

## REHABILITATION OF SIEBERTS CLASS III DEFECT WITH DIFFERENT APPROACH

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### ABSTRACT

Rehabilitation of ridge defect is very challenging task for a Prosthodontics. To achieve proper esthetics and speech, closure of the defect must be done along with replacement of the missing teeth. These defects can be treated with different types of prosthesis but they do not replace the exactly lost soft tissue structures. Complete Implant-supported rehabilitation have great successful rate, but they have questionable prognosis in case of type three Siebert ridge defects. In this types cases the Andrew's bar system can be one of the best options for patient. Basically, Andrew's bridge is a type of fixed-removable types of prosthesis and fulfills all the requirements of the patient like structural, functional and esthetic. Fixed-removable partial prosthesis is mainly indicated for patients with excessive soft tissue loss and when the alignment of the opposing arches creates difficulties for placement of a conventional fixed partial denture. In this article presents a case report that describes need of fixed-removable types of prosthesis and various step involve in fabrication of fixed-removable types of prosthesis to treat a Siebert's Class III anterior ridge defect using natural teeth as abutments for its fixed component followed by a removable component. Andrew's bar system provides a more reliable alternative method as compare to implants in cases both soft and hard tissue defect.

**Keywords:** Andrew's Bridge, Bar Attachment, Class III ridge defect

### INTRODUCTION

Soft and hard tissue deformation in partially edentulous ridge is a major issue in the esthetic restoration of the anterior region. Deformities can be caused by trauma to the face, birth defects, traumatic extractions, implant failures or severe periodontal disease.<sup>1</sup>Sibert (1983) identified basically three types ridge deformities Bucco-lingual loss of tissues (class I), Apico-coronal loss of tissues (class II) and combination of bucco-lingual and apicocoronally loss of tissues (class III).<sup>2</sup>

Prosthetic dentistry involves the maintenance and restoration of oral functions, comfort, appearance and health of the patient by the replacement of missing teeth and contiguous tissues with artificial substitutes. Each restoration should be designed for the specific patient being treated. In some cases, a fixed-removable partial denture known as the Andrews bridge, superior to the conventional partial denture.

The fixed-removable partial denture involves a pontic assembly removed by the patient for preventive maintenance. Main indications for such types of restoration are cases where the abutments are capable of supporting a fixed partial denture but the residual ridge has been partially lost due to acquired and congenital defects or pathologic process so that a fixed partial denture would not provide adequate restoration of the patient's missing teeth and supporting structures.<sup>3</sup>

All successful therapeutic treatment depends upon a many types of parameters like careful selection patients for each treatment, formulation of a treatment plan and careful implementation of a proper way of all treatment procedure. If operator strictly follow all these principles, any operator-induced error can be significantly minimized.<sup>4</sup> There are various restorative treatments developed for the patient with an unaesthetic edentulous space is the fixed removable partial denture.<sup>5</sup>

## Case report

A 25 years old female patient reported to the department of prosthodontics crown and bridge with a chief complaint of fading speaking due to missing upper front teeth for past 24 years (fig 01). Complete medical and dental history was recorded, which revealed that patient had met with an accident 24 years back which led to severe bony defect in maxilla and soft tissue of lips. She was treated for the traumatic injuries. Loss of natural tooth is natural physiological process of ageing and can also be caused by various other factors like pathological conditions and trauma. In almost 90% of cases the most common cause for anterior tooth loss is trauma which is usually associated with variable amount of adjacent hard and soft tissue loss. Majority of such cases are Siebert class III defect and management of these cases require additional hard and soft tissue augmentation or regeneration procedure. However, when loss of tissue is more, complete aesthetic outcome of such surgical procedure is unpredictable and expensive. Fixed removable partial dentures are primarily indicated for such patient with extensive hard and soft tissue loss. This present case report shows fabrication of a Andrews Bridge-Fixed Removable Prosthesis wherein a prosthesis is retained by abutments on either side of edentulous space. This prosthesis met the various requirement of comfort, esthetic, □bar and sleeve attachment to hygiene etc. Extraoral examination revealed that patient had reduced upper and lower lip support, facial scar

etc. Intra oral examination revealed missing teeth in respect to 22 and grossly decaying 24, 25. There was a considerable reduction in the height and width of the residual alveolar ridge in the maxillary anterior region (Sieberts Class III). Treatment options for the maxillary arch include implant supported FPD along with bone graft, conventional FPD, Fixed-removable denture and conventional RPD. Implant placement would have required block graft followed by soft tissue regeneration which will extend the duration of treatment procedure, cost and outcome may not be predictable.

FDP can restore structure, functional and esthetic requirements to a limited extent. In the maxilla, the asymmetry seen in the arch across the midline was not allowing accurate esthetic placement of the artificial teeth without compromising of bio-mechanics. If the teeth were to be placed along the ridge, it would not provide proper lip support that was a principle esthetic concern in this patient. The increased bone loss in vertical direction would have required an increase in the length of the pontics that could have caused esthetic failure of final prosthesis. Therefore, the defect would have required corrections by soft tissue grafts and bone grafts to render it suitable for FDP. The conventional removable prosthesis was not satisfying all patient's needs, and if not maintained properly, it would have caused decalcification and dental caries of the primary abutment, periodontal problem such as inflammation of the gingival tissues. □

First patient was informed about various treatment options and cost, and fixed removable prosthesis was planned for the maxillary arch.

The Andrews bridge provides adequate esthetics, improved phonetics, and facial support through its ridge replacing acrylic removable component. Another advantage of Andrew's bridge is that it can be removed by the patient for improved hygiene access to the pontic area.<sup>6</sup>

#### PROCEDURE:

1. Diagnostic impression of the upper and lower arch was made by using irreversible hydrocolloid impression material and upper and lower models were obtained.
2. Intentional RCT was performed in respect to 24,25 followed by customized post fabrication in 24 (fig 02)
3. Tooth preparation in 24, 25 and vital tooth preparation was done in 11,12,13, 21, 23, (fig 03)
4. Gingival retraction was performed and impression was made in stock tray using polyvinyl siloxane impression material.
5. The master casts were poured using Type-IV gypsum product and Face bow transfer takes place (fig 04)
6. Wax bite for PFM retainers was fabricated in respect to 13,12,11,21,22,23,24,25. (fig 05)

7. Both side wax pattern connected using CEKA attachment. Bar should be positioned parallel to ridge on palatal aspect so that 2-3 mm of space below bar to the crest of ridge. (Fig 06 )
8. Final Metal framework was checked intra orally. (Fig07, 08, 09, 10)
9. Metal framework after trial, subjected for ceramic buildup with shade A2,
10. Metal framework with ceramic buildup was checked intra orally.
11. Temporary cementation of framework was takes place by using provisional cement and all undercuts were blocked pickup impression was made using light body and putty impression for removable component.
12. Models were obtained along with bar in place over which RPD frame work for tooth 22 was fabricated and try in was done in patient's mouth.
13. Try in was done and clip was placed on the bar asking and wax up was done properly to proceed for normal RPD is constructed using Heat cure resin.(Fig 11 )
14. The patient was trained for placement and removal of prosthesis. Inter dental brush suggested for maintenance of oral hygiene with routine oral hygiene instructions.
15. The periodic recall to check for the success of the treatment. (Fig 12,13)

## Discussion

During treatment planning case selection was the important part of the treatment as there was severe bone loss in both cases. The esthetic replacement of anterior teeth is a difficult challenge, especially in the maxillary arch. This situation can be further complicated by the presence of a ridge deformity. These anatomic defects may seriously compromise the esthetics of the final restoration.<sup>1</sup> All the treatment choices were explained to the patient, after the patient's final decision the Andrews bridge was the treatment of choice.

Andrew's bridge has both fixed and removable component of prosthesis. This fixed-removable bridge provides adequate aesthetics and optimum phonetics in cases of supporting tissue loss, alveolar bone defects and when alignment of the opposing arches and/or aesthetic arch position of the replacement teeth causes challenges. Second most important advantage of the Andrew's bar system is that it removed by the patient for maintain of hygienic access to the abutments and surrounding tissues.<sup>7</sup> Andrews bar system is more stable and retentive because it take support from tooth and the occlusal forces are also directed towards the long axis of the abutment teeth.<sup>3</sup>

As compared to a cast partial denture, the fixed-removable partial denture is more stable because it is entirely tooth-borne and all occlusal forces are directed along the long axis of the teeth.

As compared to a conventional fixed partial denture, the pontic teeth are arranged during the esthetic try-in appointment. The flange of the pontic assembly is contoured to improve comfort, esthetics, and phonetics. Moreover, in contrast to conventional fixed partial dentures, the pontic assembly is removed to facilitate hygiene procedures and may be relined as the ridge resorbs.<sup>3</sup>

The bar and sleeve of Andrew's bridge attachment technique have evolved to produce whole new classes of prosthesis. Twin Andrews bars and a double track sleeve provides a tissue supported, unilaterally, free end saddle fixed-removal partial denture. It eliminates maintenance and phonetic problems of header bar retained partial denture. Andrew's bridge has been marvelously adapted to implant prosthesis.<sup>8</sup> This Andrew's bar system provides adequate aesthetics, hygiene, optimum loading conditions, minimum trauma to the soft tissues, incomparable fit and is very economic.<sup>7</sup>

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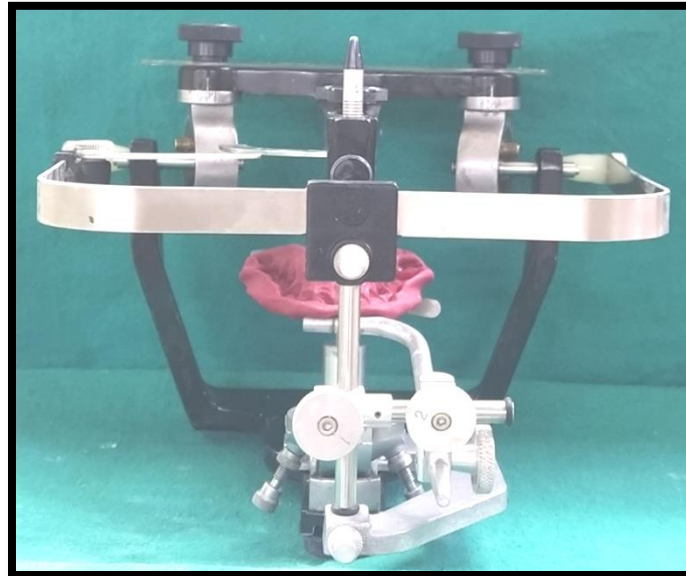
Fig. 01, Frontal profile before treatment



Fig.02 Fabrication of customized post



Fig. 03, placement of post and tooth preparation



**Fig. 04, Face bow transfer**



**Fig. 05, Final cast over which prosthesis fabricate**



Fig. 06 Wax bite



Fig. 07 metal framework with coping

Fig. 08, Intra oral frame work try-in







Fig. 09, frontal view after metal framework try-in



Fig. 10, Ceramic buildup



Fig. 11, RPD fabricated over the bar



Fig. 12, Occlusal view of final prosthesis



Fig. 13, Facial profile after the treatment