

# Replacement of Missing Tooth in Anterior Maxilla with Implant-Supported Fixed Prosthesis: A Case Report

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## ABSTRACT

The common reason for tooth loss in the anterior region, is due to traumatic injury or congenital anomaly. Loss of a single tooth may cause functional and esthetic deficits to the patient. There are different treatment options available for replacing a missing incisor. Implant supported crown should be considered as first treatment alternative for replacing a missing tooth. This case report highlights on replacement of an anterior incisor with single incisor.

**Keywords:** Dental implants; partially edentulous; single-tooth implant.

## INTRODUCTION

Anterior region is considered as the most common area of tooth loss, may be due to trauma or any congenital anomaly. This causes both functional as well as aesthetic concern affecting the psychology and smile of the patient.<sup>1</sup> The usual sequence that follows after tooth extraction is alveolar ridge resorption along with the loss of tissue morphology. Dental implants can be considered as a treatment option among different approaches like removable partial denture, resin bonded bridges, fixed partial dentures and for replacing missing teeth. Replacement of anterior teeth with implant supported restorations is quite challenging and technique sensitive as well.<sup>2</sup>

## CASE REPORT

A male patient aged 30 years, reported with missing right maxillary central incisor to Department of Prosthodontics, CODS, BPKIHS for the replacement of his missing front tooth. Patient gives a history of trauma and loss of tooth five years back. Clinical examination followed by radiographic evaluations; intraoral periapical radiographs

(IOPAR) and orthopantomographs (OPG), were done. Intraoral examination confirmed missing right central incisor (Figure 1). Diagnostic impressions were made of the maxillary and mandibular arch, and diagnostic casts were obtained. Complete haemogram, following a detailed medical history was done. Bone mapping of the implant site was done. A 3.5 X 11.5 mm Adin Implant System was selected as a fixture for the replacement of missing tooth. Surgical procedure was done under local anaesthesia using 2% lidocaine (1:80000) and following aseptic measures. In the area of the missing central incisor, a palatally positioned full-thickness incision was made and the flap was raised. Following the manufacturer's protocol for



**Figure 1: Preoperative picture with missing right central incisor.**



**Figure 2: Implant fixture placed.**



**Figure 3: Hydroxyapatite alloplastic bone graft (a) and GTR membrane (b) placed covering the thin buccal cortical plate.**



**Figure 4: Open tray impression technique with vinyl polysiloxane.**



**Figure 5: Final prosthesis in situ.**

implant placement an osteotomy was drilled with the help of the surgical template. The selected implant was then screwed (Figure 2), primary stability was achieved at 35N and the flap was closed with the help of silk 3.0 sutures. Due to the presence of thin buccal cortical plate and exposure of few threads of implant fixture labially, alloplast hydroxyapatite bone graft (Sybograf) with guided tissue regeneration (GTR) membrane was placed and sutured (Figure 3). Appropriate antibiotic (amoxicillin 500 mg, three times daily for seven days) and analgesic (ibuprofen 800 mg, every four to six hours as needed) were prescribed and post-operative instructions were given. Healing after a week was satisfactory and no untoward sign or symptom was noted.

After five months following radiographic examination, second stage surgery was done. We placed gingival former on the fixture after unscrewing the implant cover screw. After two weeks, the healing abutment was removed and an impression coping placed, followed by a Vinyl Polysiloxane (Reprosil, Dentsply/Caulk, Milford,

DE) open-tray impression to capture the position of the implant (Figure 4). The healing abutment was replaced and shade selection (A2) was done. The impression was poured using type IV die stone with transfer coping and implant analog in place. A 15 degree angled abutment was selected and screwed onto the implant analog in the cast and porcelain fused to metal crown was fabricated. After verifying the aesthetics and occlusion, the angled abutment was then torqued to 35N with the help of a torque wrench and the crown was cemented using resin modified glass ionomer cement (Figure 5). Complete seating of abutment to the implant fixture was confirmed with IOPAR. The patient was very happy with the final aesthetic and functional outcome. Oral hygiene instructions were given to patient and recall after 3 months for regular checkup.

## DISCUSSION

There are different treatment options available for replacing missing incisors. Dental implant restoration has many advantages over fixed dental

prosthesis such as preservation of the natural dentition and supporting periodontium, improved aesthetics, improved hygiene accessibility and less long-term costs.<sup>3,4</sup> The surgical and aesthetic goals were kept in mind and bone graft was placed along with the implant.

The survival rate of immediate versus delayed loaded implants was studied by Romanos et al, and it stated that clinical outcome and the peri-implant bone response of immediately loaded implants is poor in comparison to conventional loading protocol.<sup>5</sup> As the labial aspect of the cortical plate had bone loss, it was decided not to go for immediate

loading, and thus, the conventional loading protocol was followed.

Implant-supported restorations provide considerable advantages over other treatment options available. Placing dental implant in the maxillary anterior region requires precise planning, surgery, and prosthetic treatment. Thus, proper case selection and precise knowledge on choosing the appropriate treatment option helps in better outcomes as in the present case.

**Conflict of Interest:** None

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