Direct retainer

**Clasps:** can be divided into two types according to the direction of approach of the retentive arm to the undercut area into:

1. **Supra bulge clasps** (occlusally approaching, circumferential or encircling clasps): The **retentive arm** approaches the undercut area from the suprabulge direction.
2. **Infra bulge clasps** (gingivally approaching or bar clasp) The **retentive arm** approaches the undercut from the infrabulge direction, e.g.: bar clasp (I bar clasp)

**Types of Occlusally approaching clasp:**

1. Simple Circlet clasp (circumferential).
2. Half & half clasp.
3. Fish hook or hairpin clasp.
4. Reverse circlet clasp.
5. Embrasure clasp.
6. Ring clasp.
7. Back action and reverse back action clasp.

1. **SIMPLE CIRCLET CLASP** (circumferential):
   - Is the most common clasp used for removable partial denture
   - The least complex design, it has a rigid reciprocal arm, a rest, proximal plate approximating the edentulous area, and a flexible retentive arm.
   - It may be used on canines, premolars and molars.
disadvantages:
- 1- difficult adjustment
- 2- increase tooth coverage
- 3- more metal coverage

2- RING CLASP
The ring clasp is used on molars. Some designers advocate its use for tipped mandibular molars where there is only a mesial undercut on the tooth. It has mesial and distal rests and the reciprocal arm is continuous connecting the two rests. A supporting strut might be used to provide a rigid reciprocation area from the principal occlusal rest to the strut.

3- EMBRASURE CLASP OR BUTTERFLY CLASP:
The embrasure clasp is used when there is no modification spaces in the portion of the arch that needs retention. The clasp is in fact two circlet clasps back-to-back. It may be used on two molars, a molar and premolar or two premolars. Preparation of the double rest and channel going from the lingual to the buccal of the teeth needs to be deep enough for strength and not compromised by the opposing occlusion.
4-THE REVERSE CIRCLET CLASP

The reverse circlet clasp is used when the retentive undercut is located on the surface of the abutment tooth adjacent to the edentulous space. It is indicated in class I & class II distal extension partial dentures where deep tissue undercut precludes the use of infrabulge clasp.

Disadvantages:

1. It may be difficult to provide adequate room for clasp need removing a significant amount of tooth structure.
2. Poor esthetic
3. Lack of distal rest may allow the prosthesis to damage the associated structure and overcome by placing distal rest.

5-hair pin clasp or fish hook:

The fishhook or hairpin clasp is another modification of the circlet clasp. It is mostly used on teeth with long crowns. It is rarely used because so much of the teeth is covered by the retentive arm. The other difficulty is lack of flexibility of the retentive tip because of the bulk of the clasp and lack of esthetic.
The half and half clasp is a modification of the circlet clasp with the reciprocal arm coming from one direction and the retentive arm from the other. Two rests are used for this clasp. It is used on molars and premolars.

2-Gingivally approaching (BAR CLASP):

-which enter the undercut crossing the gingival margin. This type have a push type of retention

-low retentive value compared to other types

-this is due to minimal tooth engagement

Uses:

Consist from 2 parts:

1-approach arm : it is a minor connector that connect the retentive tip to the denture base.

2-retentive terminal : it should end on the surface of the tooth below the undercut.
INDICATIONS OF BAR CLASP

1-Small undercuts exist in cervical third of abutment tooth.
2-tooth supported partial dentures or tooth supported modification areas.
3-distal extension base situations
4-esthetic consideration

CONTRAINDICATION:
1-sever soft tissue undercut
2-height of contour locate near occlusal surface

There are several modifications for like I-bar, T-bar ,modified T-bar and Y-bar

I-BAR SYSTEM(RPI system)used in free end extension (CL I&CL II)

Modified type of roach clasp to reduce tooth contact

R-REST(MESIALLY)  P-Proximal plate  I- I-bar clasp

○ ATTACHMENTS(EXTRA CORONAL)

○ what is mean of attachment?
Is a connector consisting of two or more components. One component is connected to a tooth or tooth root, or an implant and other component is connected to a prosthesis located outside the normal clinical contours of abutment crowns, extracoronal attachment derive their retention from closely fitting component from closely fitting component termed matrices and patrices OR key and key way. Many of these permit vertical movement of prostheses during occlusal loading. This mechanical accommodation is intended to minimize the transfer of potentially damaging forces to the abutments. This concept has led to (stress breaking) theories of removable partial denture design.

**Advantages**

- Elimination of visible retentive arm of clasp component and visible vertical support through the rest seat.

**Disadvantages:**

- 1- require pre-prepared abutment
- 2-complicated clinical and laboratory work
- 3-it wear
- 4-difficult to repair and replace
- 5-least effective with short teeth
- 6-expensive
INTRACORONAL DIRECT RETAINER:-

resides within the normal contours of abutment and functions to retain and stabilize a removable partial denture.

consist of two distinct component :-

1-matrix : is a metal receptacle contained within the normal clinical contours of a fixed restoration.
2-patrix : is attached to the corresponding removable denture
REQUIREMENT OF INTRA CORONAL RETAINER:

1- When two or more intracoronal attachments are used in a single removable partial denture, the precise parallelism of all matrix and patrix is essential. Parallilism results in a well defined path of insertion and removal and in mechanical binding when off-axis forces are applied to the prosthesis.

2- The binding phenomenon is considered major factor contributing to retention.

This type may be subdivided into 2 categories:
1- precision attachment: the components are fabricated from metal using high precious manufacturing techniques. These attachments usually exhibit long, parallel walls and exceptional surface adaptation.
2- semiprecision attachment: less intimate fit between matrix and patrix component. Often display gently tapering walls with plastic pattern.