

## A fixed convenient esthetic solution- Andrew's Bridge: A case report

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### Abstract

A patient with several missing teeth in the anterior aesthetic region along with severe ridge defect poses a challenge for prosthodontic rehabilitation. A removable partial denture may become heavy as it replaces the teeth as well helps to restore the normal facial musculature, while a conventional fixed partial denture and implant supported FPD may fail to replace the soft tissue structure. The present case discusses a fixed removable partial denture rehabilitation of a patient that will help us to achieve optimum esthetics, replace the missing teeth along with the supporting structure, be convenient and pocket friendly.

**Keywords:** Andrew's bridge, Removable fixed prosthesis, Economic.

### Introduction

The basic aim of prosthodontics involves the replacement and restoration of teeth by artificial substitutes for restoring function, esthetics, and comfort. Tooth loss is often followed by loss of alveolar bone, thus while rehabilitating such cases it is essential to fabricate a prosthesis which helps to achieve optimum esthetics, phonetics, comfort of the patient and at the same time be economical to the patient.<sup>1</sup> Not all the patients are an implant patient, thus in an era that is considerably moving towards implant dentistry, it is necessary to find an alternative too.

It was Dr James Andrews of Amite, Louisiana, who introduced the fixed removable Andrew's system (Institute of Cosmetic Dentistry, Amite, LA). The Andrew's system was constructed from a fixed bridge with removable pontics. The fixed removable partial denture has a pontic assembly that is removed by the patient for preventive maintenance. The retainers are either porcelain fused to metal (PFM) or full veneer metal, which are permanently cemented to the abutments. The retainers are joined with prefabricated castable or custom made bars and then cast together, or a prefabricated metal bar is soldered to the metal copings after casting. The removable pontics are retained by a clip on the intaglio surface which fits precisely over the bar attachment.<sup>2</sup>

### Indication

1. Ridge / jaw defects either due to trauma and/or surgical ablation.
2. Cleft palate patients with congenital or acquired defects.
3. Often fixed partial denture failure with badly damaged, cracked or weakened teeth by fillings and disproportionate teeth.
4. Sometimes could be used in patients with periodontal problems.<sup>3</sup>

### Case Report

A 48-year-old female patient reported to the department of prosthodontics with a symptom of pain and foul smell in

relation to fixed partial denture in the mandibular anterior arch since past 2 months. Dental history revealed extraction of mandibular anterior teeth 3 years earlier due to mobility, followed by fabrication of Porcelain fused to metal bridge extending from mandibular left first premolar to right first premolar for replacement of mandibular anterior teeth. Clinically the prosthesis had fractured with respect to 34, oversized 33 and 43 (Fig. 1). Gingival inflammation was present, thus there was failure of the fixed partial denture prosthesis.

It was decided to remove the existing FPD for proper accessibility to the particular area (Fig. 2). Radiographic examination revealed periapical pathology with relation to 33, 34, 43. Distal caries involving pulp with 35, 44, 45 (Fig. 3). Ridge area was inflamed due to lack of oral hygiene. Inappropriate pontic placement was the reason for inflammation and halitosis.

The treatment started with root canal procedure w.r.t 33, 34, 35, 43, 44, 45. Periodontal treatment consisting of phase 1 therapy of oral prophylaxis, oral hygiene instruction and maintenance was carried out. The mandibular canine were chosen as abutments to support the Andrew's System. 33, 34, 35, 43, 44, 45 were prepared to receive Porcelain fused to metal (PFM) crowns (Fig. 4). Elastomeric impressions were made using putty wash technique with and master casts were poured in die stone (Kalstone, Kalabhai Karson Pvt. Ltd., India). Temporization for the prepared teeth was done using tooth colored self cure acrylic resin by indirect technique. Wax pattern was fabricated for PFM retainers and they were connected with a custom made bar prepared and adapted according to the curvature of the ridge running parallel to it. The bar was attached to the abutment teeth as posteriorly as possible. The prepared pattern with the bar was then casted in chrome cobalt alloy. The metal framework was then finished and polished to try in the patient's mouth and was checked for esthetics and clearance between the bar attachment and underlying soft tissues (Fig. 5). Shade selection was done followed by ceramic firing on the copings. The temporary restoration was removed and the

finished restoration was cemented using GIC cement (Fig. 6).

Once the crowns were cemented, an irreversible hydrocolloid impression was made along with the bar. Occlusal rims were fabricated and the missing anterior teeth were arranged for trial to check for esthetics. A flexible removable partial denture was then fabricated replacing the missing teeth and placed on the bar attachment (Fig.7). Following this the patients was trained to properly remove and replace the RPD fabricated over the fixed component of Andrew's Bridge and to maintain proper oral hygiene (Fig. 8). The patient was on periodic recall to follow up the prognosis of the treatment.



Fig. 5: Metal coping trial along with bar



Fig. 6: Final prosthesis



Fig. 7: Flexible RPD



Fig. 8: Post operative



Fig. 1: Pre-operative



Fig. 2: Faulty prosthesis removed



Fig. 3: Radiographic examination



Fig. 4: Tooth preparation

**Discussion**

Patient selection is critical and problems that develop post treatment are the result of diagnostic errors during treatment planning.<sup>5</sup> The bar should be placed as close to the gingival margin of the crown technically feasible, but tissue contact should be avoided as it may result in tissue proliferation if

oral hygiene is not maintained. The path of withdrawal of the removable prosthesis should also be taken into consideration. Rehabilitation of multiple missing teeth with severe bone loss especially in anterior region is routinely carried out with removable partial denture, however they are less retentive, less stable and have poor acceptance by the patient.<sup>6</sup>

Andrew's bridge system has better aesthetics, hygiene along with better adaptability and phonetics. Being comfortable and economical for the patient are the major advantages along healthy soft tissue due to less soft tissue impingement. It avoids transfer of unwanted leverage forces to the abutment teeth thereby acting as a stress breaker.<sup>7</sup> Reduced RPD bulk, good retention with little wear are some of the advantages listed by Preiskel<sup>8</sup>. Andrew's system is usually of two types, Pontic supported Andrew's bar system and bone anchored or implant supported Andrew's bar system.

Immeleus JE and Aramany M in 1975 described the use of fixed-removable partial denture for cleft palate patients. The Andrew's bridge permits rehabilitation with a FPD-RPD used in treating cleft-palate patients with congenital or acquired defects when conventional methods are contraindicated. It permits the replacement of the lost teeth and supportive structures.<sup>9</sup>

The Andrews bridge is more stable and retentive because it is completely tooth borne and the occlusal forces are also directed towards the long axis of the supporting teeth. The flange of the pontic assembly is contoured to improve comfort, esthetics, and phonetics, and to resist possible torque during function. Above all, the major advantage of the Andrew's system is that the pontic assembly can be removed to facilitate hygiene procedures and may be relined as the ridge resorbs.<sup>10</sup>

## Conclusion

Andrew's bridge permits rehabilitation of congenital and acquired defects when conventional treatments are not feasible. Andrews Bridge is an innovative economical treatment modality for patients, helping manage defects and having combined excellent properties of fixed and removable prosthesis with best esthetic results. The patient treated with the Andrew's Bar System in this case report was routinely followed-up. The patient was found to be comfortable with the prosthesis without any complaint and showed an improved esthetics and phonetics.

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## Conflict of interest

None.

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