CASE REPORT

MARYLAND BRIDGE

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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 treatment modality. This article presents a case report on resin bonded bridge.

Key Words : Resin bonded bridge, bonding, resins cement.

J Odontol Res 2015;3(1)54-57.

INTRODUCTION

Resin bonded or resin retained bridges (RBBs/RRBs) are minimally invasive fixed prostheses which rely on composite resin cements for retention. These restorations were first described in the 1970s and since then they have evolved significantly. The major disadvantage of conventional fixed partial denture is the destruction of tooth structure required for the abutment preparation upon which the retainers will be placed. Resin bonded fixed partial denture is an alternative to the conventional fixed partial dentures which require only minimal preparation of the abutments.

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, 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 procedures[1]. This article presents a case report on resin bonded bridge.

Case report

A male patient, aged 40 years presented with missing lower central incisors(fig.1, 2). Patient gave a history of loss of teeth due to trauma one month back. Periodontal health of the abutments were found to be compromised. After considering the patient's wish and the clinical situation, the option of removable partial denture, fixed partial denture and implant were eliminated and it was decided to replace the missing teeth with a Maryland bridge. Tooth preparation for both 32 and 42 was done following the standard technique. Lingual preparation ended 1mm from the incisal edge and a chamfer finish line was prepared 1 mm supragingivally (fig. 3). An impression was made in addition silicone impression material and sent to the laboratory. The laboratory technician was instructed to keep the metal wings of the prosthesis 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 embrassure areas (fig. 4, 5). After isolation with a rubber dam, the Maryland bridge was cemented using resin cement (fig. 6 , 7). A follow-up was advised.

Discussion

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 advantages and disadvantages. Patient awareness of the advantages and disadvantages of different treatment modalities is very important for decision making, therefore there are many factors making teeth replacement one of the most challenging restorations in dentistry. [2]

The term 'Maryland Bridge' resulted from the development of a type of electrochemical etching at the University of Maryland. Electrolytic etching were performed by 3.5 % solution of nitric acid at 250 mA current for 5 minutes followed by placing in 18%hydrochloric acid for 10 minutes in ultrasonic cleaner. This procedure is used for non- beryllium Ni- Cr alloys or 10 % solution of sulphuric acid at 300mA current followed by the same above mentioned procedure is used with beryllium containing Ni- Cr alloy.

The three most common complications associated with resin-bonded prosthesis are debonding (21%), tooth discoloration (18%) and caries (7%).[3] Even after 10 years of service the periodontal response for resin bonded fixed partial dentures is minimal[4]. From a clinician's perspective, the main advantage of RBBs is that, in comparison to conventional bridge preparations, they are conservative of tooth structure[5].

Biological reasons for failure include caries and periodontal disease but these occur relatively rarely[6]. 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 finalised following bridge cementation. The most common technical reason for RBB failure is debonding[5]. Authors have reported that debonding does not appear to affect patient satisfaction[7, 8] and there is usually limited damage to abutment teeth.

If a bridge debonds there are two options: remake or recement. If a one off event such as 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[9] and recementing for a second time is generally ill advised as replacing the bridge has been found to have a higher success rate.[9] This is probably because in the majority of failed cases, there is an inherent problem with bridge design which may have been present at initial cementation and/or developed since. When only one retainer fails, the bridge is likely to remain in situ promoting the development of caries beneath the failed retainer[10,11]. Where there is a fixed-fixed design and only one side is loose, attempts can be made to

Figure 1&2 - Preoperative intraoral view

Figure 3 - Teeth preparation of 32&42

Figure 4 - Lingual view of Maryland bridge

Figure 5 - Maryland bridge

Figure 6 - Postoperative extraoral view

Figure 7 - Postoperative intraraoral view

remove the retainer that is still in place with the help of an ultrasonic scaler. Parafunctional forces increase the likelihood of restoration failure, especially where the occlusion has not been accounted for. Any habits should be identified during the assessment phase and the patient should be counselled to avoid habits like nail and pen biting. When bruxism is suspected the prescription of a night guard or occlusal splint should be considered.

Metal connectors may shine-through translucent incisors causing them to appear grey and in fact Djemal et al. [7] reported that the metal of the retainer was the most common reason for patient dissatisfaction with their RBB. Greying can be reduced to an extent by the use of opaque cement and careful retainer design, avoiding extending the metal to within 2 mm of the incisal edge, where the enamel becomes relatively more translucent.

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