WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 8, Issue 3, 852-856. Case Report ISSN 2277– 7105

ENHANCING ESTHETICS WITH MINIMAL TOOTH REDUCTION- MARYLAND BRIDGE

Kondumahanti V. N. Avinash*[1], Subash Munireddy[2], Jayakar Shetty[3], Chiranjeevi Reddy G.[4] and Venkat Raghu[5]

[1]Post-Graduate Student, Department of Prosthodontics, AECS Maaruti College of Dental Sciences and Research Center, Bangalore, Karnataka, India.

[2]Professor, Department of Prosthodontics, AECS Maaruti College of Dental Sciences and Research Center, Bangalore, Karnataka, India.

[3]Professor and head of the Department, Department of Prosthodontics, AECS Maaruti College of Dental Sciences and Research Center, Bangalore, Karnataka, India.

[4]Professor, Department of Prosthodontics, AECS Maaruti College of Dental Sciences and Research Center, Bangalore, Karnataka, India.

[5]Post-Graduate Student, Department of Prosthodontics, AECS Maaruti College of Dental Sciences and Research Center, Bangalore, Karnataka, India.

Article Received on
23 Dec. 2018,

Revised on 14 Jan. 2019,
Accepted on 05 Feb. 2019

DOI: 10.20959/wjpr20193-14272

***Corresponding Author**
Dr. Kondumahanti V. N. Avinash
Post-Graduate Student, Department of Prosthodontics, AECS Maaruti College of Dental Sciences and Research Center, Bangalore, Karnataka, India.

ABSTRACT

Maryland bridges are considered as a conservative alternative to traditional bridges. These prostheses consist of a pontic that is held in place by a metal or porcelain framework. This framework is bonded onto the lingual surface of the two teeth adjacent to the missing tooth. Advantage of this design is the conservation of the tooth structure. Maryland bridges are easy and quick to prepare in comparison to other types of bridges and also the process of fabrication of Maryland bridges is simpler and easier.

KEYWORDS: Maryland Bridge, Esthetics, Resin Based Luting Cement.

INTRODUCTION

The esthetic appearance of a person is compromised when the anterior teeth are missing. The masticatory load on mandibular anterior teeth is low when compared to posterior teeth hence resin boned fixed prosthesis can be suggested in such cases. The

biggest advantage of resin bonded bridges is the minimal or no requirement to remove natural tooth structure of abutment teeth.

The replacement of missing teeth with conservation of the abutment tooth structure is possible with minimally invasive treatment alternative like Maryland Bridge. Retention and resistance of the restoration are enhanced by the tooth preparation and framework extension. Adhesion of resinous cements to the metal framework and etched enamel is the predominant reason for the stability of Maryland Bridge.

In 1973, Rochette introduced the concept of perforated cast alloy framework with acid etched composite resin bonding for splinting of periodontal involved anterior teeth.[1] In 1980 Livaditis extended this concept for the replacement of missing posterior teeth, later to be known as the Maryland Bridge technique.

Etched cast retainers are proven to be advantageous over the cast perforated restorations.[2] The resin-to etched metal bond can be substantially stronger than the resin-to-etched enamel. Hence Retention will be improved.[3]

CASEREPORT

A 35 year old man came to the Department of Prosthodontics for replacement of his missing anterior teeth in lower arch (Fig-1). On clinical examination it was found that mandibular left lateral incisor was missing. Primary impression was taken with irreversible hydrocolloid and diagnostic casts were made. Left mandibular central incisor and left mandibular canine were selected as abutment teeth and tooth preparation was done on the lingual surface only (Fig 2). Vertical grooves were placed on the lingual surface of abutment teeth. Then final impression was taken with Polyvinylsiloxane impression material and cast was made with die stone. Shade was selected. Casting was done after wax pattern fabrication. The prosthesis was then processed for porcelain fusion to metal. Extensions of the prosthesis was then checked (Fig-3). The teeth surface was etched and dried. Bonding agent was then applied. Metal primer was then applied on wings of the prosthesis. Then dual curable resin based luting cement was applied between prosthesis and teeth surface and light curing was done according to the manufacturer's instructions.(Fig.4,5).

Patient was then instructed to come for regular recall visits. Since debonding is most commonly associated with biting or chewing hard food, so patients was cautioned about this

danger. The retainer design can be responsible for the accumulation of plaque as a result of lingual over contouring and the gingival extent of the margins. So patient was instructed to maintain his oral hygiene properly.

Fig. 1. Missing anterior tooth.

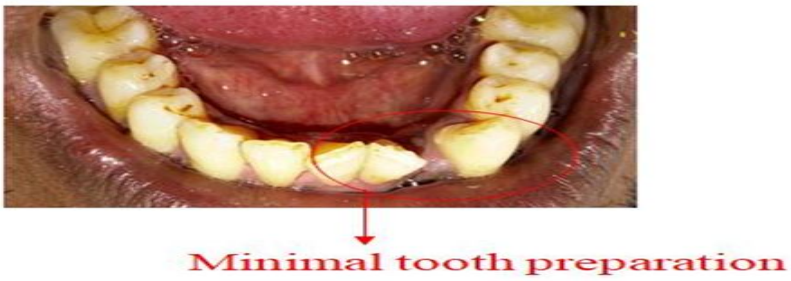

Fig. 2. Tooth Preparation on the Lingual Surface.

Fig. 3. Extensions of the prosthesis.

Fig. 4. Final Prosthesis.

Fig. 5. Before and After the Prosthesis.

DISCUSSION

Resin bonded prosthesis is a popular substitute for the conventional fixed partial prosthesis which is used mainly for missing single anterior tooth. Lividitis and Thompson first proposed microscopically roughened intaglio surface of a non-precious-alloy bridge framework for providing mechanical retention to the tooth structure through an adhesive luting cement relying mainly on mechanical retention.[4,5] The proximal and lingual enamel of intact teeth has been used to retain the restoration.[6] Maryland Bridge typically consists of a metal ceramic pontic attached to the two metal wings extending on the abutments. A more conservative approach, avoiding the excessive preparation is possible in the Maryland Bridge. Cementing the wings to the palatal/lingual surface of the abutment teeth is responsible for this advantage.[4] Debonding between tooth structure and metal prosthesis is the common failure reported. Improvement in bonding techniques, materials and modifications in the design of the flanges to increase the bonding surface have been tried to overcome this failure.[7,8] However Current generation designs are based on the same concept of tooth preparation since the better bonding systems are available.[4] Mechanical retention preparation design acts as adjunct for adhesive cementation of the alloy to the tooth structure in allowing the casting to be supported by abutment teeth. A single path of insertion of the prosthesis is ideal to avoid the displacement of the prosthesis along any other path except the path of insertion of the prosthesis.

CONCLUSION

The primary advantage of Maryland Bridge is the design of the preparation. A conservative approach with precision is applied for the tooth preparation for fixed partial denture. Retention was improved with more retentive alterations in framework designs like addition of grooves in preparations. The technique can be very successful but it must be approached carefully.

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