Resin Bonded Prosthesis

Dr Geeta Paul
Professor, Dept of Prosthodontics

Dr Rahul Paul
Professor & Head, Dept of Orthodontics

Inderprastha Dental College & Hospital, Sahibabad

Abstract

Fixed prosthodontic treatment improves patients comfort and masticatory ablity ,maintains the health and integrity of dental arches and elevates patients self image .But all patients who desire fixed partial denture are not candidates for conventional fixed teeth,. e.g. in mandibular anterior region, where conventional fixed prosthesis can not be given. The imaginative approach to deal with such situations is by composite resin bonded metal retainers or a fibre reinforced composite bridge.

Introduction

Fixed prosthodontic treatment improves patients comfort and masticatory ability ,maintains the health and integrity of dental arches and elevates patients self image .Treatment of choice for patients where conventional fixed prosthesis cannot be given, fibre reinforced composite bridge or resin bonded metal retainers are given .

Fibre reinforced bridge have a substructure veneered with a particulate composite material where as composite resin bonded metal retainers have high modulus non precious alloys which are etched and bonded to enamel with composite resin .These prosthesis have become more popular especially for treating the medically compromised ,indigent and adolescent patients .This approach has become alternative to conventional fixed partial dentures and removable partial dentures because these are economical, conservative, functional and do not irritate soft and hard tissues i.e. replacement of mandibular incisors .These bridges can be given to patients having periodontally weak abutments, less occlusal clearance, where there is need of splinting teeth as well as excellent aesthetics appearance. They are contraindicated in patients requiring long span bridges or having parafunctional habits .These bridges should receive significant attention after insertion .Hence frequent appointments should be followed to ensure success of the prosthesis.

Case Report

Case 1 : A 55 year old female residing in Delhi came to dental office with a chief complaint of having a big gap in the mandibular anterior teeth .She was unsatisfied with her appearance .on examination ,oral condition was periodontally ompromised .conventional fixed partial denture and regular space management techniques were not advisable .We wanted to opt for minimal invasive technique which could solve the problem .The best possible options were either to go for bonded or reinforced resin bridge itself .We opted for resin bonded bridge in her case .

Procedure : Tooth preparation was done by using a flat end tapering diamond bur.

Lingual surface :

1. Minimal preparation just enough to remove surface enamel since lingual surfaces are not in occlusion with maxillary anteriors.
2. Development of a cingulum rest seat, which acts as a vertical stop against occlusal forces.
3. Creation of inciso-gingival proximal surface.
4. Proximo facial extensions for retention without a metal display .
5. Rotational path of insertion was provided with one proximal surface having slight undercut .
6. Finish line was made supragingivally 1 mm from the crest of tissue .
7. Definite lingual ledges were formed to provide resistance form for the retainer to assist in.proper seating during cementation .The preparation was extended more than 180º of the tooth circumference in order to enhance retention .

Impression

An accurate impression was recorded using light body and putty elastomeric impression material to reproduce the tooth preparation .

Framework Fabrication

Wax pattern of the framework was fabricated and casted into nickel chrome metalceramic alloy .the sandblasting was done on tissue surface using aluminium oxide.Ceramic was added in the pontic area of the framework .

Acid Etching Of Retainer

Before proceeding to acid etching, areas to be avoided were blocked with paraffin wax .Acid etching was done in an electrolytic etching unit using 10% sulphuric acid for 3 minutes.

Then it was cleaned ultrasonically in 18% hydrochloric acid, washed and air dried.

Acid Etching Of Prepared Tooth

The prepared tooth surface was isolated, etched and cleaned .Composite resin cement was placed on the internal surface of the prosthesis and the restoration was slowly inserted .firm pressure was applied until complete seating was done. Excess material was removed and external surface was finished and polished after complete polymerization.

Case 2: A 60 year old female visited dental office with a similar chief complaint and oral condition as case 1. but this patient was allergic to nickel .so we opted for fibre reinforced bridge over resin bonded bridge .

Procedure

Preparation : Tooth preparation was done in similar manner as for resin bonded bridge on lingual surface with flat end tapering diamond bur .In addition to that, a thin groove like preparation was made on the lingual surface near the edentulous side on the corcnal half of enamel ,a chamfer margin was created on the remaining part of preparation.

After tooth preparation, the area was isolated and etched with 37 phosphoric acid for 40 seconds and cleaned .Bonding agent was applied on the prepared tooth surface..Glass fiber strip was cut according to the size of the preparation placed on the prepared tooth area..The pontic was build using indirect composite resin which is more viscous than clinically used direct composite resin .The glass fibres strip and pontic were bonded to the tooth surface using bonding agent and compsite mixture.The prepared prosthesis was finished and polished .

Discussion

In both the above discussed cases minimal invasive technique was considered over the conventional technique because of the limitations .This technique is indicated where single tooth replacement is required with excellent appearance without harming the supporting structures. These prosthesis are indicated for periodontally weak abutments which offer potential for bonding and to reduce the cost of restoration. It is contraindicated in patients requiring long span bridges , having parafunctional habits .The lingual surfaces of teeth involved are not in occlusion therefore the preparation needs only to be enough to remove surface enamel as occlusal clearance is not a problem.

Conclusion

The resin bonded prosthesis is not a preparationless technique as once thought but one that requires careful treatment planning and technical skill .Tooth preparation should be designed to counteract the tensile forces with adequate resistance and retention form and due consideration should be given to the enamel available for bonding .All these restorations should receive significant attention after insertion.

References

1. Contemporary Fixed Prosthodontics S.F.Rosenstiel
2. Fundamentals of fixed Prosthodontics H.T. Shillingburg
3. Resin bonded prosthesis Neelam Sharma ,Vijay Chitre

CASE - 1

PRE OPERATIVE **POST OPERATIVE**

CASE - 2

PRE OPERATIVE **POST OPERATIVE**