

Types of clasp assemblies

The clasps can be classified into the following:

1. Clasps Designed Without Movement Accommodation.
2. Clasps Designed to Accommodate Functional Movement:

Clasps Designed Without Movement Accommodation

Circumferential Clasp

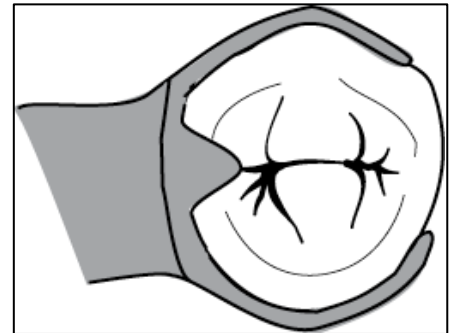
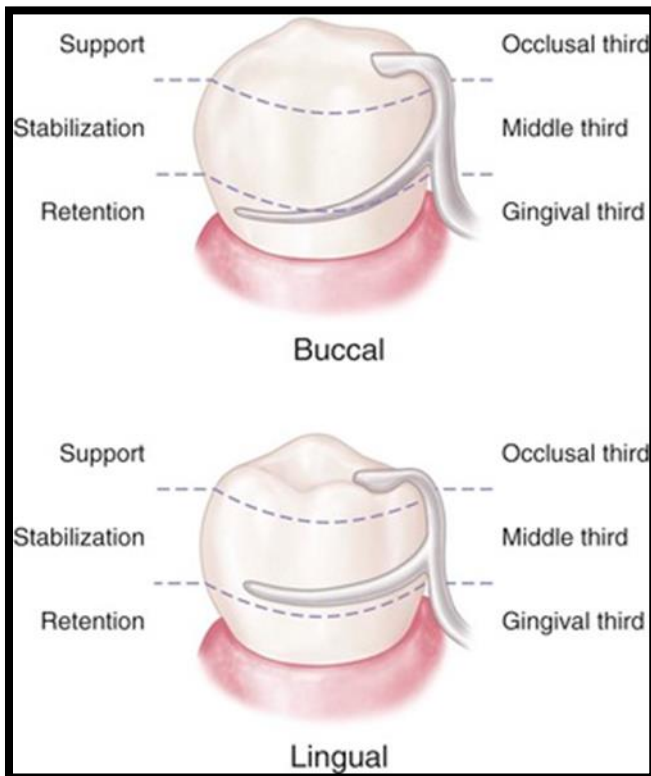
Although a thorough knowledge of the principles of clasp design should lead to a logical application of those principles, it is better when some of the more common clasp designs are considered individually.

The circumferential clasp will be considered first as an all-cast clasp.

The circumferential clasp is usually the most logical clasp to use with all tooth-supported partial dentures because of

its retentive and stabilizing ability. Only when the retentive undercut may be approached better with a bar clasp arm or when esthetics will be enhanced should the latter be used.





Characteristic and design:

- a. the most simple clasp (*clasp of choice in tooth-borne cases*)
- b. clasp assembly has one retentive arm opposed by a reciprocal arm originating from the rest
- c. the retentive arm begins above the height of contour, and curves and tapers to its terminal tip, in the gingival 1/3 of the tooth, well away from the gingiva
- d. the bracing arm is in the middle 1/3 of the tooth,

Advantages:

- 1. Excellent bracing qualities.

2. Easy to design and construct.
3. Less potential for food accumulation below the clasp compared to bar clasp.

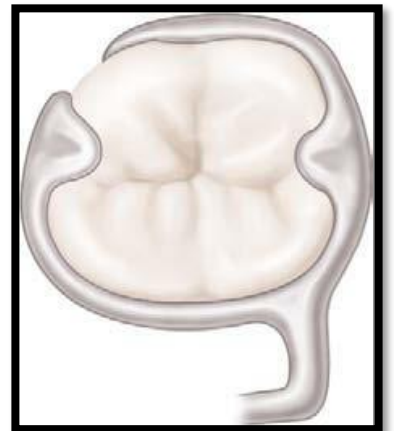
disadvantages:

1. More tooth surface is covered than with a bar clasp arm because of its occlusal origin.
2. more metal may be displayed than with the bar clasp arm.
3. Difficult to adjust.

2. Ring clasp

Charachteristic and design:

- a. Encircles nearly the entire abutment tooth
- b. Usually used with mesially and lingually tilted mandibular molars
- c. The undercut is (i.e. adjacent to edentulous span)
- d. Should always be used with a supporting strut on the non-retentive side with an auxiliary occlusal rest on the opposite side. Omission of the supporting strut will allow the clasp arm to open and close with minimum or no reciprocation.
- e. Use a cast circumferential clasp with lingual retention and buccal bracing



Disadvantages:

- a. Covers a large area of tooth surface, therefore requiring meticulous hygiene
- b. Very difficult to adjust due to the extreme rigidity of the reciprocal arms
- c. The lower bracing arm should be at least 1 mm from the free gingival margin and relieved to prevent impingement of the gingival tissues.

Contraindications: excessive tissue undercuts prevent the use of a supporting strut.

3. Embrasure (Double Akers)

Clasp:

Used In the fabrication of an *unmodified Class II or Class III partial denture, no edentulous spaces are available on the opposite side of the arch to aid in clasping.*



Charachteristic and design

1. Two rests, two retentive arms, and two bracing arms.
2. Double rests with definite shoulders to prevent weakening of clasp arms, separation of teeth and food impaction.

Disadvantages:

- a. Extensive interproximal reduction is usually required.
- b. Covers large area of tooth surface - hygiene considerations.

Other less common used modification of cast***circumferential clasps*****1. "C" clasp (Hair-pin or Reverse action)****Characteristic and design:**

The retentive area (undercut) is adjacent the occlusal rest.

Advantages:

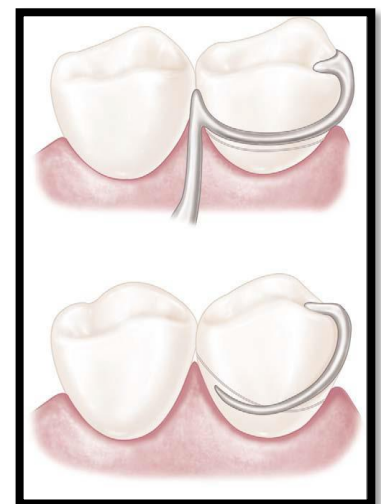
- a. Allows use of undercut adjacent to edentulous space

Disadvantages:

- a. Almost impossible to adjust.
- b. Non-esthetic.
- c. Difficult to fabricate.
- d. Covers extensive tooth surface and acts as a food trap.
- e. Insufficient flexibility on short crowns due to insufficient clasp arm length.

**2. Back-action Clasp****Characteristic and location**

1. The back-action clasp is a modification of the ring clasp.
2. Its use is difficult to justify.
3. clasp used on premolar abutment anterior to the edentulous space.

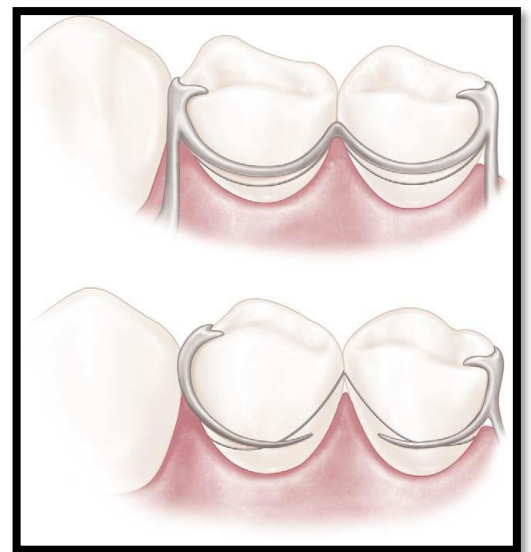


3. Multiple Clasp.

The multiple clasp simply consists of two opposing circumferential clasps joined at the terminal end of the two reciprocal arms .

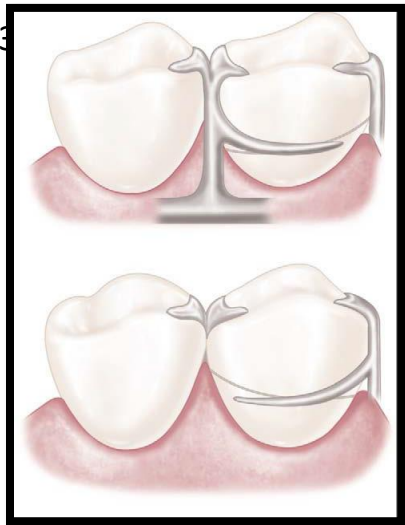
indication

1. It is used when additional retention and stabilization are needed, usually on tooth-supported partial dentures.
2. It may be used rather than an embrasure clasp when the only available retentive areas are adjacent to each other.



Half-and-half Clasp.

The half-and-half clasp consists of a circumferential retentive arm arising from one direction and a reciprocal arm arising from another. The second arm must arise from a second minor connector, and this arm is used with or without an auxiliary occlusal rest. Reciprocation arising from a second minor connector usually can be accomplished with a short bar or with an auxiliary occlusal rest, thereby avoiding so



prosthodontics

much tooth coverage. There is little justification for the use of the half-and-half clasp in bilateral extension base partial dentures.

Half and half clasp

Clasps Designed to Accommodate Functional Movement:

Clasp assemblies that accommodate functional prosthesis movement are designed to address the concern of a Class I lever. The concern is that the distal extension acts as a long “effort arm” across the distal rest “fulcrum” to cause the clasp tip “resistance arm” to engage the tooth undercut. This results in harmful tipping or torquing of the tooth, which is greater with stiff clasps and increased denture base movement.

1. the bar clasp with mesial rest (e.g. RPI)

2. the RPA clasp

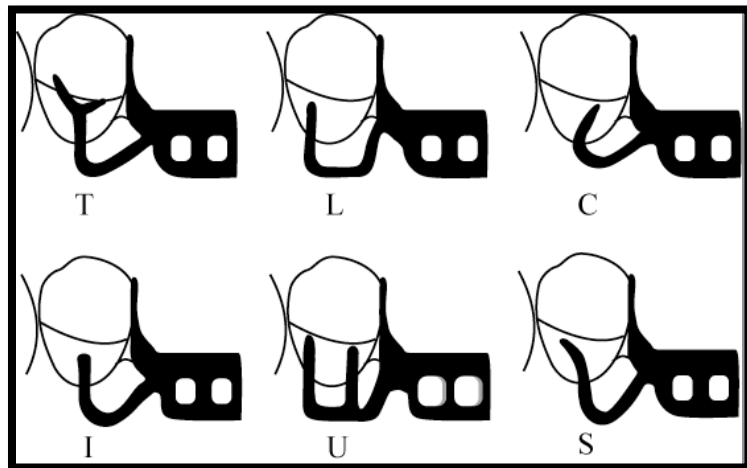
3. the combination clasp

1. Bar Clasps

a. The bar clasp is a cast clasp that arises from the partial denture framework and approaches the retentive undercut from gingival

prosthodontics

direction (as opposed to a circumferential clasp that approaches the undercut from the occlusal direction).



b. Retentive clasps are identified by shape of retentive terminal, i.e. T, Y, L, I, U, and S.

c. The shape is unimportant as long as the direct retainer is mechanically and functionally stable, covers minimal tooth structure with minimum display (the I bar most often meets these requirements)

Contraindications:

- a) deep cervical undercuts - food trap or impingements result
- b) severe soft tissue or bony undercuts - food trap or impingements result
- c) insufficient vestibular depth for approach arm (requires 4 mm - 3 mm from free gingival margin, 1 mm for thickness of the approach arm)
- d) pronounced frenal attachments in area – impingement

prosthodontics

The R-P-I Clasp

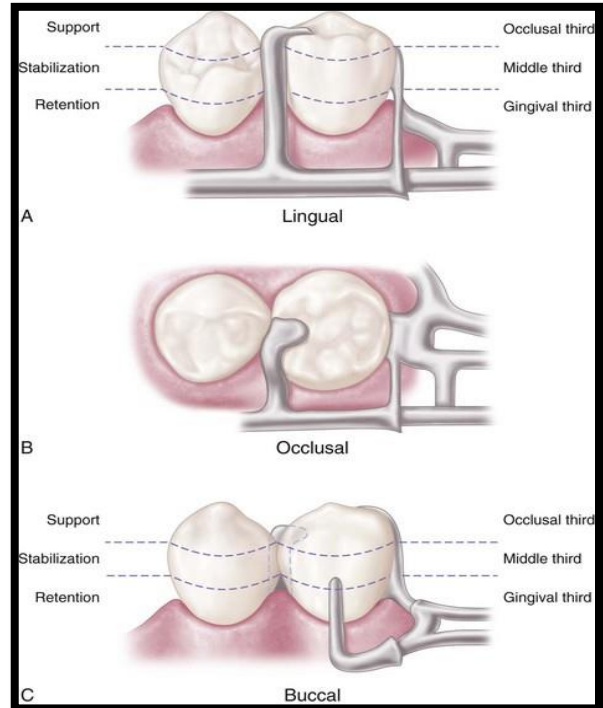
1. The components of this clasp assembly are:

"R" - rest (always mesial)

"P" - proximal plate

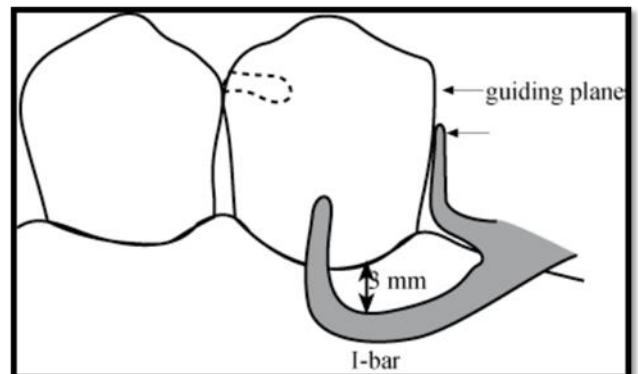
"I"-I-bar

- **The rest** is located on the mesio-occlusal surface of a premolar or mesiolingual surface of a canine. The minor connector is located in the mesio-lingual embrasure but is not in contact with the adjacent tooth (prevents wedging).



- **The proximal plate** is located on a guide plane on the distal surface of the tooth. The plate is approximately 1 mm thick and joins the framework at a right angle.

- **The I-bar clasp** is located on the buccal surface of the premolar and on the mesio-buccal surface of the canine. The I-bar originates at the

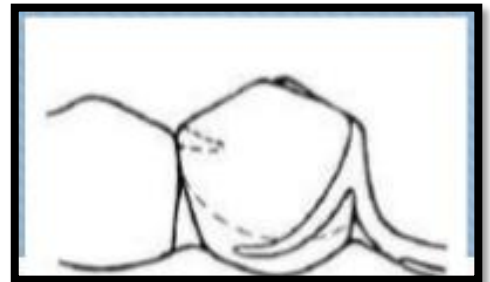


prosthodontics

gridwork and approaches the tooth from the gingival direction. The bend in the I-bar should be located at least 3 mm. from the gingival margin. This distance will prevent food entrapment and provide the length for the necessary flexibility in the clasp arm. The clasp is usually cast and is placed just below the height of contour line.

2. Aker clasp (RPA)

It consists of a mesial occlusal rest, proximal plate and a circumferential clasp arm, which arises from the superior portion of the proximal plate and extends around the tooth to engage the mesial undercut.



3. Combination Clasp

The combination clasp is similar to the cast circumferential clasp with the exception that the retentive arm is fabricated from around wrought wire (platinum-gold-palladium alloy or chrome-cobalt alloy).