**Resin bonded bridges**

A fixed dental prosthesis replacing a missing tooth or teeth , it involve bonding of wing/s to the inner aspect of adjacent tooth with adhesive cements.

*Advantages* : very conservative , medium term restoration , good Px. , five Yr survival =87.7 % , splint periodontally involved teeth , depend on precise attachment and bonding between etched enamel and metal cast.

1. First generation : direct bonded restoration:

Extracted natural tooth / acrylic / composite , bonded to the proximal and lingual surfaces of abutment teeth .

*Disadv*. : poor success rate , limited strength , de-bonding , discoloration , brittle, for short ant. Span , short term .

1. Second generation : Rochette bridges

Bonding metal retainer to enamel using adhesive resin , to splint periodontally involved mand. Ant. teeth using perforated cast gold bar to get mechanical interlocking.

It need 2 visits , retention improved, it retained by acid etch on enamel , and chemical cure composite . , no preparation on tooth to cover a maximum area of the lingual surface, and so it limited to lower ant teeth.

Perforations weakened the metal , wearing OF resin , and limited adhesion .

1. Third generation : non perforated:
2. Myrland bridges which etched to increase micromechanical retention by chemical or electrochemical by 18% HCL , 10% H2SO4.

And the quality of etch depend on the acid that used , type of alloy ,, concentration , electrical current.

It provide good strength , hazards of chemicals and uniform patter need to the use of sandblasting by 50 µm AL to get roughed oxide layer of base metal and higher bond strength

*advan*. thinner but resist flexing , polished and resist plaque accumulation.

Limitation , etching need thicker wings, preparation may be needed, etching limited to base alloy.

1. Virginia bridges : wings treated to be visible macro-mechanical undercuts, by lost salt crystal "insoluble crystals create a positive and negative retention configuration."

Or lost mesh pattern technique " wax pattern."

 It need no etching so no worry about contamination BUT usually result in over contoured retainer.

1. Adhesive bridges: tin coating for Nobel metal alloy / or silicoating "fusion of a thin layer of silica to the metal fitting surface which react chemically with silane coupling agent .

All ceramic resin resin bonded bridges

 Metal connectors shine through , so All ceramic is alternative , glass infiltrated alumina .

Single retainer eliminate the problem of partial de-cementation due to flexion , and it shows even higher survival rates.

Canine is the abutment of choice when replacing laterals, they have long root , long crown, so retention increased, surface area of bonding also increase , rigidity and convexity of palatal surfaces.

Fabrication :

* Preparation , restoring the design , bonding
1. Preparation
* Outline and path of insertion , resistance and retention form , minimal metal display , prep. Remain in enamel
* Proximal undercuts must be removed , rest seat , groove/slots to provide resistance , distinct margin gingivally
* Sufficient enamel for bonding , retainer must encompass enough tooth structure
* Metal alloy used ,they are highly rigid and resist flexing when stress exert on the cement .
* 0.7 mm minimum dimension , 0.5-0.8 mm inter occlusal clearance and throughout movement , removal of centric occlusion (0.3-0.5 from an area of 2-3mm) ? , 1 mm supra gingival
* Interproximal finish line ends at the center of the contact point to max. wraparound and min. metal shine, as parallel as possible to increase the retention and reduce the black triangle
* Define the rest to provide retention and assist in positive seating during cementation , which act as vertical stop , at the most prominent part of the cingulum , if post. Teeth two occlusal rests to provide more surface area, prevent flexion, limit the horizontal displacement .
* Grooves 1/2 bur diameter , not show through labially
* Increase the resistance by more than half , 180 wraparound for post. Teeth and maintain the B-L curvature , stay 1 mm of the crest of gingival
* Wings extend one tooth M ,on tooth D , if splinting is used then cover more teeth.,
* Make an accurate impression , marginal fit , retention , stability , occlusion,.
1. Design :

Metal try in : single path of insertion , retention , occlusal interferences .

1. Bonding procedure : panavia" autocure composite resin provide high strength , due to chemical bond formation of phosphate group and oxide layer of metal.

Sandblasting create micro-mechanical retention and enhance the retention

Oxidation of Base metal increase the durability of adhesion rather than Nobel alloy

Zirconia is ineffectively etched ,

Indication of RBB

Missing anterior , young pt , short span , single post. Tooth , moisture control , max. obturators.

Contra indication : the opposite of indications + congenital problem ,deep overlap.

Advantegaes conservative , no pulp trauma , anesthesia not required , , no provisional , reduce chair time ,rebond is possible

Disadv : longevity , enamel modification , difficult to correct spaces, require good alignment ,compromise aesthetic.