Retainers
Retention

Is the resistance of the partial denture to displacement away from the tissues
Physical means of retention

Adhesion

Interfacial surface tension
Physical means of retention

Atmospheric pressure

Gravity
Physiological

A. physiological molding   B. Neuromuscular control
Mechanical

Parts of the denture engaging tooth undercuts
Mechanical

Parts of denture engaging tissue undercuts

Buccal
Mechanical

Indirect retention
Clasps

- Metal projections engaging abutments to hold denture in place
CLASP RETAINERS

Occlusally Approaching

Gingivally Approaching
Clasp components

- Occlusal 1/3
- Middle 1/3
- Gingival 1/3

Survey line
- Stabilizing
- Retentive
Clasp components

- Support
- Stabilization
- Retention

Occlusal third
Middle third
Gingival third

Buccal

Support
Stabilization
Retention

Gingival third
Lingual
Diagram showing support, stabilization, and retention in buccal and lingual views of teeth. The sections are labeled as follows:

Buccal View:
- Support
- Stabilization
- Retention
- Occlusal third
- Middle third
- Gingival third

Lingual View:
- Support
- Stabilization
- Retention
- Occlusal third
- Middle third
- Gingival third
Basic Principles of a Properly Designed Clasp

1 - Encirclement
2. Retention
3. Support
4. *Reciprocation and bracing and stability*
5. passivity
6. Stress breaking action

Occlusal forces

3 mm
Factors Determining the Retentive Force of a Clasp

1 – Depth of undercut used
3–Angle of approach

Gingivally approaching clasp

Occlusally approaching clasp

Occ. approaching clasps are pulled up to move occlusally. Ging. approaching clasps are pushed up to move occlusally *(Trip action of the clasp)*
Tripping action
3– Flexibility of clasp arm

The **more flexible** the clasp arm, the **less** will be the **retention**.

More **rigid** clasps can be used in tooth supported **partial dentures**.
Factors affecting the Flexibility of clasp arm

*a* The length of the clasp arm

Increasing *arm length* increases the flexibility, thus decreasing the retention
b. The diameter of the retentive arm

*the less the diameter, the greater will be the flexibility of the clasp arm*
**C- Tapering**

*Degree of taper*, the retentive arm should be uniformly tapered in such a way that the diameter at its origin is twice that at its tip.
Round clasps are the most flexible as they flex in all directions, thus lowers the retention than ½ round and flat clasps.
The material of alloy:

Gold alloys are more flexible than cobalt chrome alloys.
The wrought form is more resilient than the same alloy of identical diameter in cast form, because of its internal structure.
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To be continued
Circumferential (suprabulge) clasps
Engages the undercut from occlusal direction
Engages an undercut of 0.01 inch (1/4 mm) on the buccal surface of molars or premolars far from the edentulous area
Indications

Best suited for strong abutments teeth

Advantages

- Provides support, retention, and the best bracing.
- Does not distort easily.
- Easily constructed.
- Simple to repair.

- Unilateral and bilateral tooth borne
Stress breaking action

Occlusal forces

3 mm
The Reversed Aker Clasp

Occlusal rest located away from the edentulous area.
Retentive arm that engages an undercut near the edentulous area.
A rigid reciprocal arm.

**Indication:**
In distal extension cases when the bar clasp is contraindicated

**Advantage:**
disengagement. Reduce torque transmitted to the abutment tooth.

**Disadvantage:**
May produce some wedging force. This can usually be countered by occlusal rests on the approximating
Hair pin clasp or C-clasp

Retentive arm turned back (curved) to engage an undercut near the edentulous area (below the point of origin (distobuccal un.))

Disadvantages:
- Greater coverage of tooth surface, increase the functional load on abut.
- Food trapping at the loop of the arm, and
- Inferior esthetics
**Extended arm clasp**

**Indication.**
Used when the undercut on the tooth near the edentulous area is poor, while that on the adjacent tooth is suitable.

**Advantages**
- The clasp has splinting action.
- Distributes the lateral load over the two teeth.
**Multiple Clasp**

Consists of two opposing Aker’s clasps,

Two Lingual rigid reciprocal arms are connected together at the terminal ends to augment their rigidity.

**Indications:**
- When Splinting of periodontally affected teeth is needed.
- When RPD replaces an entire side of the dental arch.

Available retentive areas are only adjacent to each other.

**Disadvantage**
- Utilizing two embrasures rather than a common one.
DOUBLE AKER
(Embrasure, Butterfly, Compound clasp)

• Two Acker clasps arising from a common body and from the same minor connector, Minor C. located in the embrasure between the two clasped teeth.
• Used on the dentulous side of unilateral edentulous (class II,III) cases having no modifications, class IV.
• Provide bilateral stabilization, and bracing, in addition to retention.
It also splints the two teeth.
DOUBLE AKER
(Embrasure, Butterfly, Compound clasp)

Cross arch stabilization
Half & Half clasp

- Retentive arm arising from one side of the tooth

It is used with isolated premolars and molars for bounded partial denture.
Half & Half clasp

- A *reciprocal arm arising from the other direction* on the opposite side of the tooth.
Half & Half clasp

Two minor connectors

rest
Ring Clasp

Provides unilateral bracing. Used for single tilted molars.

More flexible than Aker because it is a one arm clasp.
Back action clasp

- Single arm clasp
- Minor connector starts mesio-lingually
- It engages mesio-buccal undercut.
Back action clasp

- Single arm clasp
- Used on maxillary premolar and molar buccal have buccal undercut
- Sometimes an additional rest could be employed on the mesial side to improve support
- Used in free end saddle
- Additional rest should add mesial
Reverse Back action clasp

- The minor connectors originate mesiobuccal line angle from the saddle and ends to engage a mesiolingual undercut of 0.01 or 0.02 of an inch.
- The clasp is frequently used on lingually tipped bicuspids.
- It also provides single bracing only.
- It has an additional esthetic disadvantage.
Reverse Back action clasp

Back action clasp
Back-Action

Reverse-Back Action

Ring clasp
R.P.A

A mesial occlusal rest.

An Aker retentive arm arising from the superior portion of the proximal plate.
**Indication:**
In distal extension RPDs presented with shallow vestibule or severe tissue undercut

**Advantages:**

1. Mesio-occlusal surface of the tooth, permitting the other components *to release from the tooth* and drop into undercuts when occlusal loads are placed on the denture base.

2. This in turn *prevents tipping of the abutment*.

3. Absence of a lingual rigid reciprocal arm *minimizes rotational forces* falling on the abutment.
A proximal plate
Combination Clasp

1. For the anterior abutment of the posterior modification space in a Class II partially edentulous arch only when a mesiobuccal undercut exists, to minimize the effects of a first-class leverage system.

2. A severe buccal tissue undercut that does not permit the use of a bar clasp.

3. When flexibility is required on the abutment tooth adjacent to the distal extension base.

4. On periodontally compromised abutment tooth when a cast bar-type clasp is not indicated.
Combination Clasp

Flexibility due to its circular cross-sectional form, adjustability when necessary, and appearance due to its round form and smaller diameter of 18 gauges. However, as disadvantages, it should be kept in mind that this clasp design needs extra steps in RPD fabrication and is easily deformed and less stabilized. This clasp system can be used even in 0.02 in. mesiobuccal undercuts due to its flexibility. These clasps may also be used in tooth-borne partial edentulous cases.
Mesio-Distal clasp

- Used only in anterior teeth
- Depends on frictional resistance for retention
To be continued
Gingivally approaching clasps
(infra bulge, I-Bar, Roach)
The I–bar clasp (Roach clasp arm)

The I–bar clasp consists of:

- A retentive clasp arm
- A rigid reciprocal clasp arm
- An occlusal rest and a minor connector

The tip of the retentive arm may be in the form I, T, U, C or Y.

One
Different forms of gingivally approaching clasps
R.P.I

Rest

Proximal plate

I-bar
Indications:

aesthetic

Success
**Indications:**

- In distal extension cases, as it *provides a stress releasing action*.
- When tissue undercuts are *not severe*
Contraindications

Shallow buccal vestibule
Contraindications

Severe tissue under cut buccal
Devan clasp

- Two occlusal rests on abutment are used.
- The bar arm arises from the border of the denture base. Wrought wire clasp arm could be used if additional flexibility is required.
- More esthetic due to interproximal position.
- No distortion due to its proximity to denture border.
- Food debris may be entrapped between the arm and the denture base.
Insertion and removal
Retention

OCCUSALLY APP. ARE PULLED OUT.

GING. APP. ARE PUSHED.
(TRIP. ACTION.)
Bracing
Esthetics
Tolerance and Gingival tissue trauma and Caries
THANK YOU
THANK YOU
THANK YOU
THANK YOU
THANK YOU
THANK YOU
THANK YOU
THANK YOU