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Case Report

USING A PARTIAL VENEER CROWN AS A CONSERVATIVE RETAINER IN FIXED PROSTHODONTICS

Krati Jain[1], Khurshid Mattoo[2]

[1]Department of Prosthodontics, Subharti dental college, Subharti University, Meerut, India
[2]Department of Prosthodontics, College of dentistry, Jazan University, (KSA)

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For Correspondence
Email ID: drkamattoo@rediffmail.com

Abstract:
More often than not, partial veneer crowns have been the most under rated retainers in fixed Prosthodontics. While the problem of casting shrinkage with base metal alloys is justified, it is also true that the advent of resin cement has broadened the scope of such retainers. Meanwhile, patients who practice good oral hygiene measures and have a low caries index seem unquestionable choice for such retainers. This article presents a case report of a male patient who was successfully rehabilitated with a fixed partial denture in which both retainers were partial veneers.

Keywords: **conservative preparation, resin cement, crown, bridge, veneers.**

Introduction

Conservation of natural tooth structure continues to be an important aspect of preventive dentistry, especially in present times where cloning has become a reality. Advent of implant supported prosthesis has significantly eliminated using two abutments to support a pontic. However, because many of the patients cannot opt for implant supported prosthesis, the branch of fixed Prosthodontics will always find some users even in the distant future. An important conservative aspect of fixed partial dentures (two/three/more Unit Bridge) that has been underutilized is definitely the use of partial veneer crowns as retainers for a three/four unit bridge. Among various technical reasons, the most important being related to basic property of the base metal alloys that shrink after solidification thereby rendering the margins open which promotes secondary caries. Burnishable alloys like gold alloys overcome such marginal discrepancy. Other limitations to use of partial veneer retainers are the technical sensitivity that is associated with such type of retainers. The chances of esthetic and retentive failure are more if one does not know the preparation, especially that of incisal/occlusal third and the retentive grooves. [1-2]

Conservative advances have also seen the development of resin cements in the past

decade along with the rise in the use of fluoride containing cements both in restorative and prosthetic treatments. These cements have been primarily developed to decrease the incidence of secondary caries in areas where oral hygiene measures are inaccessible. This article in the form of a clinical report presents a case where a patient with low caries index and excellent oral hygiene maintenance resulted in the successful rehabilitation of a patient with a fixed partial denture utilizing two partial veneer crowns as retainers.

Clinical Report

A female patient aged 28 years reported to the department of Prosthodontics with a chief complaint of unaesthetic smile due to missing right first premolar, extracted six months back due to caries. Medical history was non-contributory. Social history revealed that the patient was working as a reception in a private firm. Dental history revealed the use of adequate oral hygiene measures, low caries index, good patient attitude towards dental and personal care. Extra oral examination showed normal facial features. Intra oral examination presented a Kennedy class three partial edentulous situations with well-formed edentulous ridge and clinically sound anterior and posterior abutment **(Fig 1A)**. Treatment plan presented to the patient included the prosthetic option of an implant supported single crown, a removable partial denture or a conservative fixed partial denture. The patient opted for a fixed partial denture with a conservative approach. After obtaining the informed consent from the patient, the treatment was started by making preliminary impressions using irreversible hydrocolloid (CA 37; Cavex, Haarlem, Holland) from which diagnostic casts were made and mounted on a semi adjustable articulator (Hanau) (Waterpik, Ft Collins, CO, USA) with the help of a face bow (Spring Bow, Waterpik, Ft Collins, CO, USA). After thorough evaluation of the abutment teeth on the diagnostic casts along with radiographic evaluation, the preparations of the abutment teeth were made **(Fig 1B)**.

Respective preparation for two retainers was done at the same appointment **(Fig.1B)**, following which gingival retraction (Traco; VOCO GmbH, Cuxhaven, Germany) and final impressions were made using addition silicone elastomer (Reprosil, Dentsply/Caulk; Milford, DE, USA) **(Fig 1C)**. Temporary fixed partial denture was cemented with non eugenol zinc oxide cement (Pre Vision Cem; Heraeus Kulzer). The metal framework obtained from the laboratory was thoroughly evaluated on the working cast before clinical trial was done **(Fig 1D).** After thorough evaluation of the casting and the restoration, the final fixed partial denture was cemented using a resin cement (Super Bond, C&B-Metabond, Parkell, Inc. U.S.A) in relation to the partial veneer retainer **(Fig. 2 A and B)**. The patient was followed up at 1 week, 1 month, 3 months, 6 months and then yearly for a period of 5 years. The patient continues to be under follow up. No problems have been reported till date and the patient is highly satisfied with the outcome of the prosthesis.

Discussion

Partial veneer three quarter crowns when placed on the anterior and posterior natural teeth conserves the highly aesthetic facial surface of the natural tooth along with the exact contour of the tooth involved. Their use in fixed Prosthodontics dates to more than nine decades. [3] With advances in adhesive resin cements there are reports of using gold and metal onlays in restoration of natural teeth. [4, 5] Using a partial veneer retainer for this case was justified because it was possible to place parallel proximal grooves of adequate length without compromising the bulk of the tooth. Partial veneer retainers are versatile in conservation

as maximum retention for restoration is obtained with minimal sacrifice of tooth structure and without pulp encroachment. [6-8] Other favorable aspects in the existing case included vital abutments, low caries index, sufficient tooth structure to allow placement of the grooves or modification of planes, less bulky cingulum in relation to canine, non-ovoid canines, adequate bulk of the abutment and a favorable occlusion.

While diagnosing a case where partial veneer can be used as a retainer it is important to identify the future position of the proximal grooves. Proximal grooves in partial veneers require tooth preparation in the appropriate location with the correct shape; they also have to be cut parallel to each other and to the long axis of the tooth. Adhesive cement used in this case is a 4-META resin (C & B Metabond, Parkell, Farmington, N.Y.) because of its relatively high surface energy characteristic and strong bond to dentine and metal. [9]

Conclusion

Partial veneer crowns are excellent retainers for fixed partial denture in patients with low caries index and good oral hygiene. Resin cements provide benefits of excellent retention and less chance of secondary caries. However, clinical studies need to be conducted for long term use of such treatment options.

Figure 1: (A) Intra oral view of Kennedy class I partial edentulous situation (B) Abutments prepared for partial veneer retainers (C) Putty reline final impression (D) Three unit fixed partial denture with partial veneer retainers

Figure 2: (A) Partial veneer retainers cemented with resin cement (B) the fixed partial denture replacing missing first premolar showing life like appearance

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