

Normoocclusion, treatment of local and general deviations

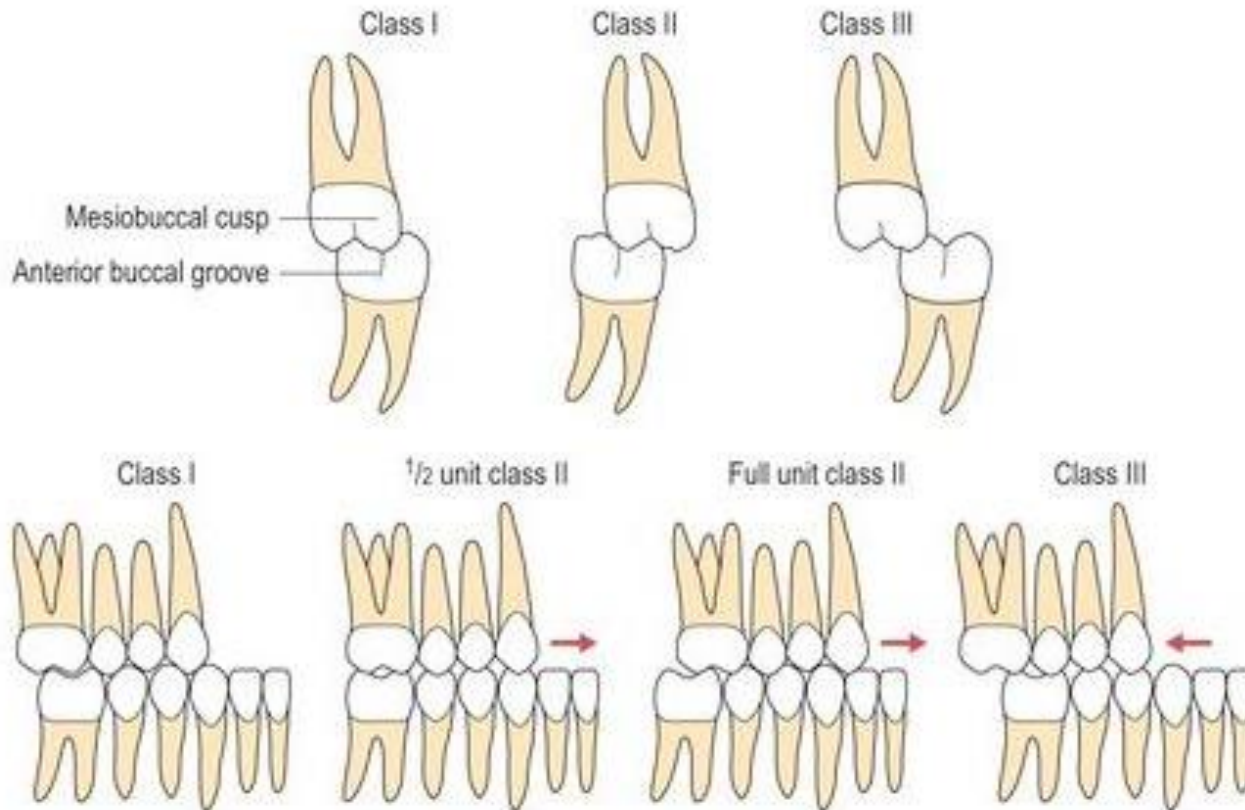
Dr. Bálint Réka

Semmelweis University,
Department of Paediatric Dentistry and Orthodontics



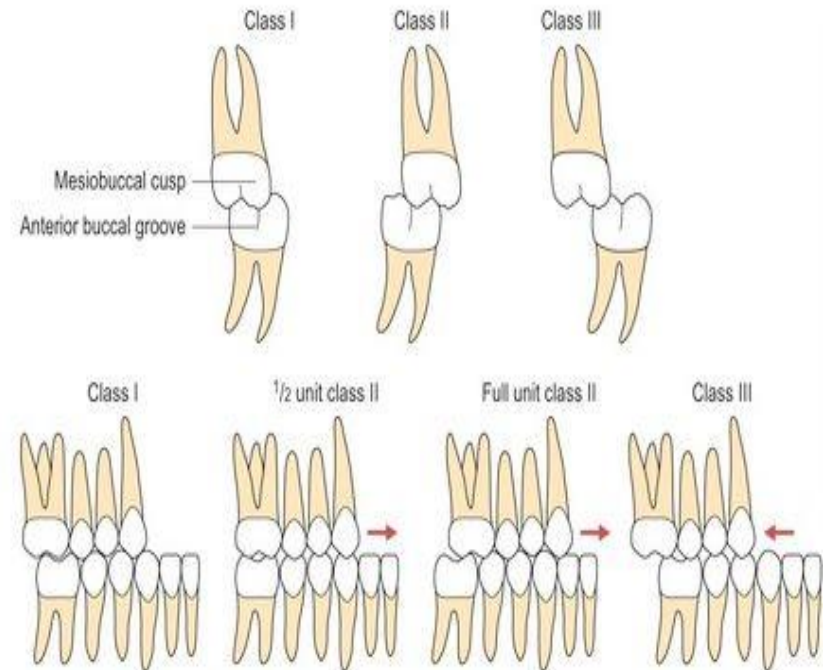
SEMMELWEIS
UNIVERSITY 1769

Angle Classification



Angle Class I.

- Upper 6 MB cusp bites between the lower 6 fissures CB-MB (dental classification)
- MD ratio between upper / lower teeth is normal
- +/- 1mm => half of the anomalies is class I.



Angle Cl. I. Anomalies

LOCAL ANOMALIES

- tooth **number** anomalies
 - tooth **germ position** eruption
- sagittal / transverse / vertical **tooth positions**
- Irregularities in tooth **shape and size**

GENERAL ANOMALIES

- **vertical discrepancies of occlusion**
 - Deepbite
 - Openbite
- **transversal discrepancies of occlusion**
 - Narrow jaw with a pointed front (narrow or gaps) or with crowded front
 - Crossbite

These anomalies can be found in Angle Class II. and III. also

1. UNDERBITE

Lower jaw sticks out too far forward.



5. GAPS

Too much room for teeth.



2. MISALIGNMENT

Teeth are not lined up with midline of face.



6. DEEPBITE

Upper teeth hide the lower teeth.



3. CROSSBITE

Upper teeth fit inside lower teeth rather than outside.



7. OPENBITE

Tongue can stick out between teeth when biting down.



4. CROWDING

Too little room for teeth.



8. OVERBITE OR BUCK TEETH

Front teeth stick far out.



Local Anomalies: position

- ① The tooth is angulated, but the apex of the root is in a good position in the apical base
- ② The tooth is in the wrong position and the apex of the root is far from its normal position
- ③ Combination of the two mentioned above



Etiology of the local anomalies

- Lack of space:

Inherited disproportion between tooth and jaw size

Transversal developmental difficulties of the jaw

Anterior migration of the posterior teeth as a result of caries related collapse of the support zone

Physiological mesial migration in the later, adolescent development phase

- ⦿ Malfunctions: e.g. forced or urged crossbite
- ⦿ Genetic determination: extra teeth, missing teeth, wrong tooth germination, diasthema medianum
- ⦿ Trauma: especially if before the permanent tooth erupts completely
- ⦿ Premature loss of milk teeth (1 year before the normal eruption of the permanent tooth)



Axial deviation of individual teeth

● Inclination: labial, buccal, palatal, lingual, mesial, distal (protrusion, retrusion)

➤ Labially upper incisors/protrusion:

- Inherited
- Dysfunction (thumb sucking, Tongue press)

➤ Palatally tilted maxillary incisors/retrusion:

- Lack of space
- Cover bite

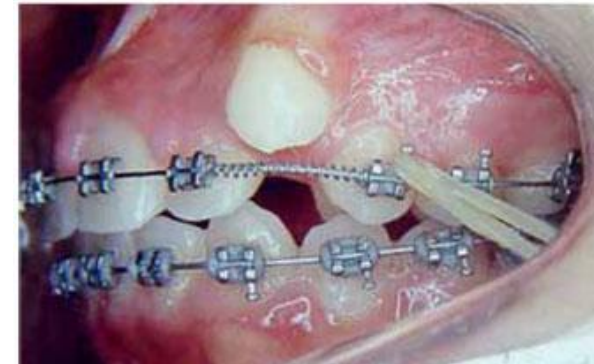
● Angulation

● Torque



Isolated ectopy of the canine

- Reason: lack of space
- Therapy: up to etiology (dent/skelet.)
 - Open space, depending on:
 - axis inclination,
 - space requirement
 - Palatal expansion:
 - Removable device: "Y" plate
 - Fix appliance: compression spring, Hyrax, Quad-Helix
 - Extraction



Diasthema in the front

● Diagnosis:

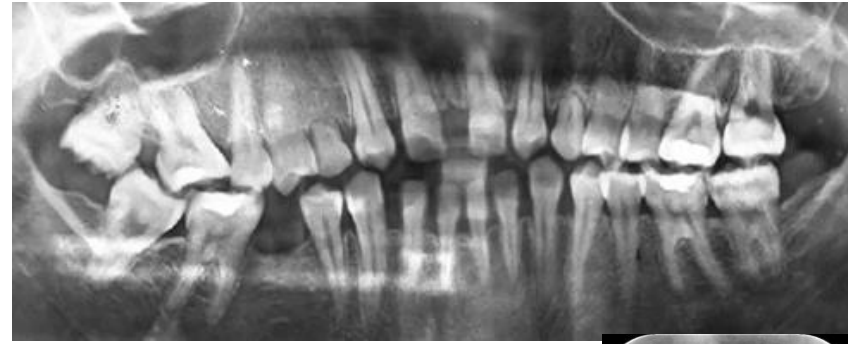
- › clinical examination
- › OP, X-RAY

● Etiology:

- › Thick frenulum labii superioris
- › Tooth excess (mesiodens)
- › Number of teeth (2 aplasia)
- › Incorrect tooth germination
- › Malfunction

● Problem:

- › aesthetic, phonetic disorders, malocclusion, cysts etc...



Therapy:

- › Frenulectomy
- › Extraction
- › Closing the gap:
 - Removable device (mesial spring)
 - MB, spring, intermaxillary elastics along the wire
 - Mesialization by aplasia (Bene plate, mini implants)
- › Gap opening & implants
 - MB, compression spring, loops
 - Distalization (Bene plate, mini implants)
- › Leveling/nivellation, physical bodily movement
- › Speech therapy, psychology

Retention !!!



Crossbite of individual teeth

- Diagnosis:
 - › Clinical examination
 - › OP, x-ray
- Etiology: dent./skeletal.
 - › Lack of space
 - › Persistent milk tooth
 - › Trauma
 - › Incorrect tooth germ or (minor jaw) position
- Results
 - › Periodontal disease
 - › Traumatic occlusion
 - › Tooth loss



Therapy:

- › Elimination of the cause
 - › Open space with MB or removable devices
 - › Space maintainer (removable / fixed active / passive)
- ◎ Make sure about stability (place, overbite)





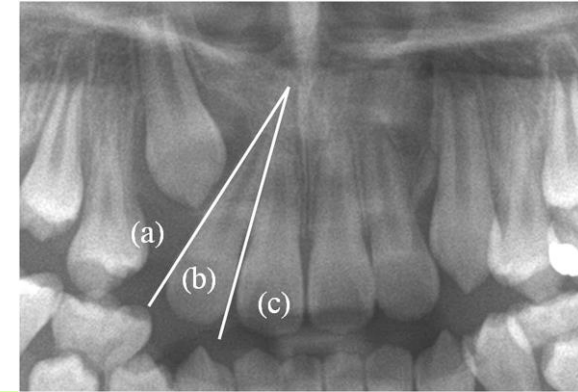
› Inclined plane

- Glued acrylic block (3-6 lower incisors)
- Criteria: enough space in the dental arch
- Overbite
- Max 3 weeks, otherwise iatrogenic open bite



Retention / Impaction

- Diagnosis:
 - › Clinical examination
 - › X-ray from 2 directions (SLOB)
- Etiology:
 - › Lack of space
 - › Incorrect tooth germination
 - › Hereditary factors
 - › Trauma
 - › Premature loss of milk teeth
 - › Dens supernumerarius or supplementariosteeth
- Result:
 - › Cysta follicularis
 - › Root resorption of the neighboring teeth

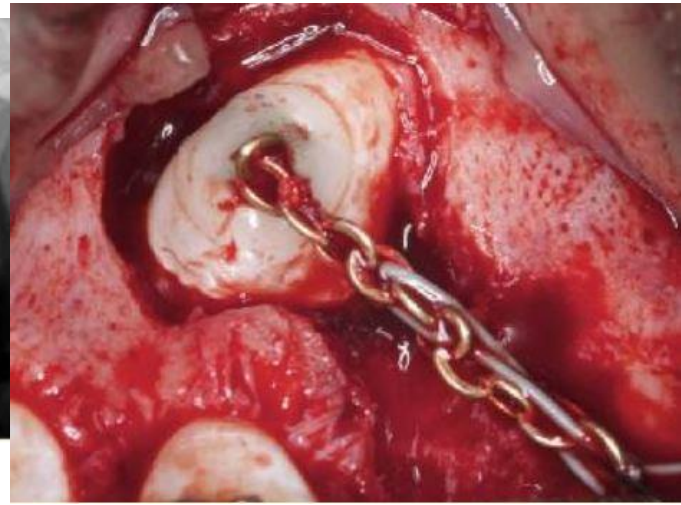


| Häufigkeit | | | | |
|-------------|---|---|---|---|
| Oberkiefer | 8 | 3 | | 1 |
| Unterkiefer | 8 | | 5 | |



◎ Therapy:

- › Orthodontics
 - Tooth axis deviation $<30^\circ$
 - Tooth is only covered with mucous membrane
- › Surgery orthodontics
 - $30^\circ <$ tooth axis deviation $<50^\circ$
 - Tooth lies deep in the bone
 - Exposing and extruding
 - "Redressement force" (adjusting with the pliers)
- › Surgery: extraction
- › Side effects:
 - Injury to the crown
 - Anchorage loss
 - Root resorption, intrusion of the neighboring teeth

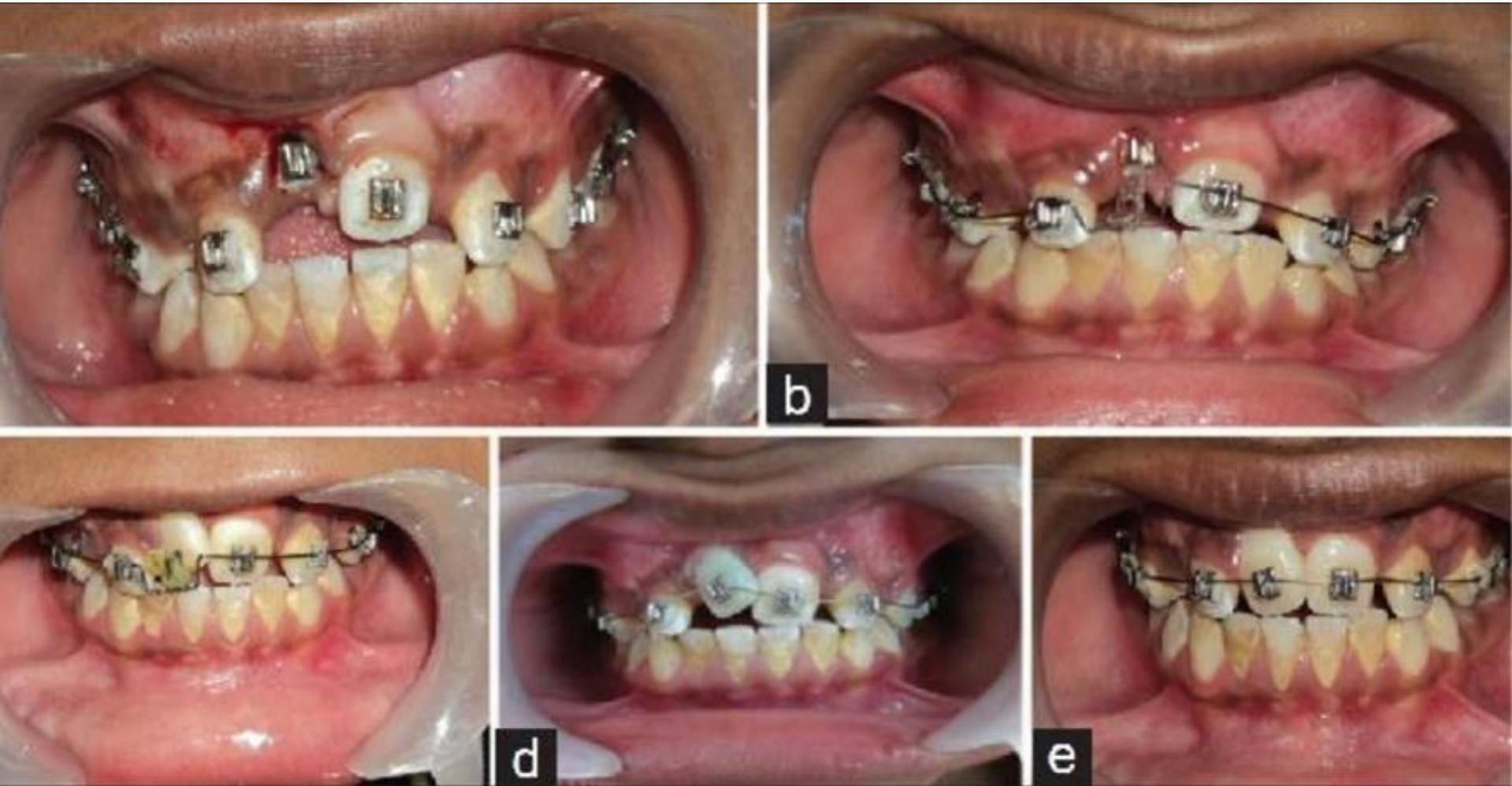


⦿ Prognosis relies on:

- › Axis inclination
- › Position: palatal / buccal
- › Crown position to the midline
- › Lack of space
- › Age, bone maturation



Impaction of the first incisor



Trauma, mesiodens, axial deviation, thick attached gingiva

Numerical diversions

- Diagnosis:
 - › Clinical examination
 - › X-ray
- Etiology:
 - › Bolk's terminal reduction hypothesis
 - › Genetic factors
 - › Intrauterine, teratogenic effects/damages
 - › Syndromes
 - › Trauma
- Agenesia
- Dens Supernumerarius: 1 (mesiodens), 5, 9

| Frequency | | | | | |
|-----------|---|---|---|---|---|
| Upper jaw | 8 | 2 | | 5 | |
| Lower jaw | 8 | | 5 | | 1 |

⊙ Therapy:

- › Depending on:
 - Other orthodontic abnormalities
 - Age
 - Oral hygiene
- › Lower number of teeth:
 - Gap closure
 - Prosthetics
 - Implantology
 - Compensatory extractions
- › Extra teeth
 - Surgery orthodontics

II. General bite anomalies

- ⦿ Vertical anomalies:
 - › Deep bite
 - › Open bite
- ⦿ Transversal disharmony:
 - › Narrow dental arch
 - › Crossbite
 - › Crowding
 - › Spacing



Deepbite

- Skeletal:
 - › increased horizontal growth of the jaw
- Dentoalveolar:
 - › Molar infraocclusion
 - › Front supraocclusion
- Symptomatic
 - › More than 2mm overbite
 - › Increased Spee's curve
 - › Deep mentolabial sulcus
 - › Temporal chewing
 - › Large interarticular space

◎ Cephalometric x-ray:

› ML-NL:



› ML-NSL:

› NL-NSL:



› Gonion angle:



◎ Therapy:

› Molar extrusion

› Front intrusion



With fixed (e.g. utility arch, anti-spee arch, Eva plate, Bite Turbo, Bracket Position) or removable (e.g. activator, Hansa, plate with bite ridge) devices



Openbite

- ① Skeletal:
 - › increased vertical growth of the face
- ① Dentoalveolar:
 - › Molar supraocclusion (uni / bilateral ~)
 - › Front infraocclusion (frontal ~)
- ① Symptomatic
 - › Bad habits, forms of breathing
 - › Negative overbite (in the dentoalveolar ~)
 - › Increased lower facial height
 - › Small interarticular space

◎ Tele x-ray:

› ML-NL:



› ML-NSL:

› NL-NSL:



› Gonion angle:



◎ Therapy:

› Weaning (atrial plate, tongue grid)

› Molar intrusion (High Pull Headgear, Everdin plate)

› Front extrusion (intermaxillary E, bracket position, utility arch, extrusion step)

› Removable devices (activator, functional appliances/regulators/trainers)



Transversal Anomalies

- Primary
 - › Bolton
- Secondary
 - › Early deciduous tooth loss
 - › Wisdom teeth
- Therapy:
 - › Create space through:
 - Extraction
 - Sagittal / transverse widening
 - Stripping, front protraction



Thank you for your kind attention!

