

REMOVABLE ORTHODONTIC APPLIANCES

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Terminology

- **Removable appliance**

An appliance that is not fixed to teeth, but can be removed by the patient.



Classification Of ROA

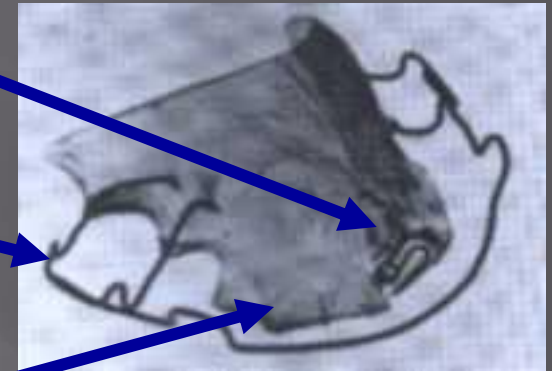
- ▣ Active (produce tooth movement/growth modification)
 - Functional appliances (FA s.)
- ▣ Passive
 - Retainers
 - Space maintainers

COMPONENTS OF REMOVABLE APPLAINCE

- Active Components
- Retentive Components
 - Acrylic Base Plate

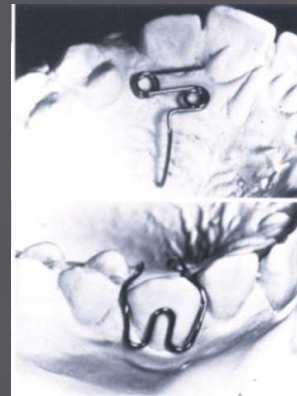
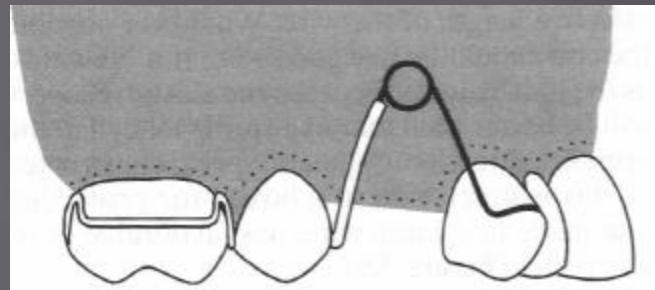
Component of Removable Appliances

- Active component
 - Spring, screw, elastics,....
- Retentive components
 - Clasps (Adam's, C-clasp, Ball clasp, Lingual extension clasp)
- Acrylic base plate



Active component

- ▣ Screws
 - Mid expansion, distal expansion, Y-plate expansion, premaxilla expansion
- ▣ Wire springs
 - Finger spring
 - Z-spring
 - Canine retractor
 - Short labial arch



Active components

▣ Screws

- Expansion is 1 mm. per one full turn i.e. 0.25 mm. per quarter turn
- May be used for moving one tooth or group of teeth (usually more than one tooth to be moved with a screw)
- Have different sizes and range of activation
- Useful only when a few millimeters of space is needed

Active components

- Expansion screws

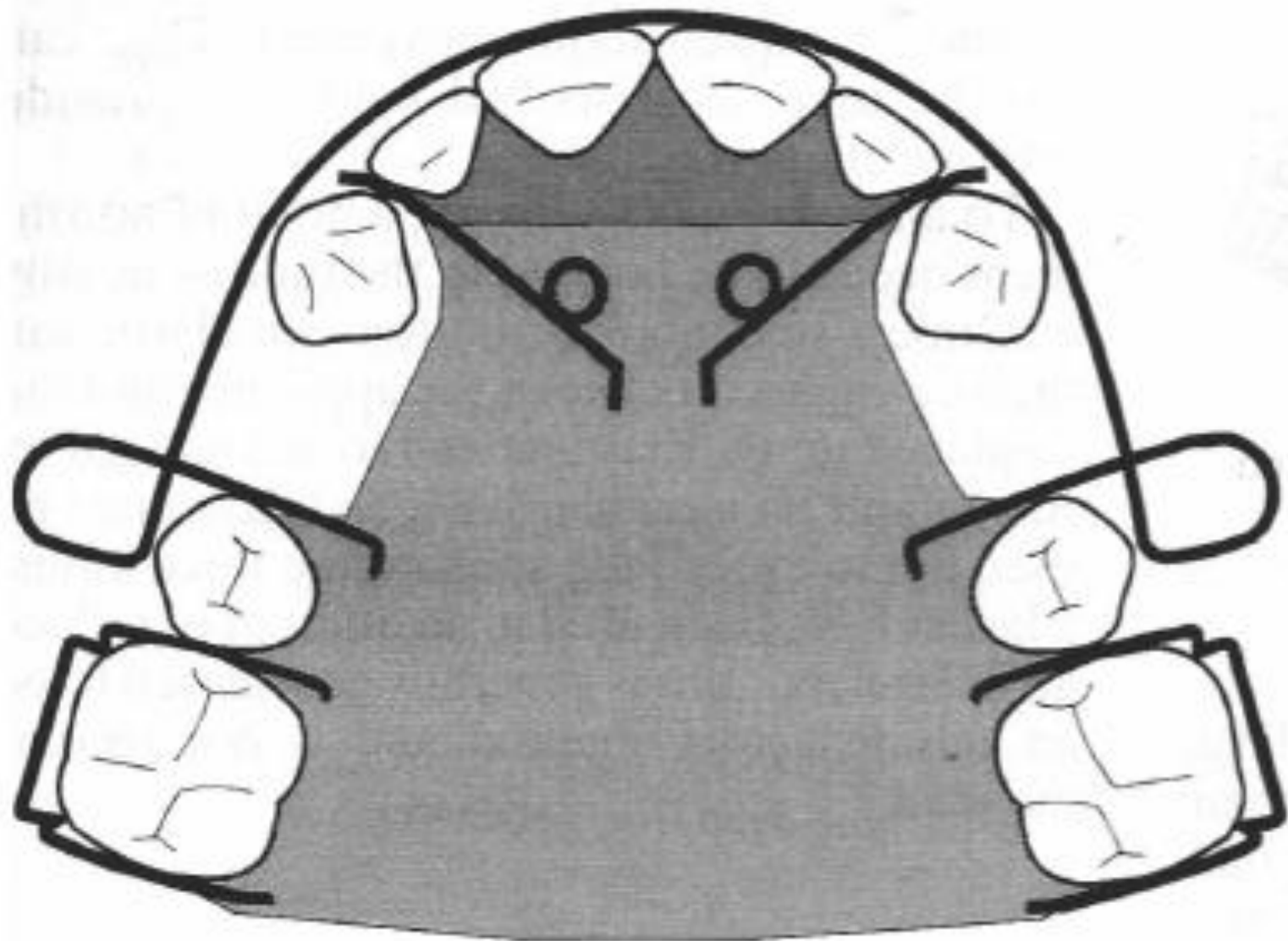


Active components

▣ Springs

- ▣ Provide extra length of wire to increase range of action and resiliency
- ▣ Extra length can be provided in the form of coil (s), loop (s) or change configuration to provide extra length of the wire





Active component

- ▣ Labial arch (vestibular arch)
 - Constructed from 0.7 or 0.8 round SS. wire
 - It must contact the middle 1/3 of the labial surface of the teeth 21|12
 - Loops should be $\frac{1}{2}$ width of the canine, should extend slightly above the gingival margin
 - Wire must be closely adapted where it cross the occlusal surface
 - Palatal retentive arms must be adapted to the contour of the palate.



Retentive components

▣ Clasps

- Adam's clasp
- C-clasp
(Circumferential clasp)
- Lingual extension clasp
- Ball clasp

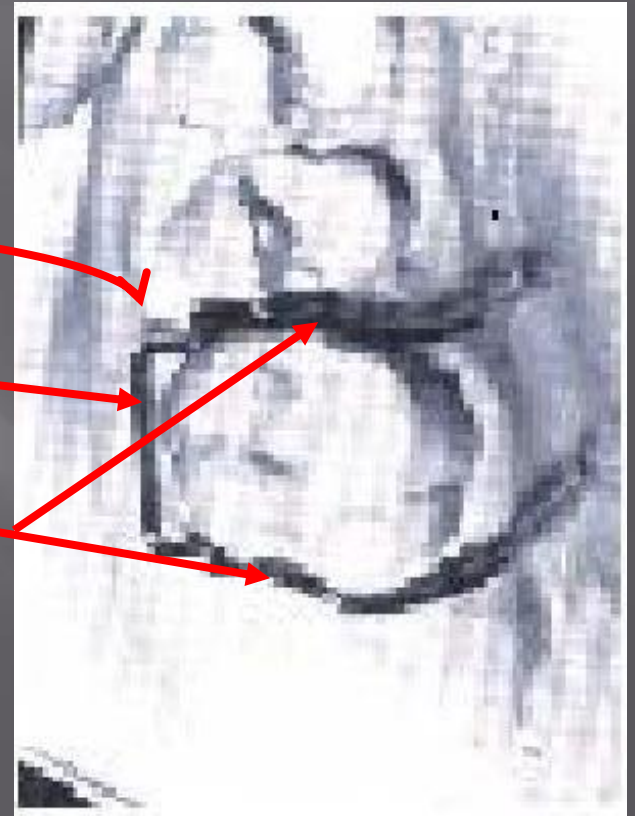


Adam's Clasp

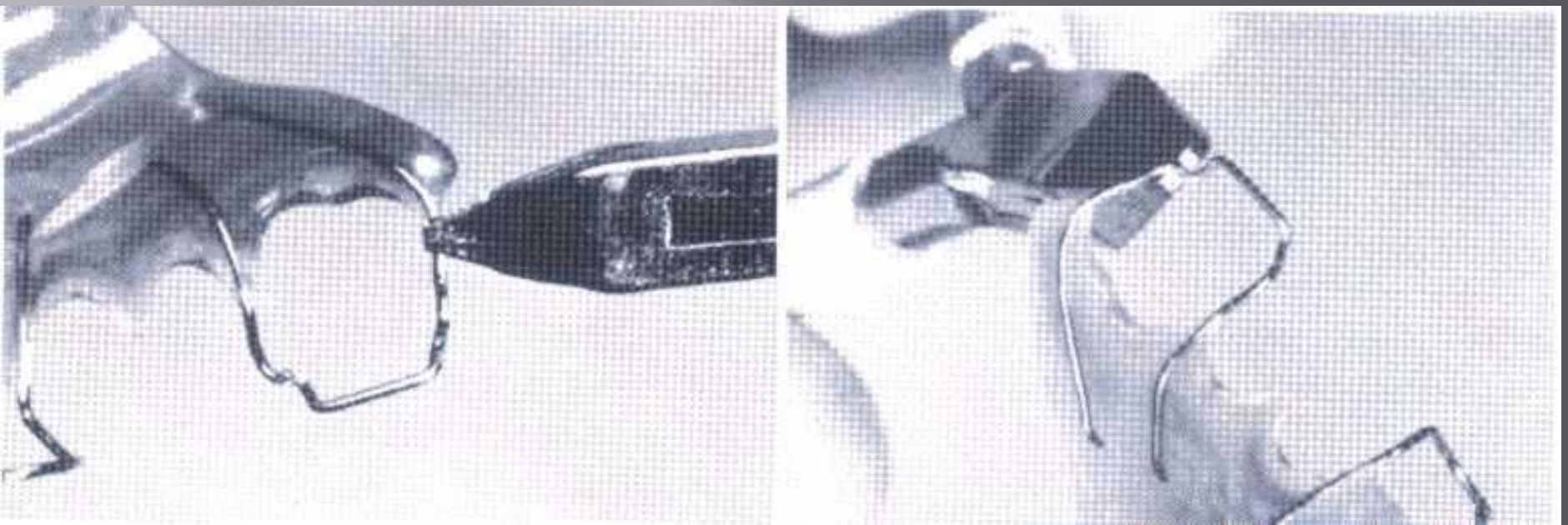
- ▣ The most useful clasp in removable appliances.
- ▣ It is designed to engage the MB, DB undercuts of posterior teeth.
- ▣ Advantage, it does not separate teeth and has excellent retention.

Fabrication of Adam's Clasp

- ▣ Components of Adam's Clasp
 - ▣ 1- Loop
 - ▣ 2- Bridge
 - ▣ 3- Tags
 - ▣ 4- Retentive parts
- ▣ It is made of 0.7 mm diameter hard SS round wire



Adjustment of Adam's clasp



Retentive component

- ▣ Circumferential clasp
 - Useful for second molars and canines
 - Easier to keep it out from occlusal contact
 - It is only supportive, not as retentive as Adam's clasp
 - It can be adequate for a retainer, but not for an active appliance



Retentive component

- ▣ Ball Clasp
 - It like Adam, extends across the embrasure
 - Uses buccal undercuts for retention
 - Easy to fabricate
 - It is stiff that could not be extended deep into the undercuts



Acrylic base plate

- ▣ It is used as a vehicle to carry all Removable Appliance components together.
- ▣ It is the Anchor tool for tooth movement.
- ▣ Use self-curing acrylic resin.
- ▣ Steps in construction (see handouts).

Clinical Adjustment

- ▣ Maxillary removable appliances are more tolerable and successful than the mandibular ones. Because the maxillary removable appliance can provide more stability as the baseplate fits better than lower removable appliances.
- ▣ During the treatment the adjustments can be performed as follow:
 - ▣ 1- Tightening of clasps as they become loose
 - ▣ 2- Activation of the spring/screws /bows
 - ▣ 3- Trimming of the baseplate (as required)

Advantages of Removable Appliance:



- ▣ More acceptable to the patient (can be removed on socially sensitive occasions).
- They are fabricated in the lab rather than directly in the patient's mouth, reducing the dentist's chair time.
- Allow some types of **growth guidance** treatment to be carried out more readily than is possible with fixed appliances.

Disadvantages



- Heavily dependant on patient compliance.
- It is difficult to obtain the two point contacts on teeth necessary to produce complex tooth movement.

Indication of Removable appliances:

- ▣ Growth modification during mixed dentition
- ▣ Limited (tipping) tooth movements (arch expansion, individual tooth mal position).
- Retention following orthodontic treatment
- ▣ Adjunct to fixed orthodontic appliances,
- ▣ Interfere with (or prevent the development of) abnormal orofacial habits

THANK YOU