

## Conservative approach for replacing missing teeth: A case report

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### Abstract

Resin bonded bridges can be highly effective in replacing missing teeth, restoring oral function and aesthetics and result in high levels of patient satisfaction. They represent a minimally invasive, cost effective and long lasting treatment modality given thorough patient assessment and the use of careful clinical techniques. Maryland bridges should be considered more frequently as the restoration of choice for short spans. Maryland bridges are resin bonded bridge using electrolytic etching of metal to retain the metal framework. Thompson and Livaditis in 1983 developed a technique of electrolytic etching of Ni-Cr and Co-Cr alloy. Etched cast retainers have definite advantage over cast perforated restorations. Retention is improved as resin to etched metal bond is substantially stronger than resin to etched enamel. In one study it was found that an electrochemically etched surface was approximately 2.9 times as retentive as a perforated one. Retainers are thinner and non-perforated. Oral surface of cast retainers is highly polished and resists plaque accumulation. Whole surface area of retainer is retentive adding to retention. But etch is alloy specific requiring special apparatus. Only non-precious alloy which can be etched is used. Precious alloys cannot be etched. Micromechanical retention in noble alloys is achieved by electrolytic tin plating. Other means of micromechanical etching is Grit blasting using 50 – 250 µm Aluminium Oxide. Chemical etching can be achieved by Hydrofluoric Acid gel (Livaditis 1986) and Aqua Regia Gel.

**Keyword:** Maryland bridge, Interim Prosthesis, Resin bonded prosthesis

### Introduction

Restoring a missing single lower central incisor is one of the most difficult esthetic procedures in dentistry especially in young adults. In 1973 Dr Rochette of France introduced the idea of bonding a cast metal bar to the lingual surfaces of periodontally involved anterior teeth for splinting purposes using the acid-etch technique and an unfilled resin cement.<sup>(1)</sup> Maryland bridges are resin bonded bridge using electrolytic etching of metal to retain the metal framework. Thompson and Livaditis in 1983 developed a technique of electrolytic etching of Ni-Cr and Co-Cr alloy. A variety of dental concerns need to be addressed when treating an anterior tooth such as shade (hue, chrome, and value), morphology, gingival contours, bone levels, and occlusion. Additionally, a choice between a fixed prosthesis, orthodontic treatment, removable prosthesis, and an implant needs to be determined. Finally, patients are not only becoming more demanding with regard to esthetics, but also are often opting for more conservative and less invasive and time consuming procedures.<sup>(2)</sup> The reduction of the lingual surface of the abutment was restricted to the nonocclusal surface area for anterior guidance.<sup>(3)</sup>

### Case Report

A male patient, aged 20 years presented with a missing mandibular central incisor reported in department of prosthodontics. Patient gave a history of loss of tooth due to trauma 10 years back. On examination it was revealed that the both central

incisors were missing with an edentulous area with loss of space for one mandibular central incisor [Fig. 1].



**Fig. 1: Showing missing mandibular central incisors**

An intra-oral periapical radiograph was taken and the radiograph revealed complete root formation of the adjacent teeth. After considering the patients wish and the clinical situation, the option of removable partial denture, fixed partial denture and implant were eliminated and it was decided to replace it with a Maryland bridge as an interim solution. Tooth preparation for both 32 and 42 was done following the standard technique.

Lingual preparation ended 1mm from the incisal edge and a light chamfer finish line was prepared 1 mm supragingivally [Fig. 2].



**Fig. 2: Showing preparation ended 1mm from the incisal edge**

An impression was made in PVS (POLY-VINYL SILOXANE) impression material and sent to the laboratory.<sup>(6)</sup>

After the metal try-in [Fig. 3] and [Fig. 4] successful shade selection was done using a shade guide (vita 3d master).



**Fig. 3**



**Fig. 4**

The trial fitting of the prosthesis was done and then esthetics mastication and speech were evaluated. The metal wings of the prosthesis keep off the incisal third to prevent darkening of the tooth because of the inhibition of light transmission. In addition, care was taken to make sure metal would not be visible interproximally or at the embrasure areas [Fig. 5].



**Fig. 5: Showing metal wings of the prosthesis keep off the incisal third**

After isolation with a rubber dam, the Maryland Bridge was cemented using resin cement using a conventional composite resin [Fig. 6].



**Fig. 6: Showing cemented Maryland Bridge**

A 12-month follow-up was advised until the patient is ready to replace the bridge with a more permanent solution.

### Discussion

A missing tooth in the anterior region is not only a physical loss, but also may be an emotional and psychological experience for the patient as well. Removal of healthy tooth structure from adjacent teeth to replace a congenitally missing tooth, or a tooth lost to due to decay, trauma, root fracture, failed root canal treatment, or pathology is a very aggressive treatment option.<sup>(4)</sup> Many treatment modalities are available for replacing a single missing tooth; removable partial denture, fixed partial denture or dental implant. Each modality is a possible treatment option and has its own benefits and drawback. Patient awareness of the advantages and disadvantages of different treatment modalities is very important for decision making, therefore there are many factors make single-tooth replacement one of the most challenging restorations in dentistry.<sup>(5)</sup>

### Conclusion

The resin-bonded Maryland Bridge has been considered as a popular substitute for conventional full-coverage bridges to avoid crowns on the non-restored

abutments. The design for the Maryland bridge generally allows for a single path of insertion thus avoiding displacement along any other path except the path of insertion of the prosthesis. Adhesive bonding further strengthens the bond between the framework and the tooth structure, thus increasing the overall success rate of the restoration.

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