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ACTIVATOR

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- History and Evolution
- Components of the Activator
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- Construction bite
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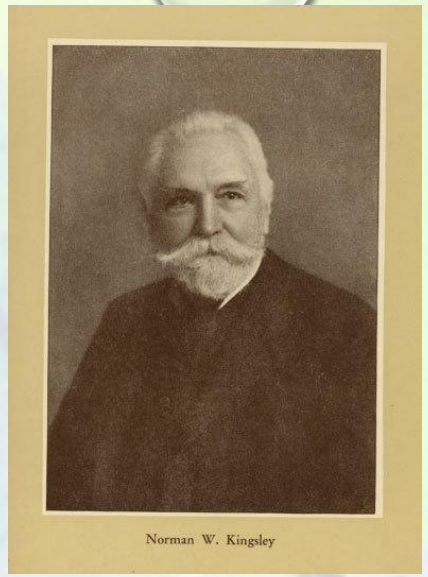
- Summary
- References

HISTORY AND EVOLUTION



- 1803 – Fox - facial sutures influenced by the extra oral forces.
- 1880 – Kingsley - " **Jumping the bite**".
- 1890 – Roux hypothesis – "**Shaking of bone**".
- Hotz – **Vorbissplate** – a modified Kingsley plate.

Draw backs of jumping of bite

- Dual bite
- Causes jiggling of the teeth

- Kingsley's postulate

- 1902 – Pierre Robin - **Monobloc**.

- 1908 – Viggo Andresen – **Activator**

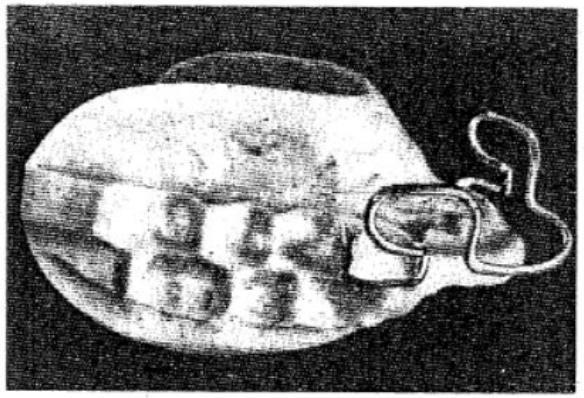


Figure 8-3. Original activator according to Andresen and Häupl.

- **Biomechanics working retainer.**
- **Activator** – activate muscle forces.
- Andresen – **Biomechanical Orthodontics**
- Andresen and Karl Haupl – **Functional jaw orthopaedics**.
- **Individual Optimum** –Karl Haupl

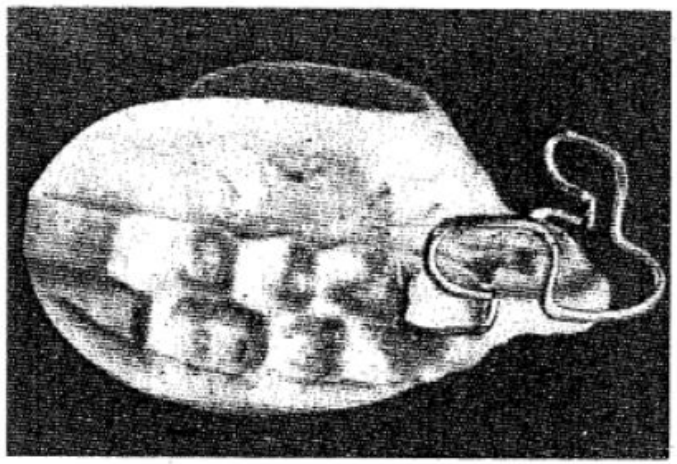


Figure 8-3. Original activator according to Andresen and Häupl.

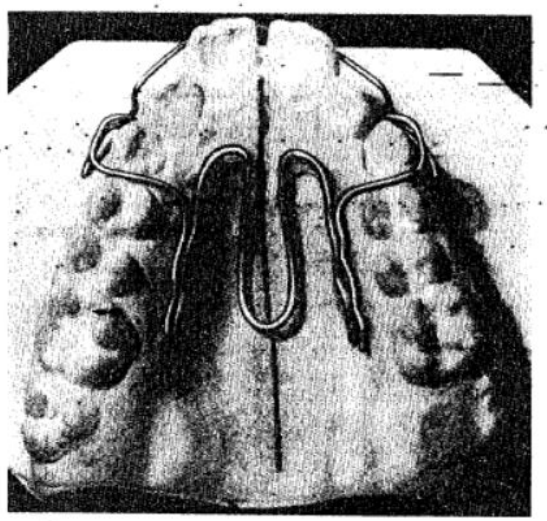


Figure 8-4. Coffin springs used for expansion.

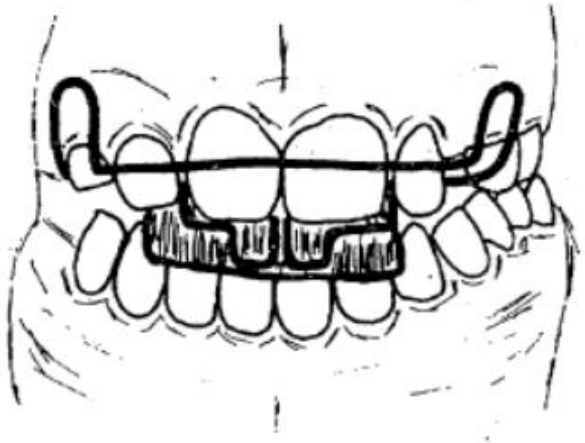


Figure 8-5. Additional elements for moving the incisors, used by Petrik.

Two main types

1. One rigid acrylic mass

- **Open activator**
- **Elastic open activator** – Klammt 1955
- **Bionator** – by Balters

2. Consist of two parts (upper and lower) joined with wire bows

- **Schwarz double plate**
- **Stokfish modification**

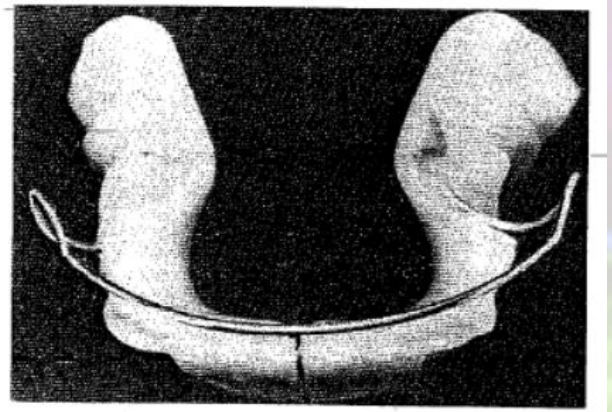


Figure 8-7. Open activator. The palatal acrylic is cut away.

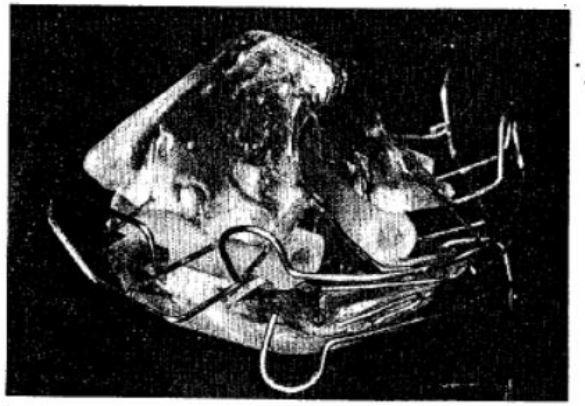


Figure 8-10. Elastic activator—the kinetor, according to Stockfisch.

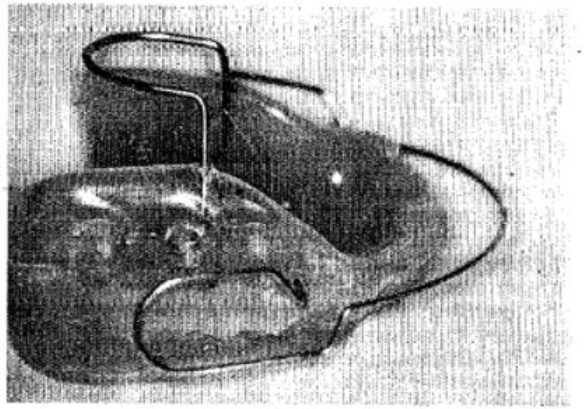


Figure 8-9. Balters' appliance—the bionator.

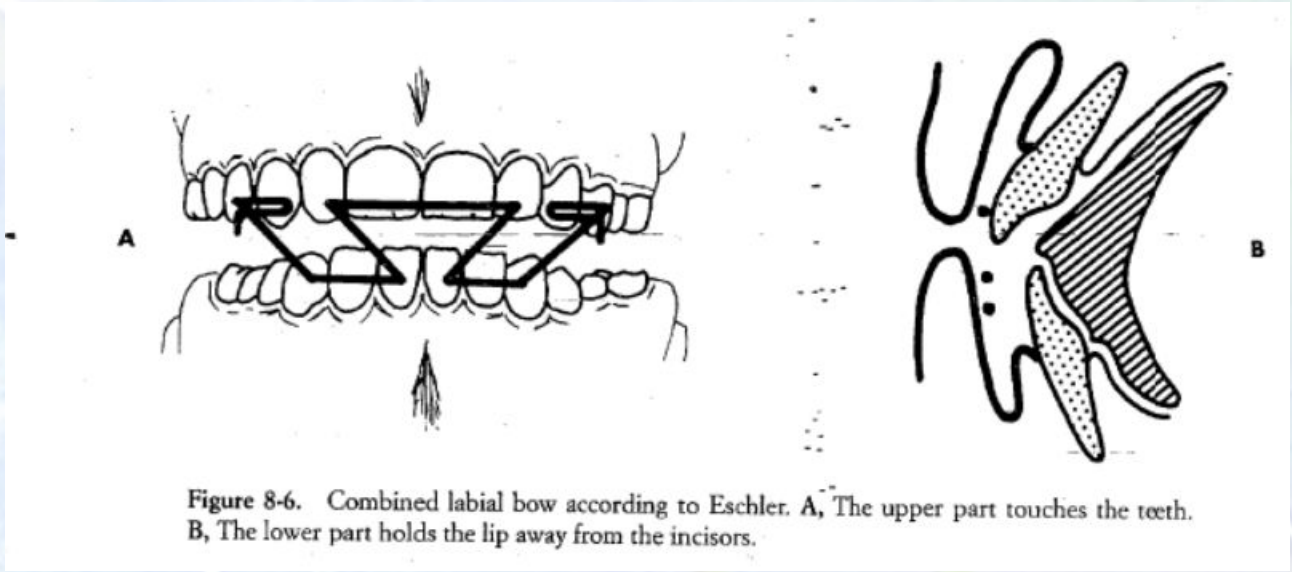


Figure 8-6. Combined labial bow according to Eschler. **A,** The upper part touches the teeth. **B,** The lower part holds the lip away from the incisors.

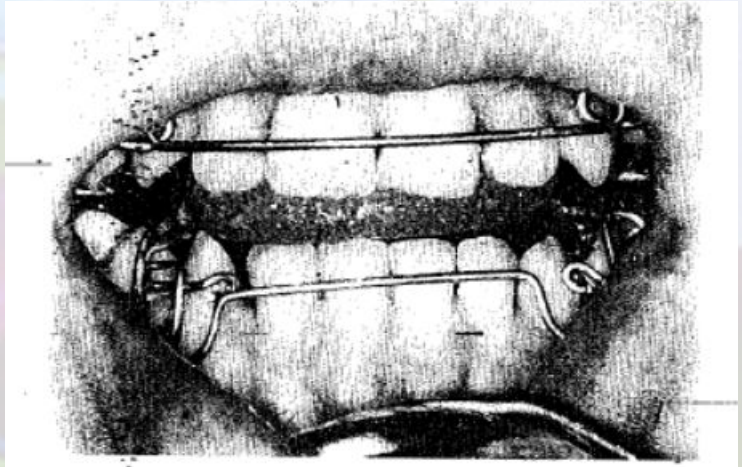


Figure 8-8. Tongue thrust habit that arose during the wearing of an open activator with a high construction bite.

Mode of action

Rigid Activator

- Contractions are isometric.
- Higher tension
- Long lasting tonic stretch reflex contraction.

Flexible two piece Activator

- Permits muscle shortening
- Transient phase reflex contraction.
- Not bulky and do not impede the movements of the mandible.

<u>Classification of views</u> – three groups

1. **Group 1** – Petrovic, McNamara, Grude
2. **Group 2** – Selmer – Olsen, Herren, Harvold, Woodside
3. **Group 3** – Eschler

SKELETAL AND DENTOALVEOLAR EFFECTS OF THE ACTIVATOR

- Influence the sutures and TMJ
- Construction bite determines the efficiency of its action
- Two growth vectors propel the jaw bases in an anterior direction
  - Sphenoccipital synchondrosis
  - Condyle
- The growth direction is more important
- Only the upward and backward growth of the condyle is capable of moving the mandible anteriorly

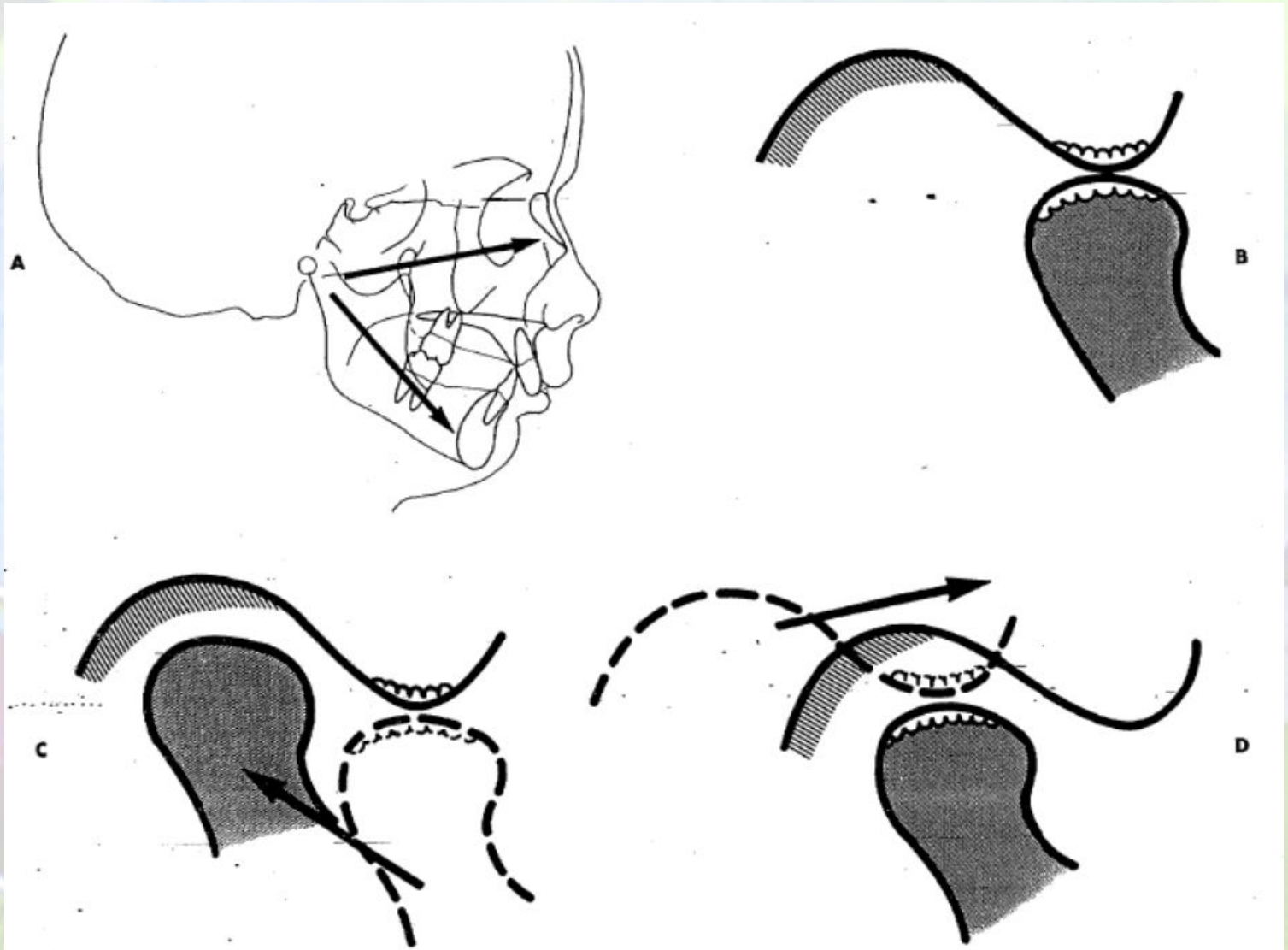


Figure 8-11. **A,** Divergent growth vectors that move the jaw bases forward. **B,** The articular effectiveness of the activator moves the condyles into a forward-downward position. **C,** Adaptation to the new position through condylar growth. **D,** Adaptation to the new position by remodeling in the fossa.

Forward positioning of mandible

↓ Stimulates

Condylar growth

↓ Activates

Superior head of lateral pterygoid process

↓ Induces

Cell proliferation in condyle and a growth response

- According to Woodside,
  - a small vertical opening restricts only horizontal midfacial development
  - a wide vertical opening restricts downwards displacement of the midface.

- Dentoalveolar effect - control eruption and alveolar bone apposition.

- Most effective - early mixed dentition.

FORCE ANALYSIS IN ACTIVATOR THERAPY

- When the functional appliance activates the muscles, various types of forces are created –
  - **Static forces**
  - **Dynamic forces**
  - **Rhythmic forces**

Two principles are employed in modern activator;-

- **Force application**
- **Force elimination**

- Types of forces employed in activator can be categorised as
  1. **<u>Growth potential</u>**
  2. **<u>Muscle contraction and stretching of soft tissues</u>**
     - Sagittal plane
     - Vertical plane
     - Transverse plane
  3. **<u>Various wire elements</u>**

CONSTRUCTION BITE

Relocates the jaw in the direction of treatment objective

↓ Creates

Artificial functional forces

↓ Results in

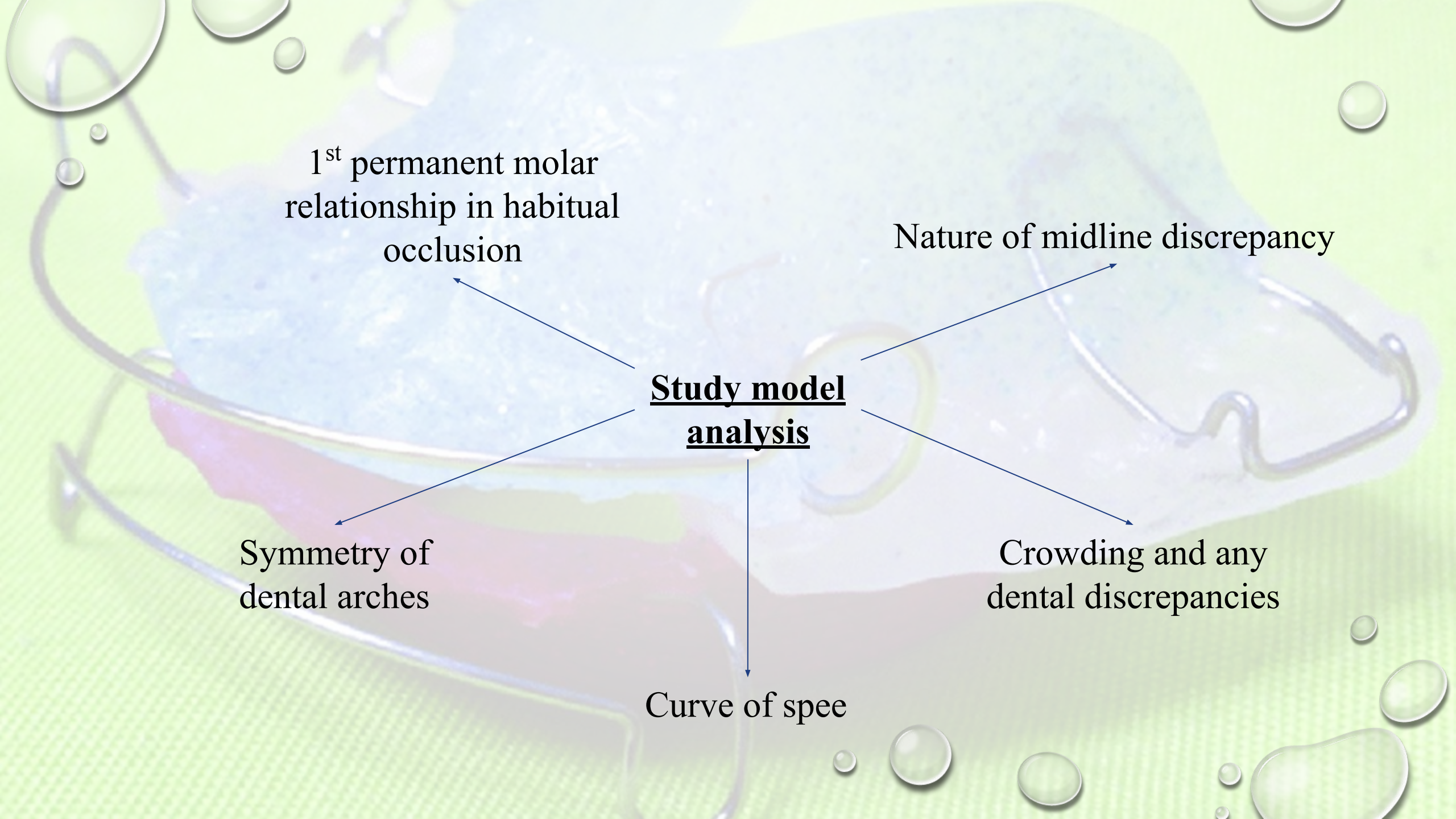
Mandibular manipulation

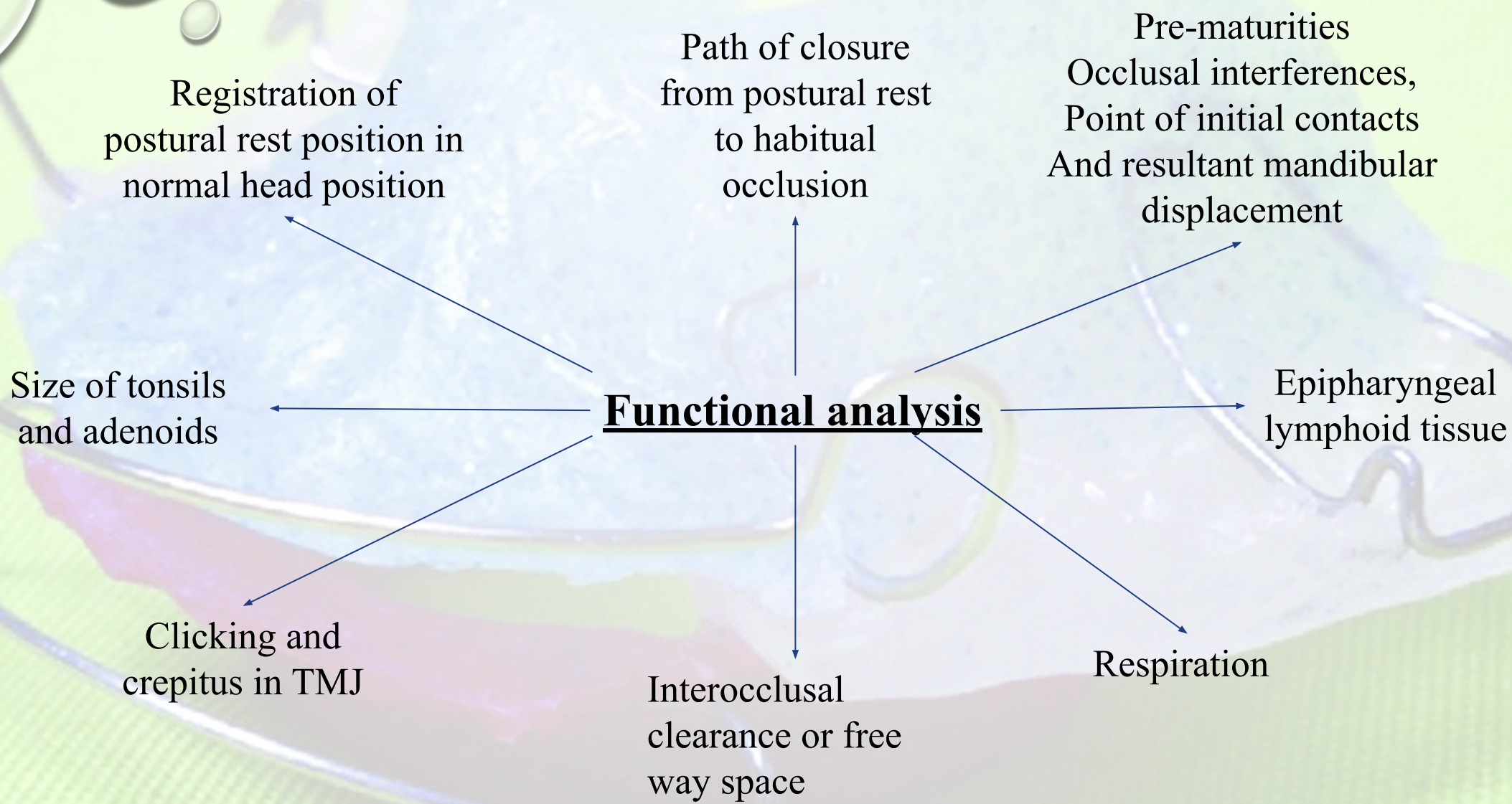
DIAGNOSTIC PREPARATION

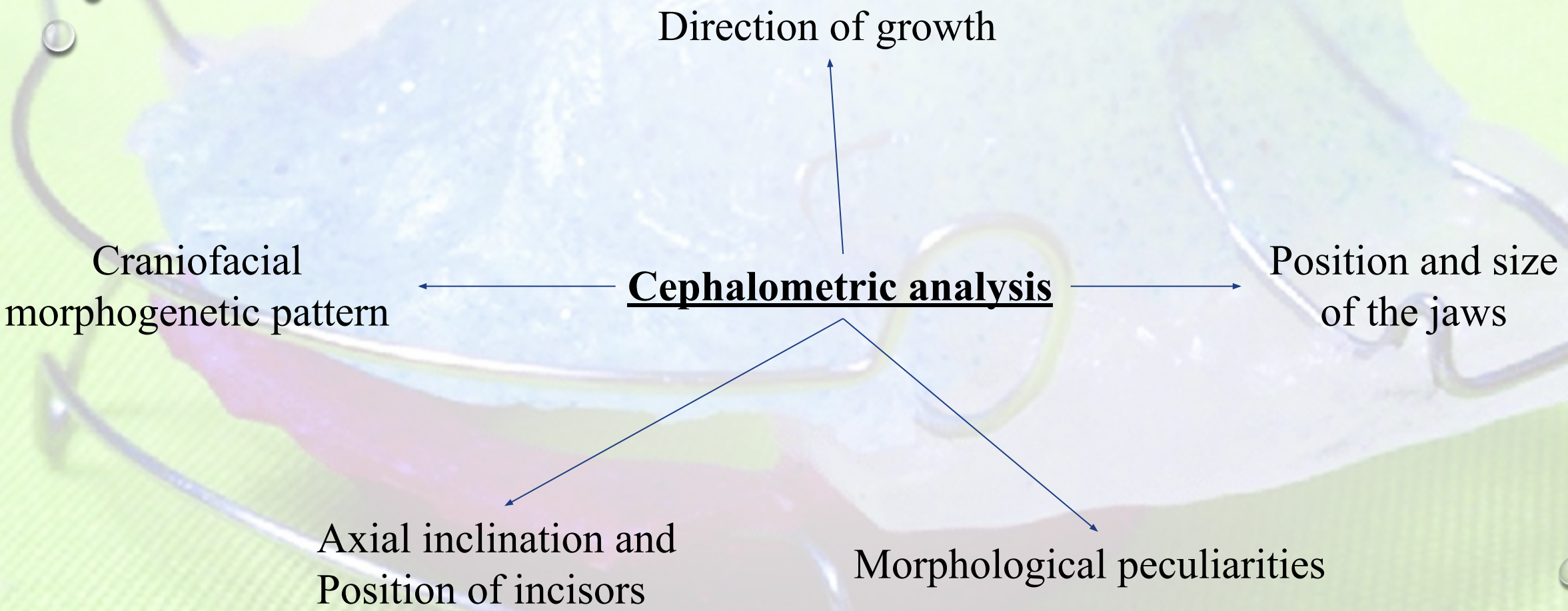
Patient compliance

Instant correction

Video imaging


1st permanent molar relationship in habitual occlusion
Nature of midline discrepancy
Study model analysis
Symmetry of dental arches
Crowding and any dental discrepancies
Curve of spee


Registration of postural rest position in normal head position
Path of closure from postural rest to habitual occlusion
Pre-maturities Occlusal interferences, Point of initial contacts And resultant mandibular displacement
Size of tonsils and adenoids
Functional analysis
Epipharyngeal lymphoid tissue
Clicking and crepitus in TMJ
Interocclusal clearance or free way space
Respiration


Direction of growth
Craniofacial morphogenetic pattern
Cephalometric analysis
Position and size of the jaws
Axial inclination and Position of incisors
Morphological peculiarities

Anterior positioning of the mandible

- In average class II problems, intermaxillary relationship - end to end incisal
- The anterior positioning should not exceed 7-8mm or ¾ of the mesio-distal dimension of 1st permanent molar

Contraindication

- Large overjet
- Severe Labial tipping of the maxillary incisors
- Short pre-functional appliances
- Pathological construction bite
- Lingually erupted incisor

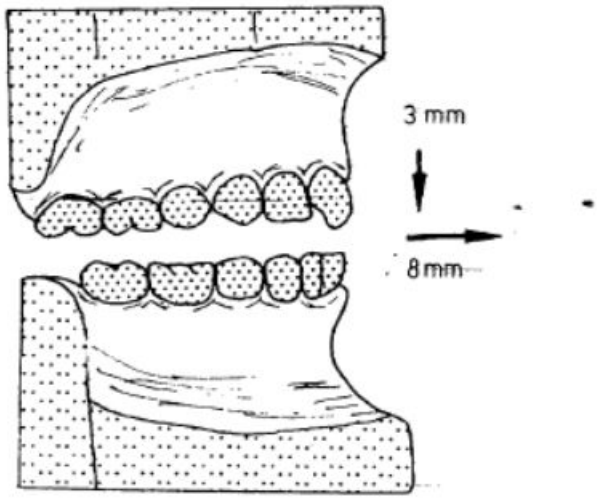


Figure 8-13. Construction bite in edge-to-edge relationship with slight opening.

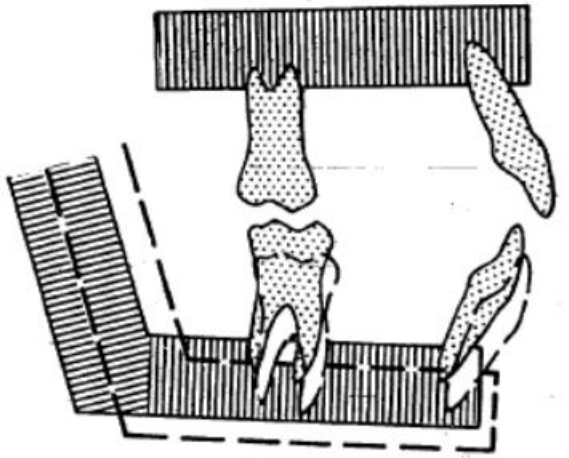


Figure 8-15. Anterior positioning of the mandible from the rest position.

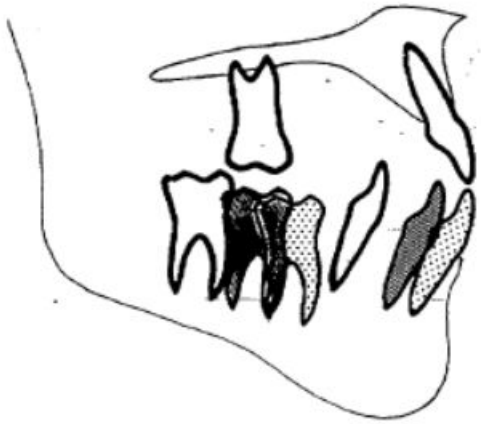


Figure 8-14. Anterior positioning of the mandible in two phases—first phase, *dark;* second phase, *dotted.*

Opening the bite

- Determining the height of the bite are guided by the following principles such as

1. Mandible dislocated from the postural rest position either sagittally or vertically

↓

Activates the associated musculature

↓

Induces strain in the tissues

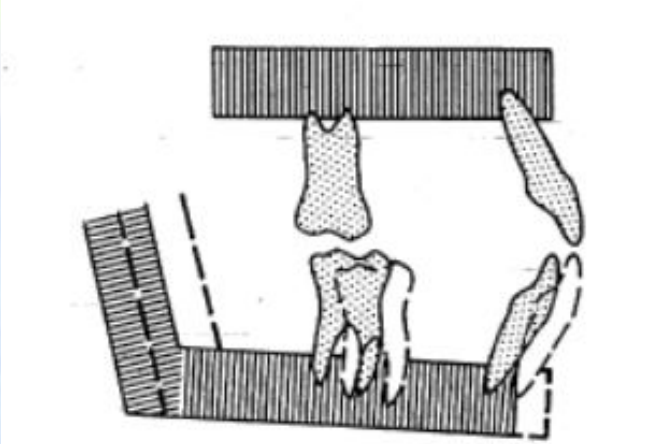


Figure 8-16. Opening the mandible below the rest position.

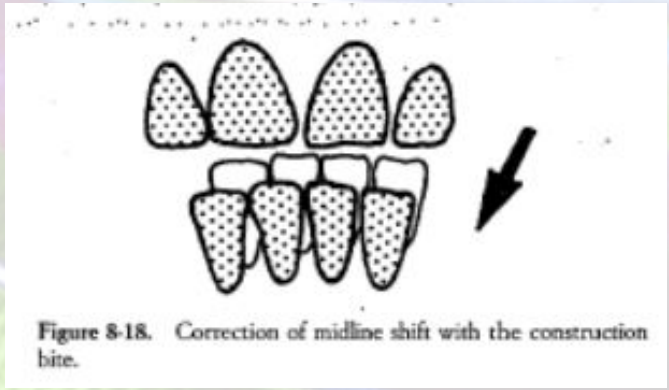


Figure 8-18. Correction of midline shift with the construction bite.

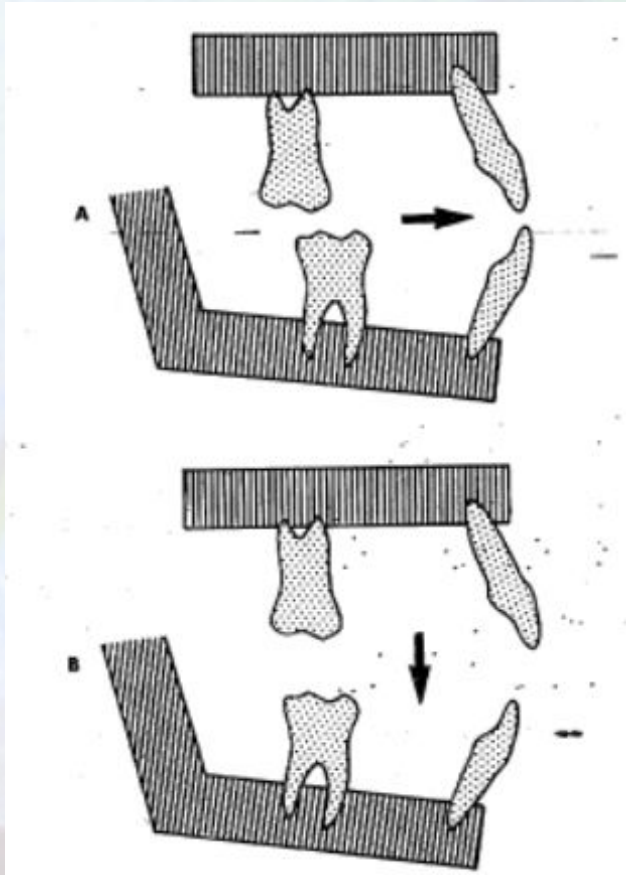


Figure 8-17. A, Sagittal force component, which arises during anterior positioning of the mandible. B, Vertical force component, which arises during opening of the mandible.

- If the magnitude of the forward position is great (7-8mm), the vertical opening should be minimal.
- Construction bite - ↑ force component in sagittal plane
- Primary activation - elevator muscle of the mandible.

- If **extensive** vertical opening is needed, the mandible must not be anteriorly positioned.
- If the bite opening **exceeds 6mm**, mandibular protraction must be very slight.
- Myotatic reflex activity of the muscles of mastication can be observed along with the stretching of the soft tissue, in this type of bite.

- Can influence the inclination of maxillary base.
- Indicated in the vertical growth pattern.

Disadvantages

- Difficulty in wearing and adapting
- Muscle spasms
- Appliance tends to fall out of the mouth
- Lip seal difficult to achieve.

General rules for construction bite

The assessment of the construction bite determines

- Kind of muscle stimulations
- Frequency of mandibular movements
- Duration of effective forces
- In forward positioning of the mandible (7-8mm) , the vertical opening must be slight to moderate (2-4mm)

- If the forward positioning is no more than 3-5mm, vertical opening is 4-6mm.
- Activator can correct the midline shifts or deviations, only if actual lateral translation of mandible itself exists.
- Functional crossbites in the functional analysis can be corrected by taking the proper construction bite.

EXECUTION OF THE CONSTRUCTION BITE TECHNIQUE

- Horse-shoe shaped wax bite rim of proper arch form and size is prepared.
- 2-3mm thicker than the planned construction bite
- If the rim is placed on the lower arch the mandible can be guided into the desired anterior position for treatment of class II malocclusion.
- If the rim is placed in the upper arch , the mandible can be moved easily to the more retruded position for construction of class III activator.

- Operator asks the patient to sit upright in a relaxed posture while gently guiding the mandible into the predetermined position.

- Repeat this 3-4 times
- Repeat the exercise and then hold the forward position for a short time to setup an exteroceptive engram.

- The softened wax bite rim is placed in the mouth, during closing movement the operator controls the edge to edge incisal relation and midline registration.

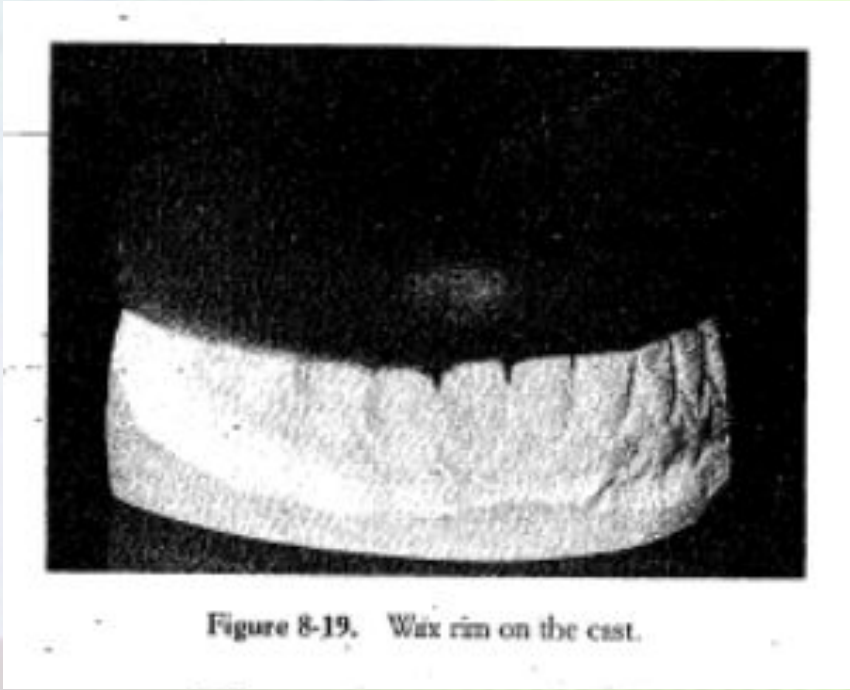


Figure 8-19. Wax rim on the cast.

- The wax is cut away from the labial of the central incisors so that the midlines can be observed and correct reproduction of incisal relationship is established.
- Wax is carefully removed and checked on the models
- Wax should be close to all the cusps of the teeth
- Hardened wax bite is then chilled and then checked once again in the mouth.

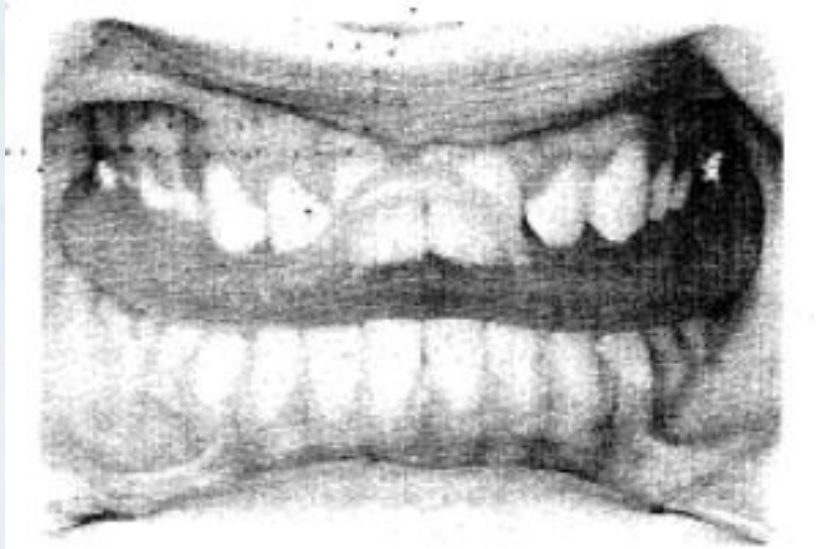


Figure 8-20. Wax rim in the mouth. When the bite is being taken, midline shift should be controlled.

TECHNIQUE FOR A LOW CONSTRUCTION BITE WITH MARKEDLY FORWARD MANDIBULAR POSITIONING

- Mandible is positioned anteriorly to achieve an edge to edge relationship parallel to the functional occlusal plane.
- In class II functional retrusion cases, the mandible can be positioned anteriorly to a greater degree than in true class II malocclusion with a normal path of closure.

- The construction bite should always be at least 3mm posterior to the most protrusive positioning possible.
- Should maintain the interocclusal clearance.
- Not exceed its postural rest position for the vertical registration.

Mandible moves anteriorly

↓

Teeth engages the appliance

↓

Myotatic reflex

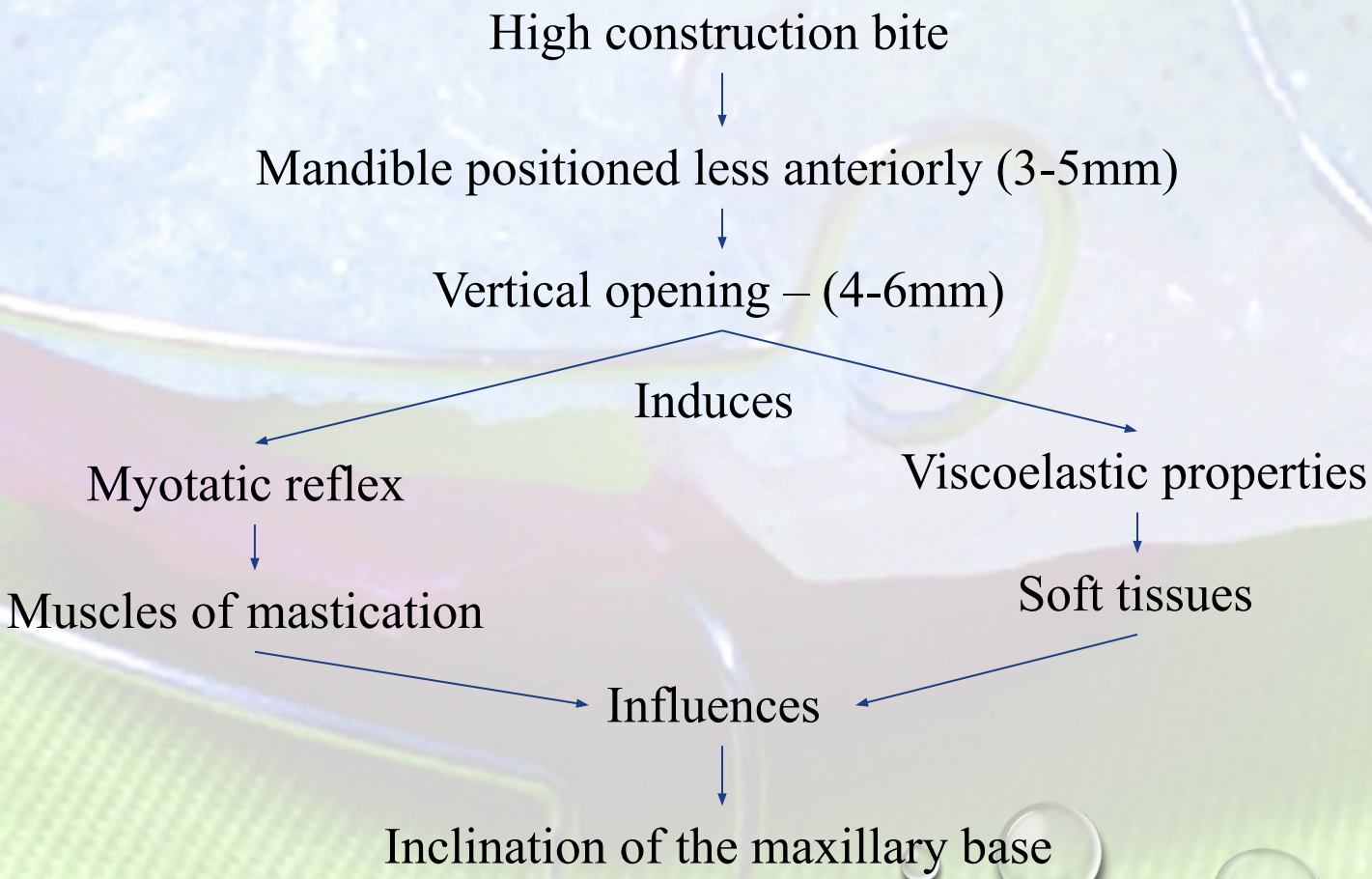
↓

Elevator muscle of mastication is activated

Horizontal activator

- Activator with a low vertical opening registration and a forward bite
- Indicated in class II div I malocclusion with sufficient overjet.
- H-activator allows;
  - Mandibular forward positioning
  - Maxillary incisors can be positioned upright
  - Inhibition of Anterior growth vector of maxilla

TECHNIQUE FOR A HIGH CONSTRUCTION BITE WITH SLIGHTLY ANTERIOR MANDIBULAR POSITIONING



- Indicated in vertical growth patterns, referred to as V-activator.
- Greater opening of the vertical dimension in the construction bite allows the myotatic reflex to remain operative even the musculature is more relaxed.
- Partially achieved by the retroclination of the maxillary base

- This skeletal adaptation must be supported by dentoalveolar compensation which requires
  - Differential guidance of eruption of the lower buccal segments.
  - Withholding of maxillary buccal segment eruption.
  - Lingual tipping of the maxillary incisors.
  - Labial tipping of the mandibular incisors.

TECHNIQUE FOR A CONSTRUCTION BITE WITHOUT FORWARD MANDIBULAR POSITIONING

Indicated in vertical dimension problems ;-

- Deep overbite
- Open bite
- Selected cases of crowding

Deep over bite malocclusion

↓

Dentoalveolar

↓ Caused by

- Infra occlusion of buccal segment
- Supra occlusion of anterior segment

↓

Interocclusal space is small

↓

Activator with low construction bite

↓

Intrusion achieved by loading the incisal edges with an acrylic cover

↓

Intrusion is relative rather than absolute

↓

ie, other teeth are free to erupt and accomplish the predominant growth pattern
Successful result requires a significant increment of growth in vertical direction

Skeletal deep over bite

↓

Horizontal growth pattern

↓ Compensated by

Forward inclination of the maxillary base

↓

Acrylic capping engages the incisors

↓

Allows molars to erupt freely

↓

High construction bite

↓ Elicits

Myotatic reflex and viscoelastic properties of the muscle and soft tissues

↓

← Dentoalveolar compensation

- Extrusion of the lower molars
- Distal driving of the upper molars

Open bite malocclusion

- Dentoalveolar open bite can be treated properly by trimming the acrylic of the appliance.
- Bite is opened by 4-5mm to develop sufficient elastic depressing force and load the molars that are in premature contact.
- Can influence the vertical growth pattern in these cases.

Crowding

- Anchored intermaxillary
- Works similar to active plates with jackscrew.
- Low Construction bite.
- Activator works in manner similar to that of two active plates with jack screws in the upper and lower part

CONSTRUCTION BITE WITH OPENING AND POSTERIOR POSITIONING OF THE MANDIBLE

- Construction bite – taken by retruding the mandible.
- Extent of vertical opening depends on the retrusion possible.
- Tooth guidance or functional protrusion class III malocclusion
- Skeletal class III malocclusion with a normal path of closure from postural rest to habitual occlusion

FABRICATION AND MANAGEMENT OF THE ACTIVATOR

- Activator - combination of acrylic and wire components.
- Accurate transfer of the construction bite
- Success or failure of an appliance.

PREPARATION OF THE WIRE ELEMENTS

- The labial bow consist of
  - Horizontal middle section
  - Two vertical loops
  - Wire extension - canine-deciduous 1st molar embrasure

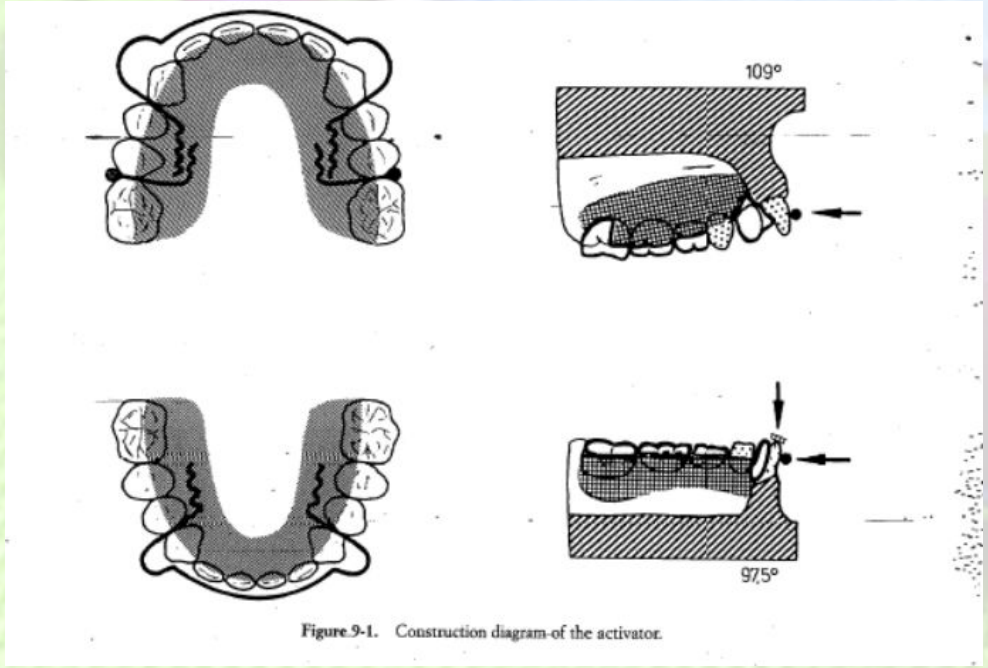


Figure 9-1. Construction diagram of the activator.

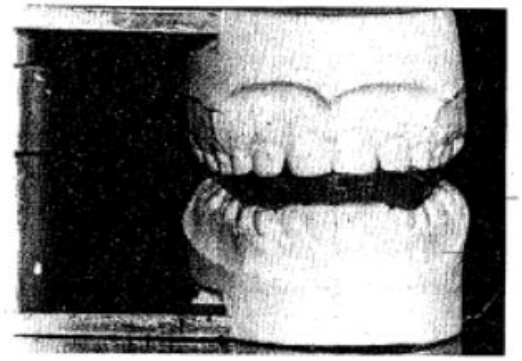


Figure 9-2. The casts are trimmed in the construction bite relationship on the fixator and mounted sideways.

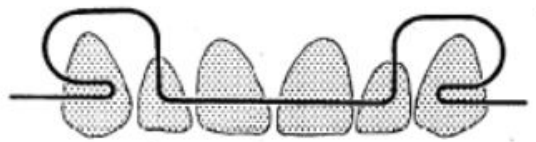


Figure 9-3. Labial bow with loops for the canines; the bow contacts the incisors in the incisal third.

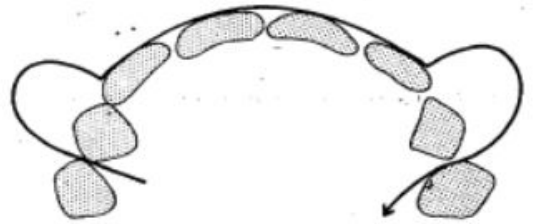


Figure 9-4. Labial bow activated for distal driving of the premolars *(right)*.

FIXATION OF THE JACKSCREW AND WIRE ELEMENTS

- Jackscrews
- Magnitude of the required opening is determined by
  - Palatal configuration
  - Type of malocclusion
- Acrylic free area - Isolated with a layer of wax.

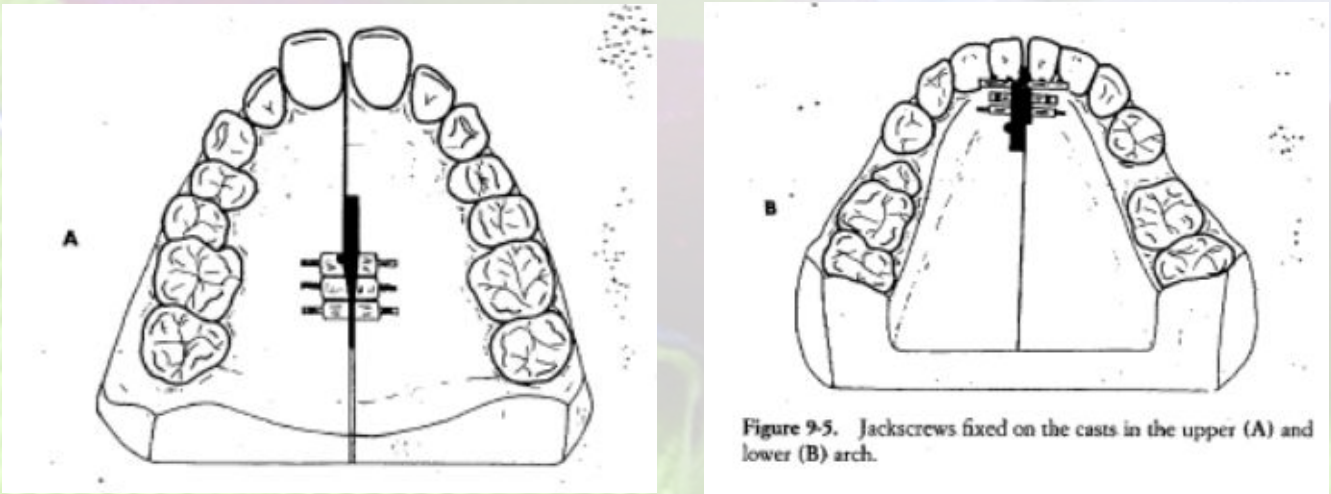


Figure 9-5. Jackscrews fixed on the casts in the upper (A) and lower (B) arch.

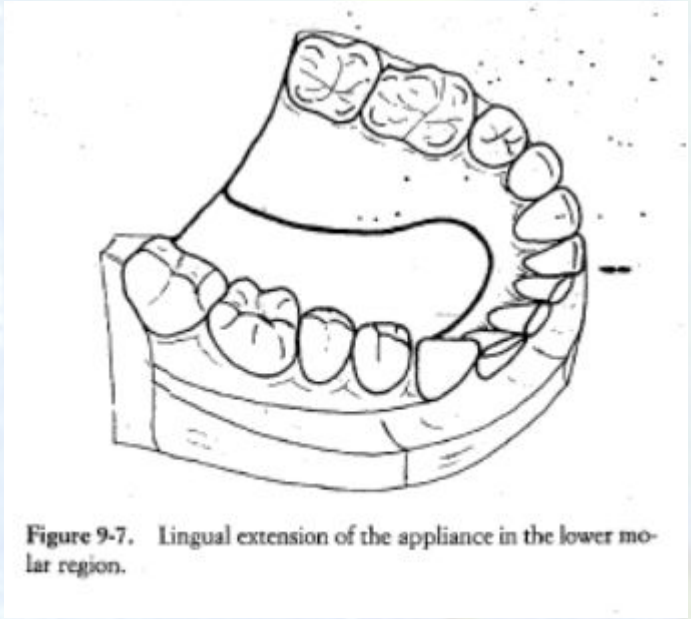


Figure 9-7. Lingual extension of the appliance in the lower molar region.

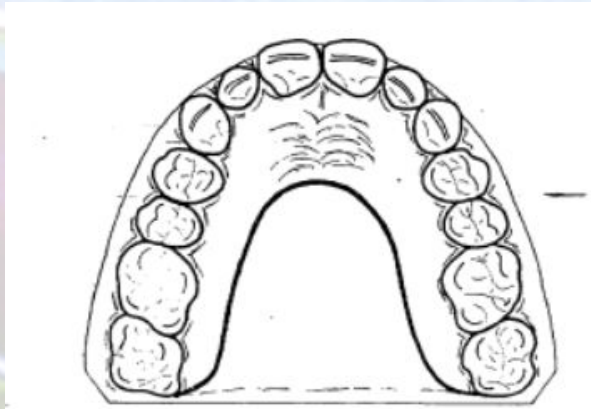


Figure 9-8. Limits of the appliance's base acrylic in the upper jaw.

Figure 9-9. Limits of the appliance in the lower jaw.

FABRICATION OF THE ACRYLIC PORTION

- The acrylic portion - upper, lower & interocclusal parts.

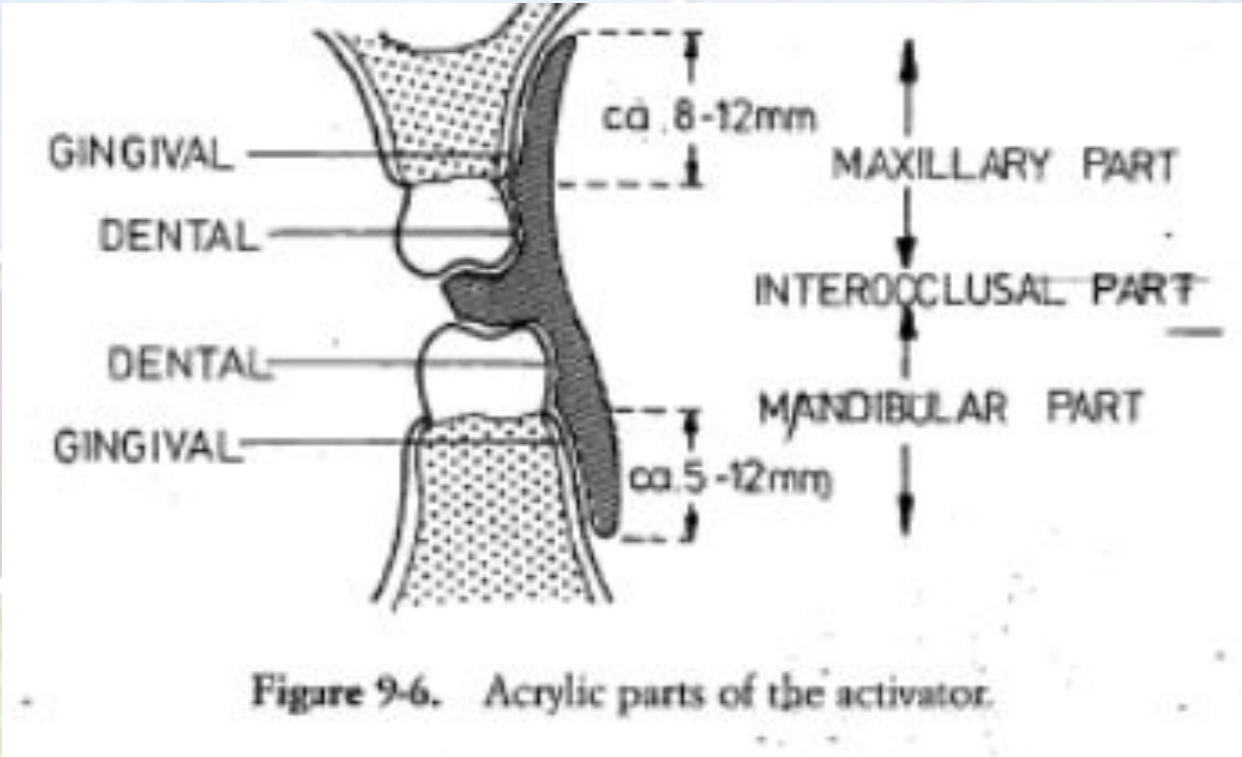


Figure 9-6. Acrylic parts of the activator.

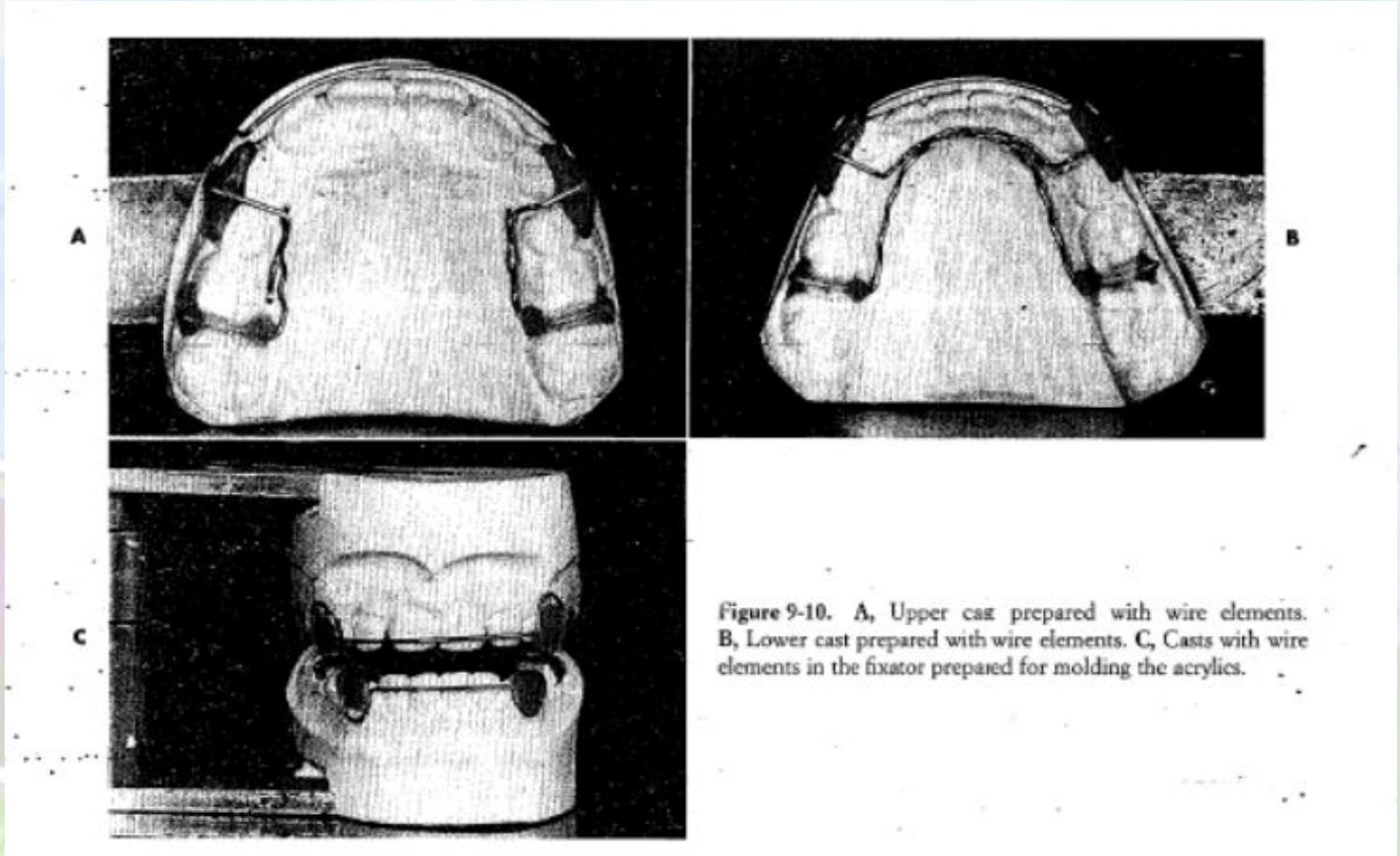


Figure 9-10. **A,** Upper cast prepared with wire elements. **B,** Lower cast prepared with wire elements. **C,** Casts with wire elements in the fixator prepared for molding the acrylics.

A brief outline of acrylic fabrication technique is as follows

1. The casts are placed in a water bath for 20min, dried and isolated.
2. Wire elements fixed.
3. Acrylic free areas covered with baseplate wax.

4. Upper and lower portions are moulded from self-curing acrylic
5. Casts placed on the fixator
6. Upper and lower portions joined with endothermic acrylic at the interdental area.
7. After polymerisation the appliance is ground and polished.

MANAGEMENT OF THE APPLIANCE

- Patient compliance.
- Doctor patient relationship.
- Wear timings
  - 1st week, 2-3hrs day time
  - 2nd week, 1-3hrs day time plus night time wear.
  - 3rd week, evaluation for trimming accuracy and desired functioning
  - Check up appointments should be scheduled every 6 weeks.

Factors to be checked during each follow up visits:-

- All guide planes
- Reshaping of acrylic guide areas
- Resealing or recontouring of acrylic guide areas
- Wire components

- Lip pads - for irritation, reshaping , contacts
- Expansion components such as jack screw
- Alteration of construction bite
  - Direct method
  - Indirect method
  - Re-joining the upper and lower parts with new construction bite

PRINCIPLES OF THERAPEUTIC TRIMMING FOR TOOTH GUIDANCE

The principles of force application in the trimming process are determined by

- Intermittent force application.
- Direction of the desired force.
- The magnitude of the force

- Need for trimming - explorer or by shadow test.
- In Area of force delivery,
  - Acrylic contact area-polished and shiny.

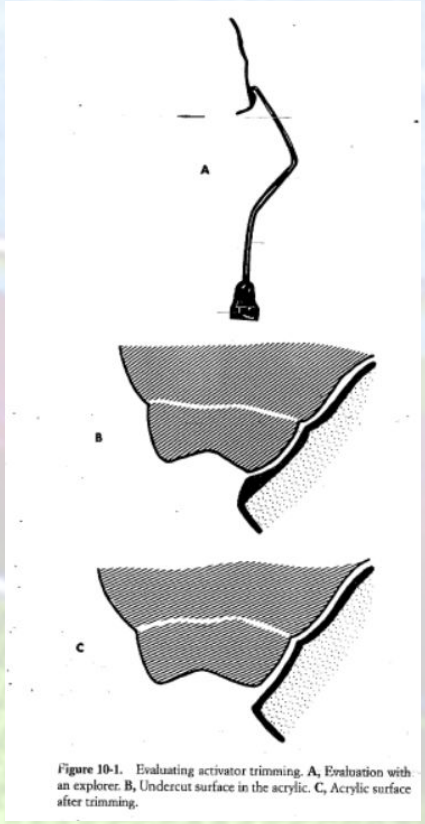


Figure 10-1. Evaluating activator trimming. A, Evaluation with an explorer. B, Undercut surface in the acrylic. C, Acrylic surface after trimming.

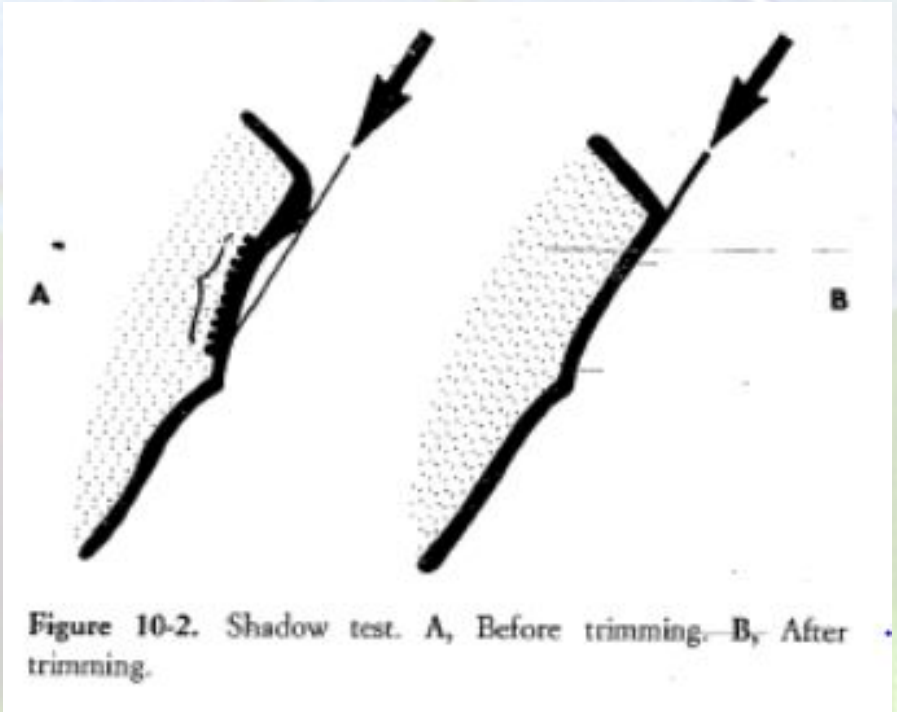


Figure 10-2. Shadow test. A, Before trimming. B, After trimming.

TRIMMING OF ACTIVATOR

PRINCIPLES OF THERAPEUTIC TRIMMING FOR TOOTH GUIDANCE

The principles of force application in the trimming process are determined by

- Intermittent force application.
- Direction of the desired force.
- The magnitude of the force
- Guide planes

- Need for trimming - explorer or by shadow test.
- In Area of force delivery,
  - Acrylic contact area-polished and shiny.

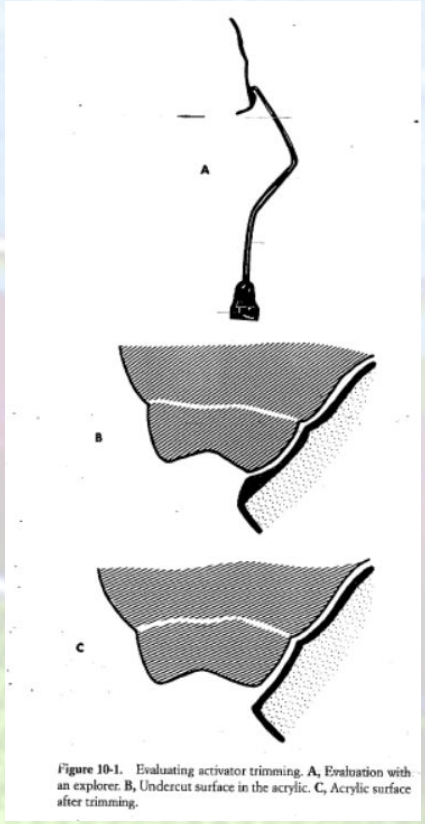


Figure 10-1. Evaluating activator trimming. A, Evaluation with an explorer. B, Undercut surface in the acrylic. C, Acrylic surface after trimming.

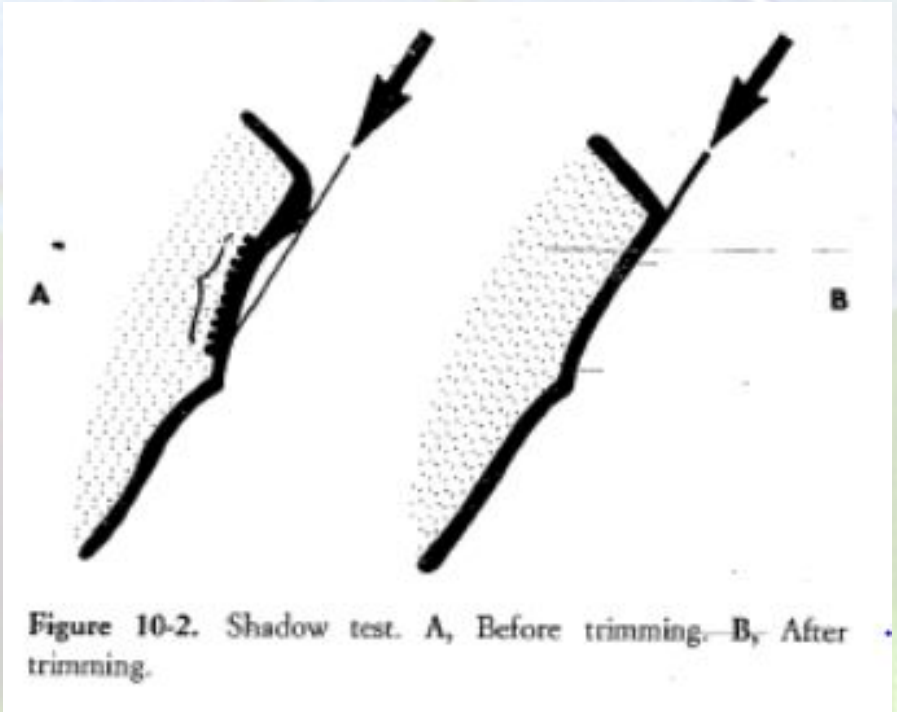


Figure 10-2. Shadow test. A, Before trimming. B, After trimming.

TRIMMING OF THE ACTIVATOR

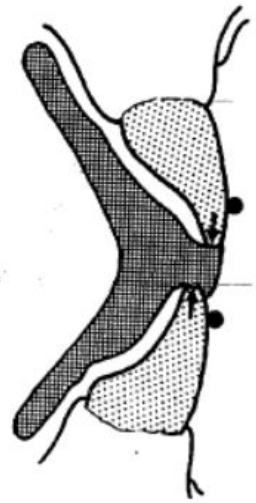
- Trimming should be done in stepwise progression.
- The planned grinding procedure is written and each trimming procedure is noted as it is performed.
- Through systematic and careful therapy, tooth movement in vertical , sagittal and transverse direction is possible.

TRIMMING THE ACTIVATOR FOR VERTICAL CONTROL

- Two movements occurs in activator therapy in vertical plane;
  - Intrusion
  - Extrusion

INTRUSION OF TEETH

- Intrusion of incisors
- Indicated in deep overbite cases



igure 10-3. Intrusion of the incisors through acrylic capping.

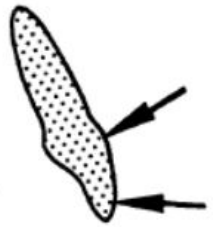
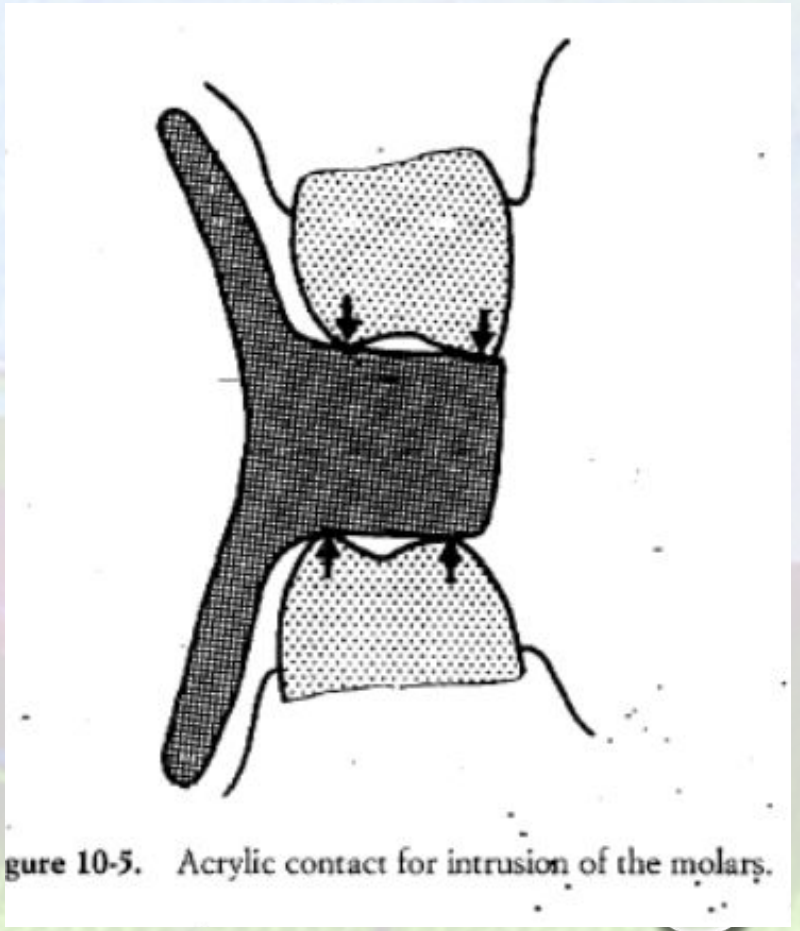


Figure 10-4. Labial bow position for intrusion (incisal third) or extrusion (gingival third) of the incisors.

- Intrusion of molars.
- Indicated in open-bite problems

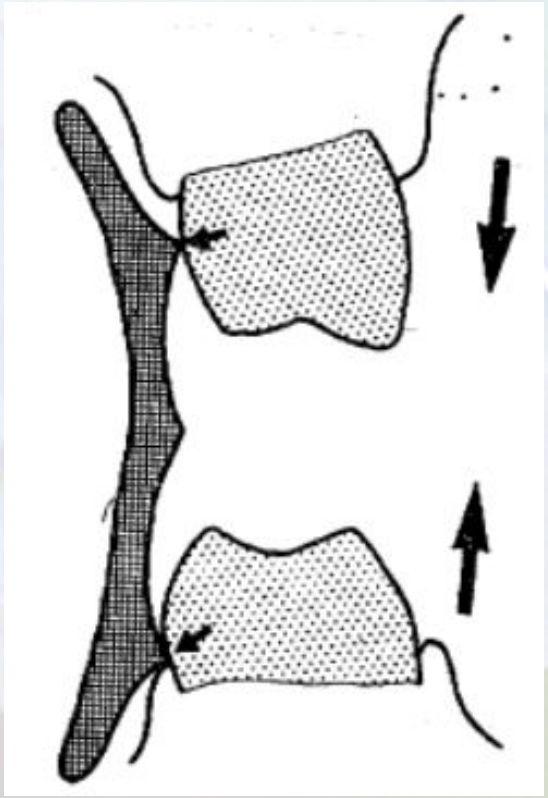


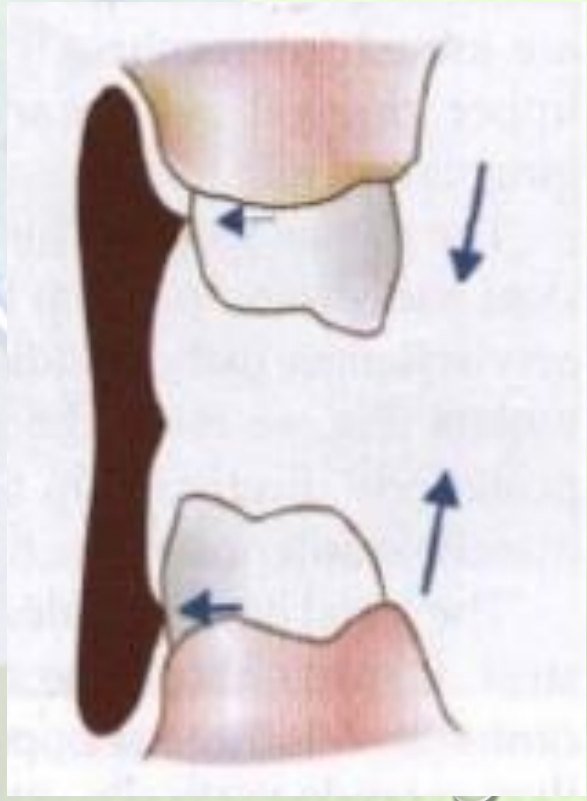
gure 10-5. Acrylic contact for intrusion of the molars.

EXTRUSION OF TEETH

- Extrusion of the incisors
- Indicated in open-bite problems

- Extrusion of molars.
- Indicated in deep-bite problems.
- Controlled differential eruption guidance is essential.





Selective trimming of the activator

- During selective trimming procedure, only the upper or lower molars are extruded
- After these teeth have erupted sufficiently, the eruption of the antagonists can be controlled
- Thereby influencing both sagittal and vertical relationship.

- In selective grinding, the path of eruption of the molars must be considered
- Lower molars erupt - upward and slightly forward direction.
- Upper molars erupt – downward and forward direction.

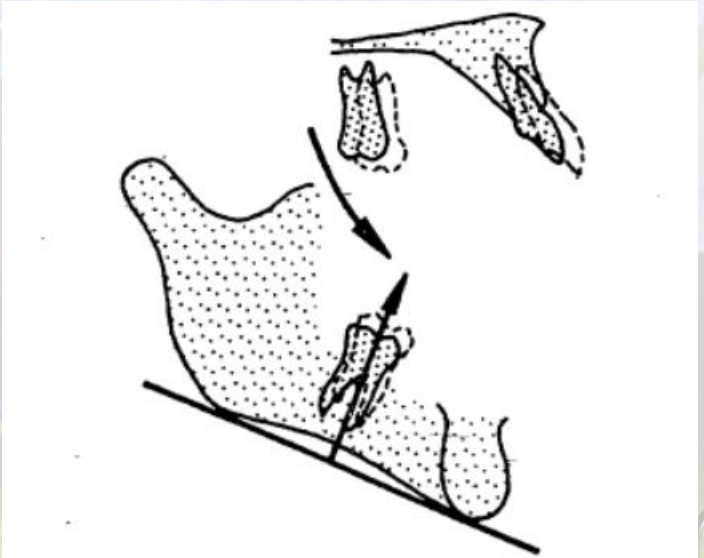


Figure 10-8. The eruption pathway of the molars should be considered in selective trimming.

Selective grinding

- In class II cases
- In class III cases

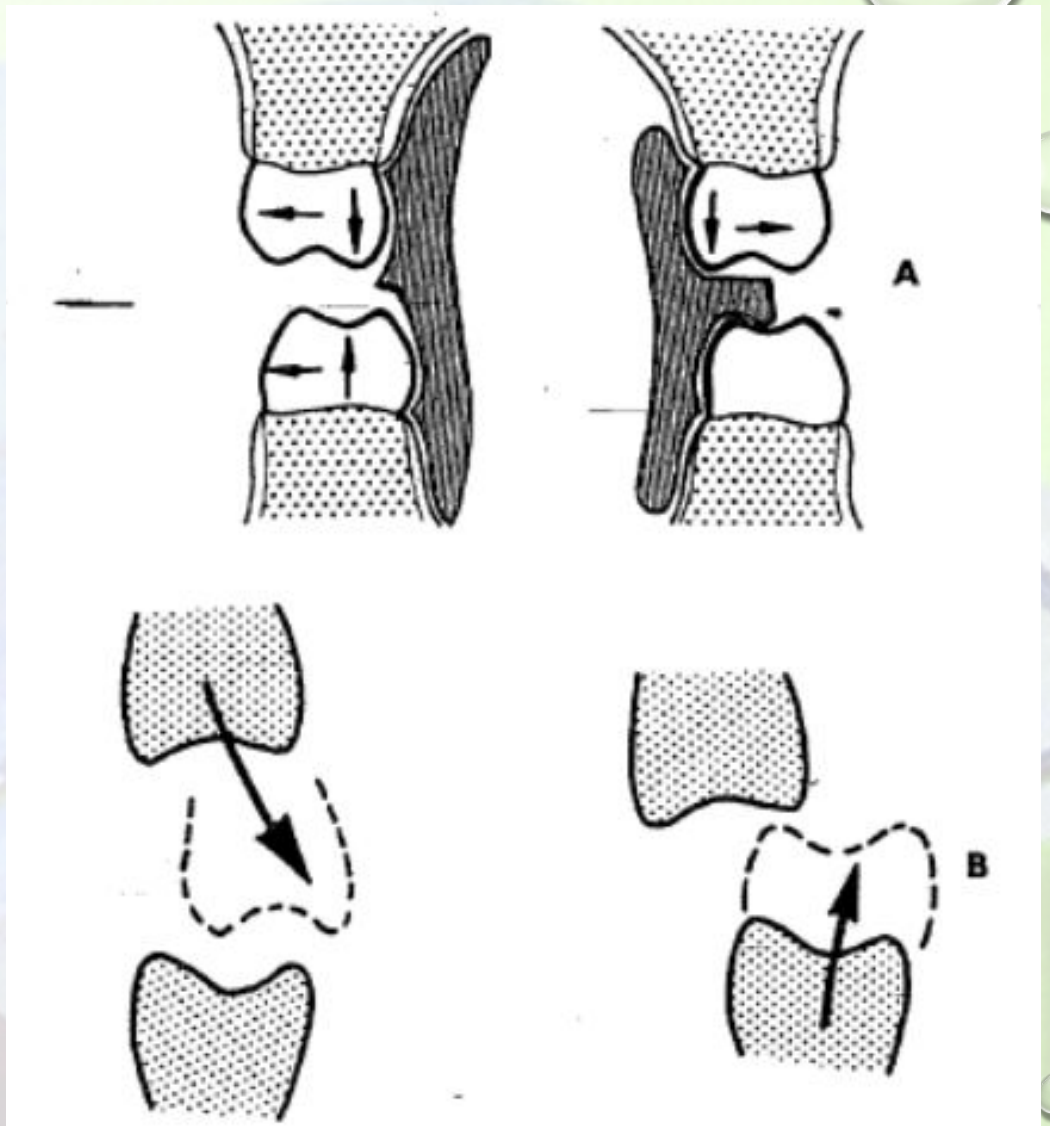


Figure 10-9. Selective trimming. **A,** Both molars are extruded simultaneously (*left*); only the upper molar is extruded (*right*). **B,** Selective eruption of the upper molars for correction of a Class III relationship (*left*); selective eruption of the lower molars for correction of a Class II relationship (*right*).

TRIMMING THE ACTIVATOR FOR SAGITTAL CONTROL

- Protrusion and retrusion of incisors accomplished
- By grinding the acrylic guide planes and adjustment of the labial bow.
- Active bow – can tip lingually or retain the position.
- Passive bow – positioned away from the teeth and prevents soft tissues contact.

Bow placement can be either

Incisal – To inhibit extrusion in deep bite cases.
To accentuate tipping of severely protruded incisor, if adequate space is available.

Gingival – To promote extrusion in open bite cases
To reduce tipping while lingualising these teeth.

PROTRUSION OF INCISORS

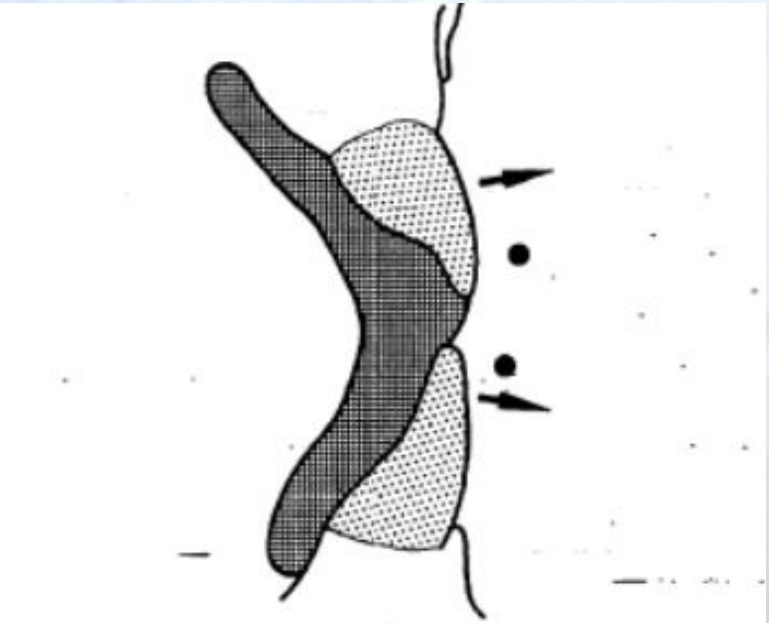


Figure 10-13. Protrusion of the incisors through loading of the whole lingual surface.

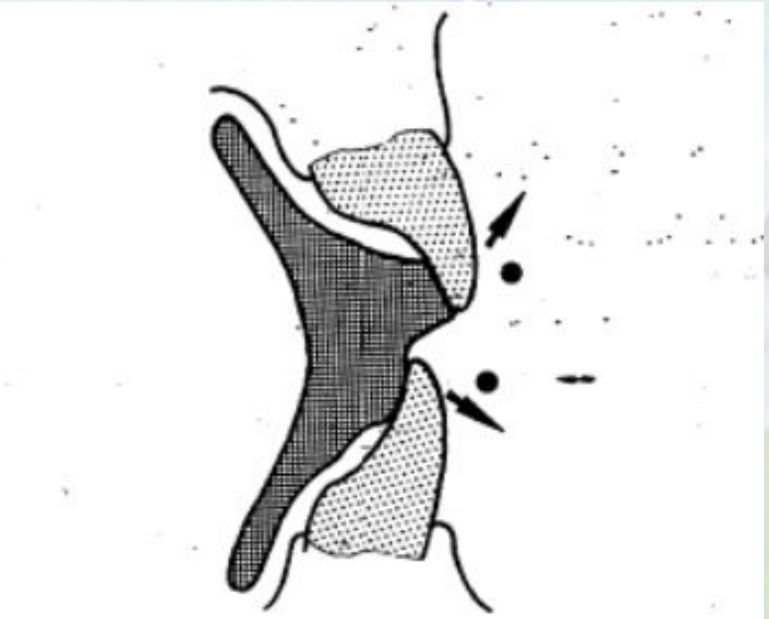


Figure 10-14. Labial tipping of the incisors through loading of the incisal third of the lingual surfaces.

In class III malocclusion

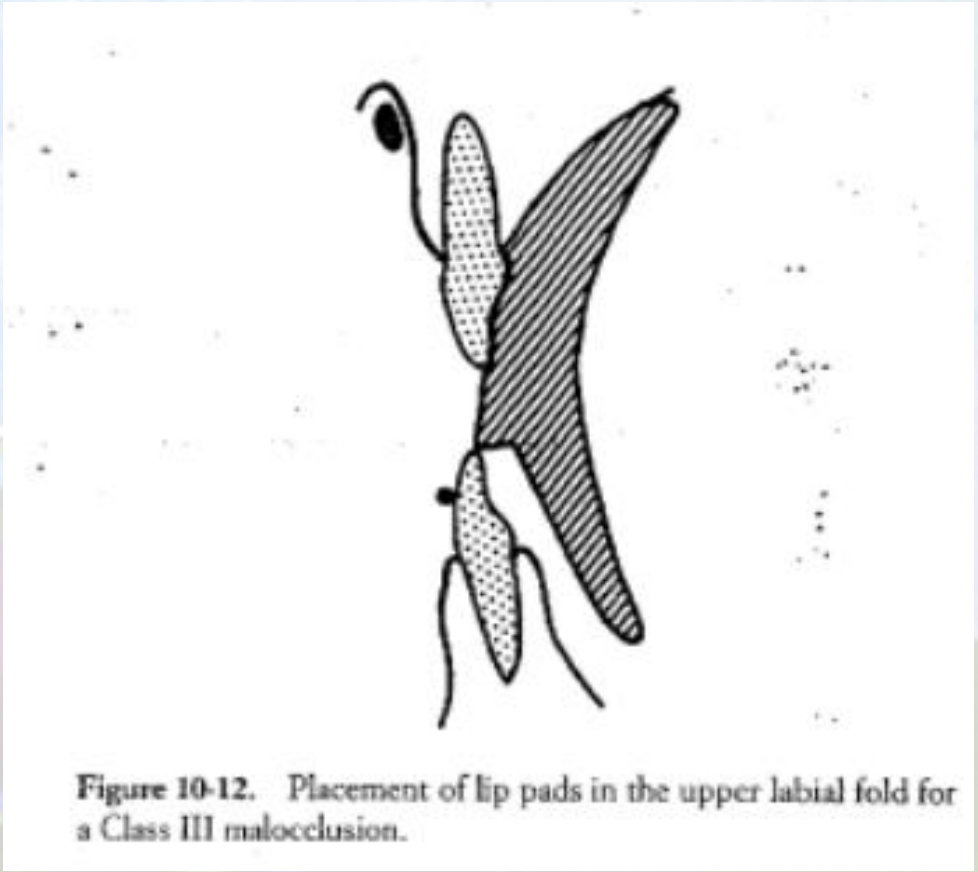
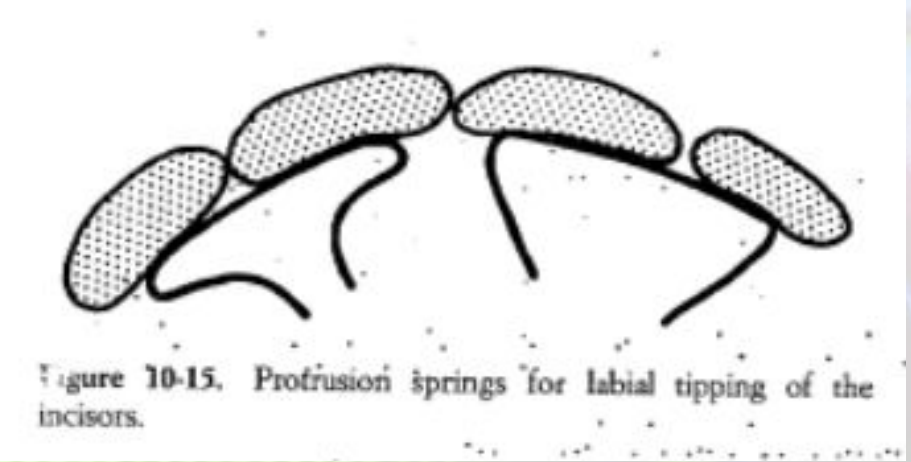


Figure 10-12. Placement of lip pads in the upper labial fold for a Class III malocclusion.

Incisor protrusion using auxiliary elements

1. Protrusion springs
2. Wooden pegs
3. Gutta-percha
4. Use of thin layers of soft acrylic



gure 10-15. Protrusion springs for labial tipping of the incisors.

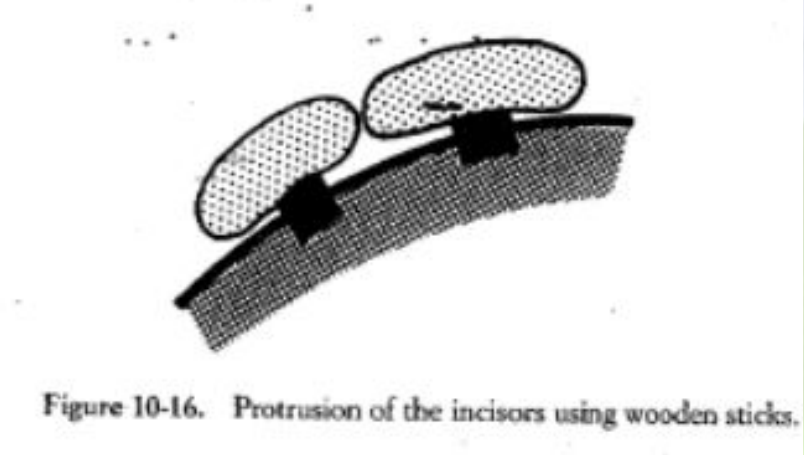


Figure 10-16. Protrusion of the incisors using wooden sticks.

RETRUSION OF INCISORS

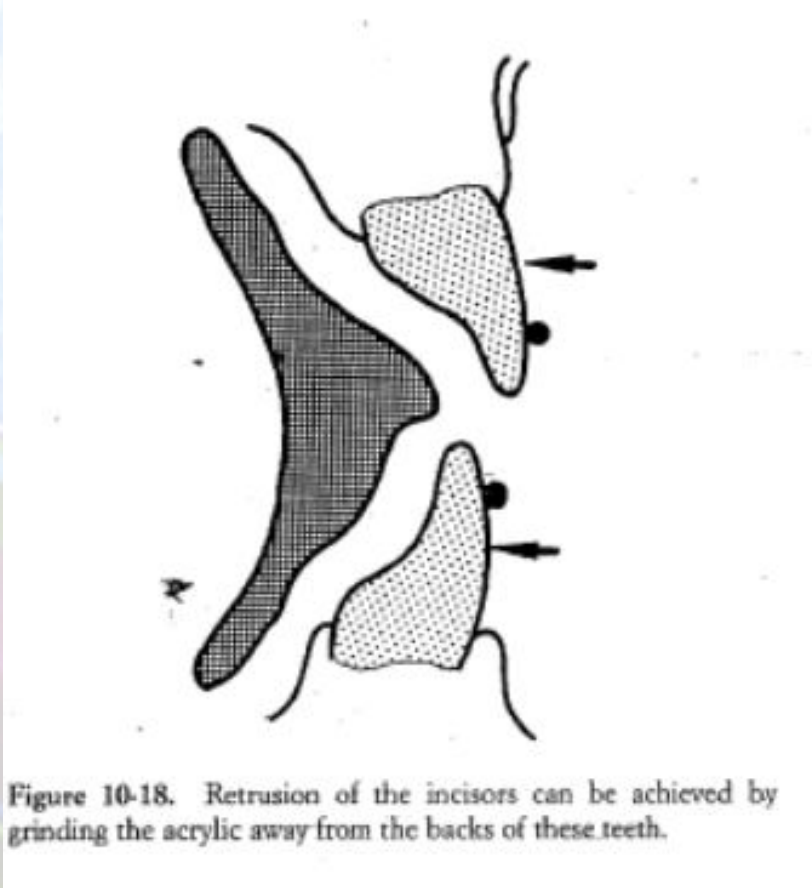


Figure 10-18. Retrusion of the incisors can be achieved by grinding the acrylic away from the backs of these teeth.

DESIGN OF ACTIVATOR FOR LOWER INCISOR AREA

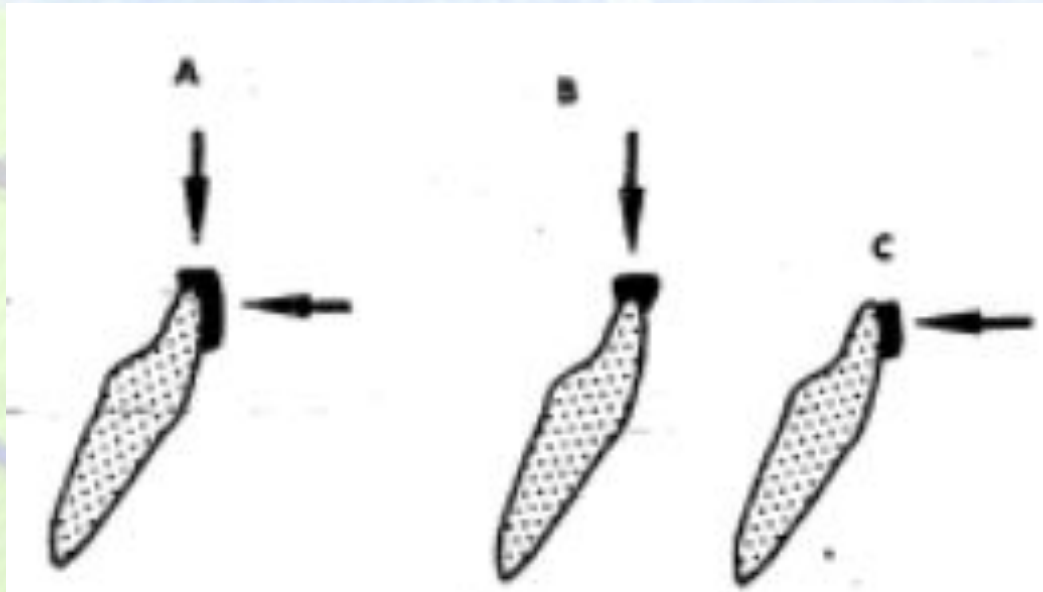


Figure 10-25. Acrylic groove or cap holding the incisors. A, Incisally and labially. B, Incisally. C, Labially.

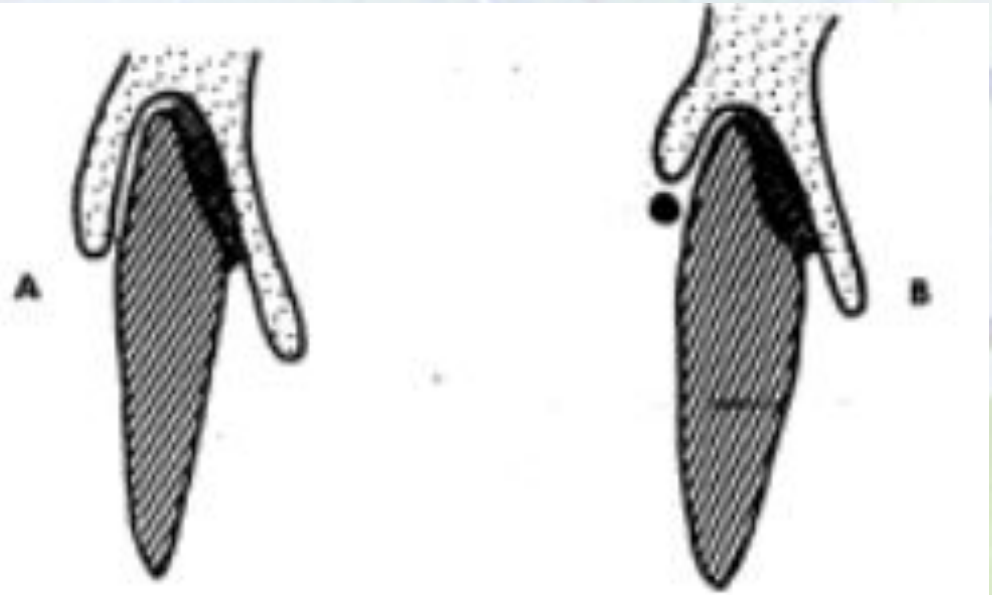


Figure 10-26. Acrylic groove. A, Holding the incisors. B, Uprighting them with a labial bow.

DESIGN OF THE ACTIVATOR FOR THE UPPER INCISOR AREA

- In deep bite cases – incisal edges are loaded.(extrusion undesirable)
- In open bite cases – acrylic is ground away.
- For protrusion – the lingual surfaces are loaded.
- For retrusion – acrylic is ground away and the labial bow be active.

- **<u>In vertical activator</u>**,
  the design for the upper incisor area is as follows;

Figure 10-29. Extension of the acrylic labially on the upper incisors and grinding in the dental area lingually. The labioincisal cap guides the incisors lingually. The labial bow is active.

Figure 10-30. Design for an upper vertical activator. The acrylic is extended labially to the middle third of the labial surface and lingually over the whole dentoalveolar and palatal area.

MOVEMENTS OF THE POSTERIOR TEETH IN THE SAGITTAL PLANE

- Mesial and distal movement of buccal segment teeth.
- Can control the permanent first molars in mixed dentition.
- Can guide the premolars.

- Distal movements - guide planes load the molars on the mesio-lingual surfaces.
- Extension -area of greatest convexity in the mesiodistal planes.
- Indicated in class II non-extraction cases.

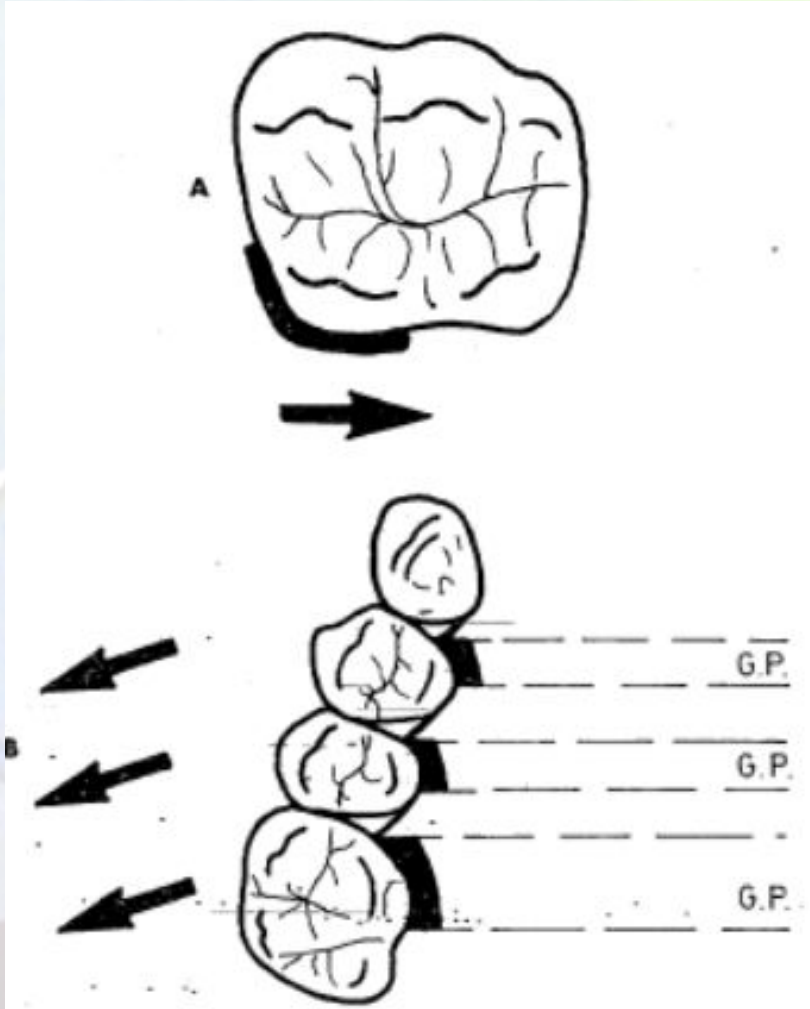


Figure 10-31. Distal movements of the molars. **A,** Loaded area. **B,** Guide planes.

Additional wire elements for distal movement;

- Stabilising wire
- Active open spring

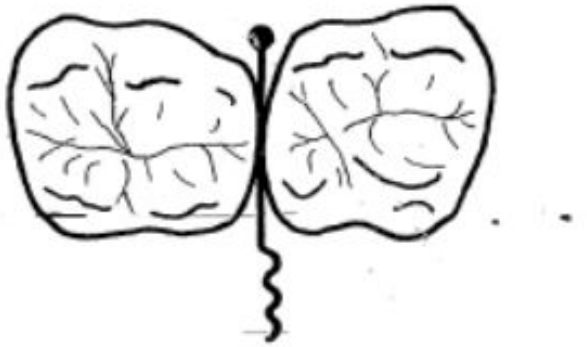


Figure 10-32. Stabilizing wire. This type of wire also is used for distalizing the molars and preventing their mesial movement.

Figure 10-33. Active open spring used to effect sagittal tooth movement.

- Distalizing of canine can be done with various design elements:-

- **Modified Labial bow**
- **Guide wires**
- **Retraction springs**

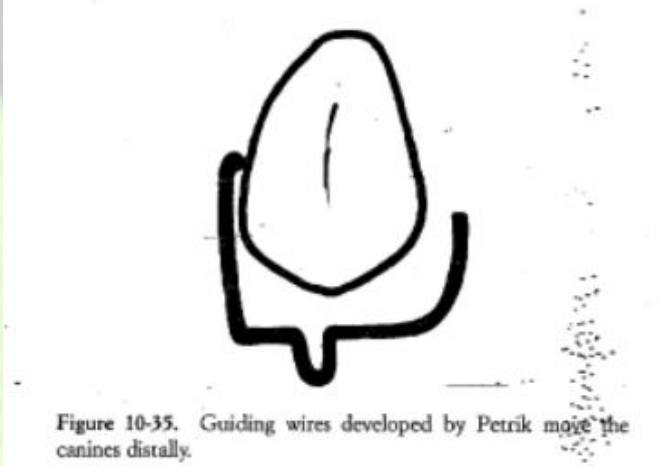


Figure 10-35. Guiding wires developed by Petrik move the canines distally.

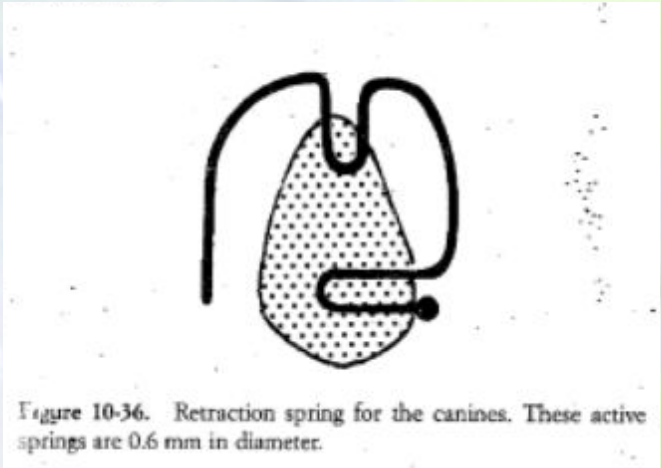


Figure 10-36. Retraction spring for the canines. These active springs are 0.6 mm in diameter.

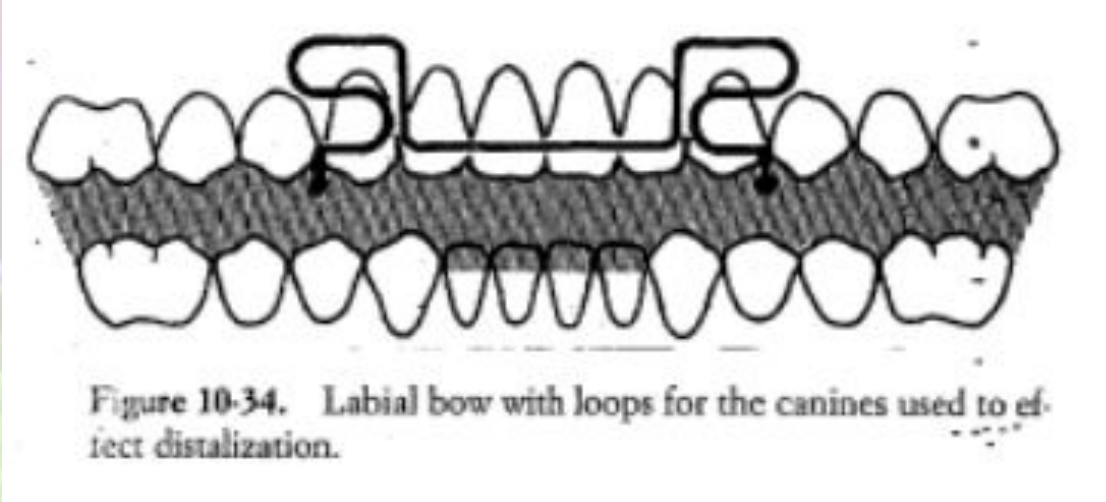
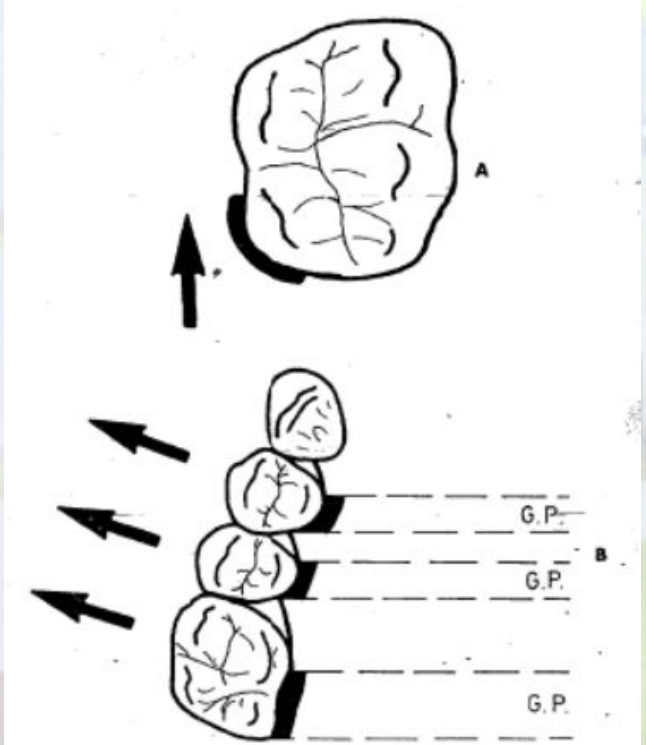


Figure 10-34. Labial bow with loops for the canines used to effect distalization.

- **Mesial movement** of the buccal segment teeth - acrylic guide planes contact distolingual surfaces.
- **Extension** - greatest lingual circumference in the M-D plane.



igure 10-37. Mesial movements of the molars. A, Loaded area. B, Guide planes.

MOVEMENTS OF THE TEETH IN THE TRANSVERSE PLANE

- Transverse movement of molars
- In cross bite condition.
- In class II malocclusion
- In class III malocclusion

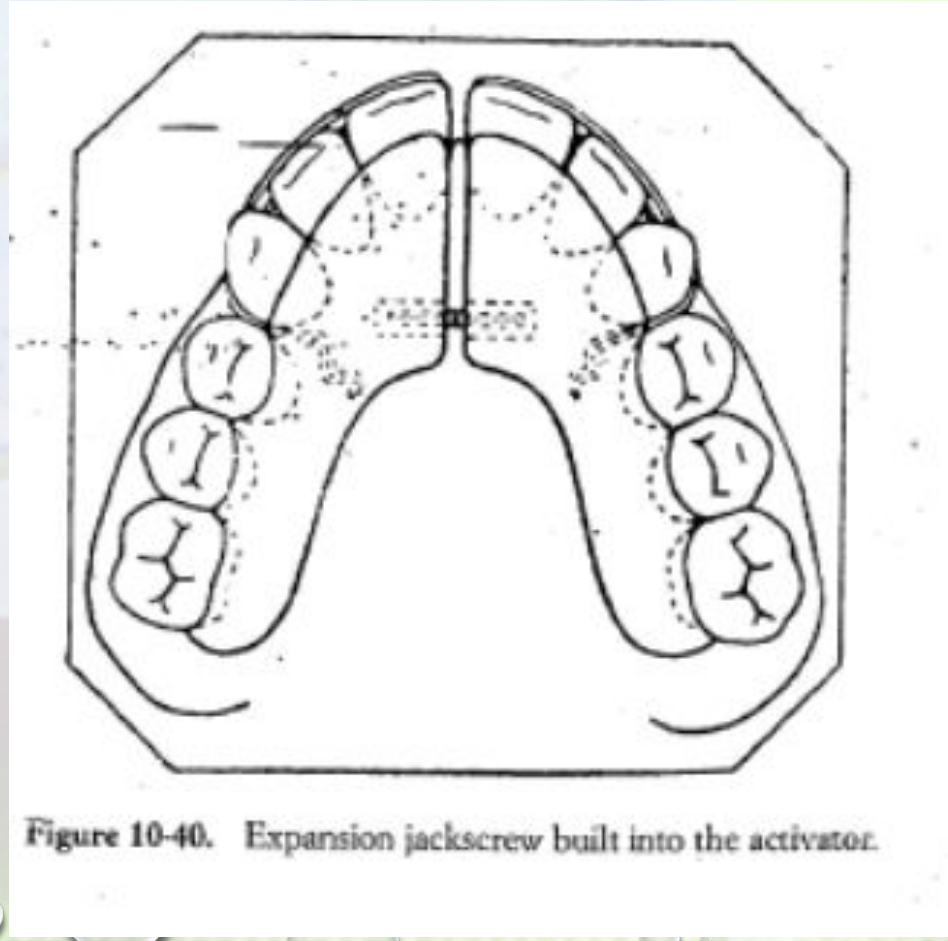


Figure 10-40. Expansion jackscrew built into the activator.

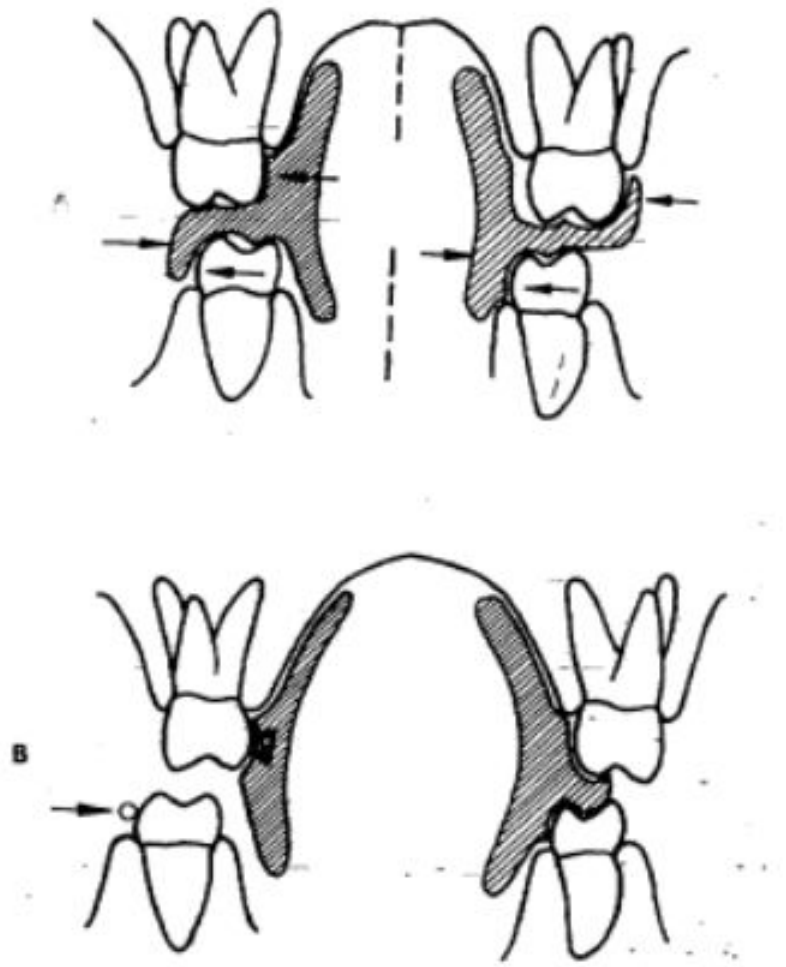


Figure 10-38. A, Transverse effectiveness of the activator in crossbite cases. B, Transverse effectiveness of the activator after anchoring the appliance on one side and moving the teeth on the opposite side with pegs and springs or the addition of soft acrylic.

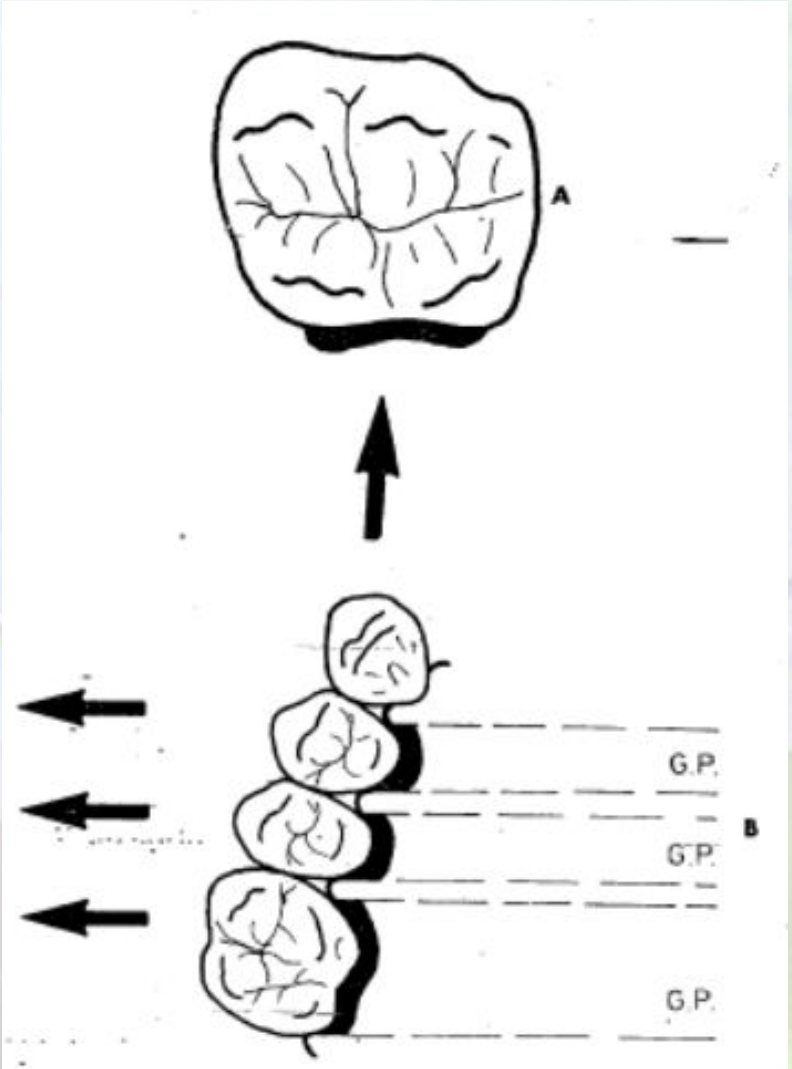


Figure 10-39. Transverse movement of the molars. A, Loaded area. B, Guide planes.

Crossbite condition

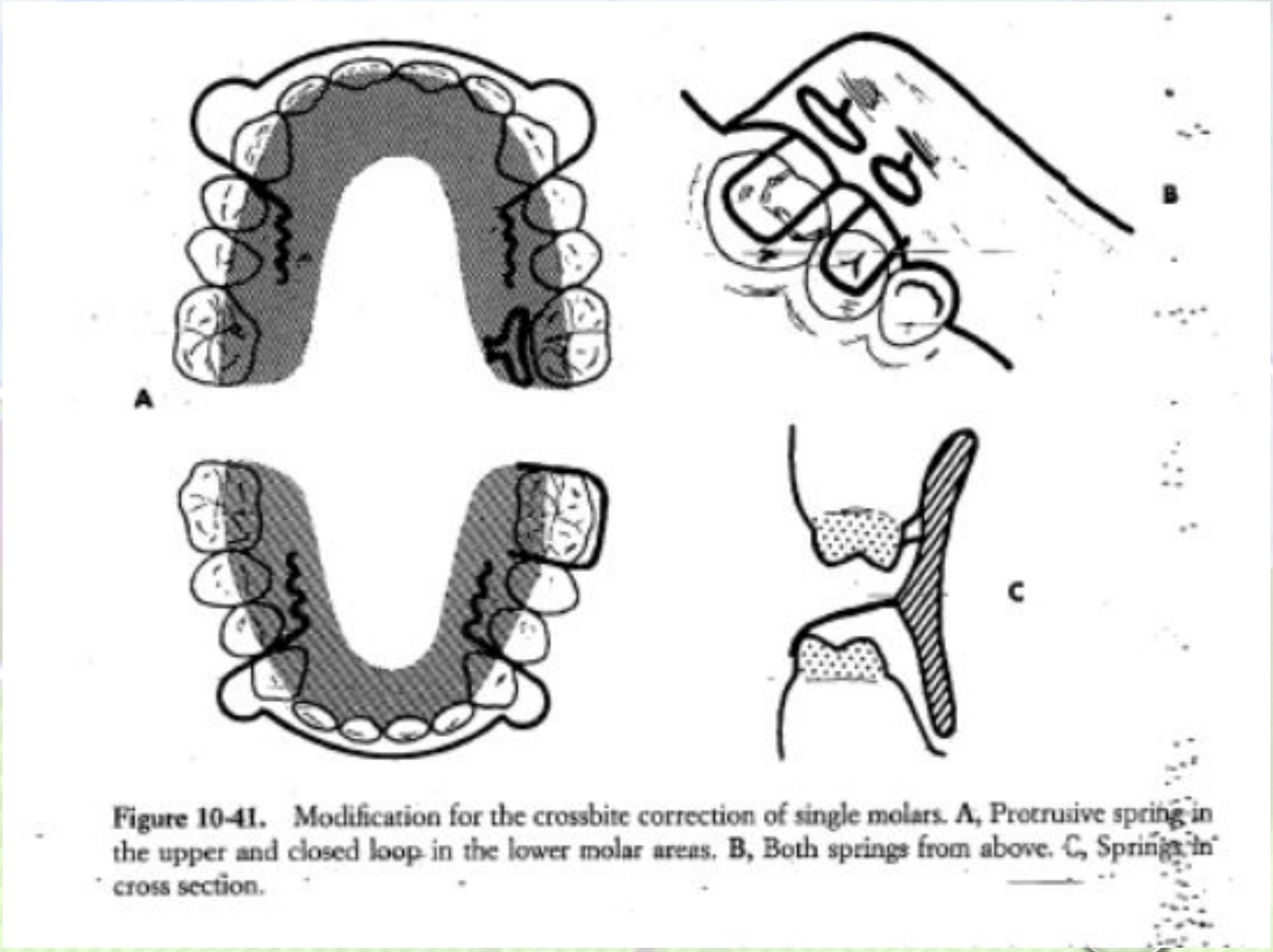


Figure 10-41. Modification for the crossbite correction of single molars. **A,** Protrusive spring in the upper and closed loop in the lower molar areas. **B,** Both springs from above. **C,** Springs in cross section.

Class II Malocclusion

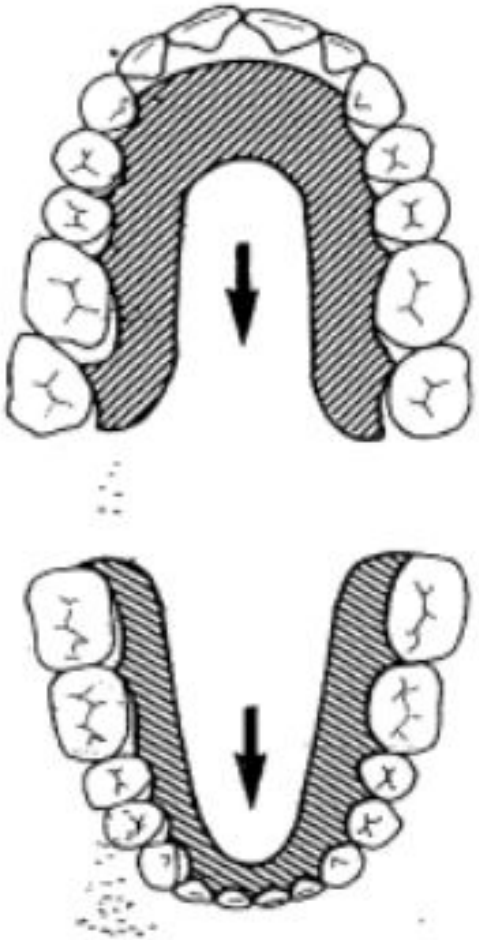


Figure 10-42. Plan for trimming the acrylic interdental projections for distal driving of the upper teeth and mesial movement of the lower in Class II malocclusions.

Class III Malocclusion

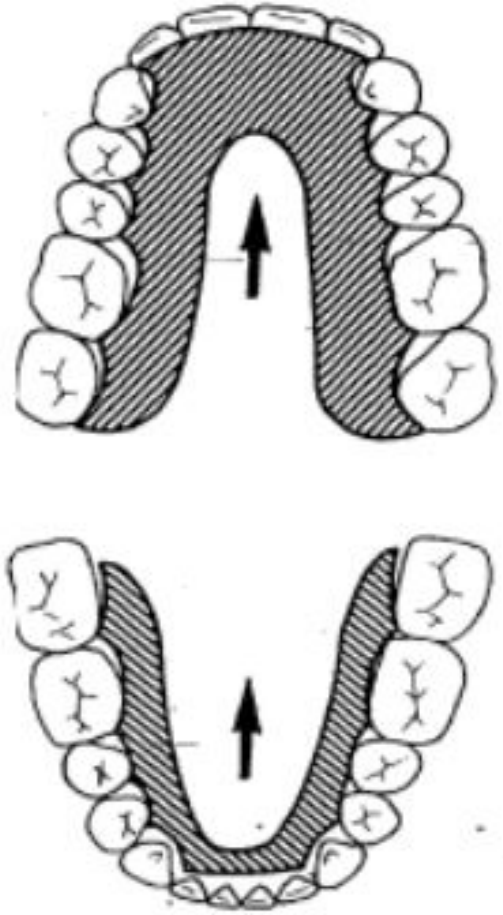
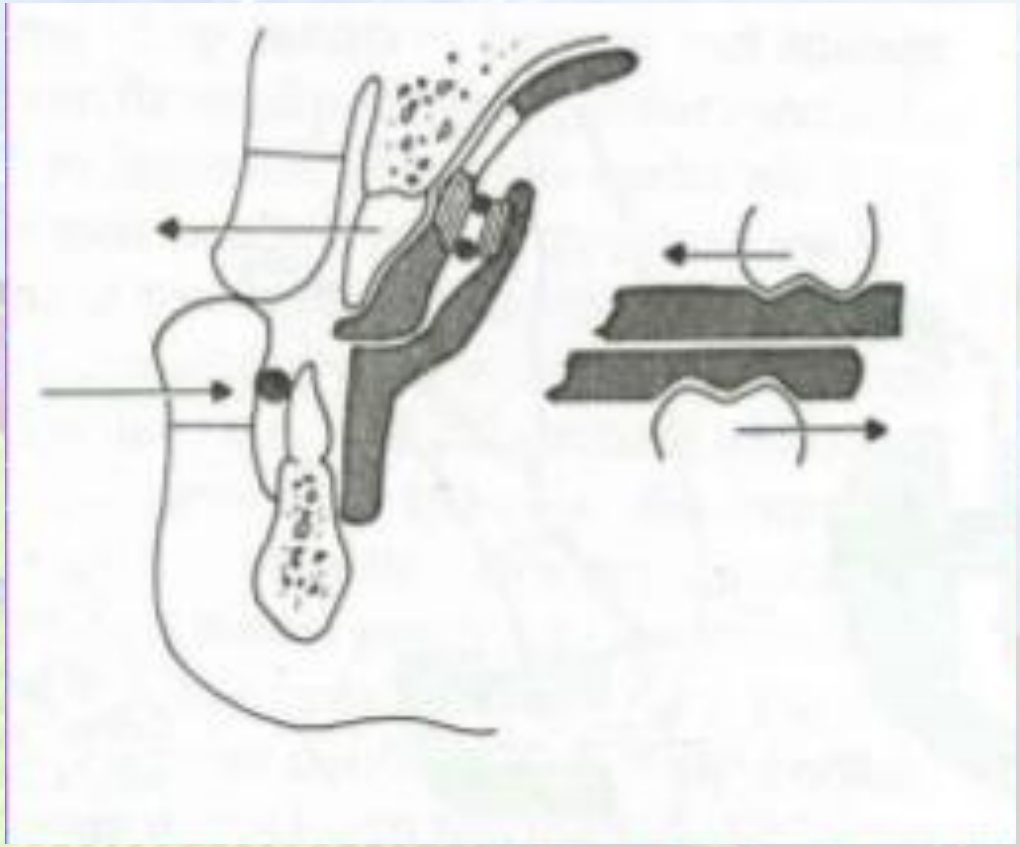
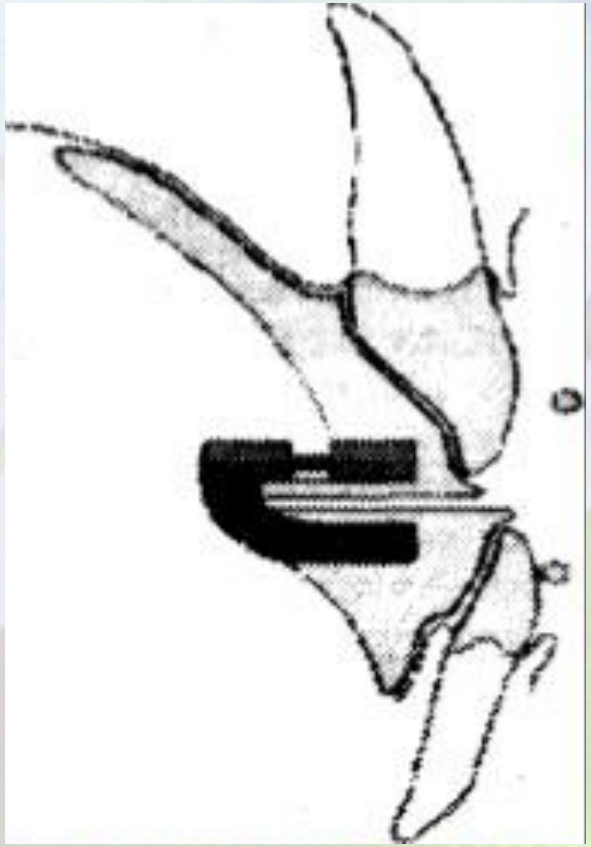


Figure 10-43. Plan for trimming for mesial movement of the upper teeth and distal driving of the lower in Class III malocclusions.

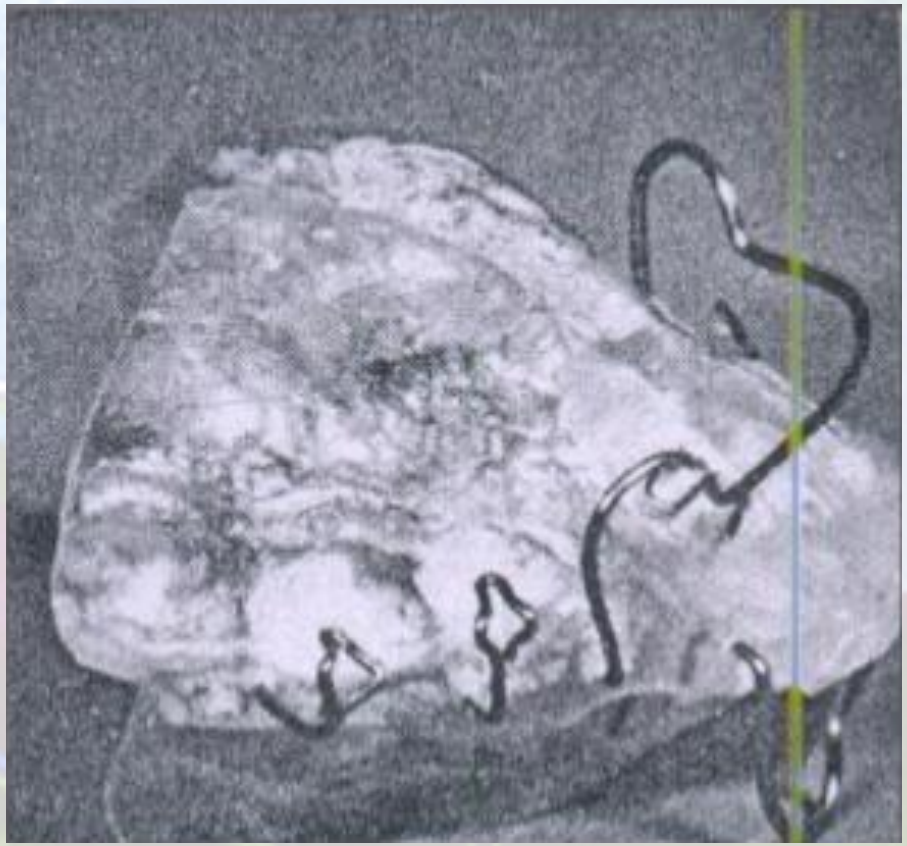
MODIFICATIONS OF ACTIVATOR

WUNDERER'S MODIFICATION





HERREN'S MODIFICATION OF ACTIVATOR



Maximum forward positioning of mandible

↓ Influences

Retractor muscles

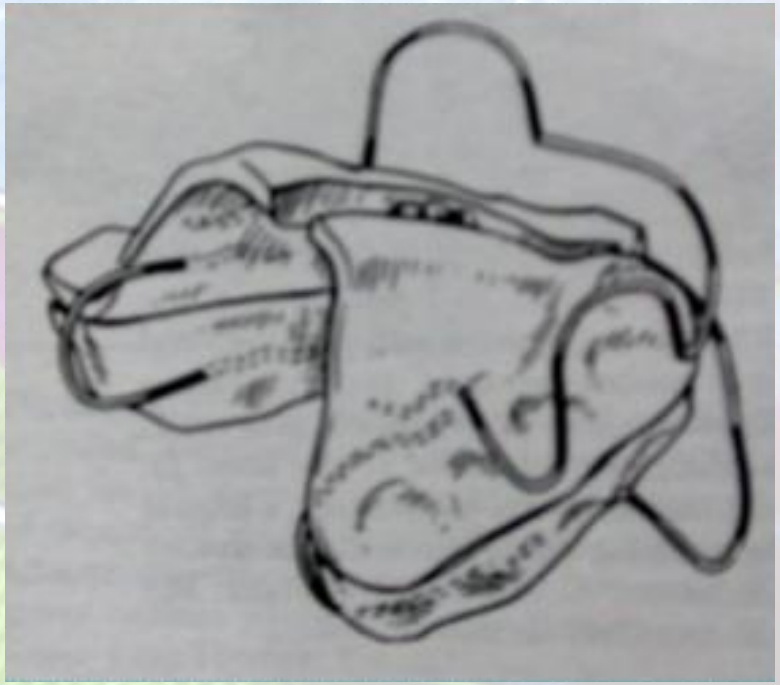
Backwardly directed force on the upper teeth

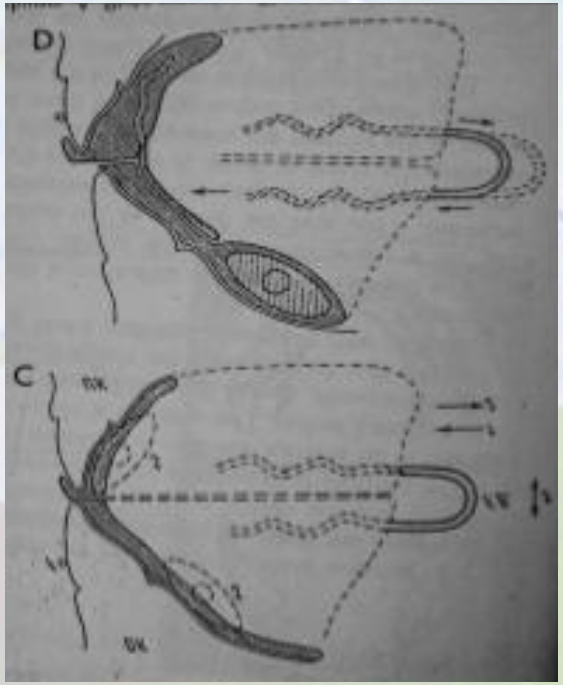
Mesial directed force on the lower teeth

- According to Herren, with every 1mm increase of forward position of the mandible, the sagittal force on the jaws will increase by 100gm

THE BOW ACTIVATOR

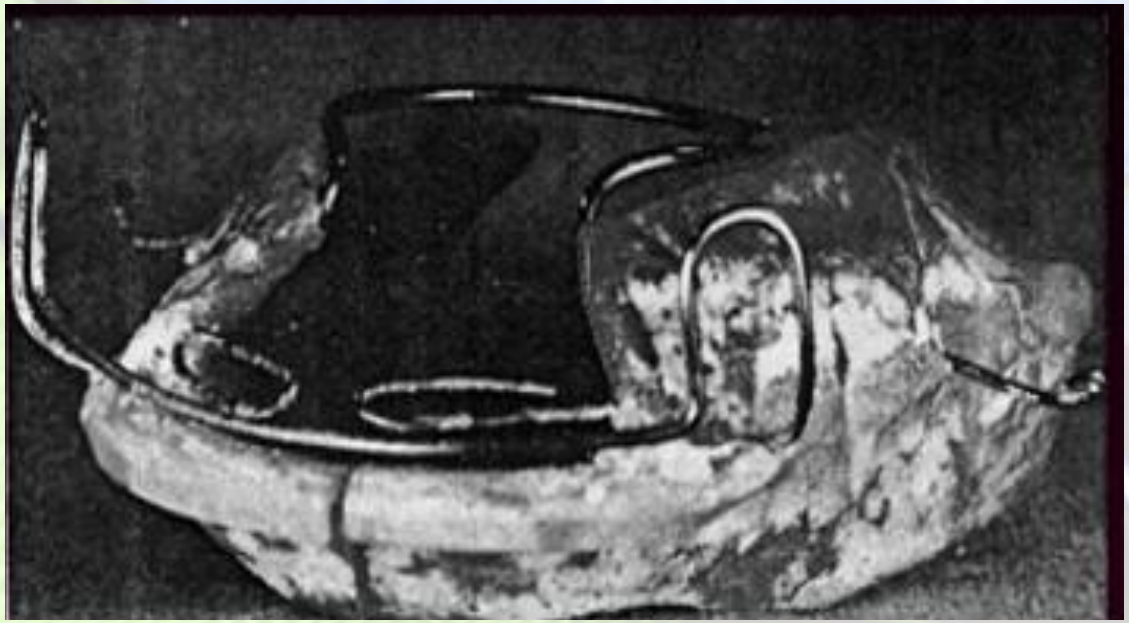
By A.M schwarz



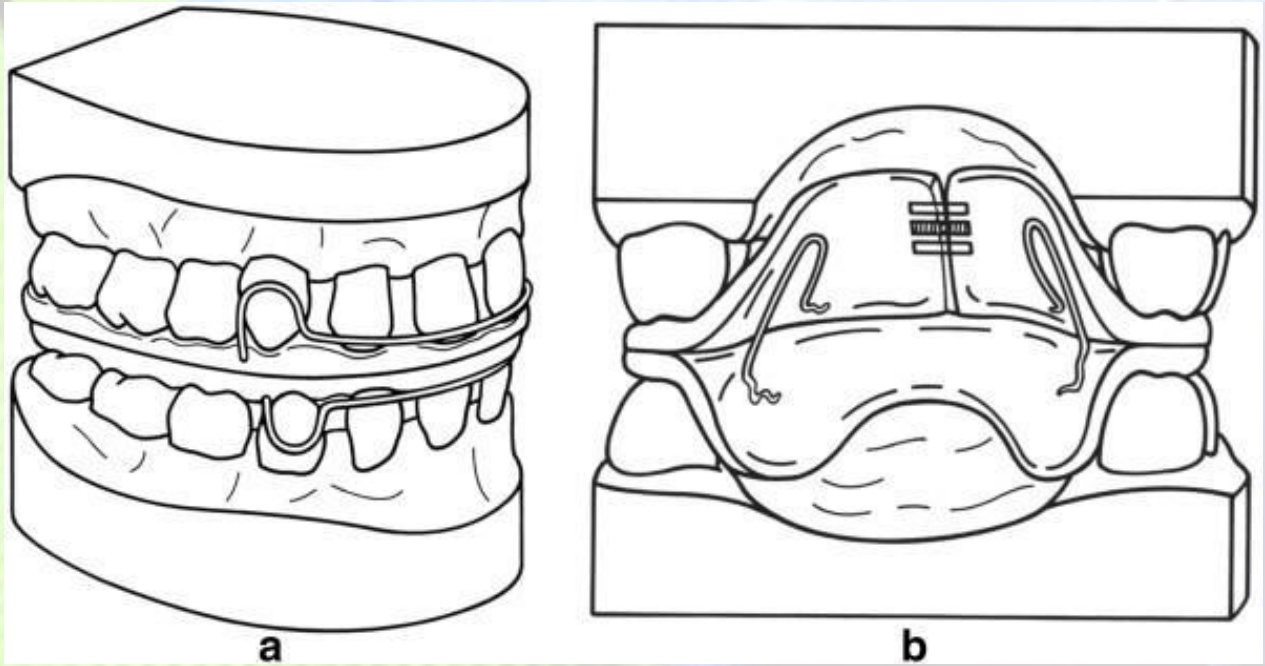


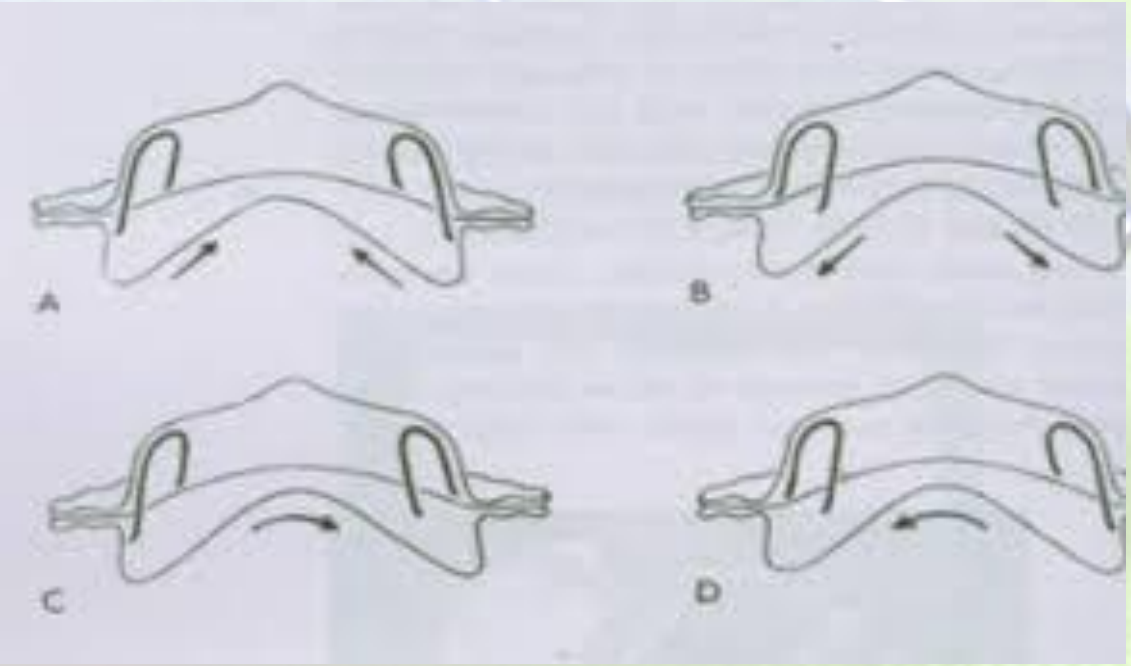
REDUCED ACTIVATOR OR CYBERNATOR OF SCHMUTH

By Prof. G.P.F. Schmuth



THE KARWETZKY MODIFICATION



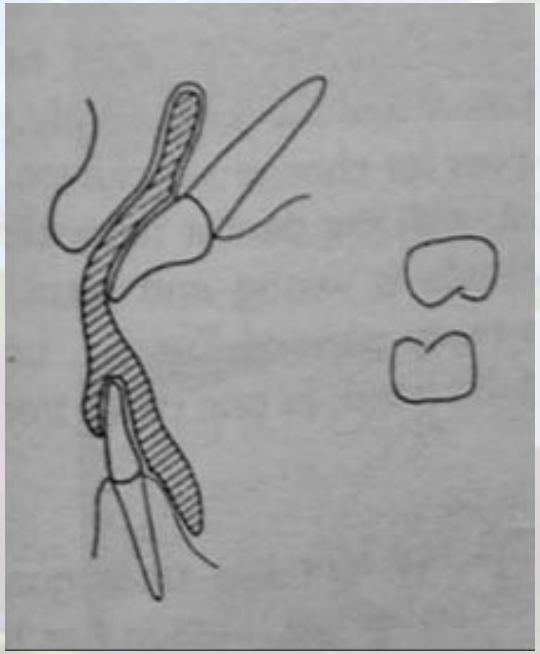


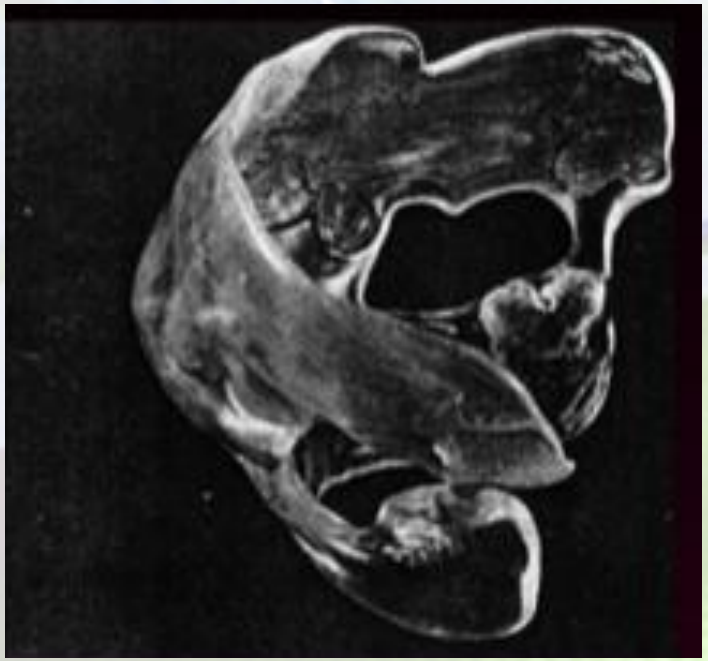
- Three types
  - Type 1 – Treatment of class II div I, the larger lower leg of U bow is placed posteriorly.
  - Type II – Treatment of class III, larger lower leg is placed anteriorly.
  - Type III – Brings about asymmetrical displacements of the mandible.

U bow attached anteriorly on one side and posteriorly on the other side to allow asymmetrical movement of mandible.

THE PROPULSOR

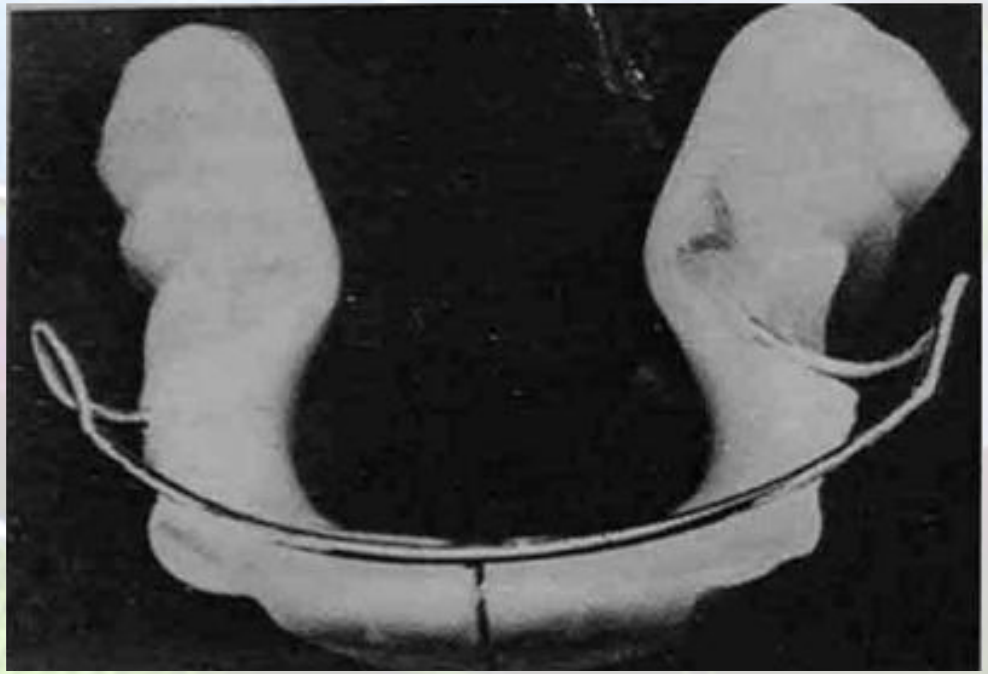
By Muhlemann
Refined by Hotz



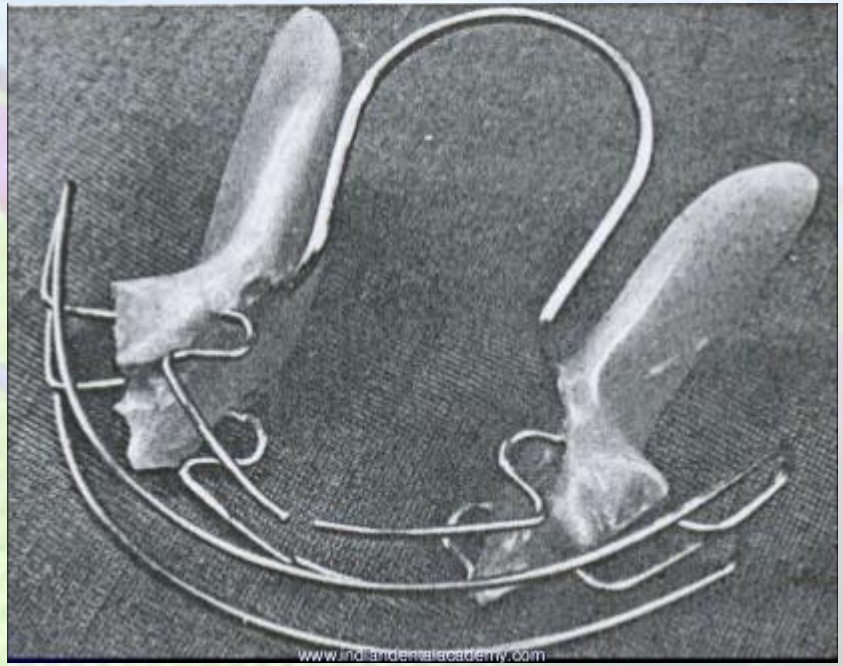


CUT OUT OR PALATAL FREE ACTIVATOR

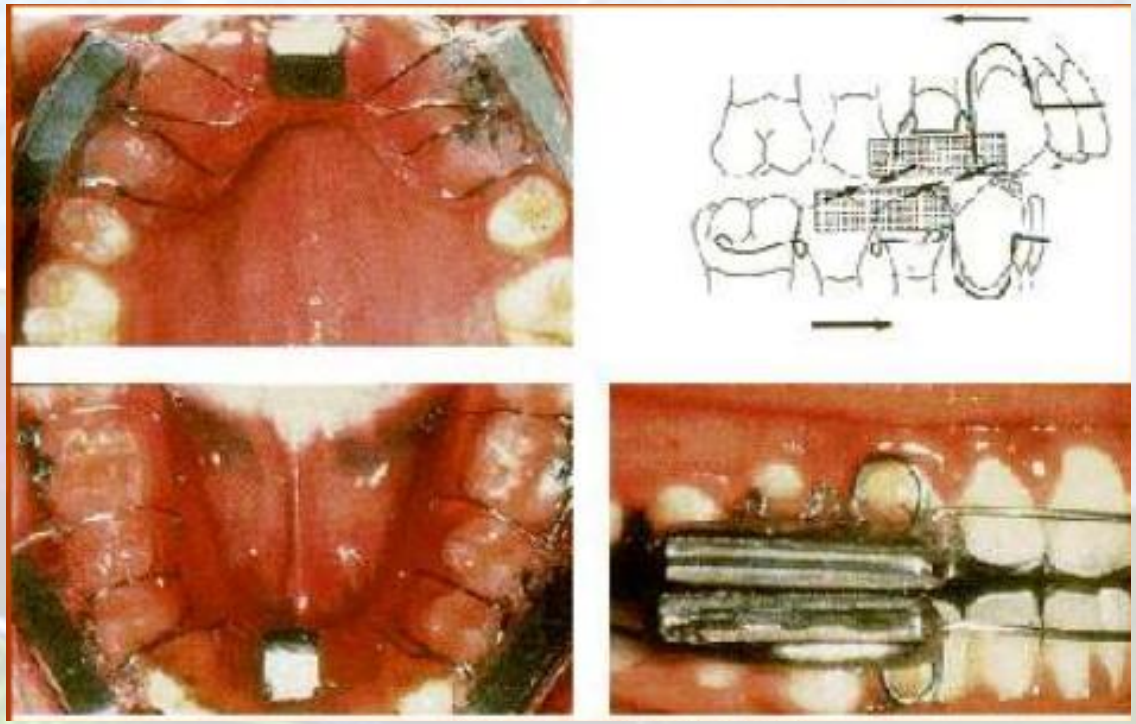
By Metzelder



ELASTIC OPEN ACTIVATOR



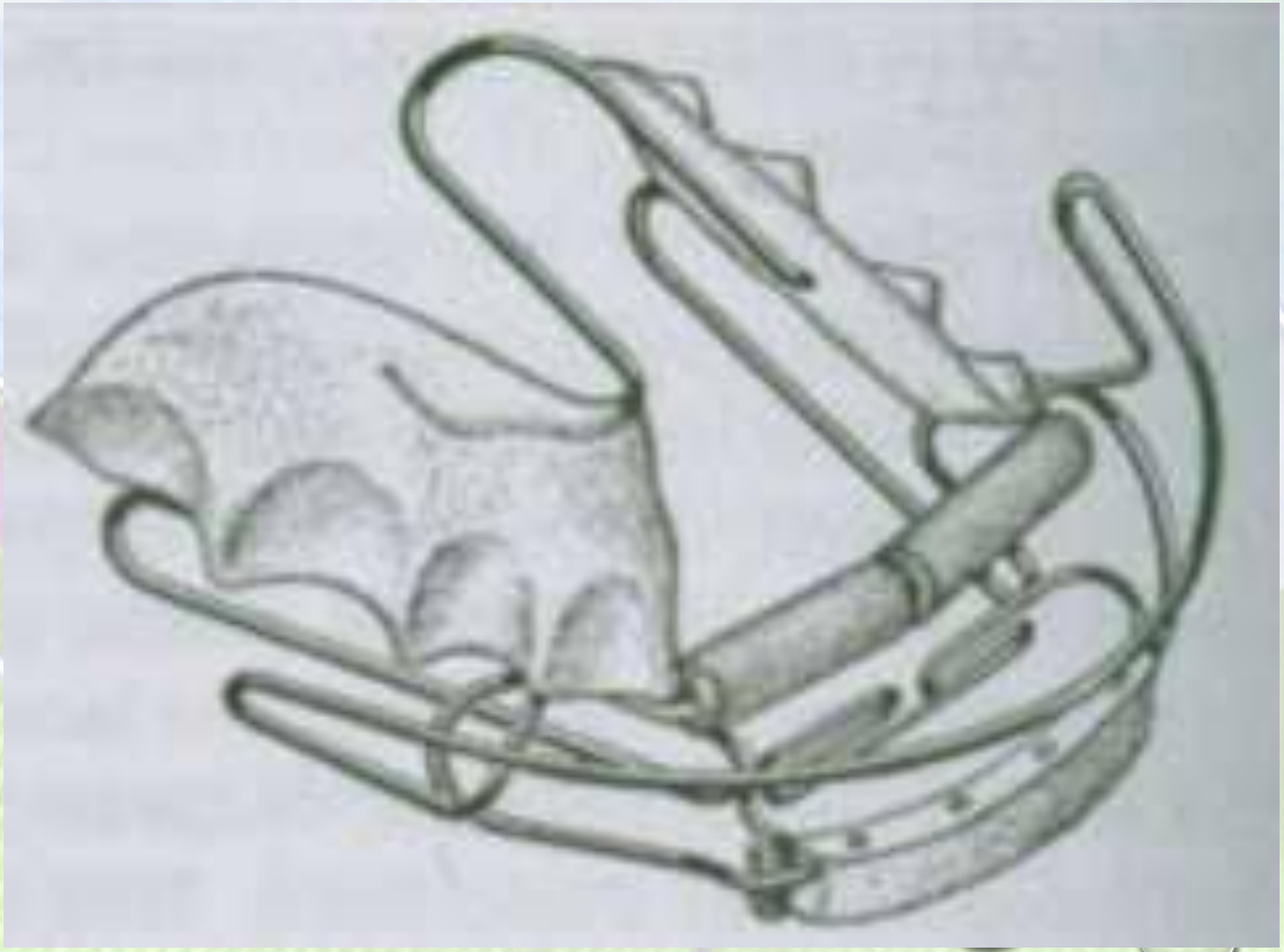
MAGNETIC ACTIVATOR DEVICE



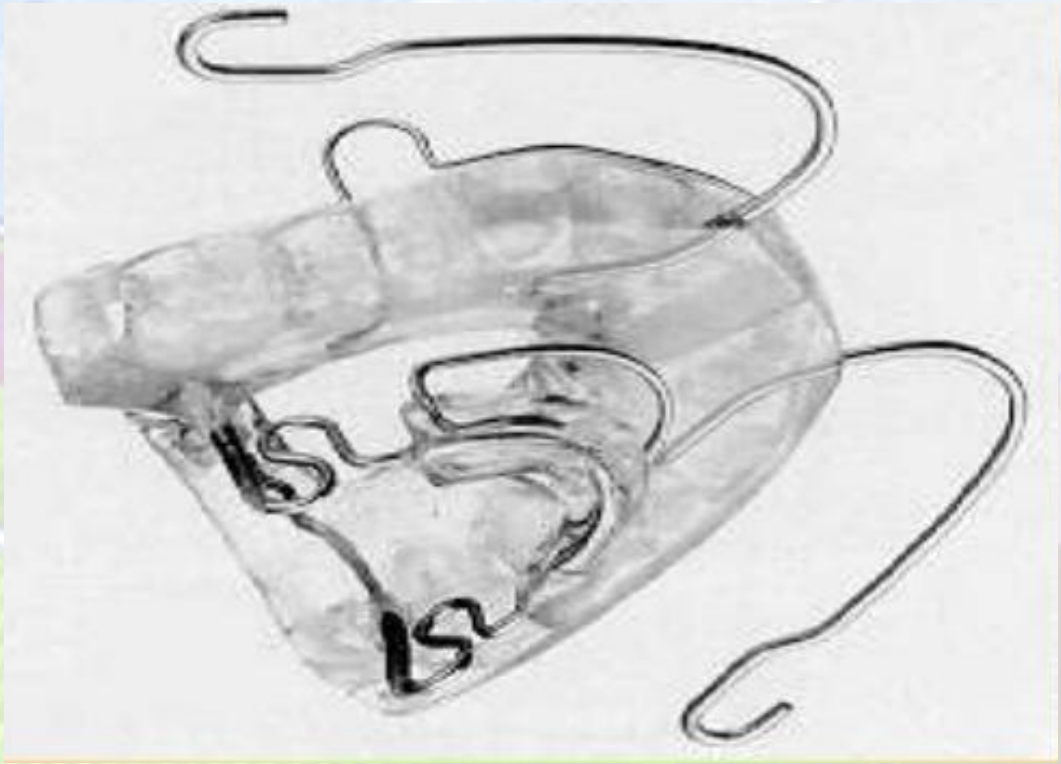
Four types

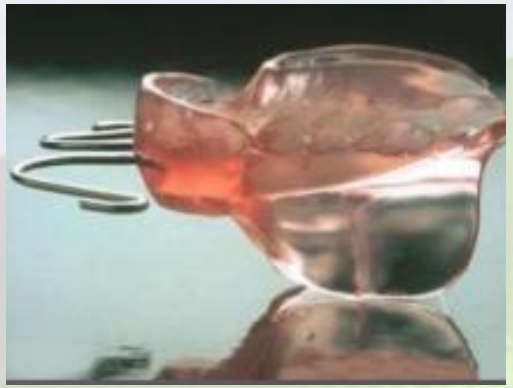
- MAD 1 – correction of lateral mandibular displacement
- MAD 2 – correction of class II malocclusion
- MAD 3 – correction of class III malocclusion
- MAD 4 – correction of open bite

Bimler appliance



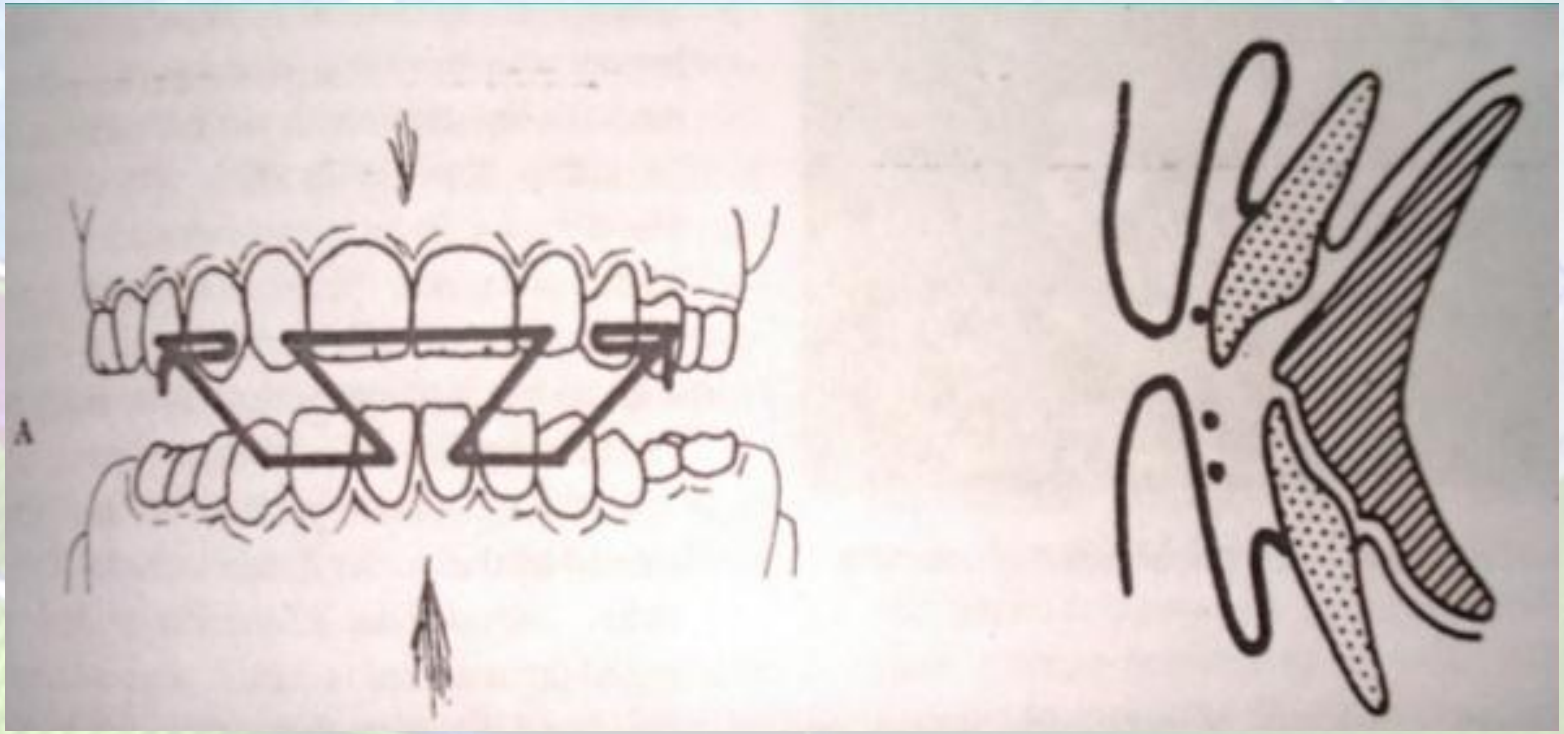
ACTIVATOR HEAD-GEAR THERAPY



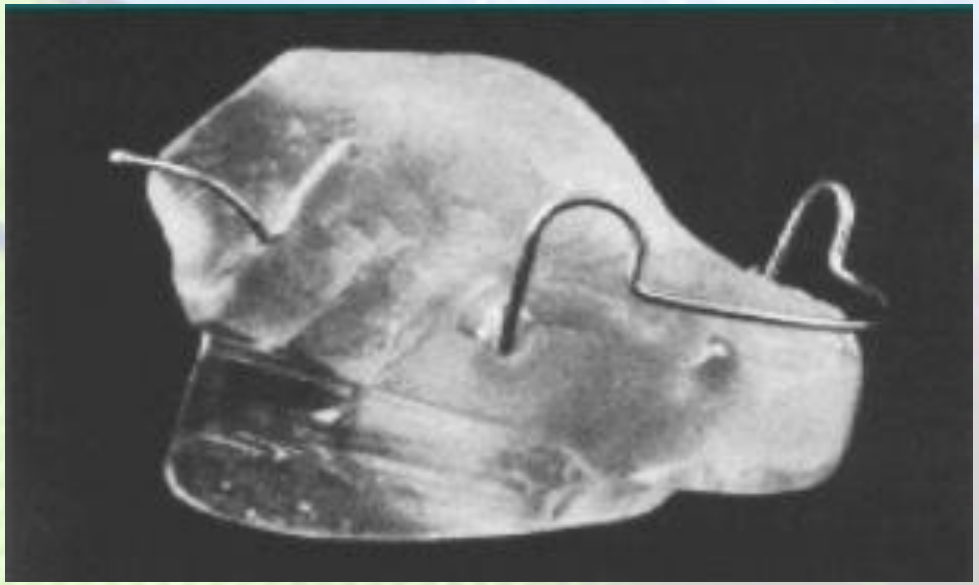


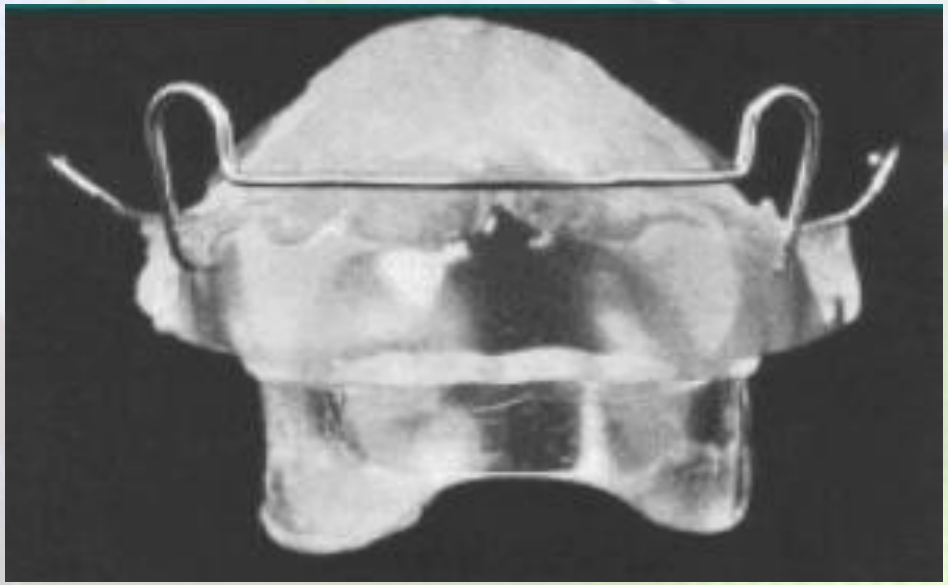
STOCKLI TYPE ACTIVATOR

ESCHLER'S MODIFICATION



L.S.U ACTIVATOR





HARVOLD-WOODSIDE ACTIVATOR

CONCLUSION

- The best time to approach most malocclusions is in the mixed dentition.
- Both skeletal and dentoalveolar changes can be achieved in activator functional appliance therapy.
- The restoration of normal function is a major contribution to improvement in the morpho-functional interrelationship.
- Combination therapy is indicated sometimes.

REFERENCES

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- Dentoskeletal effects and facial profile changes during activator therapy EJO 2004.
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THANK YOU