical situation.

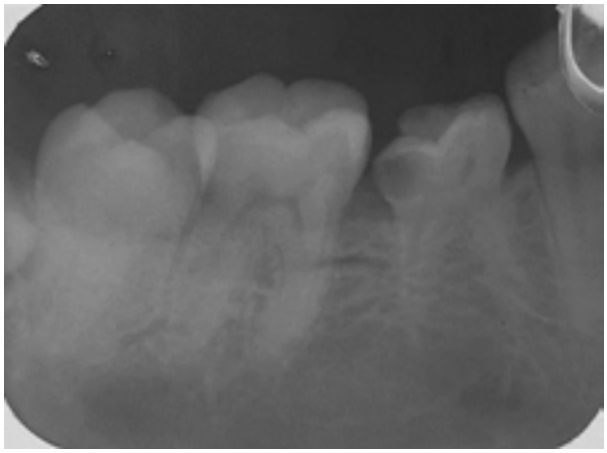

Figure 2: Preoperative intraoral periapical radiograph.

Figure 3: i-Fix® implant 5.0 x 10 mm placed through the interradicular septum.

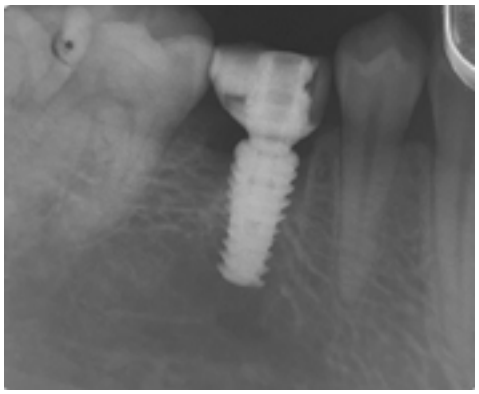

Figure 4: Intraoral periapical radiograph immediately after implant placement and provisionalisation.

Figure 5: Provisional crown before occlusal reduction.

India) of 5.0 x 10.0 mm was placed 2 mm subcrestally (Figures 3, 4). The insertion torque of 45 Ncm was obtained, thus provisionalisation was done using the extracted tooth and composite resin (Figure 5). The occlusal aspect of the provisional crown was adjusted to keep it completely out of occlusion and the patient was advised not to chew hard food from that side for two months. Because of absence of periodontal ligament (PDL) thus PDL-dependent bone, and also the presence of adequately thick buccal and lingual bony plates, grafting was not done. Sutures were not required. Acetaminophen (325 mg) and Ibuprofen (400 mg) combination eight hourly for three days followed by intake, if necessary, and 0.2% chlorhexidine mouthwash for two weeks, were prescribed to the patient.

The patient was recalled after four months for impression. Clinico-radiographically, the hard and soft tissue architecture was well-preserved (Figures 6, 7, 8). Stock transfer coping was customised with composite resin using Hind's technique (Figures 9, 10), for precise recording of soft tissue, then closed-tray impression was made. After a week, screwmentable zirconia crown was delivered (Figure 11), and the patient was kept under supportive implant treatment.

After six months of prosthesis delivery, the soft tissue integrity was well-maintained, and the crestal bone level also appeared to be stable on intraoral periapical radiograph (Figure 12). The patient was satisfied with the outcome and compliant with the supportive implant treatment.

Figure 6: After four months of implant placement and provisionalisation.

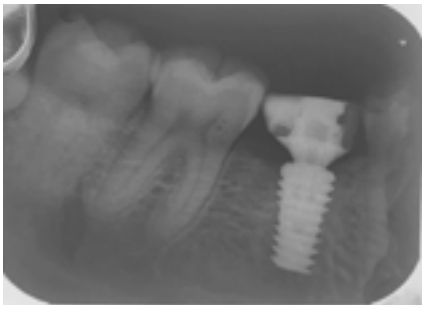

Figure 7: Intraoral periapical radiograph after 4 months.

Figure 8: Peri-implant mucosal cuff.

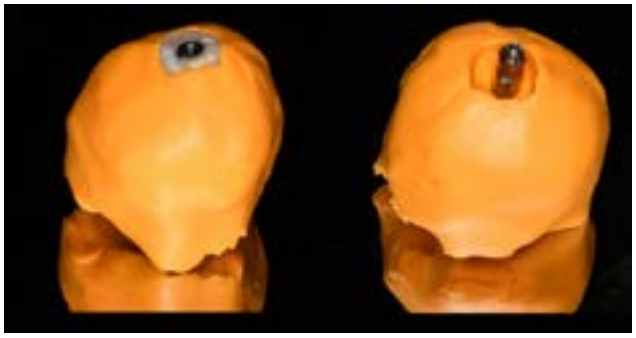

Figure 9: Hind's technique of customisation of transfer coping for soft tissue impression.

Figure 10: Customised transfer coping in patient's mouth.

Figure 11: Screwmentable zirconia crown with abutment, intraoral periapical radiograph and clinical situation at prosthesis delivery.

Figure 12: After six months of prosthesis delivery.

DISCUSSION

Buccolingual and coronoapical dimensional alteration of the ridge,[4] and mesiodistal tooth movement[5] following tooth extraction, pose biological challenge during tooth replacement. Along with the decreased functional efficiency, visible missing tooth especially in a young individual may have a negative psychological impact. Hence, immediate implant placement with immediate provisionalisation, if clinical situation favours, becomes the treatment of choice of non-salvageable tooth.[3]

Minimal flap elevation minimises hard tissue alterations and preserves the soft tissue architecture.[3] The soft tissue architecture is maintained and the mesiodistal tooth movement following extraction is prevented by immediate provisionalisation. Using the patient's own tooth as a provisional makes the process of its fabrication convenient.[6]

Grafting after immediate implant placement minimises the horizontal collapse of ridge width by providing the space for bone regeneration and thus consequently minimises reduction in vertical height. In most individuals, the buccal bony plate is largely comprised of bundle bone which is PDL-dependent and thus ultimately resorbs upon tooth extraction, resulting in horizontal and vertical ridge reduction and subsequent inward collapse of the soft tissue. Therefore, in teeth with thin buccal bone, such as maxillary anteriors, grafting is of utmost significance.[4]

In this case, however, buccal and lingual bone were more than 2 mm in width at crest, indicating enough cancellous bone in between cortical bone which would maintain the blood supply to the plates, preventing resorption. Therefore, bone grafting was not performed, thus decreasing the cost of the treatment.

Soft tissue impression allows the laboratory to fabricate a crown that precisely fits within the peri-implant soft tissue, which in turn maintains the soft tissue architecture. Hind's technique is a convenient method to record soft tissue impression.[7]

Adherence of the patient to the supportive implant therapy and long-term evaluation is essential to ascertain the success of the implant.[8]

Conflict of interest: None.

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