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Case Report

Prosthodontic Rehabilitation of Anterior Edentulous Space with Maryland Bridge - A Case Report

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ABSTRACT

Maryland bridge are a minimally invasive treatment alternative for the replacement of missing teeth when conservation of the abutment tooth structure is required. However, the reduced retention of Maryland Bridge, depending on their geometry and design, is still a clinical concern in prosthetic dentistry. To provide a long-lasting prosthesis, the practitioner must plan and fabricate a resin-retained restoration with the careful attention and effort used for conventional restorations. This case report demonstrates the management of an edentulous space in lower anterior region with Maryland Bridge with satisfactory result.

Key words: Esthetics, Maryland Bridge, Resin- bonded fixed partial denture

INTRODUCTION

Maryland bridge are a minimally invasive treatment alternative for the replacement of missing teeth when conservation of the abutment tooth structure is required. However, the reduced retention of Maryland Bridge, depending on their geometry and design, is still a clinical concern in prosthetic dentistry. The clinical success of Maryland Bridge has been attributed to many variables, and evidence-based research has focused on mainly tooth preparation and the design of such restorations. Different opinions exist regarding preparation methods to optimize their retention. The principle aim of tooth preparation and framework extension is to reduce stresses at the bonding interface and thereby increase retention and resistance. Stability of Maryland Bridge can also be attributed to adhesion of resinous cements to the metal framework and etched enamel.

History: The earliest resin-retained prostheses were extracted natural teeth or acrylic teeth used as pontics bonded to the proximal and lingual surfaces of abutment teeth with composite resin. Rochette' in 1973 introduced the use of a perforated cast alloy framework with acid etched composite resin bonding for splinting of periodontal involved anterior teeth. [1] Livaditis in 1980 extended this application in replacement of missing posterior teeth, later to be known as the Maryland Bridge technique. Livaditis and Thompson in 1982 described on improvement of the retentive mechanism, by etching the casting. [2] A great deal of clinical research has been done to determine whether the results of bonding procedures for fixed appliances would live up to the expectations.

Etched cast retainers have definite advantages over the cast perforated restorations. Retention is improved because the resin-to etched metal bond can be

substantially stronger than the resin-to-etched enamel. [3] The retainers can be thinner and still resist flexing. The oral surface of the cast retainers is highly polished and resists plaque accumulation. [3]

CASE REPORT

A 55 years old man came to dental OPD for replacement of her missing anterior teeth in lower arch (Fig:1,2). He gave the history of undergoing extraction for mobility of her teeth. Her chief complaint was speech problem and unaesthetic appearance. On clinical examination two central incisors in lower arch were missing. Primary impression was taken with rubber based impression material and diagnostic casts were made with die stone. Lower two lateral incisors teeth reductions were done on the lingual surface only (Fig 3). On the lingual surface of lateral incisor vertical grooves were placed. Ledges were then created on three points on lingual surface with tapered fissure bur for better retention of the prosthesis. Then final impression was taken with rubber base impression material (Fig 4) and cast was made with die stone. After wax pattern fabrication casting was done (Fig5, 6). The metal try in was then done on the patient's mouth to check marginal fit of the prosthesis (Fig7, 8). After metal try in shade selection was done. The prosthesis was then send to laboratory for porcelain fusion to metal. The prosthesis was then checked for proper fit (Fig 9,10). The teeth surface was then etched and dried. Bonding agent was then applied over teeth. Metal primer was then applied over prosthesis surface. Then light curable resin was applied between prosthesis and teeth surface and light curing was done for 20 seconds (Fig 11).

Patient was then instructed to come for regular recall visit. Since deboning or partial deboning can occur without complete loss of the prosthesis, visual examination and gentle pressure with an explorer should be performed to confirm such a complication. Deboning is most commonly associated with biting or chewing hard food, so patients was warned about this danger. Early diagnosis and treatment of a partially deboned prosthesis can prevent significant caries. Patient was instructed to maintain his oral hygiene properly, because this retainer design has the potential to accumulate excess plaque as a result of lingual over contouring and the gingival extent of the margins.

Fig:1 Lower arch showing missing 31,41

Fig:2 Front view in occlusionbefore treatment

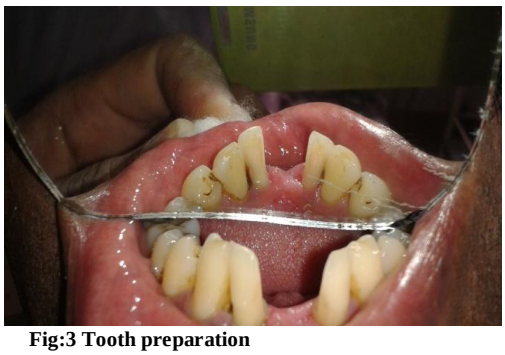

Fig:3 Tooth preparation

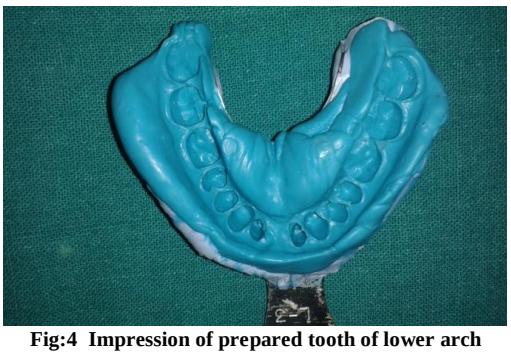

Fig:4 Impression of prepared tooth of lower arch

Fig:5,6 Metal try-in (front view and lower occlusal view) of maryland bridge in articulator

Fig:7,8 Metal try-in (front view and lower occlusal view) of maryland bridge in patient's mouth

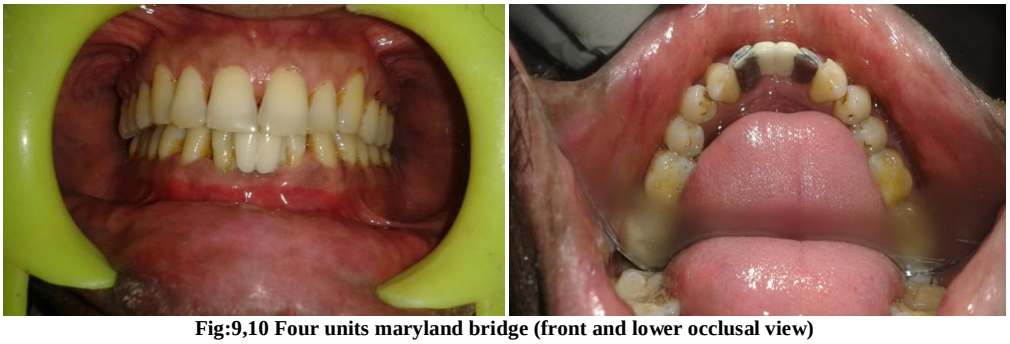

Fig:9,10 Four units maryland bridge (front and lower occlusal view)

Fig: 11 Front view of the patient

DISCUSSION

Biological reasons for Maryland bridge failure include caries and periodontal disease but these occur relatively rarely. [4] To prevent complications oral health education, encompassing oral hygiene instruction and advice regarding diet and the use of fluoride, should be provided at the treatment planning stage and finalized following bridge cementation. Patients should be warned of the risk of one retainer debonding and to report this immediately if they feel that the bridge is loose. The most common technical reason for Maryland bridge failure is debonding. [5] If a bridge debonds there are two options: remake or recement. If trauma has resulted in decementation, recementing the restoration may well be appropriate. However, studies have shown that once a bridge has debonded it is more likely to fail again [6] and recementing for a second time is generally ill advised as replacing the bridge has been found to have a higher success rate. [6,7] This is probably because in the majority of failed cases, there is an inherent problem with bridge design. With this in mind, the restoration itself should be examined and

the patient should be reassessed from an occlusal perspective: Whether patient has developed any parafunctional habit or any change in occlusion in intercuspal position or lateral excursion as a result of restoration or tooth wear of adjacent or opposing teeth should be investigated. If the decision is made to recement a Maryland bridge, the metal retainer should be air abraded and any cement residue removed carefully from the tooth before attempting this.

CONCLUSION

One of the basic principles of tooth preparation for fixed prosthodontics is conservation of tooth structure. This is the primary advantage of Maryland Bridge. Precision and attention to detail are just as important in Maryland Bridge as they are in conventional prostheses. To provide a long-lasting prosthesis, the practitioner must plan and fabricate a resin-retained restoration with the same diligence used for conventional restorations. The techniques can be very rewarding but must be approached carefully. Careful patient selection is an important factor in predetermining clinical success.

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