

## Prosthetic Considerations for an Aesthetic Rehabilitation in the Lower Anterior Region: A Confluence of Art and Science

Sandipan Mukherjee<sup>1</sup>, Shobha Rodrigues<sup>2</sup>, Rohit Kabra<sup>3</sup>,  
Sharon Saldanha<sup>4</sup>, Mahesh M<sup>5</sup>, Umesh Pai<sup>6</sup>, Puneeth Hegde<sup>7</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Professor, <sup>3</sup>Senior Lecturer, Rishiraj Dental College and Research Centre, Opp Raja Bhoj Airport, Gandhi Nagar, <sup>4,5,6,7</sup>Associate Professor, Department Of Prosthodontics, Manipal College of Dental Sciences, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India.

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### Abstract

Developments in adhesive dentistry have provided the dental profession with new restorative materials and technology to restore esthetics and function to the missing anterior dentition. Interdisciplinary treatment planning, knowledge of available restorative materials, sequencing treatment modalities, and adequate communication between the disciplines involved are a key to a successful treatment outcome when pursuing restorative rehabilitation.

This clinical report describes the challenges faced in the prosthetic rehabilitation of a partially edentulous patient to achieve a successful restoration in terms of biomechanics and function.

**Key words:** adhesive dentistry, rehabilitation, metal ceramic, aesthetic.

### Introduction

Replacement of missing teeth in the anterior region becomes utmost important esthetically. Various treatment options are available for replacement of missing lower anterior like implant, removable partial denture (RPD) and fixed dental prosthesis. RPDs generally tend to cause bone resorption and flattening of the interdental papillae on prolonged use. However, they can be used as interim prosthesis for initial esthetics. Conventional bridges require more amount of tooth preparation all around the abutment tooth causing trauma to

the pulp and hypersensitivity. Newer methods have indicated a more conservative and less invasive resin bonded fixed prosthesis, helping to preserve the remaining alveolar ridges and the soft tissue and also the vitality of the abutment teeth.

Resin bonded bridges (RBBs) are a type of fixed dental prostheses that need a minimum amount of tooth preparation. The bonding is achieved by directly cementing over the tooth structure with the help of resin cement when the preparation is restricted to the enamel surface only. These restorations were first described in 1973 when the

**Corresponding Author:** Shobha Rodrigues, Professor, Department of Prosthodontics, Manipal College of Dental Sciences, MAHE, Mangalore 575001, India.

**E-mail:** shobha.j@manipal.edu

natural extracted tooth of the patient was cemented directly to the etched enamel surface with composite resin for a limited time period to provide esthetics. Then Rochette Bridge was designed by Rochette for periodontal splinting of the mandibular anterior teeth.<sup>1</sup> However, due to the bulky framework and limited adhesion to the enamel surface its use was restricted.<sup>2</sup> Later Moon and Hudgins developed 'Virginia bridge' at Virginia Commonwealth University in 1984. Lost salt technique was utilized to provide the macroscopic mechanical retention to the framework and the tooth surface. In spite of adequate retention of Virginia bridge, this framework was bulky. The 'Maryland Bridge' was developed at the University of Maryland. The bridge retention has been enhanced by the development of resin cements which bond chemically to both the tooth surface and the etched metal alloy. It provides micro mechanical retention. Thompson and Livaditis in 1983 developed the technique of electrolytic etching of Ni-Cr and Co-Cr alloy. However, the Maryland bridges are alloys specific. It is used only for non-precious alloys because precious alloys cannot be etched to provide micromechanical retention.

### Case Report

A 28 year old female reported to the Department of Prosthodontics complaining of missing teeth and wanted them to be replaced. The patient was unwilling for any removable prosthesis and wanted a fixed prosthesis.

On examination it was revealed that the lower anteriors 41 42 and 31 were missing. The abutment teeth were deemed unfit for full coverage FDP. The bone in the anterior region was insufficient for implants and the patient was unwilling for extensive surgical procedures. Thus after thorough discussion with the patient Maryland bridge was decided as the treatment for replacement of the missing teeth.

The abutment teeth were prepared following regular protocol on the lingual surfaces only and an elastomeric impression using putty and light body was recorded for fabrication of the prosthesis and sent to laboratory for fabrication of the metal framework with wings. Metal try-in was done and speech and mastication was evaluated. Shade matching using

Vita 3D was performed. After the successful metal trial, it was processed for ceramic build up. The final restoration was cemented using Rely-X cement. Occlusion verification was done in centric and eccentric. Post - cementation instructions were given and the patient was recalled for follow-up.



Fig 1: Preoperative view



Fig 2: Following Tooth preparation and impression making

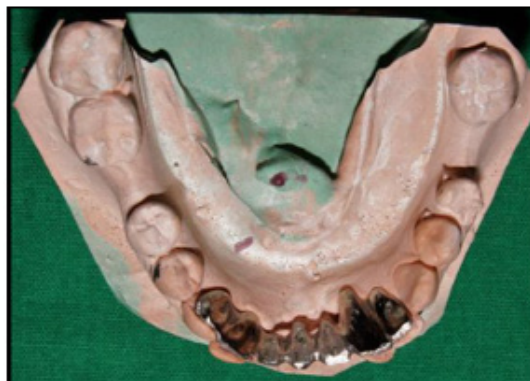


Fig 3: Metal Try In



**Fig 4: Final Prosthesis**

### Discussion

Conventional techniques of fixed dental prosthesis require considerable amount of tooth preparation. Expected transition in gingival position and the patient's age were the main deciding factors along with the patient's unwillingness for undergoing extensive surgical procedure for correction of deficient bone and implant placement, to rehabilitate using resin bonded prosthesis.

The resin bonded prosthesis, traditionally, are known to have compromised bonding and consequently shorter life span. However, newer self-etch adhesive systems have improved the longevity of the prosthesis. The main threats to the associated with resin-bonded prosthesis are debonding (21%), tooth discoloration (18%) and caries (7%).<sup>6,7</sup>

The 1 year period uneventful follow-up showed encouraging signs regarding its longevity and after its tenure, a more conventional fixed prosthesis may be planned.<sup>8-10</sup>

### Conclusion

RBBs have been very effective in rehabilitating lost teeth, particularly in short span ridges, restoring esthetics and oral function without much invasive

techniques and consequently achieving can be high patient satisfaction. With newer and improved self-etch adhesive systems, thorough patient assessment and use of proper techniques can achieve longer lasting, more esthetic restorations in cases of short spans.

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