

# Minimum Invasion, Maximum Satisfaction: A Case Report of Andrews Bridge

Namita Singh<sup>1</sup>, Gouri V Anehosur<sup>2</sup>, Ramesh K Nadiger<sup>3</sup>

1-PG Student, SDM Dental college, Dharwad, Karnataka, 580009. 2-PG Student, SDM Dental college, Dharwad, Karnataka, 580009. 3- Professor, SDM Dental college, Dharwad, Karnataka, 580009.

Correspondence to:  
Dr. Namita Singh PG Student, SDM Dental college,  
Dharwad, Karnataka, 580009.  
Contact Us: www.ijohmr.com

## ABSTRACT

This article is a presentation of case report of a treated cleft palate and lip female patient with the chief complaint of missing upper front teeth. On examination a prognathic and reverse overjet clinical situation was assessed with a Siebert's class three ridge defect. The patient was presented with a range of treatment options varying from removable partial denture to dental implant therapy. On assessment of the patient expectations, esthetic and functional prognosis the Andrews bridge system was chosen as the treatment option.

**KEYWORDS:** Andrews bridge, Fixed Removable Prosthesis, Minimal Invasive Dentistry

## INTRODUCTION

Under ideal clinical situations a fixed prosthesis is always the first choice opted by the patient. In a situation where the abutments are periodontally healthy but the ridge defect is large, in both, height and width, the conventional fixed partial denture prosthesis will result in blank spaces or gaps between the artificial teeth.<sup>1,2</sup> Even when rehabilitating with implants, artificial teeth have to be made too long to cover the gaps. This situation can pose quite a challenge to the clinician as all of these treatment options compromise the final treatment outcome.

In such conditions, Andrew's bridge is a good prosthodontic option. It overcomes the problems associated with the restorations of severe residual ridge resorption or jaw defect cases.<sup>3</sup> It comprises of two components-the fixed and the removable component.<sup>4</sup>The fixed component consists of two retainers attached to their abutments and connected by a rectangular bar that follows the curve of ridge under it. It is fabricated in metal with retainers being metal-ceramic. The removable part consists of the artificial teeth with the gingival flange fabricated to seat on the bar. This type of denture has qualities of both the fixed partial denture and the removable partial denture.<sup>5</sup>

## CASE REPORT

A 23 year old female patient was referred from the department of orthodontics for rehabilitation of the upper anterior segment. Patient revealed history of treated cleft lip and palate which was followed by fixed orthodontic treatment. Extra oral examination revealed a class III facial profile and compromised lip support. Intraoral examination revealed missing 11, 12 and 13 hinting to a Siebert's Class III defect. A reverse overjet of 8 mm was recorded.

The following treatment options were offered to the



Fig 1: Pre-operative picture

patient:

- Orthognathic surgery for profile correction
- A removable partial denture
- Fixed partial denture using central incisor and first premolar as abutments, with or without gingival veneers
- Guided bone regeneration procedure followed by replacement with implants
- Fixed-removable prosthesis.

On explaining the pros and cons of each option, the patient expressed the desire to go with the least invasive treatment plan as she was not keen on any surgical procedures.

The treatment began with making diagnostic impressions of the maxillary and the mandibular arches using Alginate (Tropicalgin, Zhermack). A diagnostic wax-up was carried out to assess the aesthetics and final closure of the defect. A wax trial was carried out to render a clear idea of the treatment plan to the patient and to objectively

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assess the esthetic and phonetic outcome that could be expected. After verification, a silicone putty index of the trial denture was made.

The abutment teeth 14 and 21 were prepared to receive porcelain fused to metal full coverage retainers. Final impressions were made using polyvinylsiloxane (Aquasil Putty Material, Dentsply) and master casts were poured in Type IV dental stone. Dies were prepared and a wax pattern of a bar connecting the two copings was fabricated. The bar 2mm in height was fabricated using a coffee straw ensuring adequate clearance from underlying tissue.<sup>6</sup> The coffee straw bar framework was invested, and casting was carried out according to the manufacturer's instructions in cobalt chromium alloy. The metal framework was tried in to check for fit, phonetics, and hygienic access. Ceramic build up was done using the putty index as a reference and the metal component was polished. The final metal ceramic restoration was cemented using interim restorative material. A pick up impression was made for the crown-bar assembly using polyvinylsiloxane impression material. Another cast was poured in die stone and fabrication of the acrylic component was carried out. Wax up was re-verified using putty index and acrylised carried out using short curing cycle. Final cementation of the crown-bar assembly was done using glass ionomer cement at luting consistency and the acrylic portion inserted using a bar and clip mechanism (Figure 2-8).



Fig 4: Pickup Impression



Fig 5: Final Wax-up



Fig 2: Metal Trial

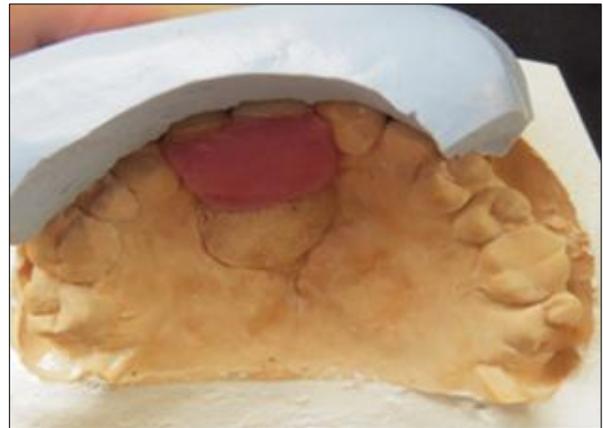


Fig 6: Reverification of Putty Index



Fig 3: Bisque Trial



Fig 7: Final Cementation

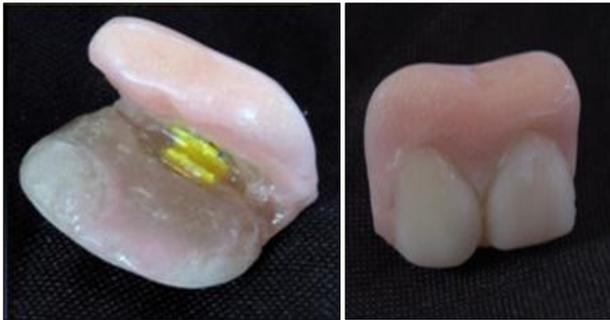


Fig 8: Final Prosthesis

The patient was trained to place and remove the removable acrylic framework over the bar component. Post insertion hygiene instructions were given and Periodic recalls were carried out to assess the comfort and function of the final prosthesis.

The patient was well satisfied with the esthetic outcome of the final prosthesis and objective assessment showed enhanced lip support and clarity of speech (Fig 9).

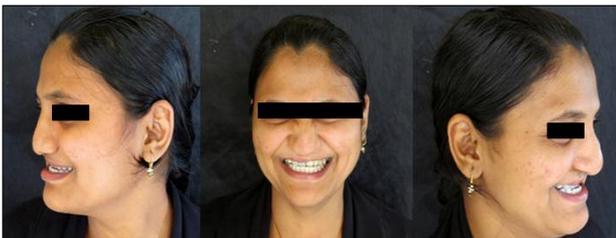


Fig 9: Post Operative View

## DISCUSSION

Rehabilitation of the upper anterior region is a very challenging situation for a prosthodontist. There is a wide array of options ranging from removable partial dentures, fixed partial dentures and implant therapy. Fixed-removable prosthesis offers a unique solution to Sieberts class three condition which is characterized by a large vertical and horizontal wall defect.<sup>2,7</sup>

Andrews bridge has both fixed and removable properties. Andrew's system provides maximum aesthetics and optimum phonetics in cases involving considerable supporting tissue loss, jaw defects and when alignment of the opposing arches and/or aesthetic arch position of the replacement teeth create difficulties. Another favourable criterion of the Andrew's bar system is that it can be removed by the patient for hygienic access to the abutments and surrounding tissues. 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.<sup>3,4</sup> Bar attachment provides a splinting mechanism there by stabilizes and

strengthens the abutment teeth. It also allows the forces of mastication shared by the abutment teeth.<sup>9</sup>

In this particular case, to increased mesiodistal space available than required an anterior fixed partial denture would have displayed unacceptably long pontics with large, empty interproximal embrasures and thereby contraindicated.<sup>8</sup>

Likewise, a conventional cast partial denture would have been an unaesthetic and inconvenient option because of anterior clasp display and a palatal major connector with large coverage.

Implant therapy also had a questionable prognosis due to poor availability of labial cortical bone plate and extensive bone regeneration procedures.

## CONCLUSION

Hence, in the given clinical scenario an Andrews bridge concept was the optimum treatment plan for a long term esthetic and functional success.

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