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ABSTRACT:
Resin-bonded fixed partial dentures (RBFPDs) have gone through substantial development and refinement in the recent past years. Dentists often question the use of resin-bonded fixed partial dentures (RBFPDs) for reliable restoration of tooth-bound edentulous spaces. Initial attempts at bonding fixed partial dentures on teeth resulted in early failure due to debonding. In the present review, we aim to highlight the recent literature of resin bonded field partial dentures.

Key words: Edentulous, Denture, Resin-bonded

INTRODUCTION
Often, in patients with congenitally missing teeth, a therapeutic challenge is imposed. When replacing an incisor, the dentist has the following options: (1) an implant-supported single crown, (2) a conventional fixed partial denture (FPD), or (3) a resin-bonded fixed partial denture (RBFPD). The implant-supported crown may not be advisable when available bone volume is minimal, or when the adjacent root is in close proximity. RBFPD can be used successfully to replace missing teeth. Clinical guidelines and indications for modified ceramic resin-bonded fixed partial dentures include (1) vital and noncarious abutment teeth, (2) a missing maxillary lateral incisor or mandibular central or lateral incisor, (3) minimal or no occlusal contacts on the abutment framework and pontic, and (4) shallow incisal guidance to avoid a steep vertical overlap. Mandibular incisors are involved primarily in protrusive movement, with more than 40% not involved in occlusion. Both glass-ceramic and high-strength oxide ceramic can be used to produce optical properties similar to those observed in natural teeth. In general, three-unit fixed partial denture (FPD), restorations based on single-tooth implant, or resin-bonded fixed partial denture (RBFPD) are conventional treatment methods commonly used for replacement of a missing mandibular incisor. One major requirement for the three-unit FPDs is to remove substantial amounts of tooth structure where preservation of the pulp is a problem. Due to small axial diameters in the mandibular incisors, preparation of the tooth would be challenging. Because of limited space and compromised quality and quantity of both hard/soft tissues, single-implant supported restorations are not always able to fulfill all the biomechanical and esthetic requirements. All-ceramic crowns in general have a number of advantages compared with conventional metal-ceramic crowns. First, esthetic properties of these ceramics are better due to the translucency of the composite resin luting material that is more than conventional cements used with porcelain fused to metal crowns. Although the early RBFPDs were considered as conservative, reversible, and cost-effective procedure for replacing missing teeth, significant numbers of debonds were observed among many clinical successes. The debonding of the early RBFPDs was initially attributed to the weak link of the adhesive interface (metal-to-cement bond). To enhance the attachment of the resin cement to the metal surface, several techniques were developed; these included electrolytic or chemical etching of the casting to produce surface microroughness and macromechanical retention devices, such as incorporation of a mesh framework. Micromechanical retention through air abrasion with aluminum oxide, as well as the use of a silicoater, are currently used routinely for inducing surface microroughness of the metal surface. Resin cements used for cementation of RBFPDs went through a number of changes. Current chemically active resin cements have superior capabilities of bonding to base metal alloys and to treated or etched dentin, with simplified adhesive techniques.

LITERATURE
Wyatt CC summarized recent information concerning its success and failure. A MEDLINE search using key words describing RBFPDs was carried out to identify pertinent English articles appearing in peer-reviewed journals since 2000. The principle reason for failure of RBFPDs remains debonding of the framework from the abutment teeth. Selection of nonmobile abutment teeth, preparation to enhance retention and resistance form, choice of the appropriate alloy and metal, and tooth bonding technique are the keys to success. The use of cantilever and nonrigid attachments may decrease interabutment forces and reduce debonding of retainers. The survival rate of RBFPDs is still considerably lower than that of conventional fixed partial dentures. Although RBFPDs can be used in both the anterior and posterior regions of

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the mouth to replace 1 or 2 missing teeth, careful abutment selection, tooth preparation, alloy selection and bonding technique are critical for clinical success.\textsuperscript{10–12} Moslehifarid E et al described a treatment option for replacement of a missing mandibular anterior tooth using InCeram resin bonded fixed partial denture (RBFPD). The conventional approach for replacing mandibular incisors dictates the placement of either a conventional porcelain-fused-to-metal (PFM) bridge, Maryland bridge, or fiber-reinforced composite veneer bridge and several appearance-related disadvantages have been reported in the use of a prosthesis that incorporates a metal substructure. The InCeram bridge is a minimally invasive restoration and eliminates undesirable incisal graying frequently observed in metal RBFPDs. This method was successfully clinically applied to overcome shortcomings of other approaches that may require a minimal invasive technique to preserve lasting sound tooth structure.\textsuperscript{13} Ghavamnasiri M et al described the case report of a 42-year-old woman who presented with an extracted left maxillary second premolar. The first maxillary molar had been crowned 10 years ago and the first premolar had a small carious lesion in the mid distal of proximal aspect. To eliminate unnecessary cutting of the PFM of the first molar and crown preparation of the first maxillary premolar, the use of RBFPD was suggested and accepted by the patient. They described the indication, the selection of a PFM-crowned abutment, and clinical procedures involved in the fabrication of RBFPD that provided a conservative solution for replacement of one posterior tooth. RBFPDs can be used successfully in both the anterior and the posterior regions of the mouth to replace one or two missing teeth. However, the survival rate of RBFPDs is still considerably less than that of conventional fixed partial dentures. The principal reason for failure is debonding of the framework from the abutment tooth. The selection of nonmobile abutment teeth, the preparation design that enhances retention and resistance form, and the tooth bonding technique are critical for success.\textsuperscript{14} Minesaki Y et al investigated whether pre- or posttreatments could improve the bonding of denture tooth pontics. A model fixed partial denture was fabricated that included composite denture teeth (Endura) bonded with 1 of 2 resin systems (C&B-Metabond or Aeliteflo). The bonding surface of the pontic was pretreated with one of three methods (air-particle abrasion [AA], AA plus silanization, or cavity preparation plus AA). The bonding areas between pontic and abutments were posttreated with 1 of 2 methods (reinforcement with fiber or metal post). Five bonded specimens for each treatment group were subjected to 20,000 thermocycles before retentive forces (N) were determined. All data were analyzed with two-way ANOVA and Bonferroni’s test. For the specimens bonded with C&B-Metabond and posttreated with a polyethylene fiber (Ribbond) or a metal post (DC Post), the mean Retentive forces were 316 N and 301 N for mandibular specimens, and 354 N and 380 N for maxillary specimens, respectively. These values were significantly higher than those obtained with other pretreatment methods. For mandibular specimens bonded with Aeliteflo, specimens posttreated with Ribbond exhibited significantly higher retentive forces (332 N) compared to other specimens. Within the limitations of this study, the bond strength of a resin-bonded fixed partial denture incorporating a composite denture tooth as the pontic was improved by reinforcement with either a polyethylene fiber or a metal post.\textsuperscript{15}

**CONCLUSION**

The survival rate of RBFPDs is still considerably lower than that of conventional fixed partial dentures. Future research should be carried out for exploration of this field of dentistry.

**REFERENCES**


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