

# AN INNOVATIVE TECHNIQUE ALL-CERAMIC RESIN-BONDED BRIDGEWORK

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## SUMMARY

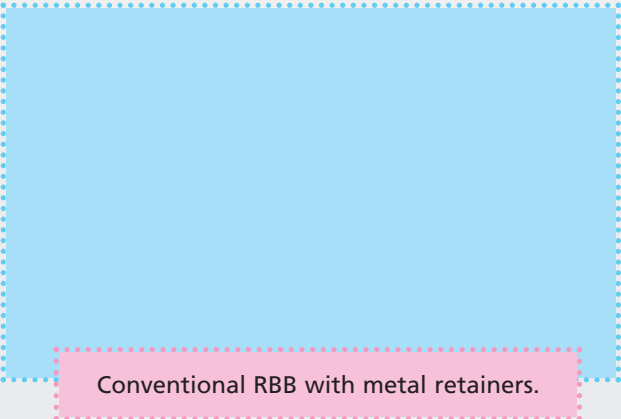
Resin bonded prosthesis is a prosthesis that is luted to tooth structure, primarily enamel, which has been etched to provide micro-mechanical retention for the resin cement (The Glossary of Prosthodontic Terms, 1994). Furthermore the retainer(s) is/are made of base metal. (Fig. 1).

In this case an all-ceramic cantilevered RBB was made and fitted to restore an unsavable upper central incisor. To our knowledge, this is the first time ever to report a free meta ceramic cantilevered RBB.

## INTRODUCTION:

Resin-bonded bridgework (RBB) is currently accepted as an effective method for the restoration of missing teeth in a arrange of clinical situations (Al-Wahadni & Hussey, 1999). While

many RBB cases utilize a fixed-fixed design, cantilevered designs are alternative and appear to perform as well as fixed-fixed designs in clinical situations (Hussey & Linden, 1996). There are situations in which RBB should or should not be used, as well as features that should be considered in deciding that one is the treatment of choice for replacing a lost tooth. Advantages for RBB included; reduced cost, no anesthetic needed, minimal tooth preparation & rebonding possibility. On the other hand, disadvantages included; uncertain longevity, no alignment or space correction & difficult temporization (Shillingburg et al., 1997).



Conventional RBB with metal retainers.

Probably, the main reason behind debonding is the bond between the etched tooth structure and the sandblasted fitting surface of the retainers (wings).

Dental porcelains play an important role in the fabrication of the most esthetic fixed restorations. Translucency, light transmission and biocompatibility give dental ceramics highly desirable esthetic properties. The first all-ceramic crown was developed by Land in 1886 and was known as the porcelain Jacket crown (Shillingburg et al., 1997). As the demand for more natural-looking crowns has increased in recent years, dentist and porcelain manufacturers have investigated a variety of methods to reinforce ceramics with the ultimate goal of a ceramic material that possesses not only a high level of esthetic and soft tissue acceptance, but sufficient strength to allow the fabrication of fixed bridges. IPS Empress was one of these newly developed ceramics which meets the above requirements. The newly developed pressed Empress ceramic is a lithium disilicate glass-ceramic and because of its strength it permits the fabrication of all-ceramic bridges.



All-ceramic cantilever RBB.



Palatal view of the RBB.

**CASE REPORT:**

A 40-year-old female presented with an unsaveable upper left central incisor. The patient was advised to have the tooth extracted and the options for restoring the space were discussed with

her. Due to cost and preservation of tooth structure factors, the patient decided to go ahead with RBB but with one exception having the wings metals replaced with ceramics!. The option of



Preparation.

having all ceramic RBB was discussed with the dental technician and the decision was taken to fabricate the bridge in IPS Empress 2.

The patient was healthy and had no facial asymmetry or extra-oral lesions. Intra-oral examination revealed good plaque control, no gingivitis and a low rate of caries. However the incisal edge of the upper right central incisor has a marked attrition. An orthopantogram and periapical radiographs of the incisor teeth confirmed that bone support was good for all teeth and there were no abnormal findings.

Alginate impressions of the maxillary and mandibular jaws were taken and study casts were fabricated. Occlusal analysis and a diagnostic wax-up were carried out and the outline form of the retainers was determined. The waxed-up models were presented to the patient for her consideration and she confirmed that she was keen to proceed with the treatment. Eventually, it has been decided to provide the patient with a cantilevered RBB and the upper left later incisor, which has a considerable size, was chosen to serve as abutment for the bridge rather than the upper right central incisor due to the attrition of the incisal edge. Patient was told that the incisal edge better conservatively restored with composite restoration.

At the subsequent visit the palatal surface of the upper right central incisor was prepared with shoulder and deep cingulum rest (Fig. 2) and a master impression was recorded in an addition cured polyvinylsiloxane material (Empress, 3M). The technician fabricated the bridge using IPS Empress 2 (Ivoclar, Liechtenstein) using staining technique (Fig. 3).

After trying-in the bridge, the fitting surface of the retainer was etched with 18% hydrofluoric acid. The abutment teeth was etched with 37% phosphoric acid for 40 seconds, washed with water for 40 seconds, and dried with oil-free air. The

## REFERENCES

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Labial View of the RBB.

socket-fitted bridge was inserted under rubber dam using a resin composite cement (Mirage, USA). Following removal of the rubber dam the occlusion was checked for interferences in centric occlusion and in lateral excursions. The patient and the all-ceramic RBB remain under review and 6 months after placement the bridge was functioning well (Figs. 4 & 5).

## CONCLUSION:

This case demonstrates the all-ceramic RBB may be as successful as conventional RBB designs which has a known survival rate. However more cases, with longer observation periods, need to be studied before a definite conclusion of the clinical performance of such module is reported.