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**Case Report****A Forgotten Technique for Replacement of Maxillary Anteriors and an associated Bony Defect: A Case Report****P S Manoaharan<sup>1</sup>, S A Mohamed Ali<sup>2</sup>, Suganya Selvarangam<sup>3</sup>, J Balaji<sup>2</sup>, Mohamed Ibthigar<sup>4</sup>****Contributors:**<sup>1</sup>Professor, Department of Prosthodontics, Faculty of Dentistry, Indira Gandhi Institute of Dental Sciences, Puducherry, India;<sup>2</sup>Assistant Professor, Department of Prosthodontics, Faculty of Dentistry, Indira Gandhi Institute of Dental Sciences, Puducherry, India; <sup>3</sup>Consultant, ASR Advanced Dental Clinic, Cuddalore, Puducherry, India; <sup>4</sup>Consultant, Dentale Multispecialty Dental Care, Puducherry, India.**Correspondence:**

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**Abstract:**

Fixed replacement of maxillary anterior teeth with an associated bony defect has challenged the restoring dentist with problems like weight of the prosthesis thereby leading to weakening of abutment teeth, difficulty in establishing smile line and mechanical stability. This article describes the management of a patient with such defect with a forgotten prosthesis – the Andrew bridge system, which has a fixed and a removable prosthetic component with retentive clips, which anchors on to a bar spanning the edentulous space. Andrew's bridge system has definite indications and offers immense advantages over the other prosthesis for rehabilitation of cases of such scenario. It addresses the problems aforementioned and provides the optimal retention, mechanical stability, esthetics and comfort to the patient.

**Key Words:** Andrew's bridge, fixed removable prosthesis, maxillary defect

**Introduction**

Replacement of maxillary anteriors has always been a challenge for the restoring dentist as the associated problems in smile line determination, establishing anterior guidance and esthetics complicate the treatment plan. The loss of teeth may or may not be associated with a soft or hard tissue defect. Such defects may be either acquired or congenital.

Restoration of a defect can be met by surgical grafting techniques. Use of autograft and allograft was also recommended for bony and soft tissue defects. There are various factors, which limit surgical augmentation procedures. Local soft tissue unavailability, to cover the graft, can lead to failure of the graft.

Apart from other anatomic limitations, systemic influences such as diabetes, hyperparathyroidism, and other metabolic disorders can lead to failure. Economic constraints and risk of failure can also limit the option of surgical technique for augmentation. Conventional fixed partial dentures can be a treatment option for such situations and can be achieved with gingival extension of the metal framework with gingival porcelain.<sup>1</sup> This can provide soft and hard tissue defect restoration along with replacement of teeth.

A fixed-removable prosthesis system may be an alternative to such situations.<sup>2</sup> The advantages of fixed prosthesis such as retention and stability and the advantages of a removable acrylic segment such as less weight, less cost and ease of maintenance is combined. The longevity of this system is documented by the pioneer of this prosthesis for a period of 20 years with evidence of optimal success rate.

Very few clinical reports have been documented in the literature with minimal follow-up over a period to validate the success of this treatment modality. A case report of fixed removable prosthesis design proposed by Dr. James A. Andrews,<sup>3</sup> is presented below for such a condition, which had a definite advantage over other systems or a conventional removable acrylic denture.

**Case Report**

A 21-year-old male reported to the dental office, who was in need replacement of missing anteriors. He had a history of an accidental fall when he was 9 years of age, following which he had lost all the maxillary anterior teeth with dento-alveolar fracture of the maxilla. Three years ago, he underwent replacement with a fixed partial denture fabricated in metal with acrylic facing. For the past 6 months, the prosthesis underwent repeated dislodgement due to the cementation failure (Figure 1). On examination, there was missing maxillary anterior teeth, right and left first premolars had been prepared to receive a fixed partial denture. The attached gingiva thickness measured about <3 mm and there was a reduction in the labial vestibular depth. The maxillary premolar teeth were pulpally and periodontally healthy.

With the background of the examination findings, the treatment plan for a fixed removable prosthesis was developed for the patient. The mounted diagnostic casts with facebow transfer provided visual appeal of the existing smile and about

the plan for the prosthetic smile (Figure 2a). Diagnostic wax-up of the finished prosthesis was made with wax with incisal guidance kept as close to zero as possible. Try-in of the metal framework was carried out and pickup impression was made with putty (condensation silicone) and sent to the lab, for the fabrication of removable partial denture (Figure 2b and c). Putty indices were made and sent to the laboratory along with the diagnostic wax up and hence that the metal framework of the bar could be fabricated within the substance of the removable acrylic segment.

The fixed part had metal ceramic crowns cemented to the prepared premolar teeth with a Hader bar over the edentulous ridge with adequate tissue relief (Figure 3a). Final try in of the fixed and removable segment of the prosthesis was carried out. The removable partial denture was a conventional removable partial denture without a palatal extension which would anchor over the bar by means of retentive clips, which were fabricated chair side using auto polymerising acrylic resin (Figure 3b and c). The patient was trained to remove and insert the prosthesis. He was also encouraged for periodic recalls and checkups for the maintenance of the prosthesis and the components. Follow-up in the 1st month revealed that he was extremely happy with the esthetics and able to use the

prosthesis for chewing and other routine functions with ease (Figure 4a and b).

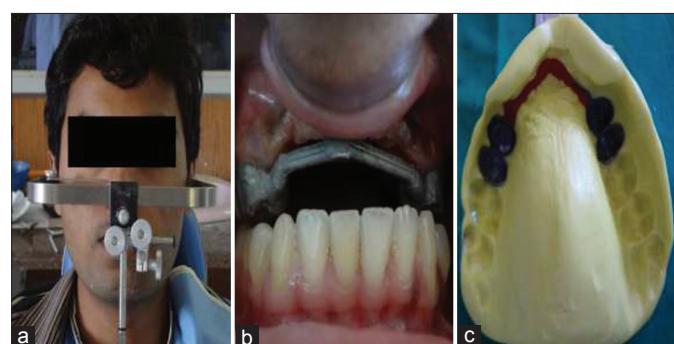
## Discussion

Replacement of missing teeth with soft and hard tissue defects have been carried out in the past with an attempt to rehabilitate the patient, fulfilling the objectives of preserving the remaining tooth structure, achieving optimum retention, stability, satisfying esthetics and a stable foundation for support. The major objective of any dentist would be to preserve the remaining tissues as Muller DeVan rightly pointed out in his dictum.<sup>4</sup> The planned prosthesis obtained support from the adjacent teeth or the bone, in an idea to distribute stresses to the bone and teeth. Surgical augmentation of lost hard and soft tissues had a limitation, as the soft tissue procure to cover the augmented material would be inadequate. Hence, the restoration of the defect was planned prosthetically along with the replacement of missing teeth.

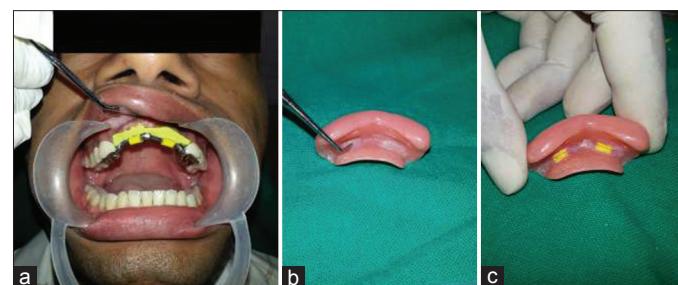
In this case, the support mechanism is shared by the tooth, and the tissues also to an extent and the bar serves as a retentive and stabilizing tool for the removable segment. The previous prosthesis had poor esthetics as the teeth were positioned short of the occlusal plane, to reduce the weight of the prosthesis and had failure of cementation due to increased span length. A complete attachment retained fixed partial



**Figure 1:** Pre-operative photograph of patient with an unaesthetic prosthesis.



**Figure 2:** (a) facebow transfer, (b) metal try in, (c) pickup impression.



**Figure 3:** (a) cemented crown with blockout of undercut, (b) relief created in denture base for retentive clips, (c) retentive clip picked up in denture base using self cure resin



**Figure 4:** (a) Intraoperative view of fixed and removable component, (b) post-operative photograph with esthetic smile

denture prosthesis was suggested initially. The added bulk of the material, to replace the soft tissues, would deliver the load on the remaining abutment teeth and compromise its periodontal status. Another design of the prosthesis would be a complete fixed partial denture with an acrylic gingival prosthesis – gingival epithesis.<sup>5</sup> This design makes the maintenance aspect from the patient side extremely difficult.

Yet another option would be an implant retained fixed prosthesis. The availability of remaining bone and increased length of the crowns, thereby compromising the crown-fixture ratio have limited this option. The case selection in this situation has narrowed all other options to a simple yet time-tested design of fixed-removable prosthesis – the Andrews bar prosthesis. The main drawback in this system is the removable component, which reduces the acceptance towards the treatment, especially a younger individual. With proper counseling and reassurance, the patient can be made to accept the treatment and also be motivated for proper maintenance of the prosthesis. The retentive clips have the tendency to wear, resulting in loss of retention. The patient should be called for regular check up and chair side replacements of retentive clips.

### Summary

Selection of case is the key to success for any treatment. In the field of restoration and replacement, knowledge of techniques available along with the skill of the dentist and

technician plays an important role in the success of the restoration. The pros and cons of the available treatment options, based on the limitations offered from the aspect of patient should be analyzed and decision should be made after discussion with the patient. When the patient is involved in the decision-making process, it can increase the level of acceptance of the treatment and motivate the individual toward maintenance of the prosthesis. In this case report with proper analysis of the diagnostic factors and involvement of the patient in the decision-making process, fixed removable prosthesis need not limit itself to be just a prosthetic alternative but a definite treatment option.

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