Management of Class I Malocclusion

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Definition:

>>Angle's class I malocclusion is also known as neutrocclusion where the molars are in normal class I relationship(Mesiobuccal cusp of the upper first permanent molar lies in the mid buccal groove of the lower first permanent molar) leaving the other teeth in malocclusion.

>>Harmonious relationship of the underlying skeletal structures and malocclusion component is restricted to the dental malrelations only..

Class I malocclusion

Most common forms are:

1) Class I malocclusion.

2) Bimaxillary protrusion

FEATURES OF CLASS 1 MALOCCLUSION

FEATURES OF BIMAXILARY PROTRUSION

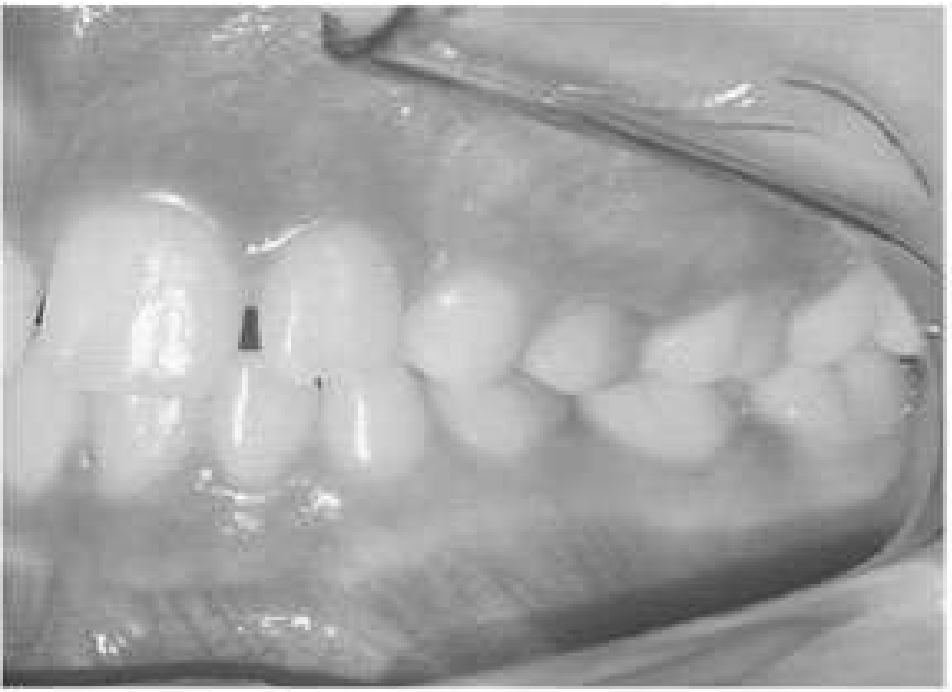
- **SKELETAL FEATURES:**
- Prognathic jaws
- Increased ANB angle
- Convex profile
- Everted lips
- Smaller upper and posterior facial height with divergent facial planes

DENTAL FEATURES:

- Bimaxillary proclination
- Increased incisal angle
- Spacing between teeth
- Normal molar and canine relationship
- Steep mandibular plane angles

a

b



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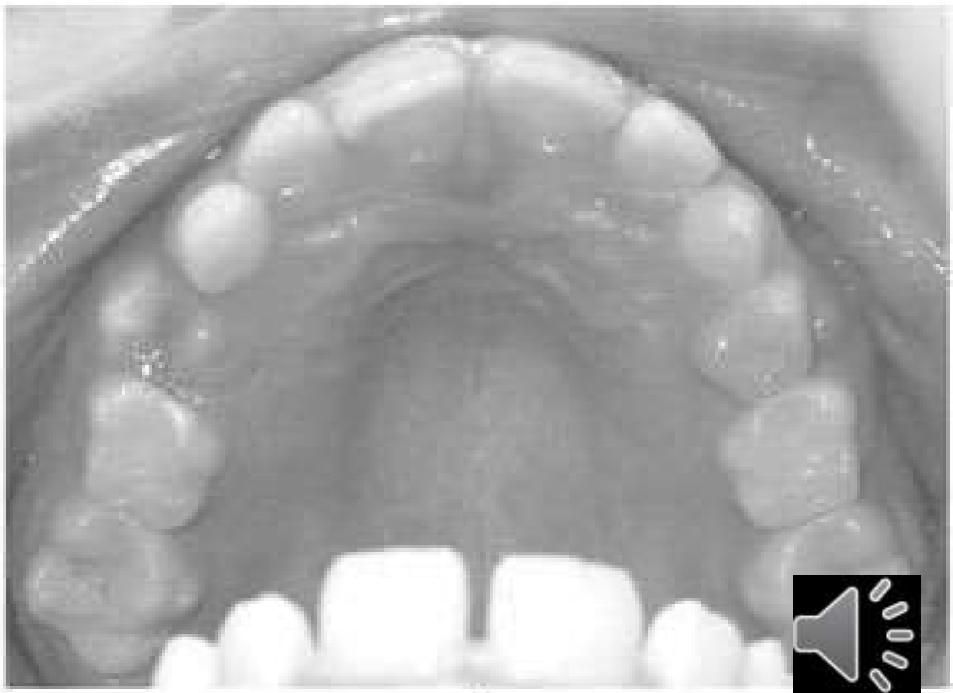

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FEATURES OF SKELETAL CLASS 1

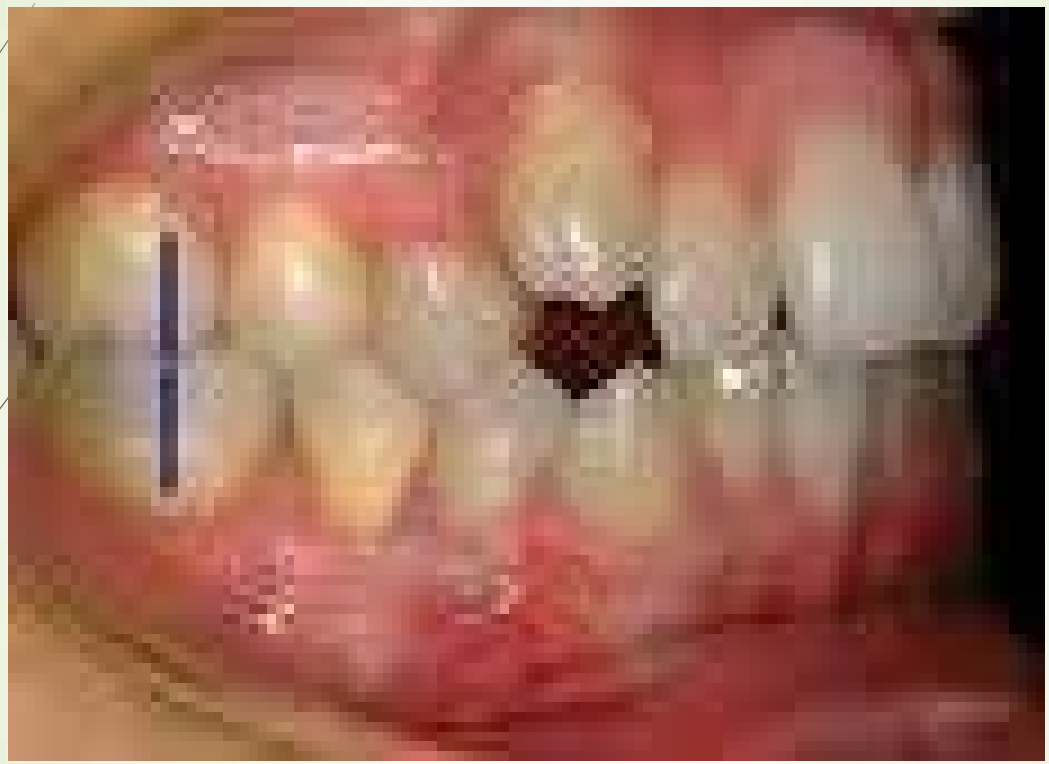
Features of skeletal class I malocclusion:

SKELETAL FEATURES:

- Harmonious face
- Straight to convex profile
- Nothing really abnormal

DENTAL FEATURES

- Class I molar relationship
- Individual tooth malocclusion with varying degree of severity
- Malocclusion may be in vertical and transverse planes.
- Lip competence is dependant on degree of anterior proclination



MANAGEMENT OF CLASS1 MALOCCLUSION

Treatment aimed at correcting:

- Spacing
- Crowding
- Crossbite
- Openbite (anterior)
- Rotations
- Deepbite (anterior)
- Bimaxillary protrusion

DIAGNOSIS:

History

- Clinical examination
- Study models
- Radiography

V. OPG

VI. Periapical

VII. Lateral ceph

SPACING

- **Generalized:**
  - Eliminate cause
- **Microdontia**
  - Eliminate spaces between anteriors,leaving a space between canine and 1st premolar
  - Prosthesis
- **Spacing with proclination:**
  - Labial bow
  - Elastics with fixed or removable appliance

Localized spacing with proclination:

- Labial bow with finger spring

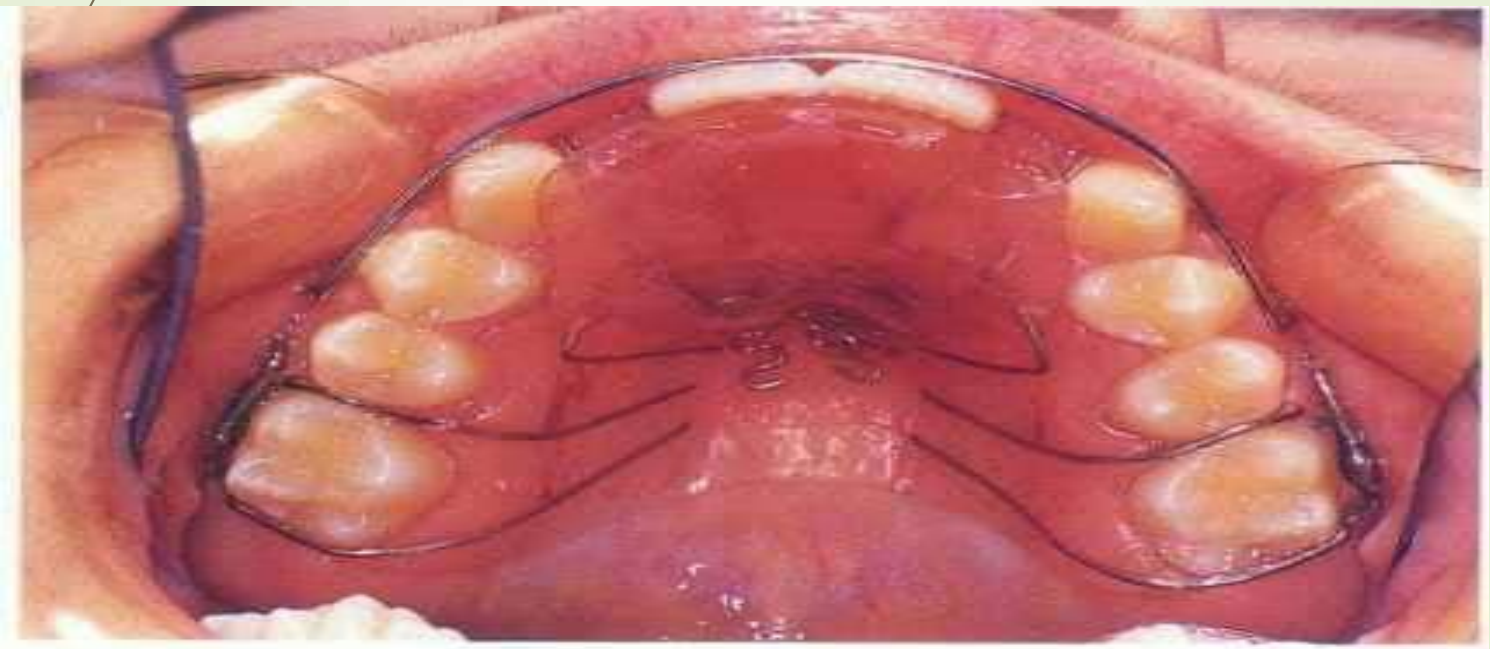


Fig. 71 Palatal finger springs; long labial bow.

Midline Diastema:

- Eliminate causes like high labial frenum attachment
- **Removable appliances**:
  - Finger spring
  - Finger spring with labial bow
  - Split labial bow
- **Fixed appliances**:
  - Pin and tube ap

CROWDING

CROWDING

- Analyze space discrepancy using model analysis.
- Treatment is planned on the amount of space required.

Mild Crowding:

If the space discrepancy is up to 4mm:

- usually resolves without extraction.
- Proximal stripping
- Alignment of teeth by labial bow, finger spring.

CROWDING

Moderate crowding:

If space discrepancy is in the range of 5-9mm, treated without extractions by :

- Arch expansion
- Molar anchorage or
- Enamel reduction.

CROWDING

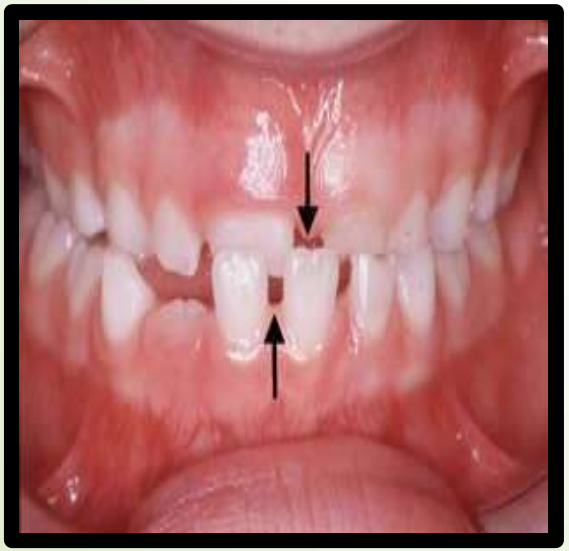
Severe crowding :

Patients with space discrepancy of 10 mm or more:

- Extract all 1st premolars
- Retract canine by canine retractor
- Align anteriors by labial bow
- Retention by Hawley's retainer.

HAWLEY'S RETAINER

CROSSBITE



CROSSBITE

- ANTERIOR
  - Z-spring with posterior bite plane
  - Expansion screw with posterior bite plane

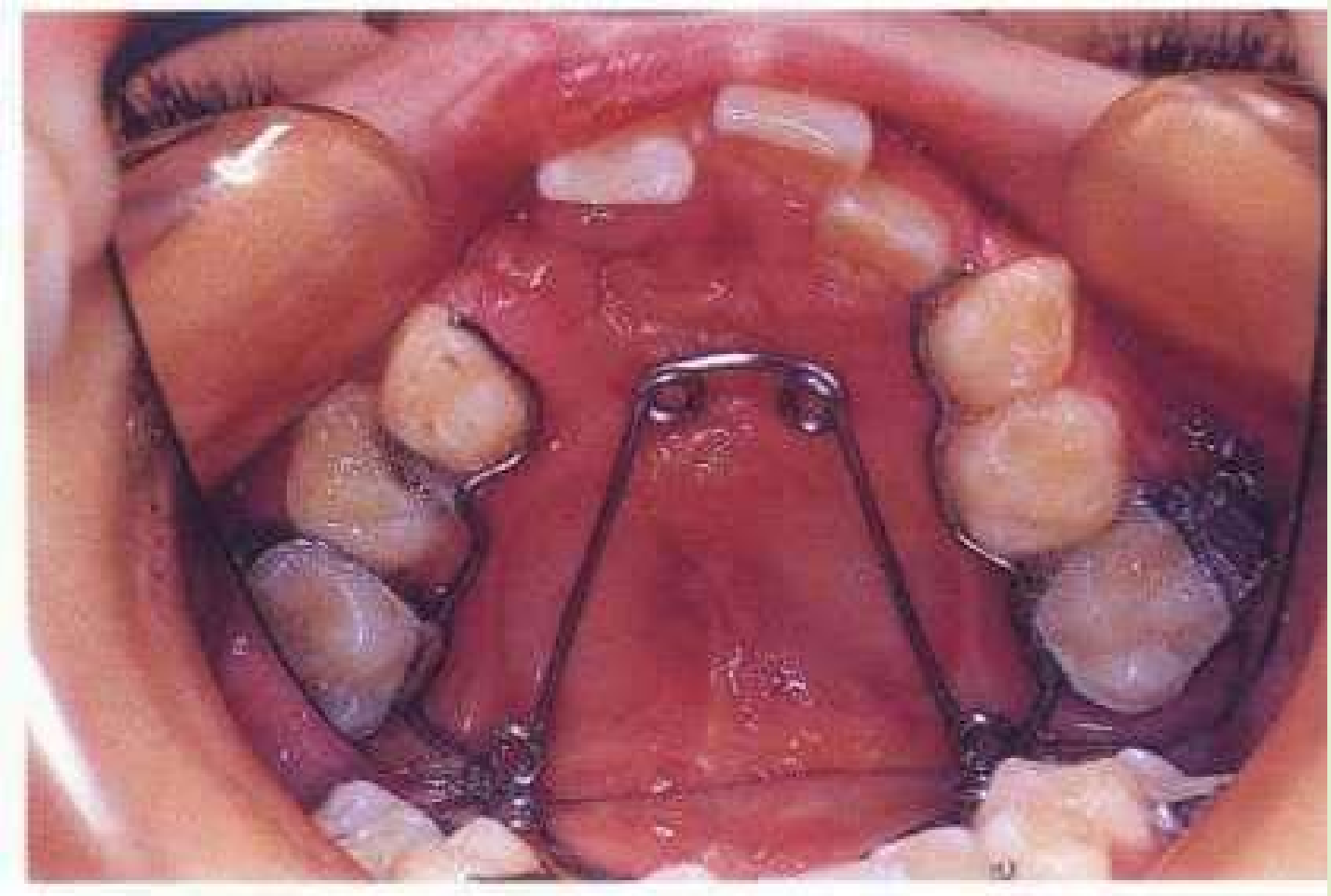
CROSSBITE

- POSTERIOR
  - **Single tooth:**
    - Cross-elastics
  - **Unilateral:**
    - Unilateral expansion screw
    - Functional appliance
  - **Bilateral:**

    Maxillary expansion is done to relieve cross bite by:
    - Coffin spring

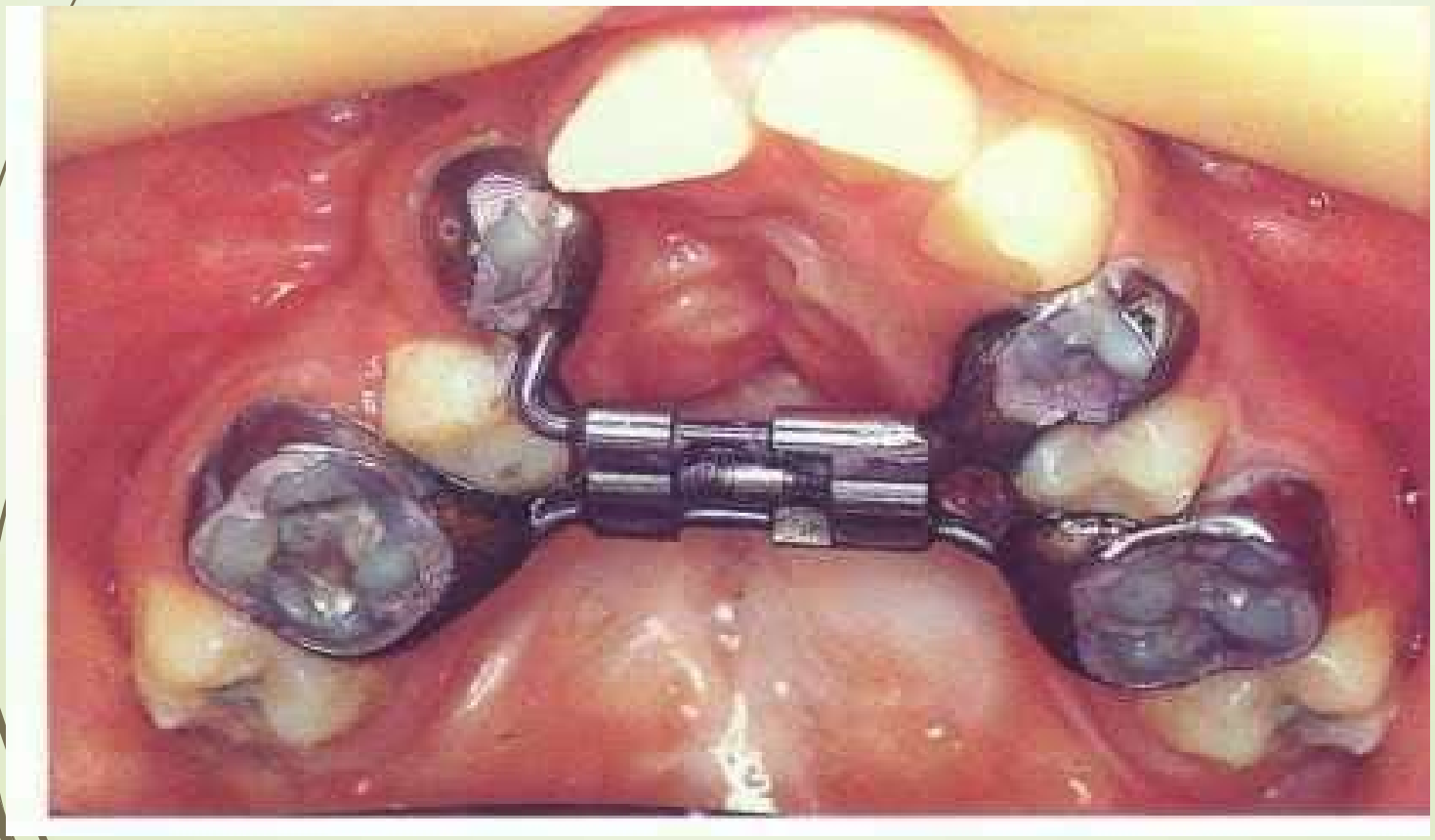
CROSSBITE

- Quad Helix Appliance



CROSSBITE

- Hyrax screw for rapid maxillary expansion



OPEN BITE

OPEN BITE

- ANTERIOR:
  - **Eliminate habit**
    - Thumb sucking
    - Tongue thrust
    - Mouth breathing
  - **Skeletal openbite**

iii. during mixed dentition:

- Frankel IV or chin cap with high pull headgear

iv. In permanent dentition,before puberty

- Fixed appliance with box elastics

v. In permanent dentition after puberty:

- Surgery
  - **If due to supra-erupted**

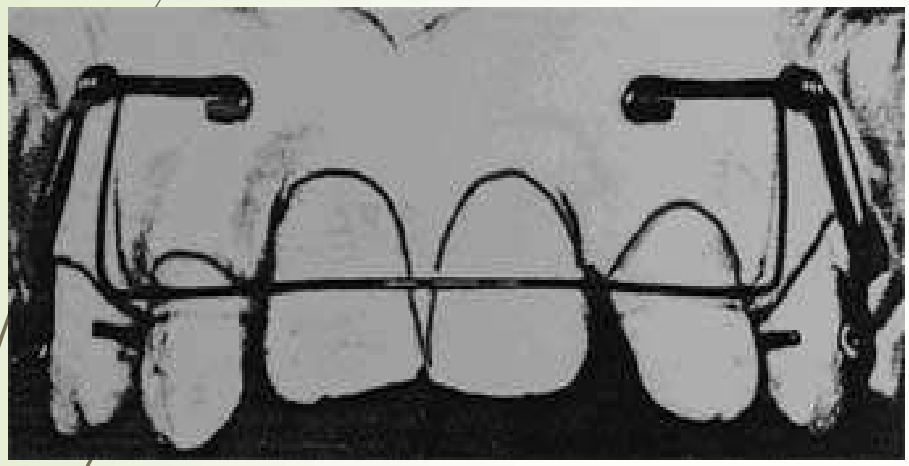
ROTATIONS

ROTATIONS

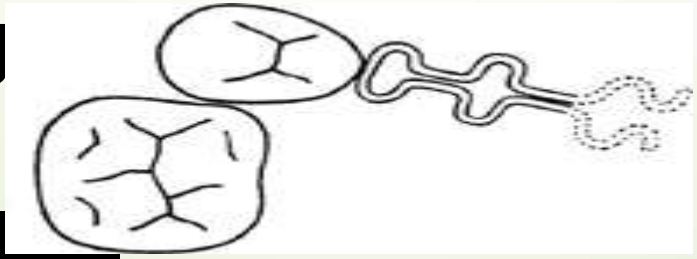
- Single Tooth:
  - Removable Appliance:
    - Couple force by flapper spring/ double cantilever spring and labial bow
  - Semi-fixed Appliance:
    - Whip spring
    - High labial bow with soldered ‘T’ spring
- **Multiple rotations:**
  - **Treated by fixed appliance**
    - Overcorrection is done and retention is given for atleast 1 year….

ROTATIONS

- High Labial bow



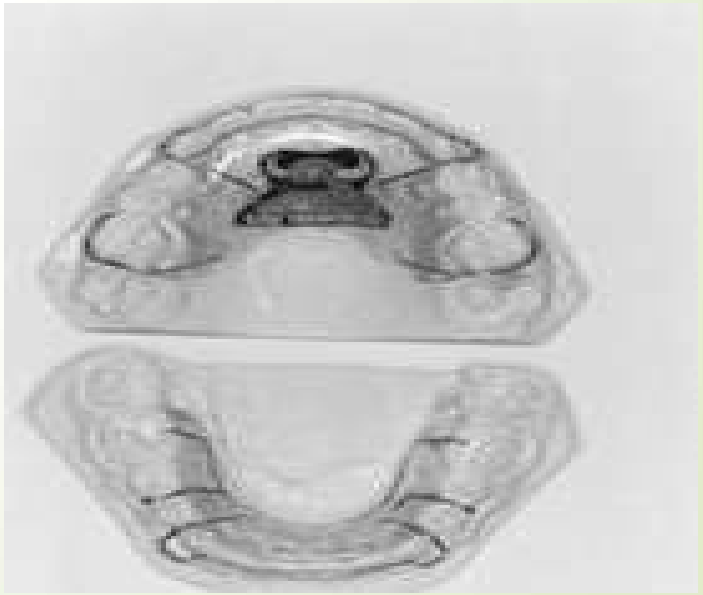
- T spring



DEEP BITE

DEEP BITE

- Growing age:
  - **With less low facial height**:
    - Anterior bite planes



DEEP BITE

- **Anterior bite planes are contraindicated if patient already has more lower facial height.**
  - **Intrude anteriors by:**

ii. Fixed appliance

i Jhooks of vertical pull headgear

BIMAXILLARY PROTRUSION

BIMAXILLARY PROTRUSION

- **Extract all 1st premolars, or 1st molars.**
- **Treatment depends on angulation of canine:**
  - **Distally inclined canine**:
    - Retract canine and align incisors using retainers
  - **Mesially inclined canine:**
    - Fixed appliance

INTERPROXIMAL ENAMEL REDUCTION AS A PART OF ORTHODONTIC TREATMENT

Authors	Journal	Level of evidence	Aims & objectives	Result & conclusion
Egle Lapenaiteand Kristina Lopatiene	Baltic Dental and Maxillo-facial Journal, 2014, Vol. 16, No. 1	Level 6	The aim of the study is to evaluate various interproximal enamel reduction techniques, its indications, contraindications and complications presented in recent scientific studies	Abrasive metal strips, diamond-coated stripping disks & air-rotor stripping are the main interproximal enamel reduction techniques. **Indications** for use are mild or moderate crowding in dental arches, Bolton Index discrepancy, changes in tooth shape and dental aesthetics within the enamel, enhancement of retention and stability after orthodontic treatment and correction of the Curve of Spee. **Complications** are hypersensitivity, irreversible damage of pulp, increased formation of plaque and the risk of caries. Interproximal enamel reduction is

Lower incisor extraction: An orthodontic treatment option

Author	Journal	Level of evidence	Aims and objective	Result and conclusion
Mrian Aiko et al.	Dental Press J Orthod 2010 Nov-Dec;15 (6): 143-161	Level 6	The aim of this study was to gather information about the indications, contraindications, advantages, disadvantages and stability of the results achieved in treatments performed with lower incisor extraction.	The main indication to extract a lower incisor is the presence of tooth size discrepancy equal to or greater than 4.5 mm due to lower anterior excess. This treatment option may be indicated in malocclusions with anterior tooth size discrepancy due large mandibular incisors. And If it is properly conducted, lower incisor extraction can significantly contribute to the treatment of certain malocclusions and pursuit of excellence in orthodontic treatment results, reflected in maximum function, esthetics a stability.

Bimaxillary Dentoalveolar Protrusion: Traits and Orthodontic Correction

Authors	Journal	Level of evidence	Aims & objective	Result & conclusion
Daniel A B, Chester S H, Ellen A B	Angle Orthod 2005; Vol. 75: Pg 333–339	Level	A group of 48 ethnically diverse patients with bimaxillary protrusion was used to study the pretreatment cephalometric traits of this malocclusion and the effect of orthodontic correction. All patients were treated with four premolar extractions and	Patients with bimaxillary protrusion demonstrated increased incisor proclination and protrusion, a vertical facial pattern, increased procumbency of the lips, a decreased nasolabial angle, and thin and elongated upper and lower anterior alveoli. This study also showed that the extraction of four premolars can be extremely successful in reducing the dental and soft tissue procumbency seen i

REFERENCES:

- CONTEMPORARY ORTHODONTICS BY WILLIAM R. PROFFIT
- HANDBOOK OF ORTHODONTICS BY ROBERT E. MOYERS
- ORTHODONTICS PRINCIPLE AND PRACTICE BY BASAVARAJ PHULARI


Thank you!
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