

Flexible dentures

Clasp design



Dr. Tiba A. Salman

Flexible denture bases

- The flexibility of the major connector of the FRPD itself act as a stress breaker.
- The flexible base of the FRPD floats over the tissue leading to the stress distribution.
- As there is almost no load on the abutment tooth, no abutment tooth mobility is seen as is seen with rigid cast partial dentures.



MODELS, SURVEYING, AND TOOTH PREPARATION

- ▶ an accurate diagnostic model.
- ▶ Survey the teeth on the stone model: now a new concept. Metal clasps were all about survey lines, being above them or being below them. This concept, although important, is different with flexible partials.
- ▶ Polynylon/Valplast likes a **"survey zone,"** not a survey line. The survey line just indicates to you where you are going to take a fine-tapered diamond and do a little enameloplasty (Figure). Think of it as **making a 2.0 mm guideplane** that goes around the tooth. That survey zone, or circumferential guideplane, is the **generator of the required stability and retention**

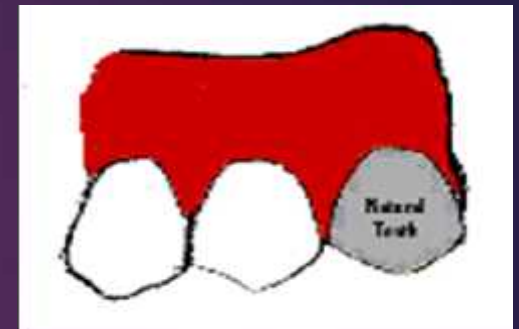


The clasps are also made up of flexible thermoplastic material **with excellent esthetics**. Different clasp designs are used

There are generally four main types of clasp used for retention in a Valplast partial denture.

1 - Wrap-Around Clasp

- The wrap around clasp is a type of retainer that rests on the surfaces of the natural gum tissues.
- It is the most common type of clasp.
- The wrap-around clasp originates from the buccal or labial flange of the denture base and traverses soft tissue to approach the abutment tooth from a gingival direction.
- For aesthetic purposes, this type of clasp often terminates $\leq 1\text{mm}$ onto the abutment tooth from a gingival direction, the tip of which falls into the embrasure between the abutment tooth and the next proximal tooth to it.
- The ideal shape and position of a wrap-around clasp is shown in Figure



This type of clasp is very retentive as it makes use of both tooth and tissue undercuts.

It is a good choice for retaining distal extensions and long spans of replacement teeth.

In order to ensure patient comfort, it is important to note that these clasps do not actually compress the tissues for retention, but should always be resting in direct contact with tissue while in a relaxed position.

If a gap is created by over-relief between the clasp and tissue, irritation could develop.

Figure 1 illustrates a wrap-around clasp that is placed too high on the natural tooth surface, compromising aesthetics and failing to make use of tissue undercuts.

Figure 2 demonstrates a wrap-around clasp that is overextended into the tissue undercut area, which may cause irritation to the patient, particularly upon insertion and removal of the denture as the clasp passes over high points of the tissue surface



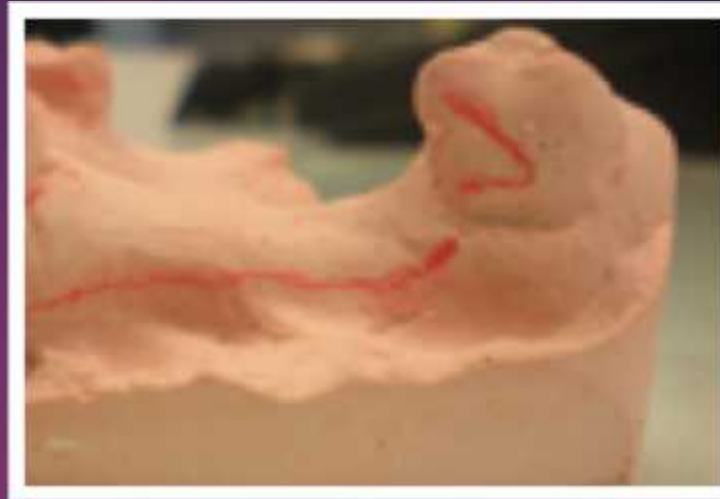
2- High Spur

In cases where the abutment tooth tilts to create a severe undercut making a wrap around clasp unfeasible, a high spur may be placed on the natural tooth.

As this is not ideal for aesthetic considerations, it is used mainly in posterior regions.

The high spur is a common retainer for Kennedy Class III cases and modifications where natural posterior teeth bound the edentulous span.

The high spur should be placed so that it enters along the height of contour and terminates in the infrabulge area of the abutment tooth



3- Low Spur

placed on the natural abutment tooth next to the replacement and positioned close to the neckline in a roughly triangular form so as to appear as natural interproximal papillae.

As they are more aesthetic than high spurs, they are mainly used in anterior areas.

Because they are placed so low on the labial surface of the natural abutment teeth they are seldom used in cases where the abutment teeth are tilted or flared to create severe undercuts.



4- Split Clasp

used whenever the suprabulge portion of the abutment tooth is very wide and narrows substantially towards the infrabulge area,

when a flared or tilted condition of the abutment tooth requires that the retentive arm pass over a very severe high point before engaging undercuts.

flexibility along both the vertical and horizontal axes of the junction.



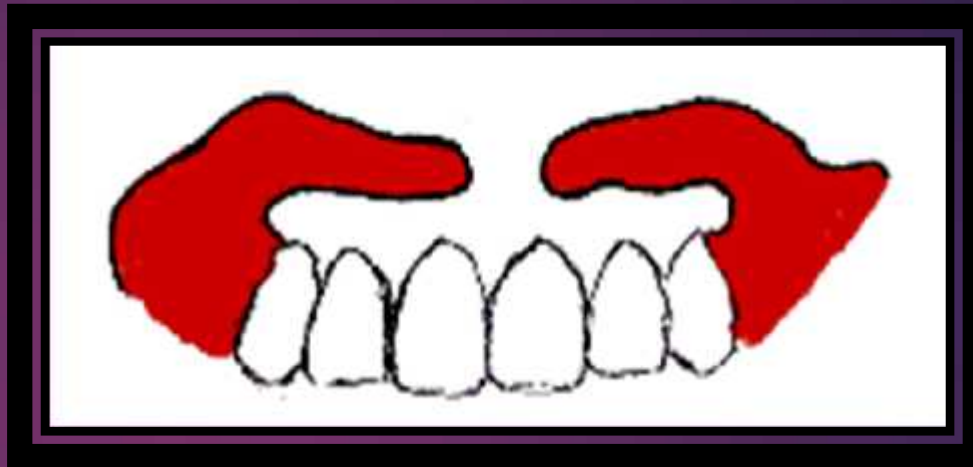
Clasp Variations & Alternate Retention

Anchor Clasp

A seldom used but occasionally useful design is the labial or buccal anchor clasp.

This clasp type is used mainly on maxillary full dentures in the labial region when large undercuts are present.

These should extend a two-teeth length from the junction point where the clasp meets the adjoining buccal or labial flange.



Labial Strap

In cases where abutment teeth exhibit a high degree of mobility, they may be splinted by use of a thin, flexible labial (or buccal) strap. As demonstrated by the case in the photos below, the labial strap may be fabricated with what is essentially a series of continued split clasps so as to avoid placing excessive strain on the abutment teeth upon insertion and removal of the denture.



Split Flange Retention

In cases with large protuberant structures along the alveolar ridge, the buccal flange may be “split” along the height of contour to create a flexible, retentive arm out of the lower half of the split flange (along the peripheral border)



Circumferential Clasp

The circumferential clasp was first suggested by Dr. Paul Kaplan, in 2008. This type of clasp completely encircles an abutment tooth for retention - ideal for freestanding distal abutments.



Combination Clasp

Another Kaplan design, this clasp is a combination of wrap-around and circumferential clasps that connect palatal/lingual and buccal components by crossing the occlusal table.

This clasp may provide more retention of the denture and stability of free end saddles than a standard wrap-around clasp, but does require some tooth preparation in order to be placed correctly.



CLASP DESIGNS TO AVOID

1- The "reach around" clasp design

waxed thick for adequate strength,
it becomes bulky and uncomfortable.



2- A hopeless 2-tooth clasp

hinge open,
providing no strength or retention.



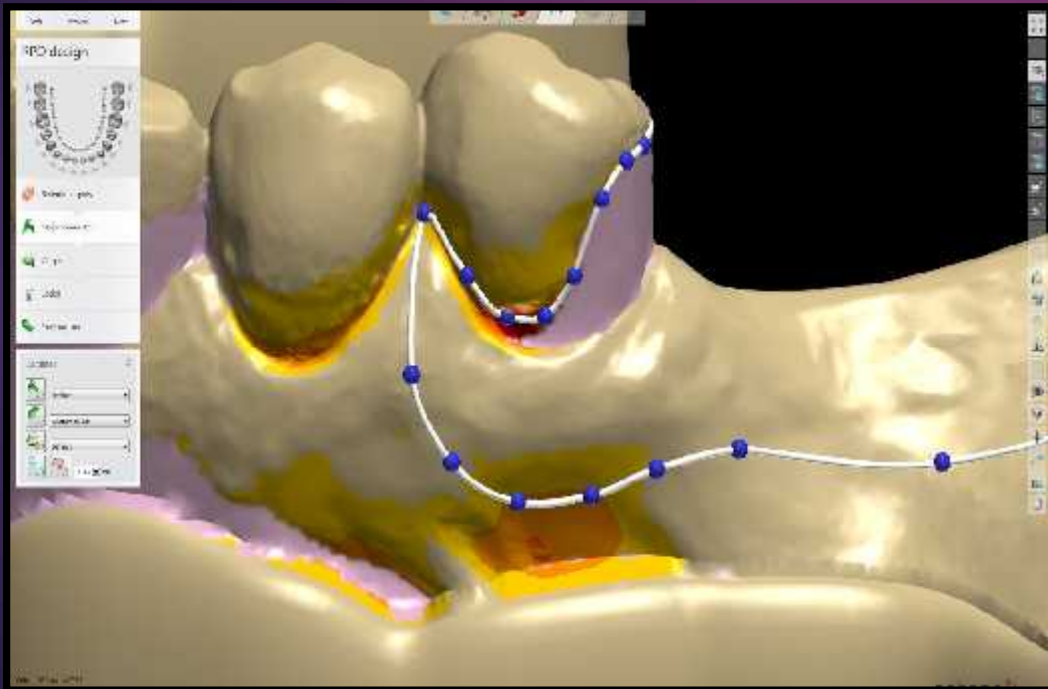
3- Separated clasps

lose strength and function.



3D Printing Valplast Flexible Partial

The r.Pod™ printer release in 2016, capable of printing original Valplast® nylon resin for flexible partial dentures. Valplast® dentures that are printed with the r.Pod™ are compatible with custom designed denture teeth that may be milled or printed.



Insertion and Adjustment

Partial must be placed in very hot water (150°F or more) for a minute prior to insertion and allowed to cool to a tolerable temperature. This process makes the partial as flexible as it would be at body temperature. This minimizes adjustments



Minor clasp tightening or loosening can be done by heating the clasp again in very hot water and bending it severely in the needed direction. This will purposely warp the area enough to change its position



Adjustment

Grinding should be done as a last resort.

Use a Standard Green Mounted Stone (used usually for porcelain) to adjust Valplast. 20K to 30K rotation and constant motion



