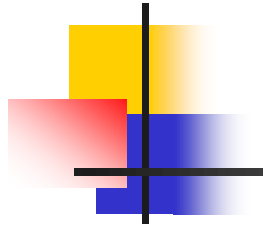


Combined activator and headgear orthopedics

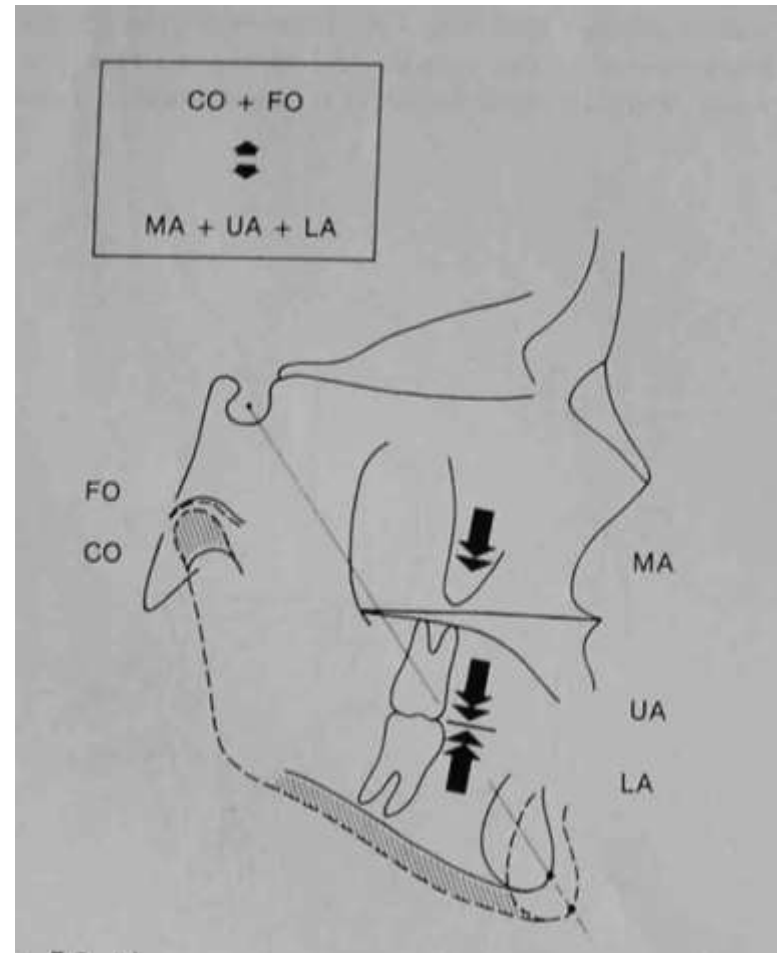




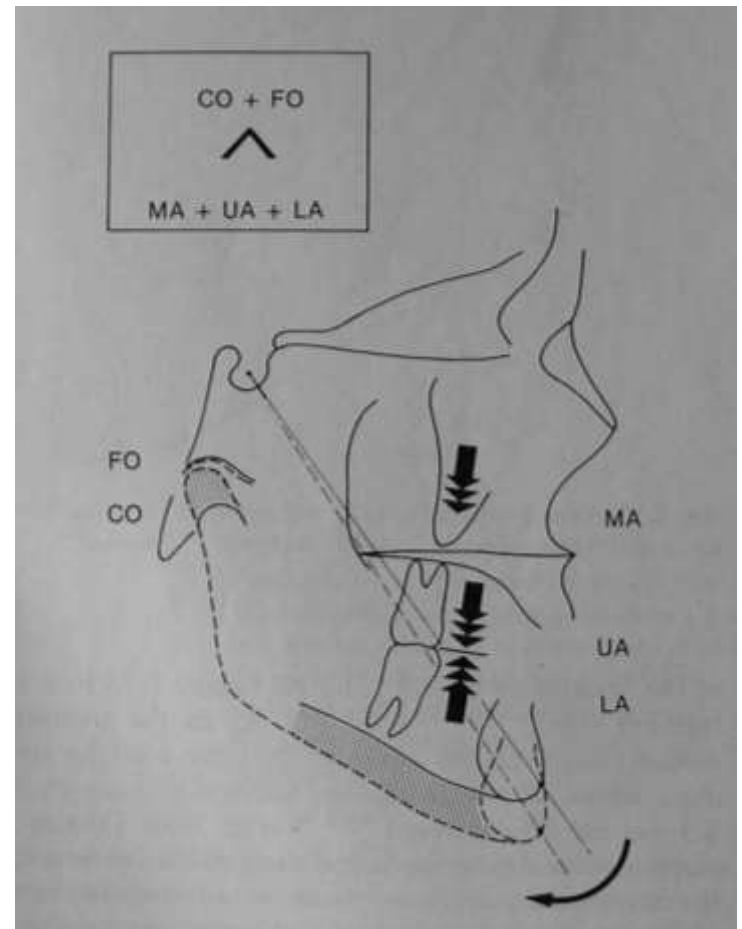
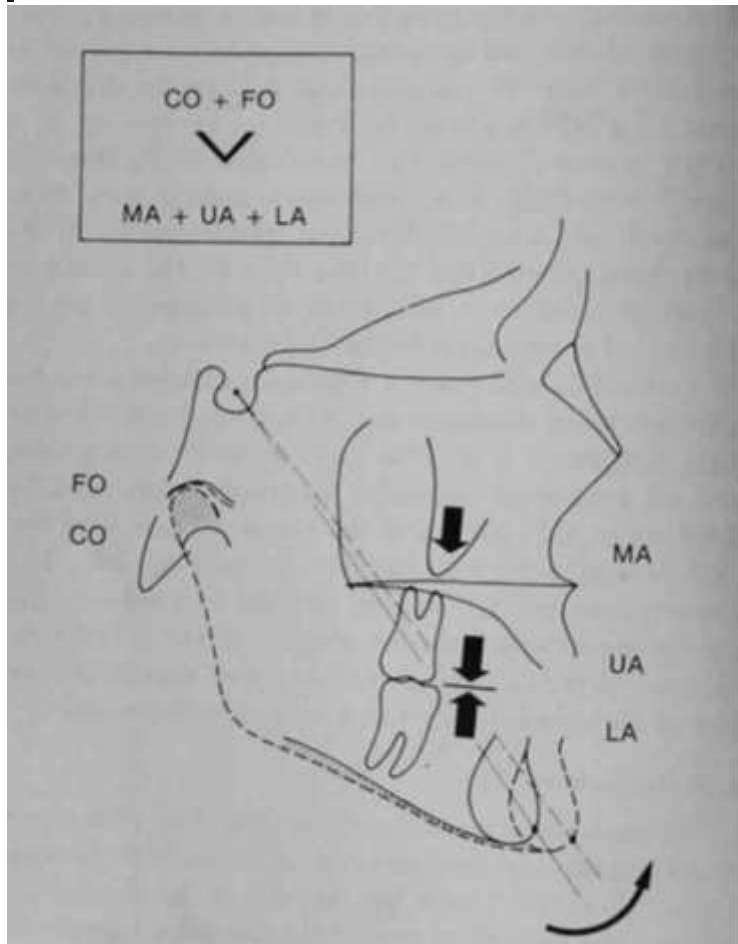
- Activator therapy
- Biodynamics of growth and development
- Biomechanics of head gear

Growth of counterparts

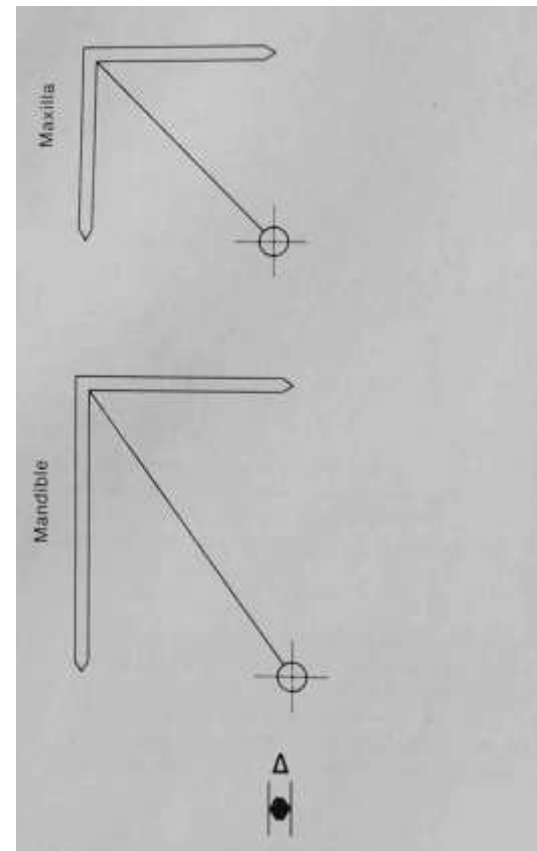
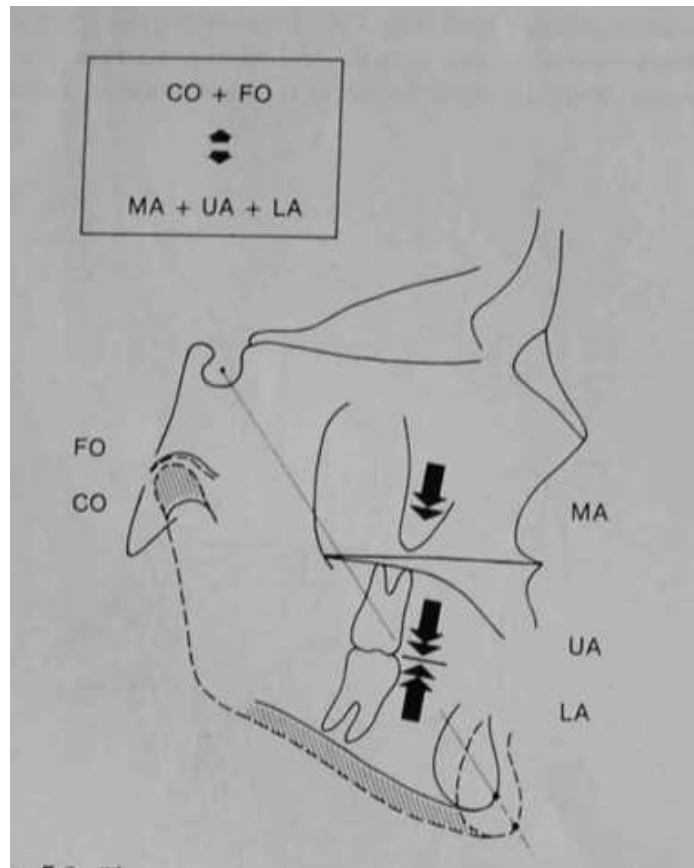
- In average growth pattern mandibular symphysis moves along y axis
- Balance is maintained



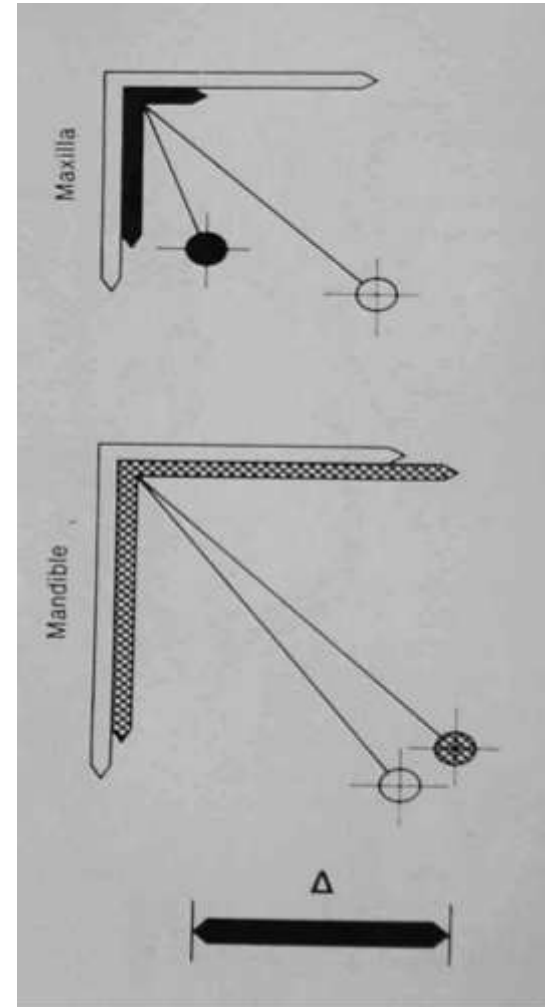
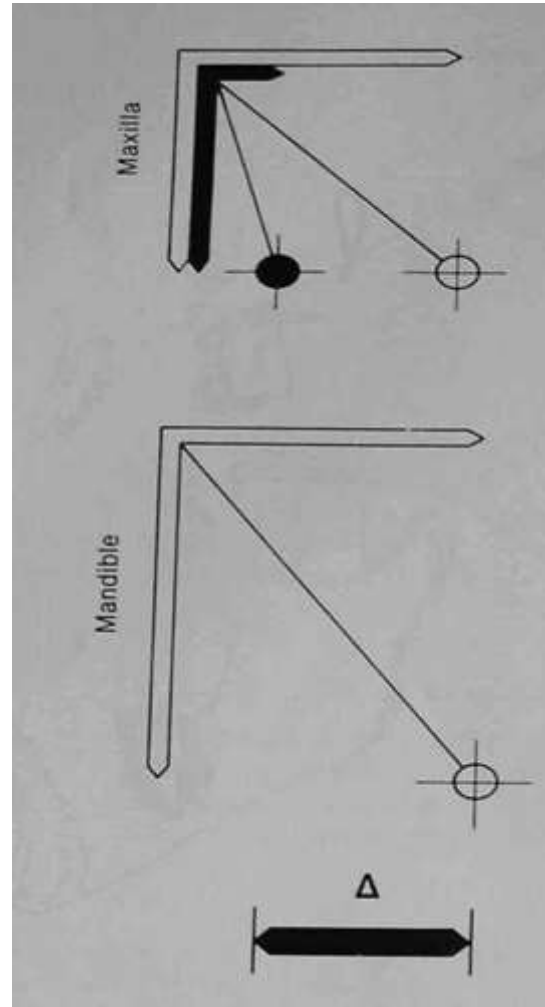
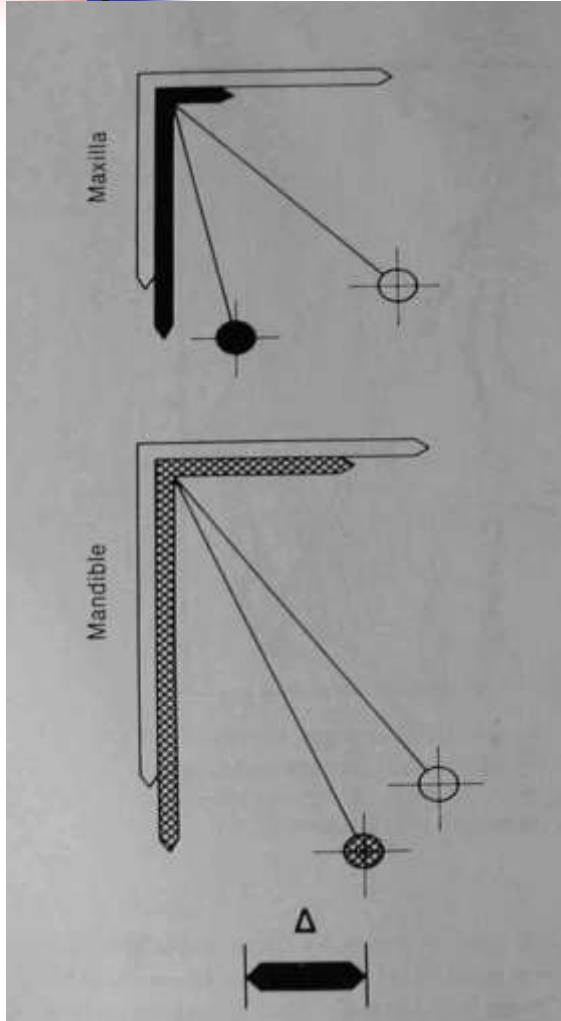
Effect of vertical components of growth on A-P position of symphysis



Division of growth vector into horizontal & vertical components

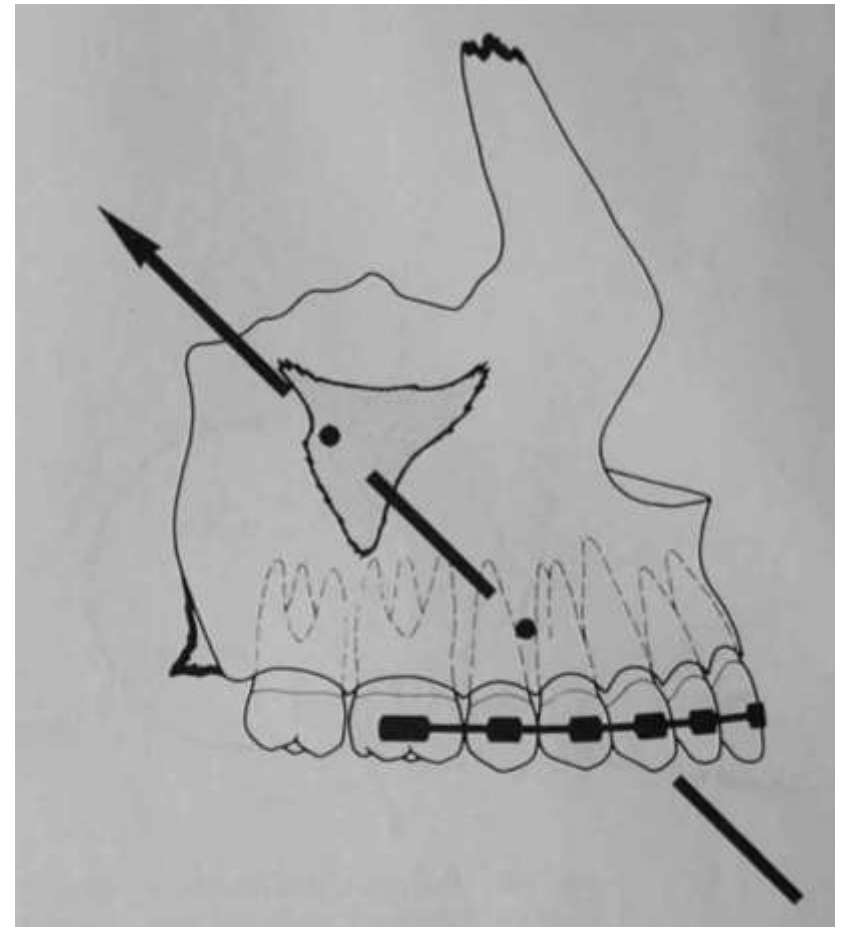


Head gears

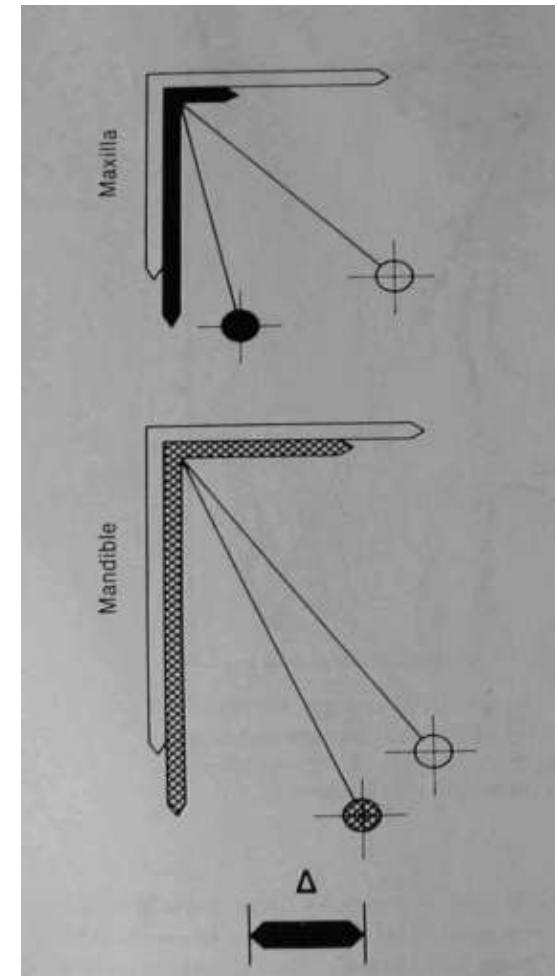
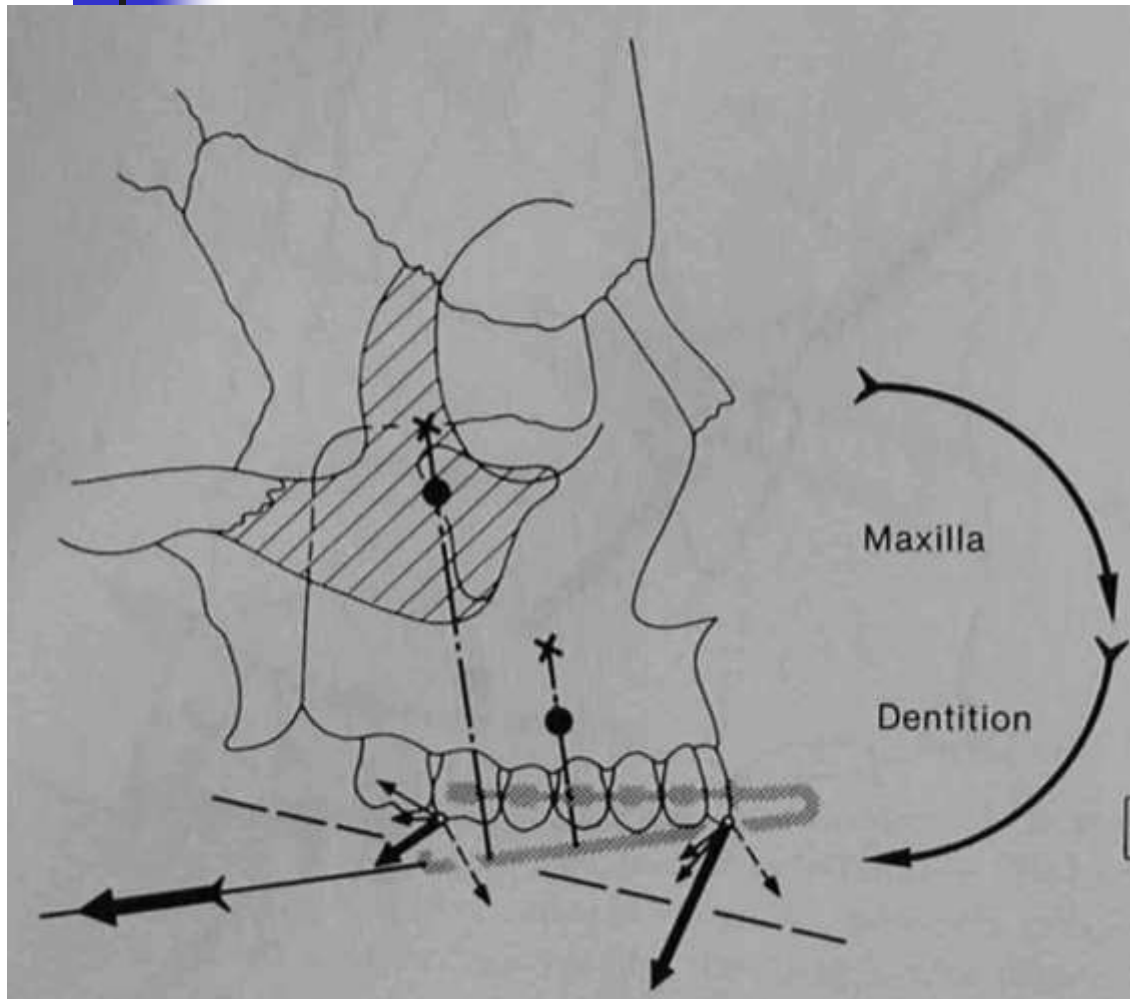


Biomechanics of head gear

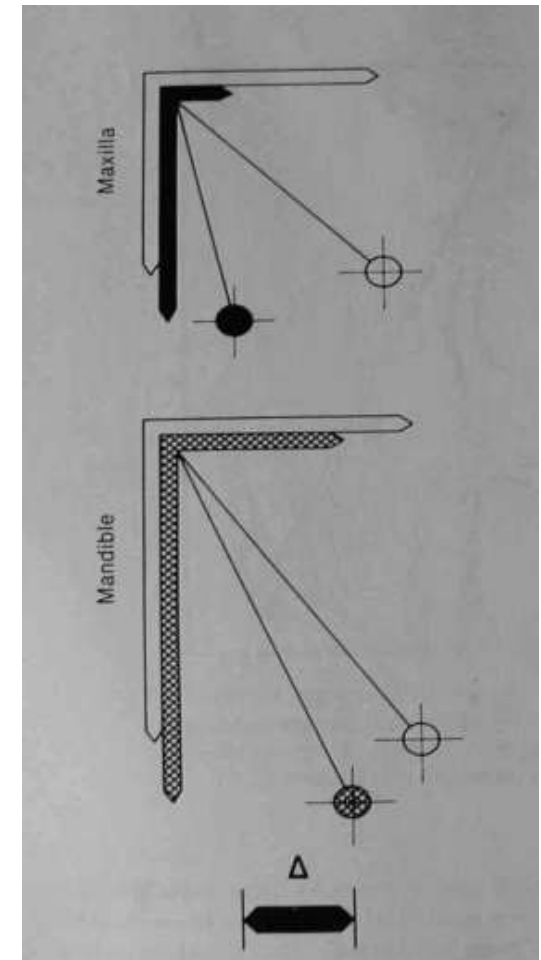
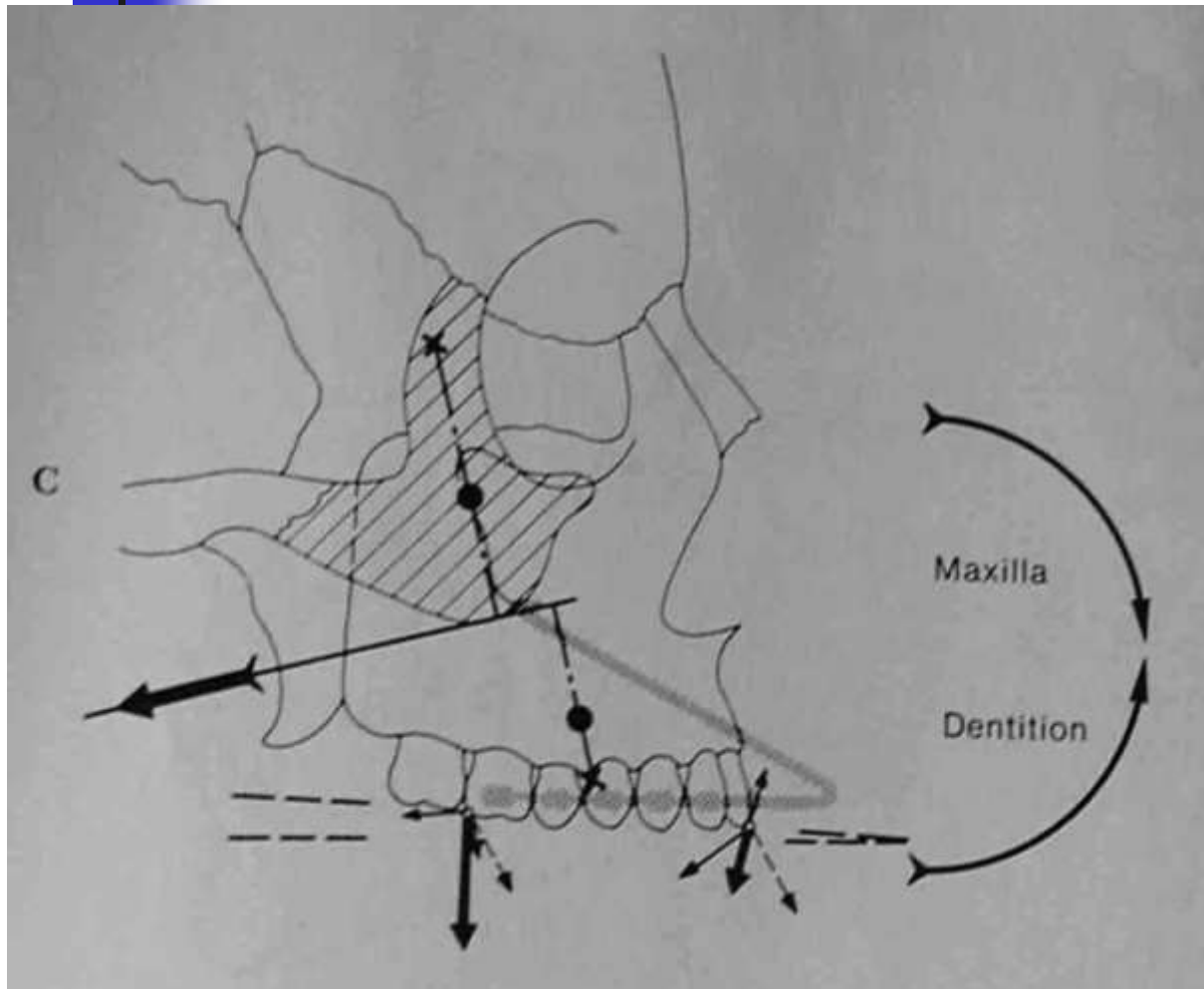
- Center of resistance
 - Tooth
 - Dentition
 - Maxilla
- Rotations
 - Clock wise-posterior-caudal
 - Counter clock wise-anterior-cranial



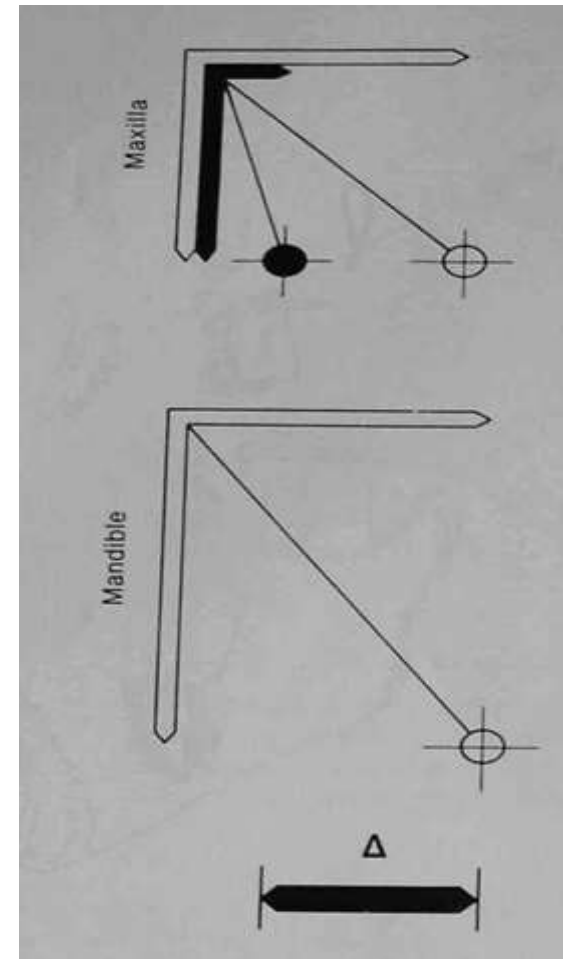
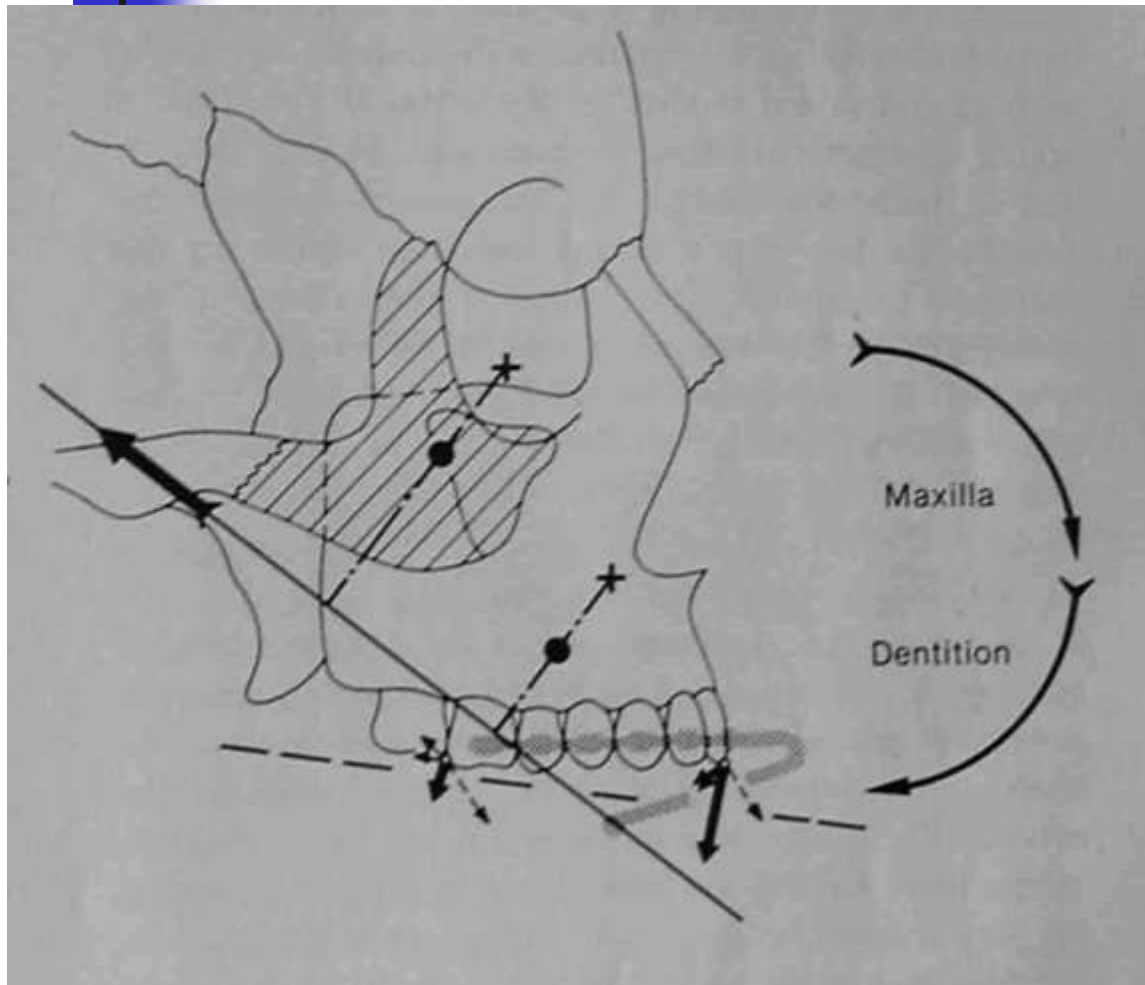
Cervical pull force inferior to both the centers of resistance



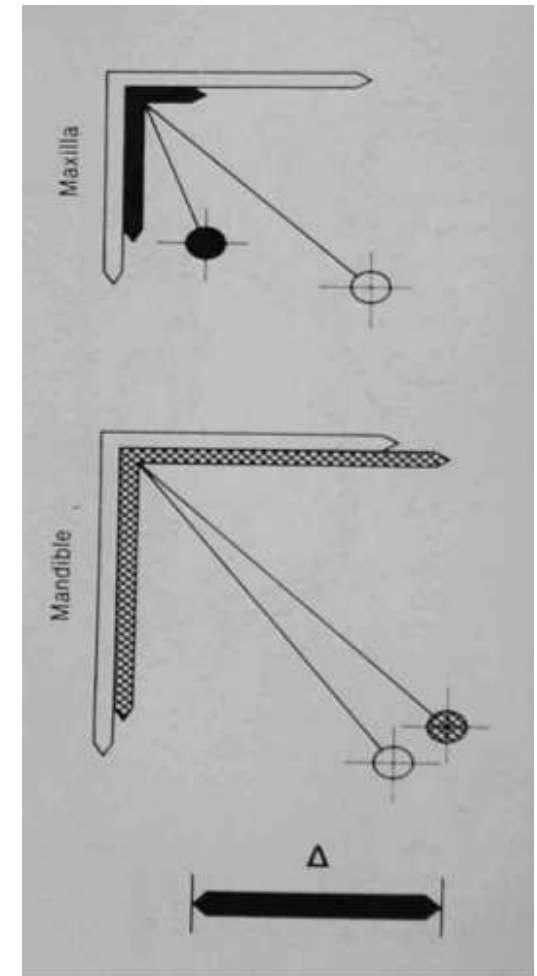
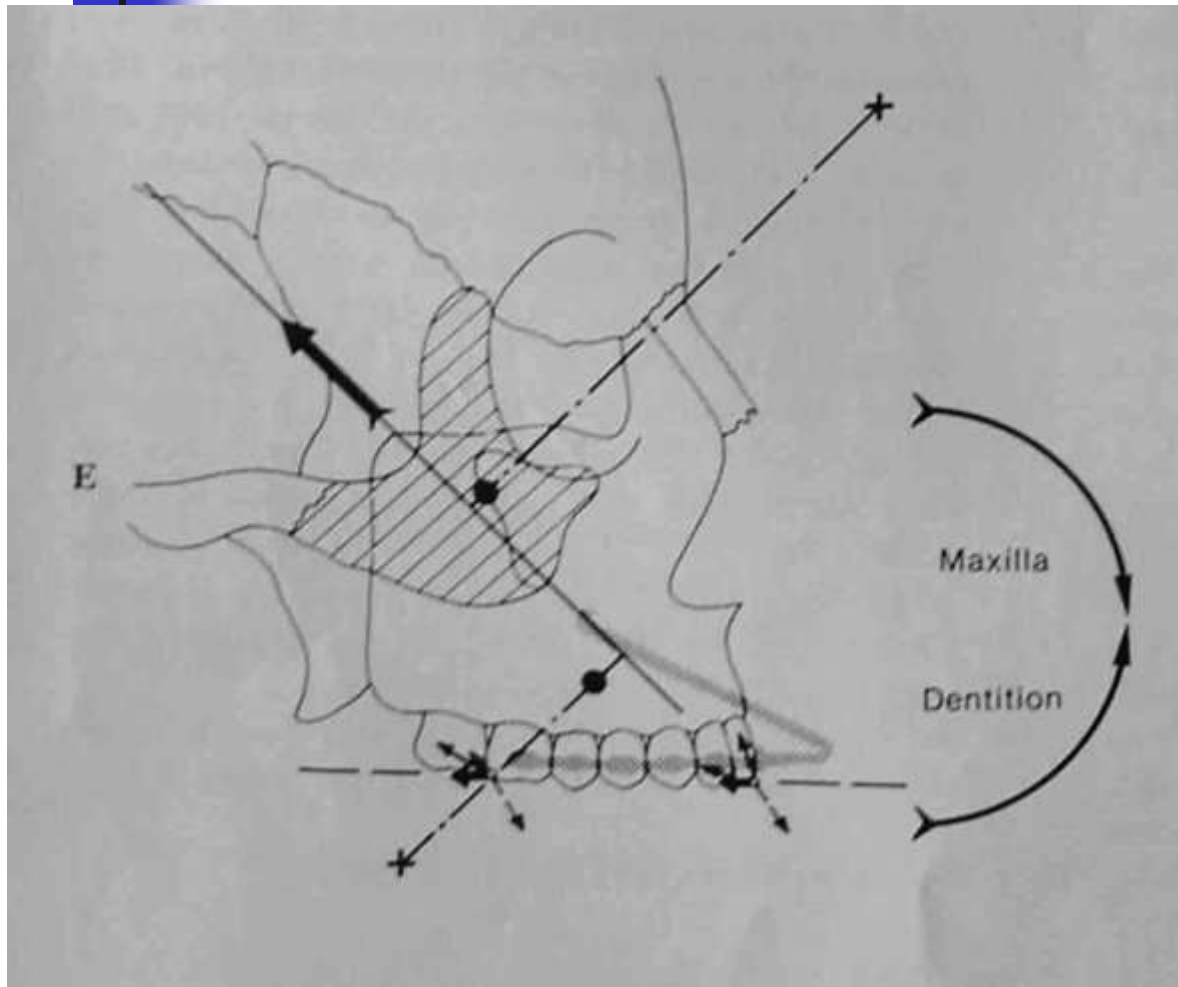
Cervical pull force passing between centers of resistance



Occipital pull force inferior to both centers of resistance

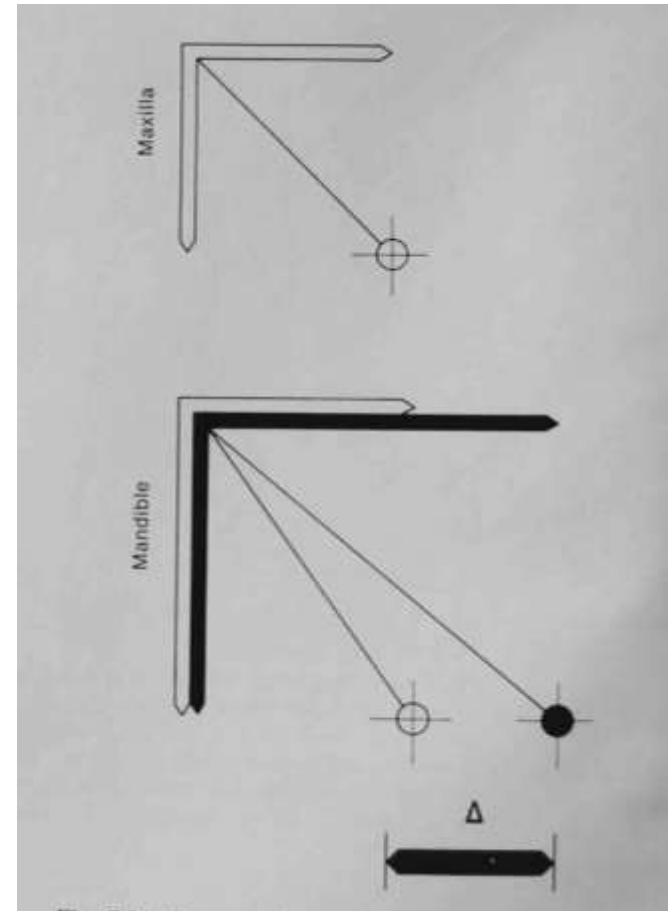


Occipital pull force passing between centers of resistance

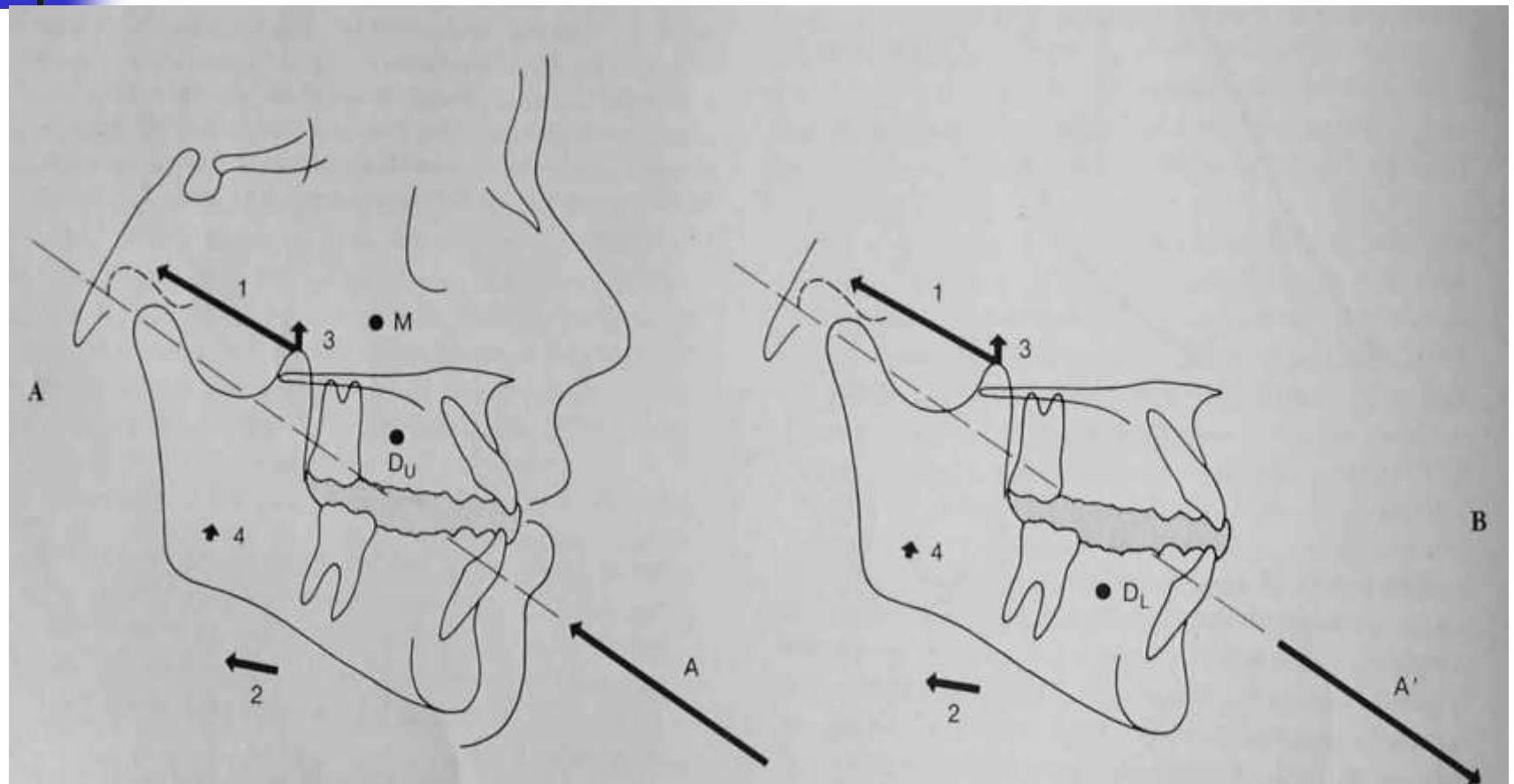


Mandibular forward positioners

- Myotatic reflex activity and isometric contractions
- Viscoelastic property of muscle and stretching of soft tissues
- Transitional



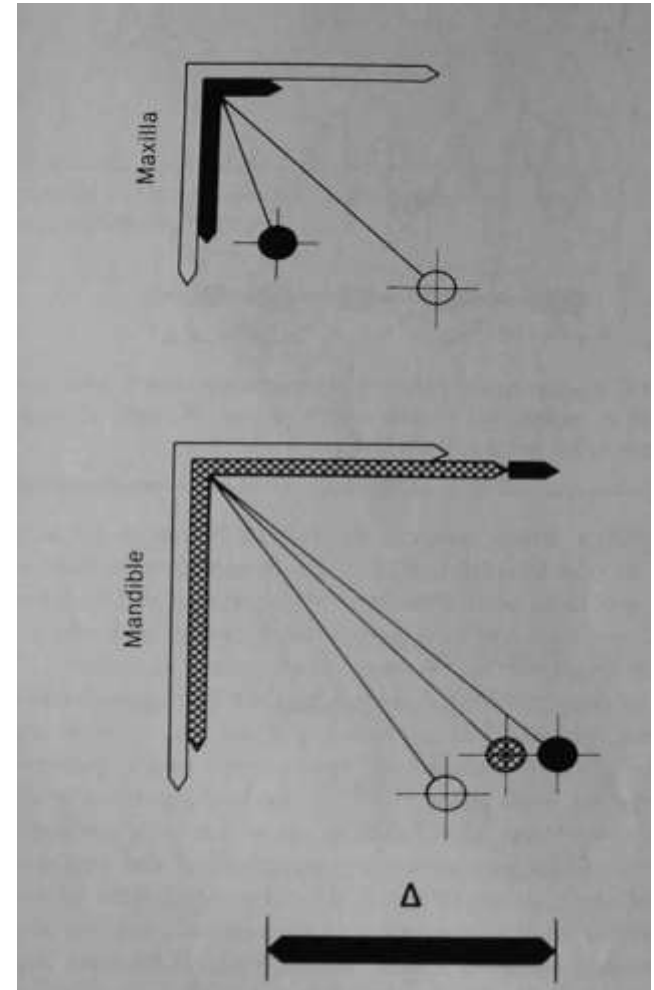
Force vector with activator



Treatment concept of Combined activator & headgear orthopedics

- Holding the maxilla in vertical as well as sagittal direction

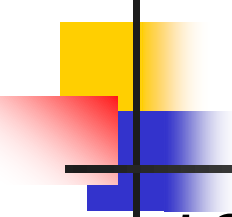
Forward positioning of the mandible





Appliance design

- Stocklie and Teuscher
- Pfeiffer and Grobety
- Hickham

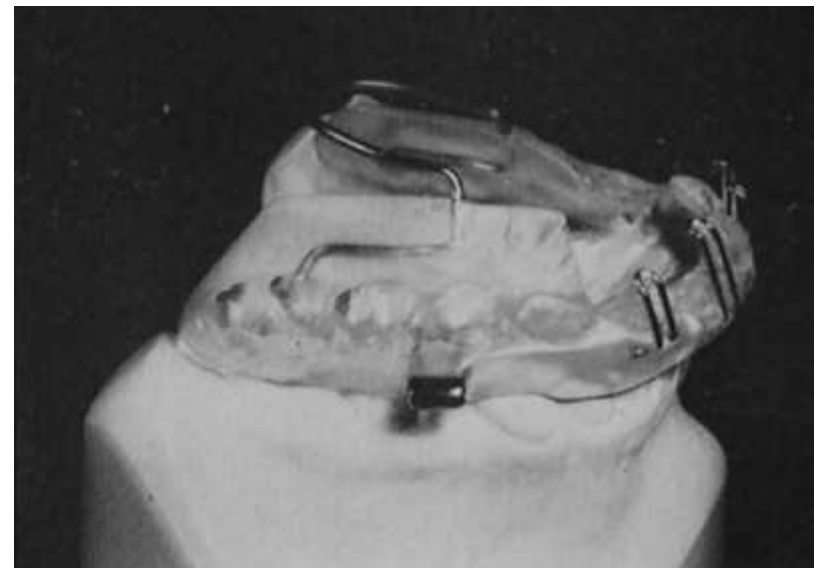
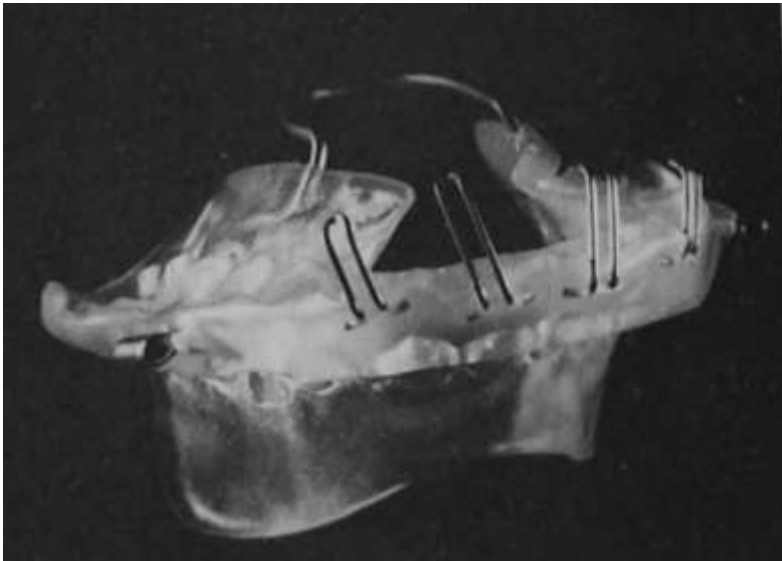


Stocklie and Teuscher Appliance design

- 1968 – cervical traction with head gear
- Similear to work of Pfeiffer and Grobety
- Thurow –removable acrylic splint
- Bass –J hook head gear to incisal torquing mechanism
- Restrict developmental contributors that tend to class II
- Enhance developmental contributors that tend to harmonize the same

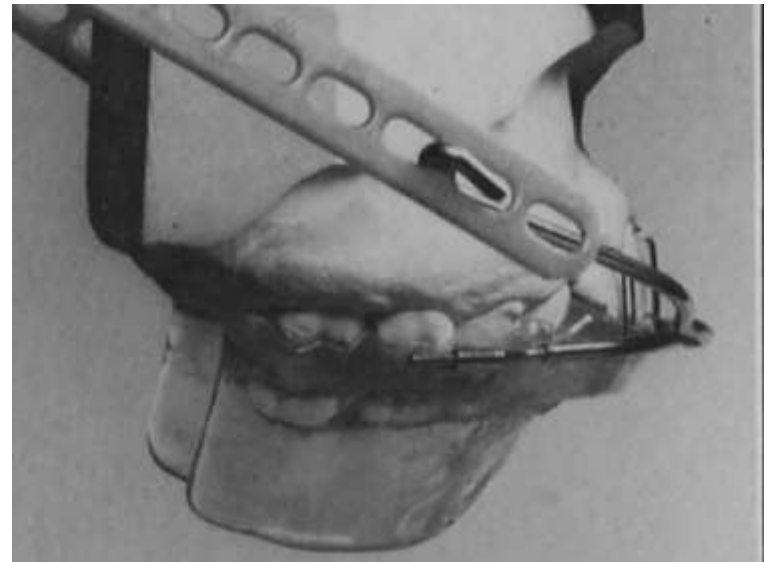
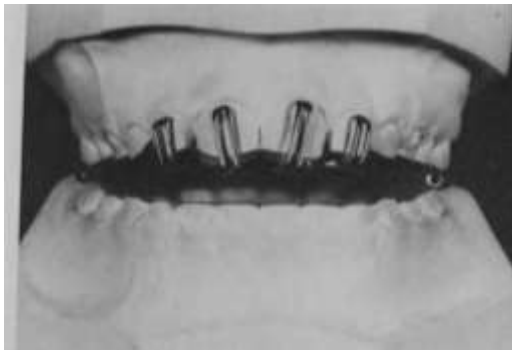
Stocklie and Teuscher Appliance design

- Activator with 2 mm of incisal capping
- A transpalatal bar
- Headgear tube between molar and premolars



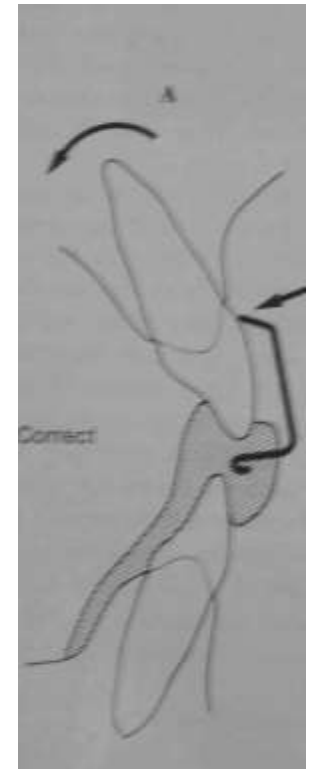
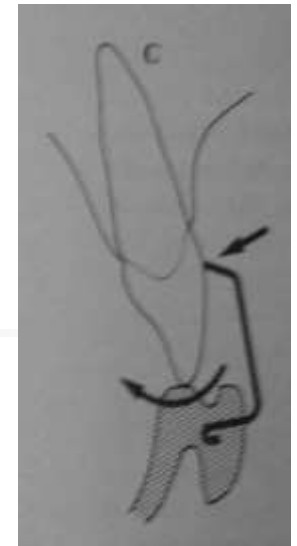
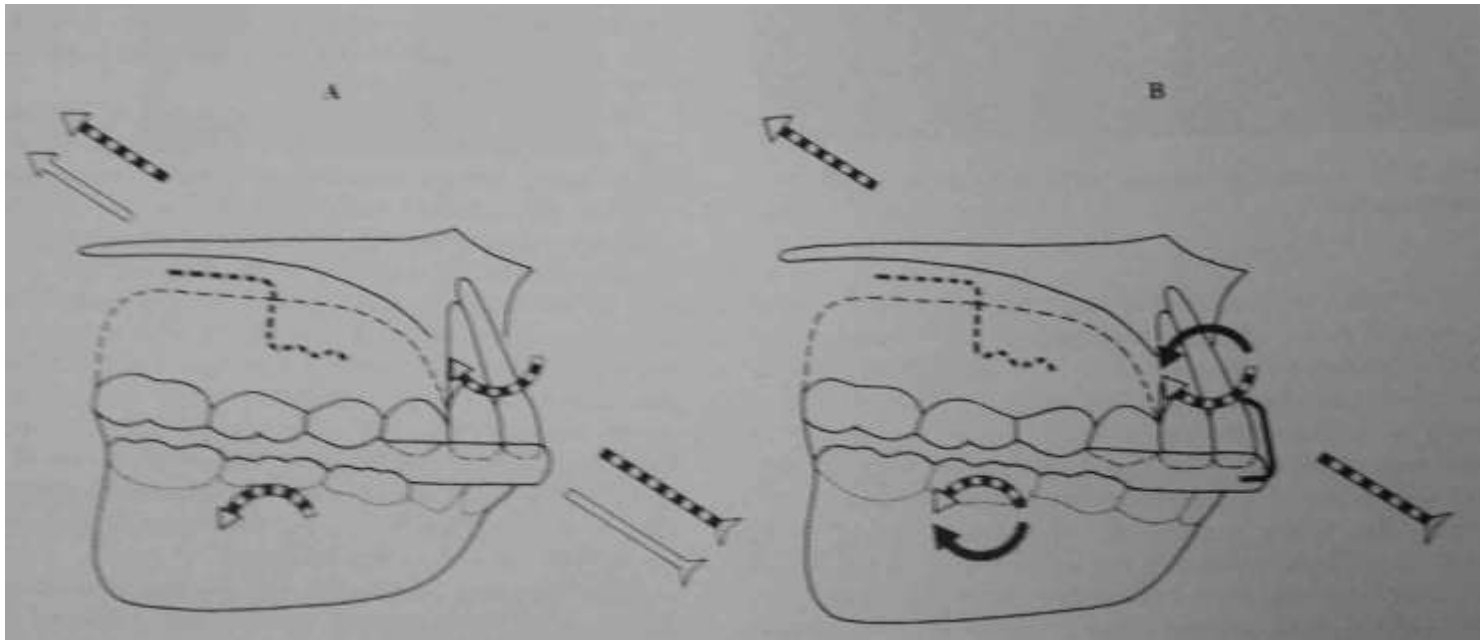
Stocklie and Teuscher Appliance design

- A force of 400 gm per side is used
- Ideally force should pass through both the centers of resistance.
- Tips the incisors
- Torquing springs



Torquing springs

- Used to stabilize the upper arch
- Palatal root tipping force is applied
- Made from 0.5/0.6 mm ss wire



Mandibular component of Stocklie and Teuscher Appliance design

- Forward positioning is essential because the head gear force might be transmitted to the mandible via intercuspation –Edler
- Construction bite –transitional approach
- Anchorage from lower lingual cortical plate
- 2-3 mm of incisal capping



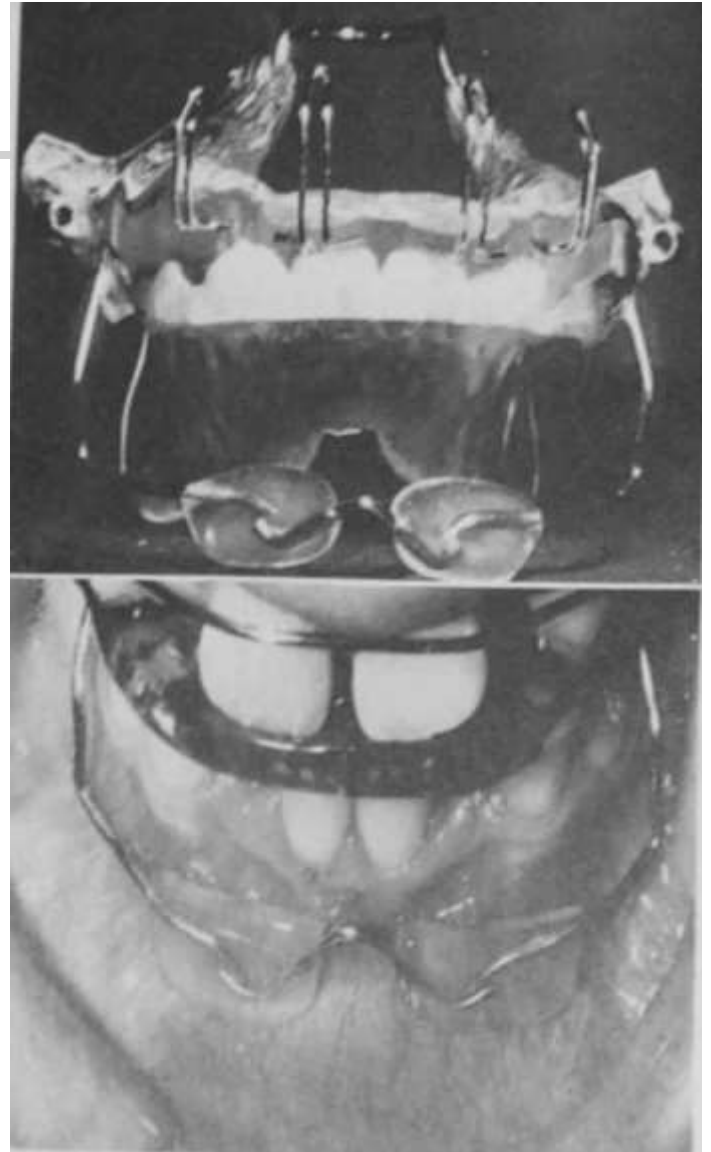
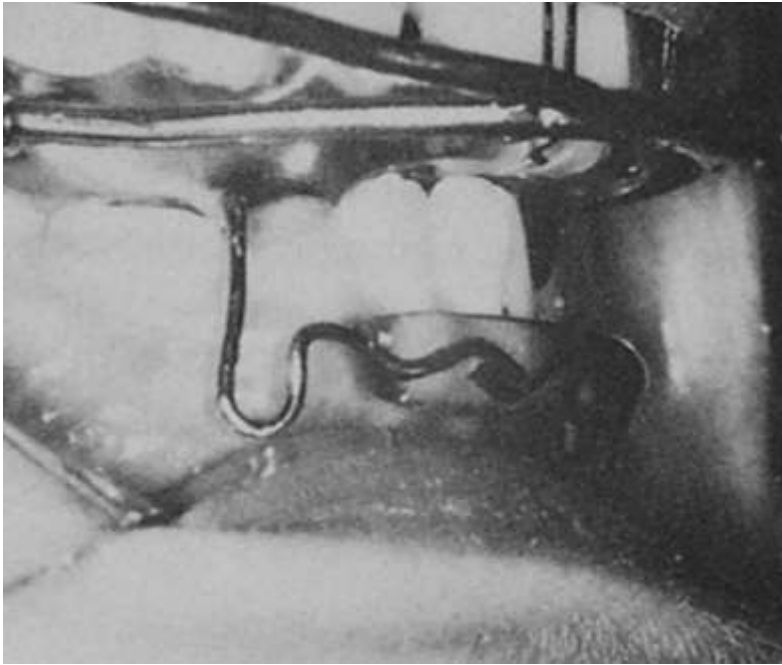
Modifications given by Stocklie and Teuscher



- Upper labial and lingual wires
- Lower labial and lingual wires
- Springs for individual tooth movement
- Combination with TPA
- Combination with fixed appliance
 - Fixed appliance after activator
 - diastema, 2*4, utility
 - Activator for cl II correction after fixed appliance

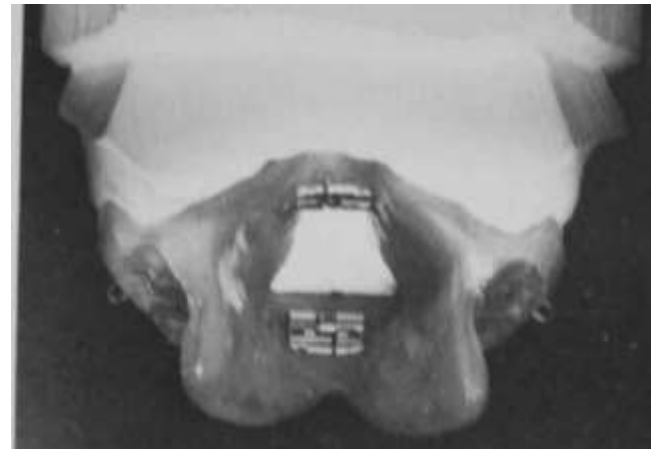
Modifications given by Stocklie and Teuscher

- Lip bumper and lip pads



Modifications given by Stocklie and Teuscher

- Grinding procedures
- Relining
 - Once in 8 weeks for expansion
 - Done when fit is lost
 - Once in 6 months
- Expansion screws





Pfeiffer and Grobety combination therapy

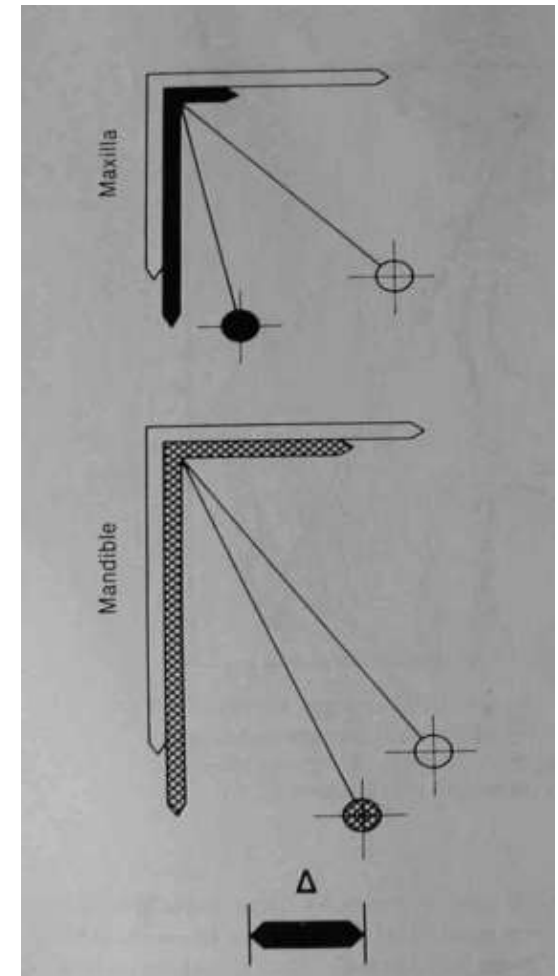
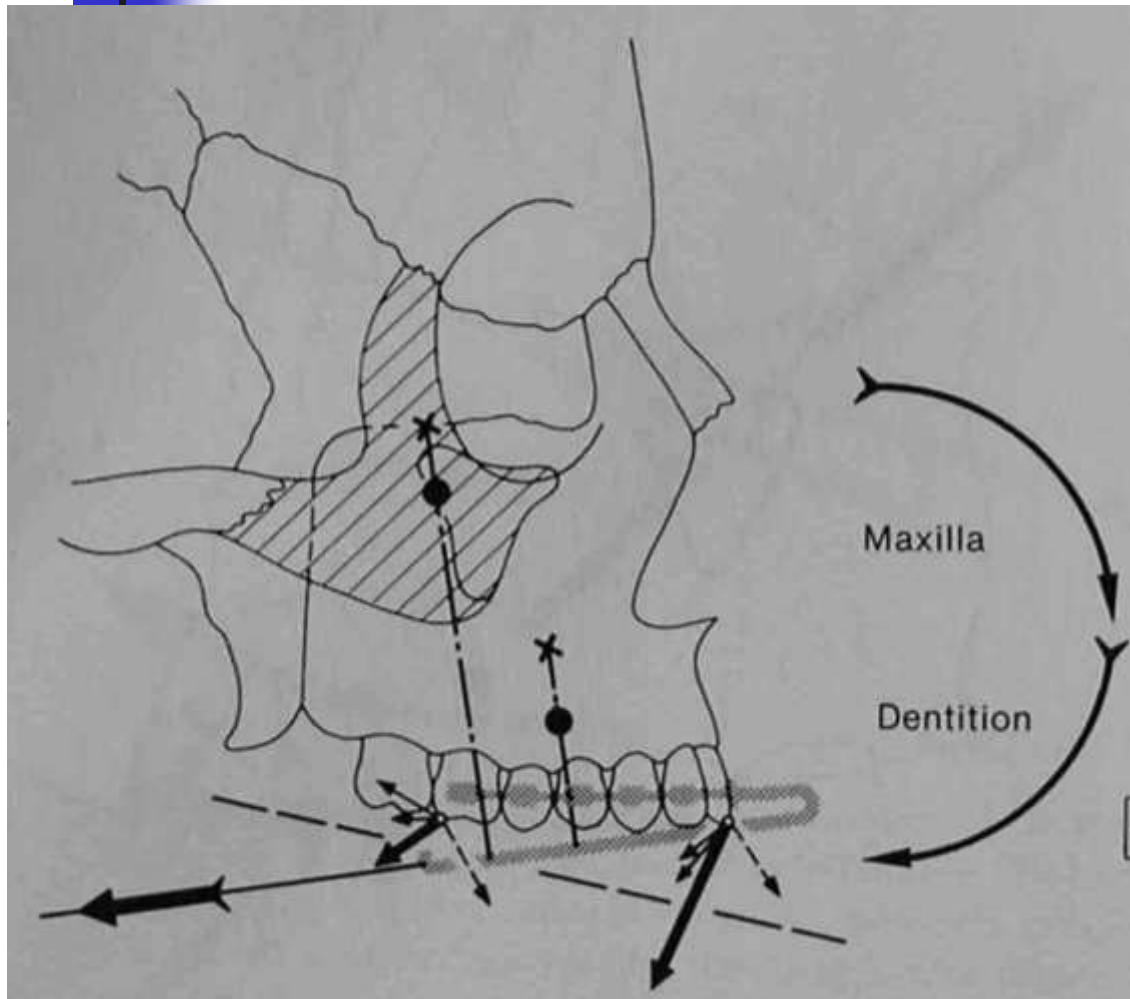
- Activator
 - Prevents ,intercepts and corrects habits
 - Acts as space maintainer
 - Expands if necessary
 - Starts to correct individual tooth position
 - Starts to correct beep bite
 - Helps to correct skeletal class II as it
 - Corrects habits
 - Promotes mesial movement of lower teeth
 - Inhibits maxillary growth



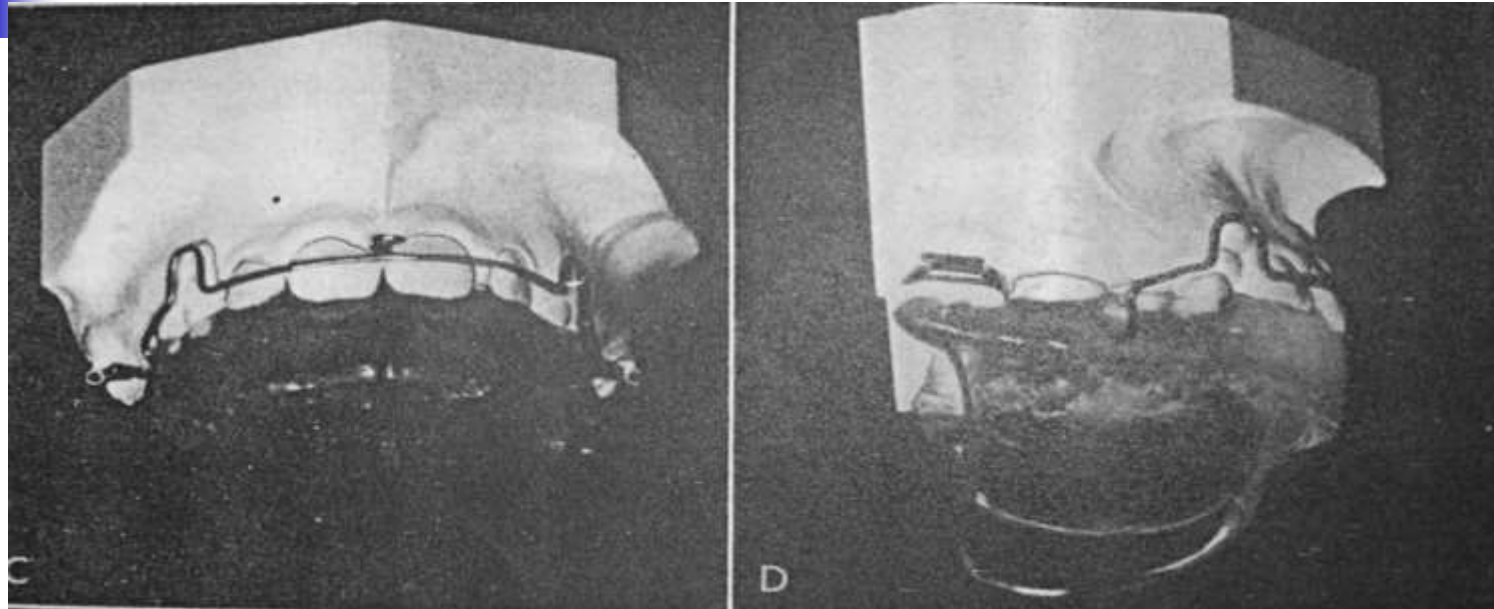
Pfeiffer and Grobety combination therapy

- Cervical extra oral force
- Slowed or interrupted maxillary growth
- Distal movement of anchor molars
- Tipping of anterior teeth
- Extrusion of upper molar—opening of bite—rotating the mandible downward & back ward
- Tipping downward of the anterior part of the palate

Cervical pull force inferior to both the centers of resistance



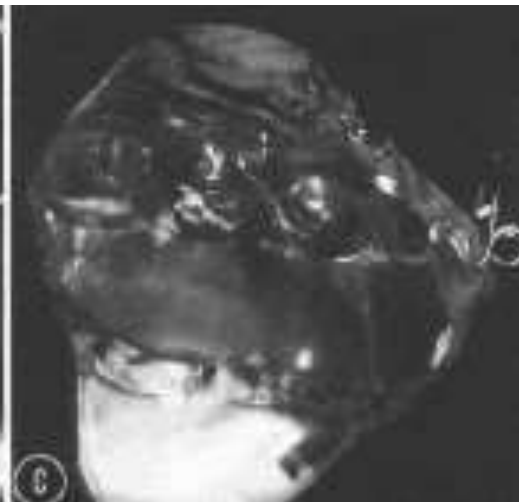
Pfeiffer and Grobety combination therapy-1972 & 1975



- Bands on first molar ,Extended lingual flanges & Spur on the labial bow
- Bite 2-3 mm short of most protrusive position & 3-4 mm beyond freeway space

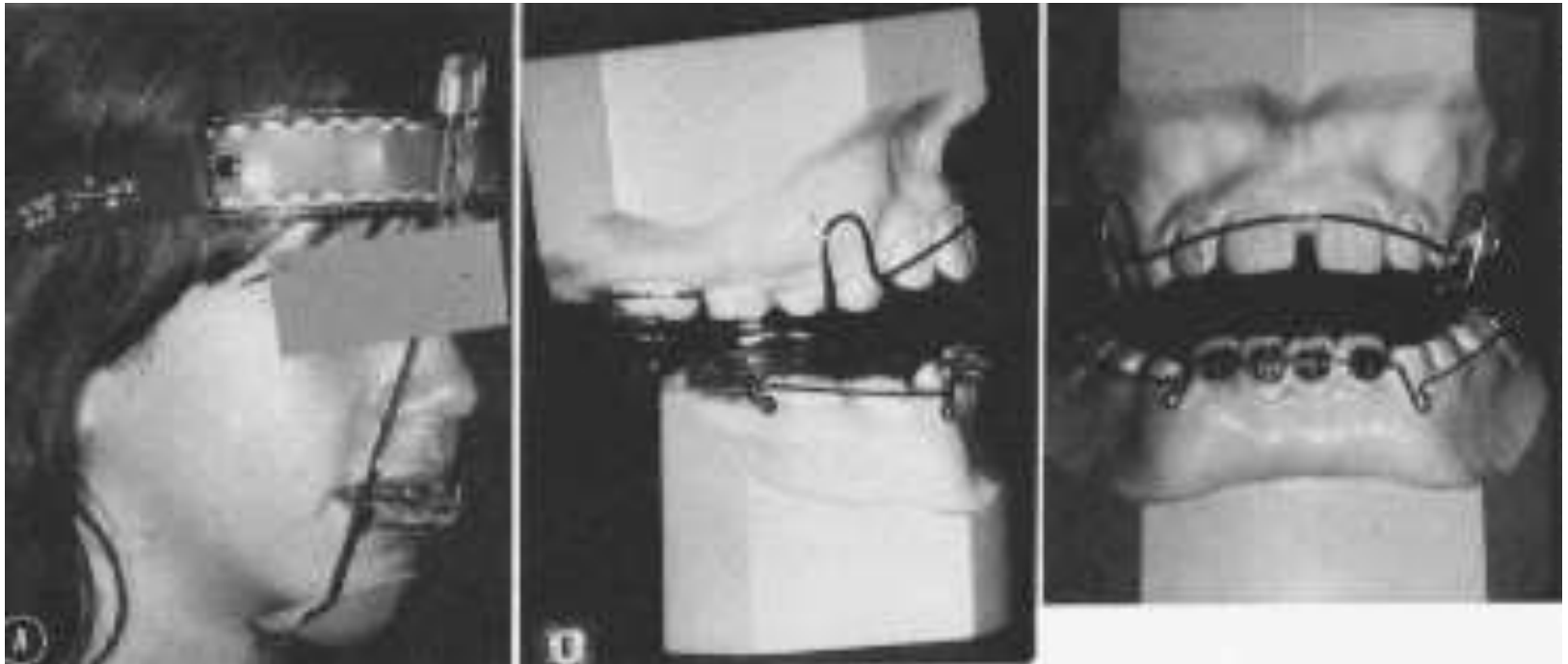
Pfeiffer and Grobety combination therapy-1982

- 70 % cervical traction
- Teuscher approach in hyper divergent cases
- Bass design of looped torquing device in cl II div II cases



Pfeiffer and Grobety combination therapy-1982

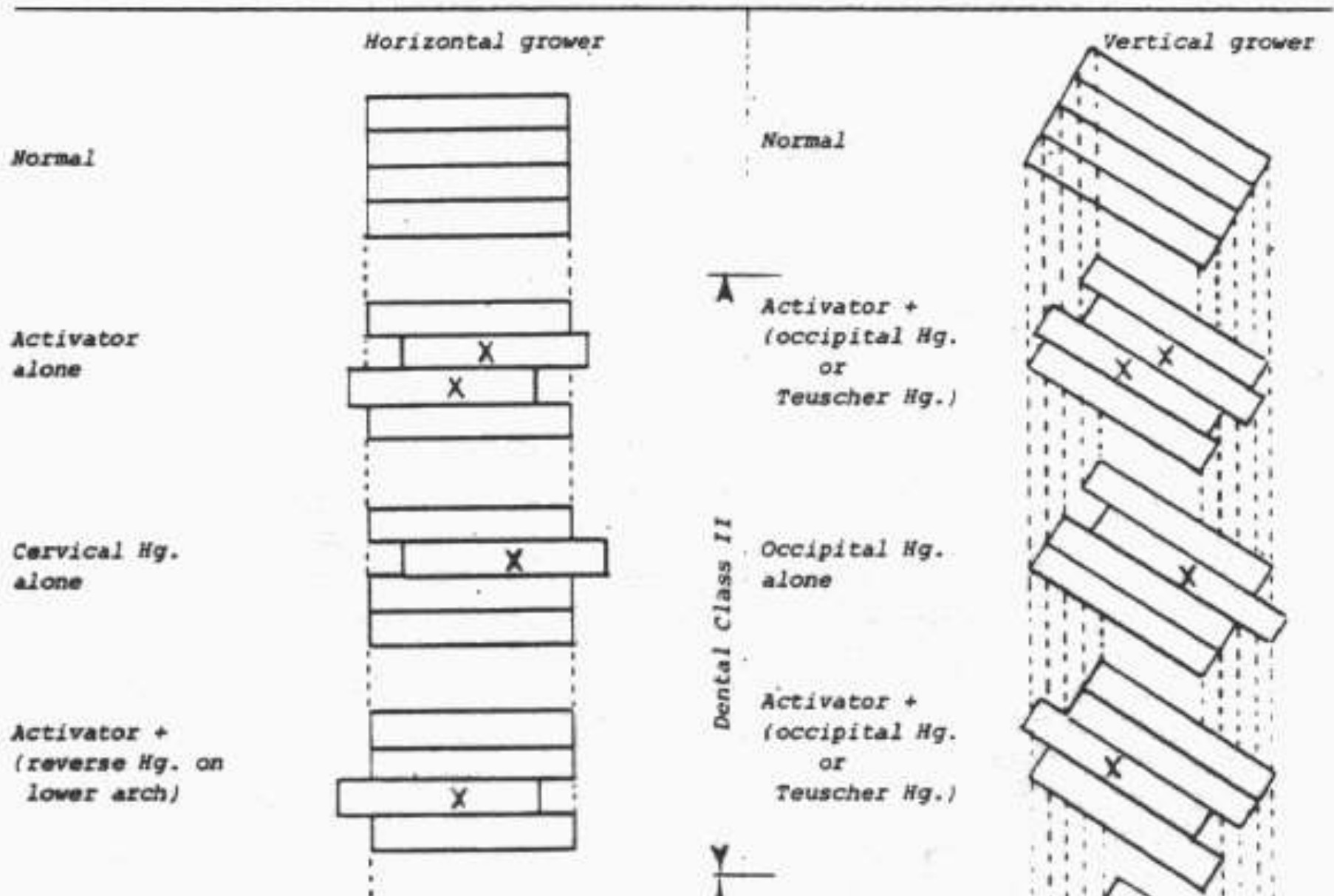
- Use of reverse head gear



Class II

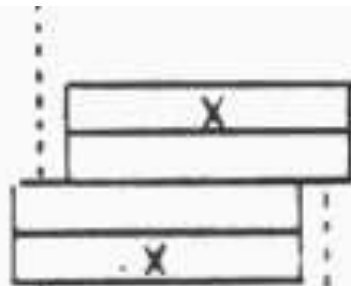
Legend: Cervical Hg. = KloeHN headgear
Occipital Hg. = Variable pull
 medium high

Reverse Hg. = Delaire mask
Teuscher Hg. = Headgear fixed on activator
X = displaced structure

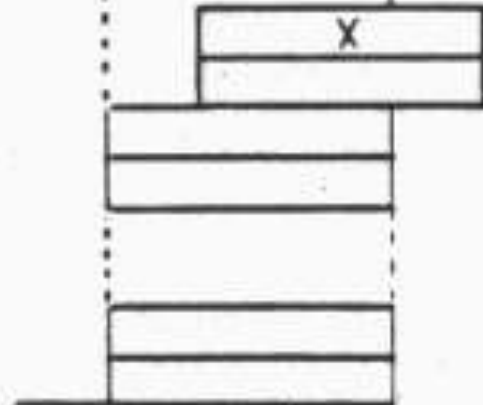


Pfeiffer and Grobety combination therapy-1982

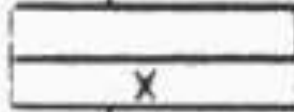
ANB < 5
Activator alone



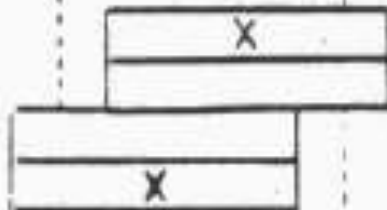
ANB > 5
Activator +
cervical Hg.



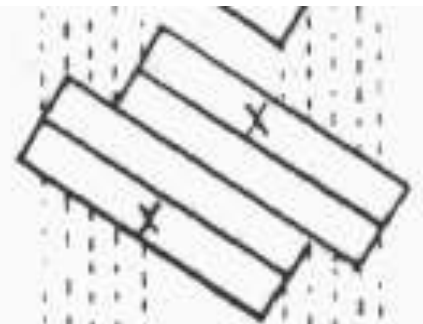
ANB > 5
Activator
highly activated
and reactivated
(reverse Hg.)



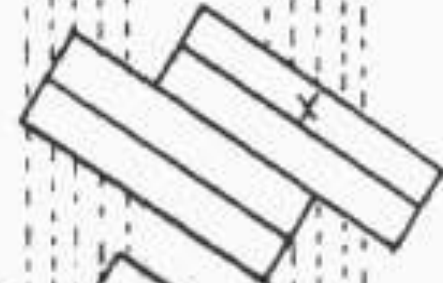
ANB > 5
Activator +
cervical Hg.



ANB < 5
Activator +
occipital Hg.
or
Teuscher Hg.



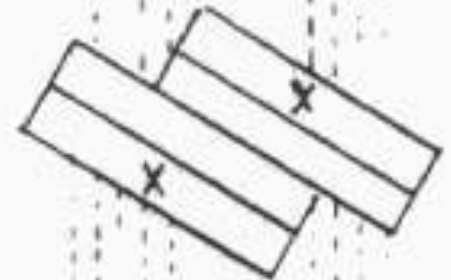
ANB > 5
Activator +
occipital Hg.



Skeletal Class II
ANB > 5
Activator +
Teuscher Hg.



ANB > 5
Activator +
occipital Hg. +
or Teuscher Hg.





Pfeiffer and Grobety combination therapy- 1982 -Treatment time

Do not wait till pre pubertal growth spurt

- Soft tissue adaptation
- Psychological problems
- Permanent teeth cannot be guided hence extraction becomes necessary
- Long term stability -tissue adaptation
- 12-18 orthopedic & 12-18 orthodontic

Hickham 1980

- Advocated hooks soldered on labial bow to apply extra oral force of 16+ ounces
- Type of discrepancy decides the direction of force



Hickham 1980

- High angle cases with anterior open bite
- Increase thickness of the bite
- Vertical pull head Cap with mandibular trough.





Activator and its modifications

“Before disregarding my recommendations and making changes, first ask me why it failed when I first tried it. After all ,I have spent a lifetime trying and discarding alternate methods,selecting the best the easiest, the most efficient ways to do things.”

-P R Begg



References

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- Dentofacial orthopedics with functional appliances- Graber,Rakosi & Petrovic
- Pfeiffer, J.-P., and Grobéty, D.: Simultaneous use of cervical appliance and activator: An orthopedic approach to fixed appliance therapy, AM. J. ORTHOD. 61: 353-373, 1972.
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- Hickham,JH: Activators for the Fixed Appliance Orthodontist, J Clin Orthod 14;529,1980
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