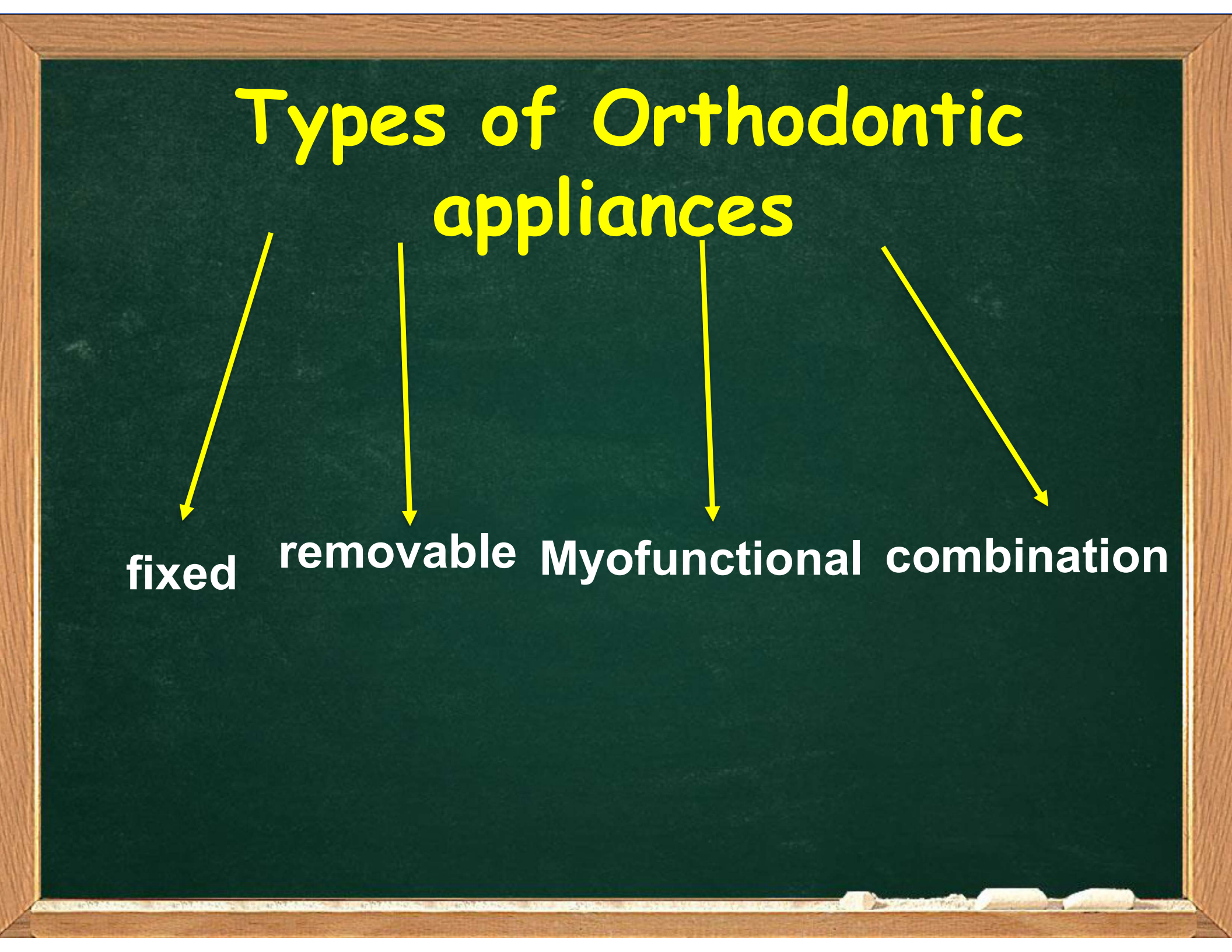
Types of Orthodontic appliances



Orthodontic appliances

Passive OAs = no force----no movement

Active OAs = force----tooth movement

Orthodontic appliances

Passive Orthodontic appliances

Passive appliances do not exert force

Passive appliances are used to maintain the existing occlusion (space maintainers, retainers, habit breakers and to disocclude the dentition (bite-blocks).

Orthodontic appliances

Active OAs = force----tooth movement

appliances exert force to tooth or group of teeth through mechanical devices or active components or by force of masculature

Ass. prof. Munad Jihad AL Duliamy

Active Orthodontic appliances

Mechanical appliances

Myofunctional

Active Orthodontic appliances

Mechanical appliances

Mechanical appliances exert force to tooth or group of teeth through mechanical devices or active components

Orthodontic appliances

Myofanctional appliance

Myofanctional appliance alter the neuromuscular activity during function. They are also called functional appliances

Orthodontic appliances

Removable orthodontic appliances: Appliances that are designed to be taken out from the mouth by the patient

Orthodontic appliances

Intra- oral orthodontic appliances

Extra-oral orthodontic appliances

Orthodontic appliances

1. Attached removable appliances

a. Active

- Headgears
- Facemask
- Chin cups
- Lip bumpers

b. Passive

- Space maintainer
- Retainers
- Habit breaker

2. Loose removable appliance/functional appliance

3. Fixed appliances

a. Mechanical

b. Functional

Removable orthodontic appliance

Appliances that are designed to be taken out from the mouth by the patient

Active Orthodontic appliances

Mechanical appliances

Myofunctional

Removable orthodontic appliance (mechanical)

Removed by the patient

removable appliances are mainly fabricated from :

1. **Stainless steel wires**
2. **Acrylic**
3. **Others : as screw & elastics**

The most popular wire is stainless steel, because it is relatively inexpensive, aeasily formed and exhibits good stiffness.

Orthodontic force:-

The force applied by removable appliances is light and intermittent. Since the best pressure to move a tooth is (25 - 30 g/ 1cm2) root surface, so the springs are designed to give that amount of pressure.

mode of action of removable appliances

Removable appliances are capable of the following types of tooth movement:

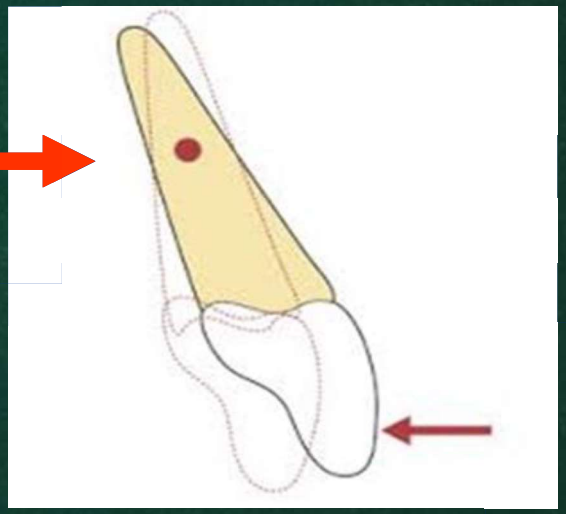
1. Tipping movements (active components)
2. Couple force system (rotation less than 90°): by two active components in opposite direction).
3. Movements of blocks of teeth (screw
4. Influencing the eruption of opposing teeth (modified Baseplate i.e. Baseplane).

mode of action of removable appliances

- Tipping movements – because a removable appliance applies a single point contact force to the crown of a tooth, the tooth tilts around a fulcrum (*center of resistance*)* which in a single-rooted tooth is approximately 40 per cent of the root length from the apex.

Tipping movements

center of resistance



Force

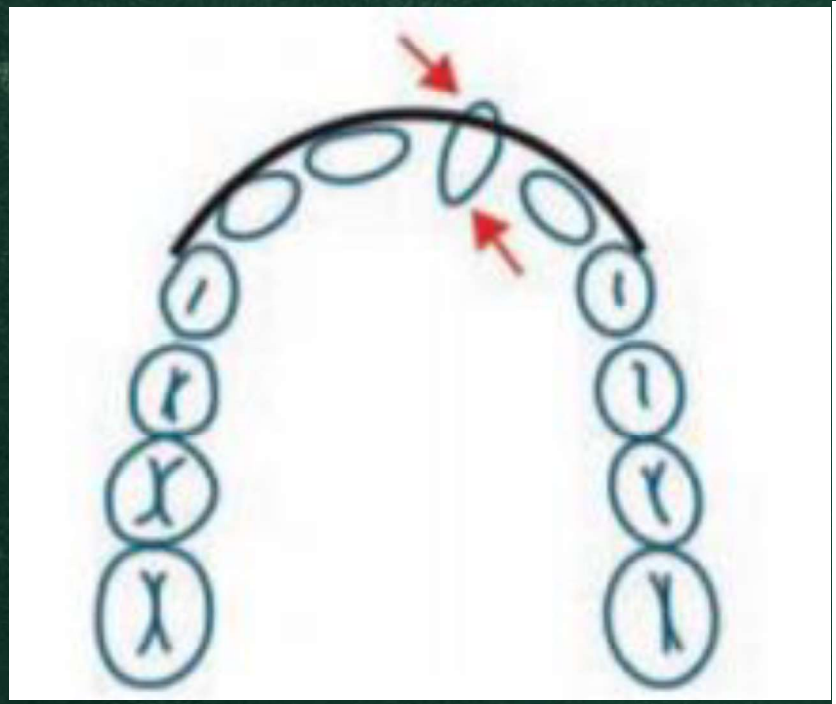
Tipping movements

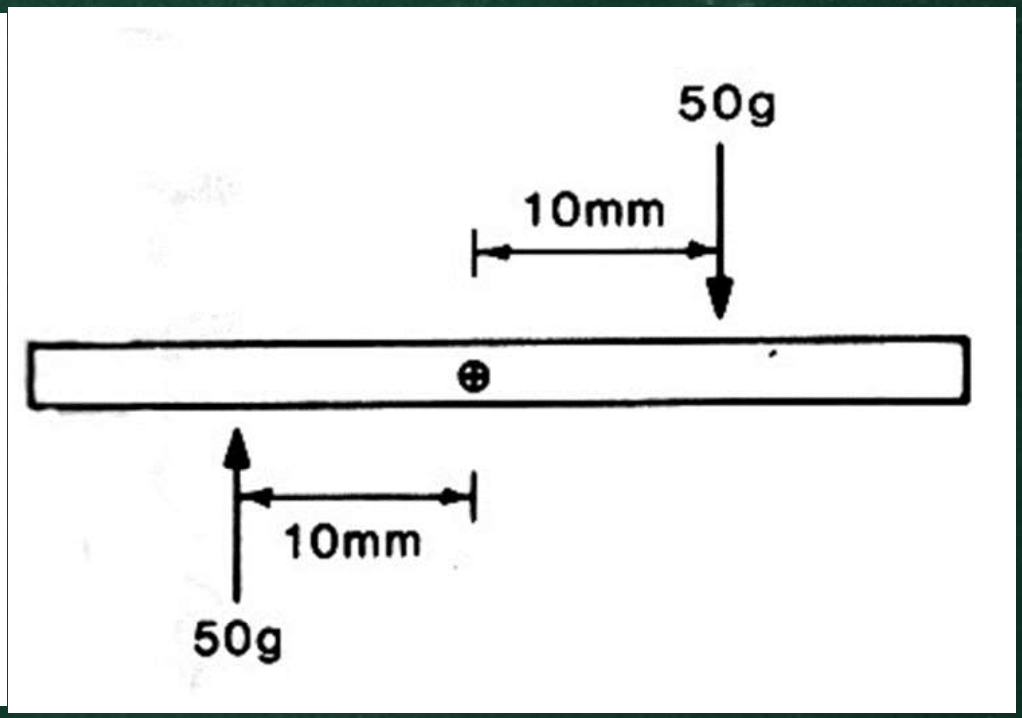
Tipping movement

bodily movement
Need fixed orthodontic appliance

Force

Couple force system



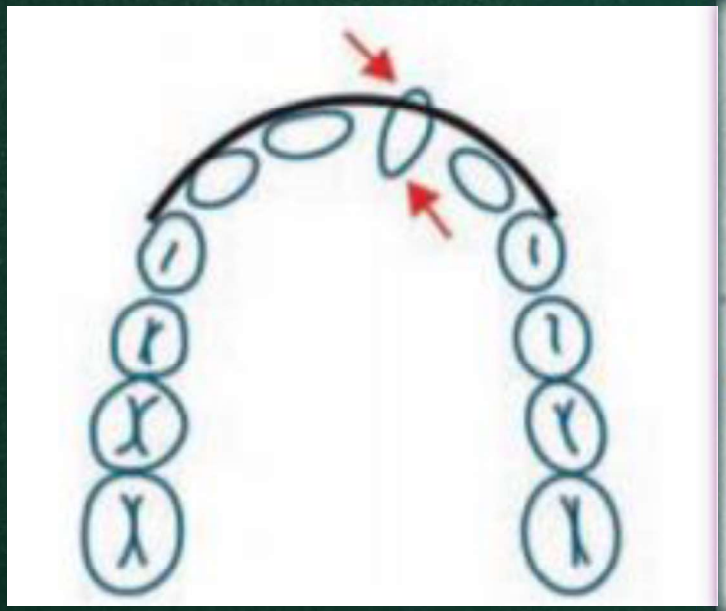


Two forces; equal magnitude; parallel and non-collinear; opposite sense

Couple force system

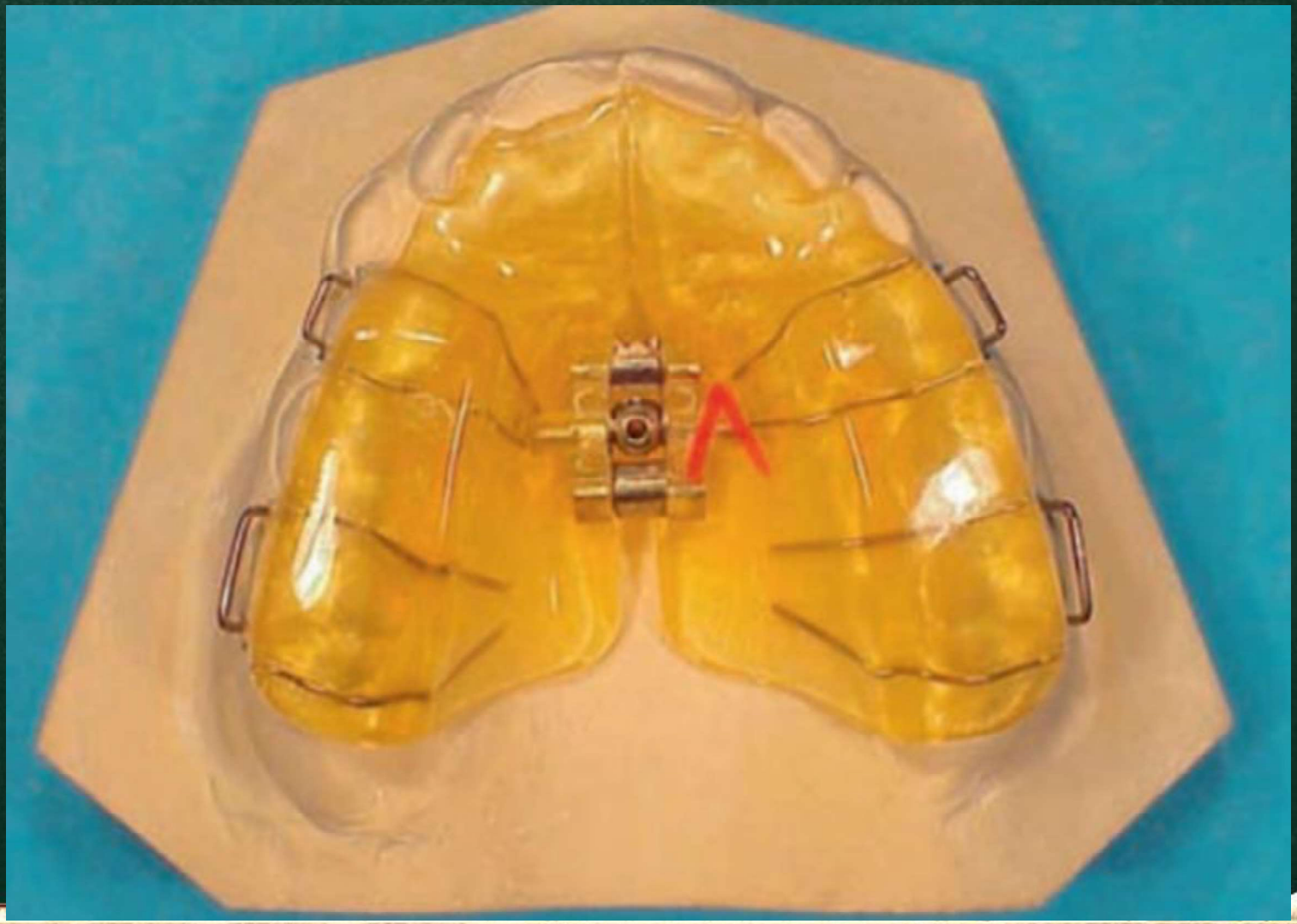
Rotation < 90°

Resolves by removable orthodontic appliances

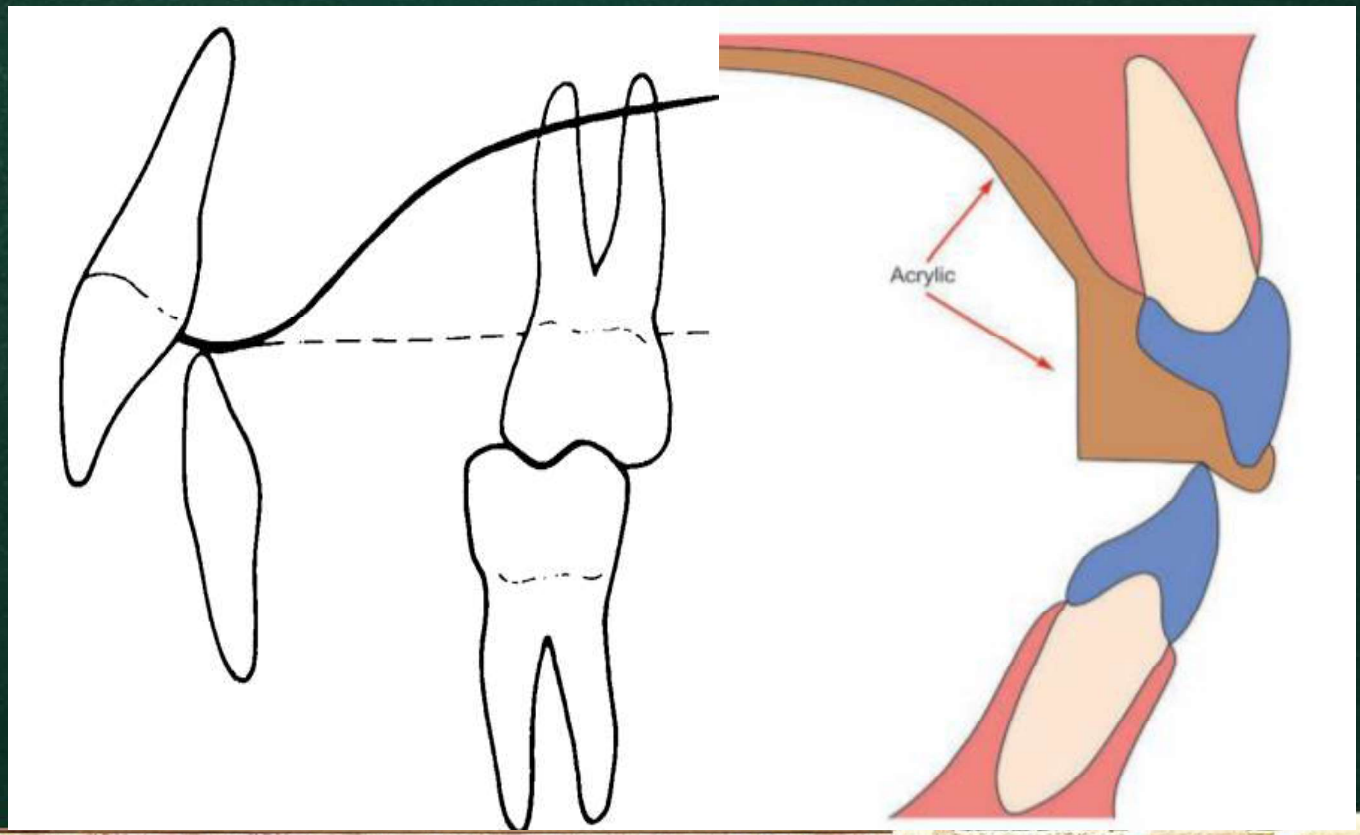


Couple force system

- Movements of blocks of teeth – because removable appliances are connected by a baseplate they are more efficient at moving blocks of teeth than fixed appliances.

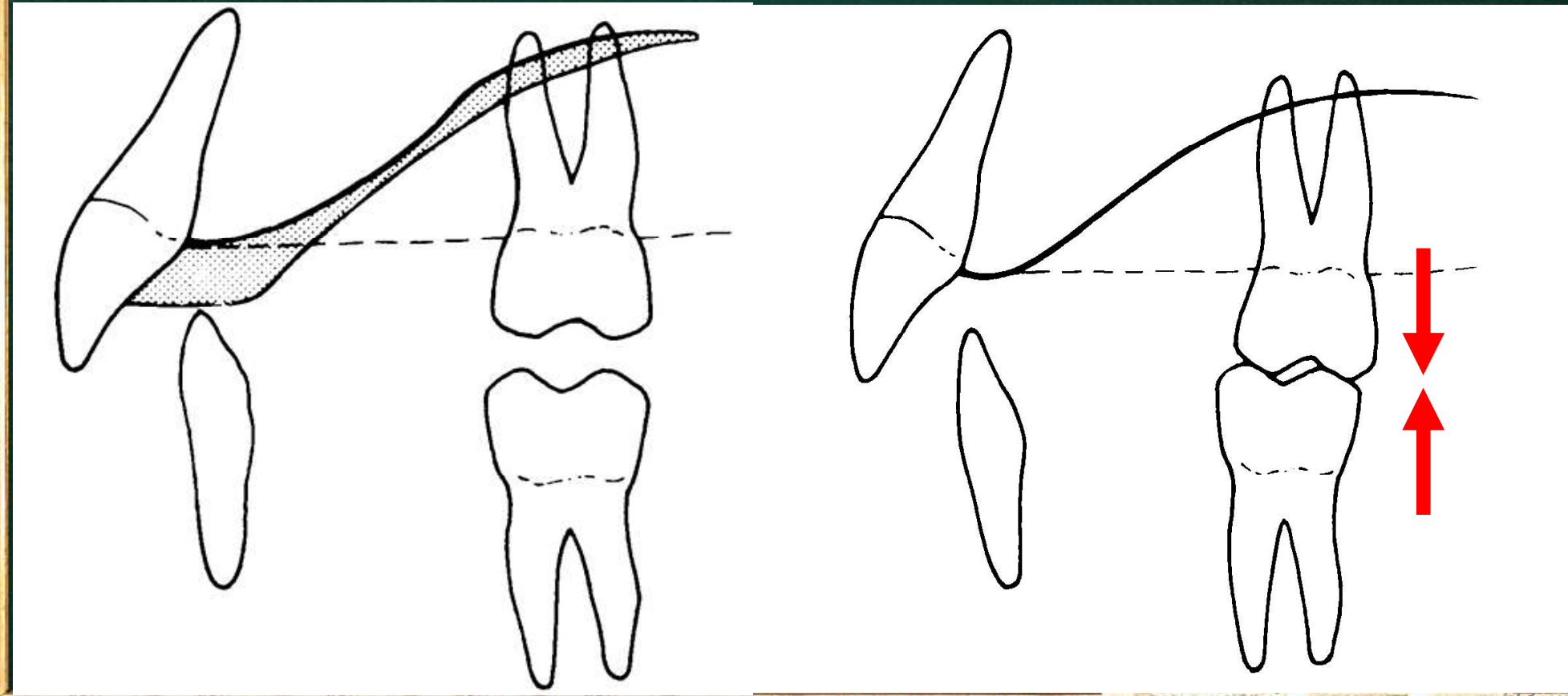


- Influencing the eruption of opposing teeth – this can be achieved either by use of: (1) a flat anterior bite-plane, which frees the occlusion of the lower incisors allowing over eruption of posterior teeth . This is useful in overbite reduction

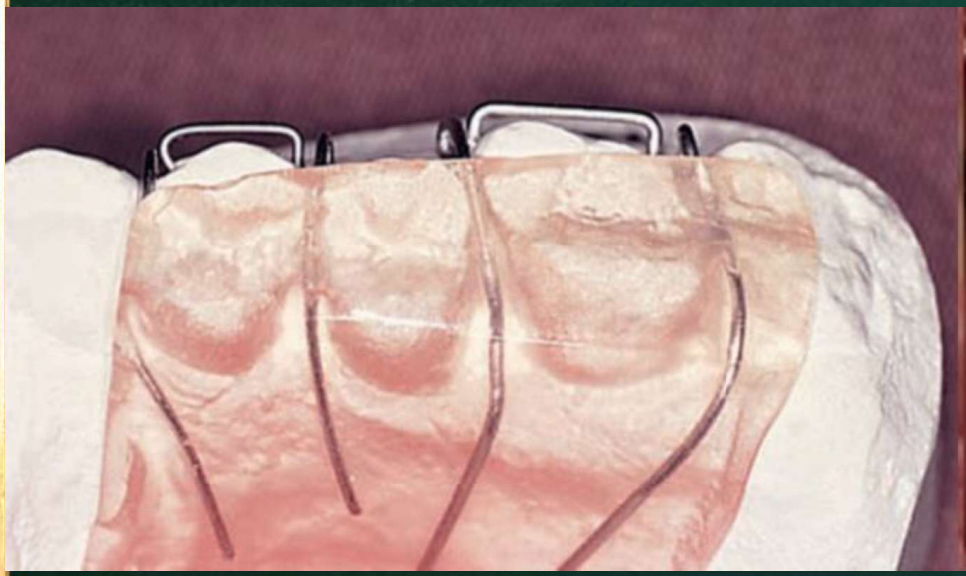


- Influencing the eruption of opposing teeth

Correction of deep bite by separating the molars over-erupt and so decreasing the allowing them to overbite



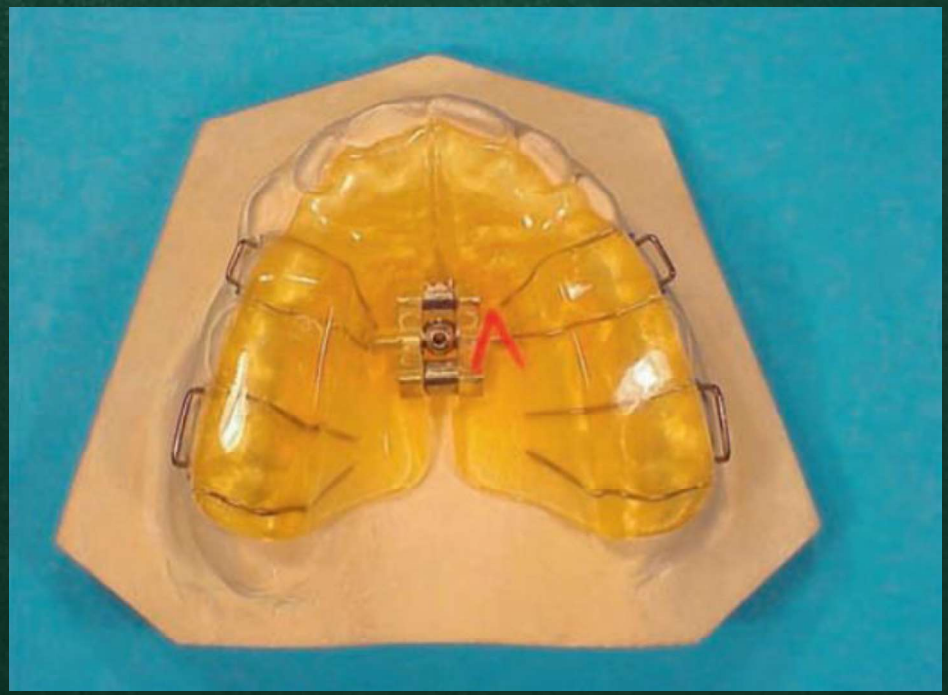
(2) buccal capping, which frees the contact between the buccal segment teeth. This indicated in correction of anterior croosbite & may also be of value when intrusion of the buccal segments is required.



Indications for the use of removable appliances

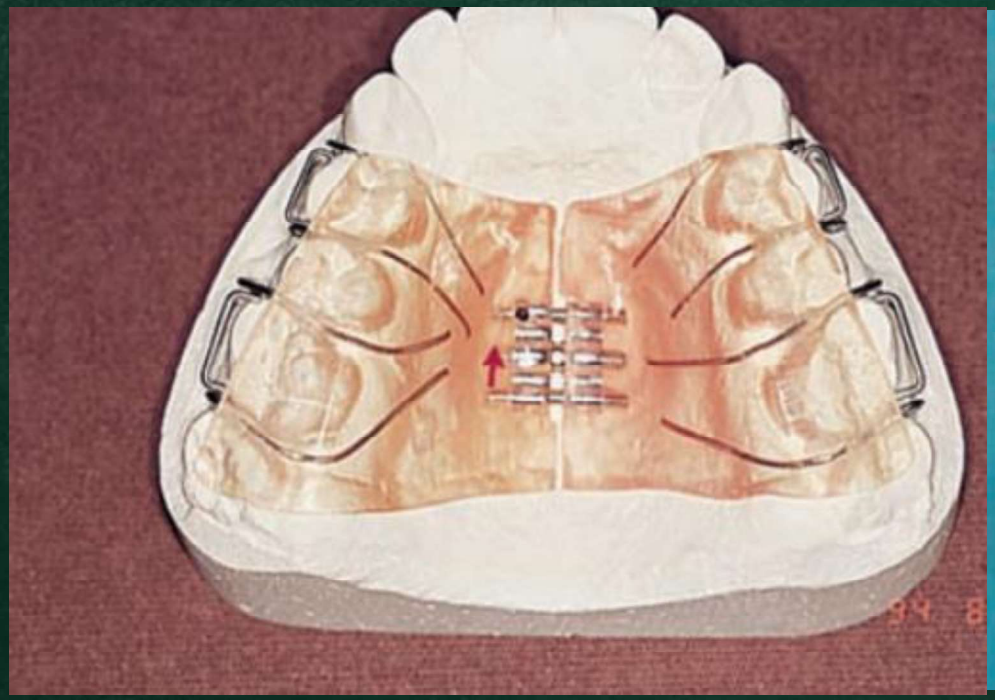
Although widely utilized in the past as the sole appliance to treat a malocclusion, with the increasing availability and acceptance of fixed appliances the limitations of the removable appliance have become more apparent.

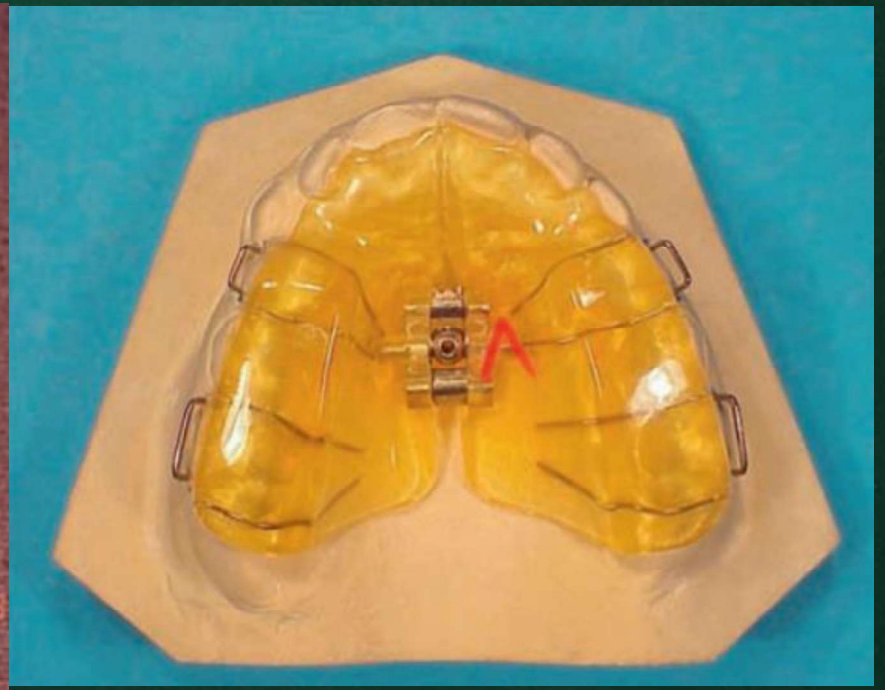
The removable appliance is only capable of producing tilting movements of individual teeth, but can lead to a compromise result if employed where more complex tooth movements are indicated. As a result the role of the removable appliance has changed and it is now widely used as an adjunct to fixed appliance treatment.



Removable appliances provide a useful means of applying extraoral traction to segments of teeth, or an entire arch, to help achieve intrusion and/or distal movement.

Removable appliances are also employed for arch expansion, which is another example of their usefulness in moving blocks of teeth.





Removable appliances are particularly helpful where a flat anterior bite-plane or buccal capping is required to influence development of the buccal segment teeth and/or to free the occlusion with the lower arch.