Extraction in Orthodontics

Extraction of primary teeth

Extraction of dens neonatalis, dens connatalis

Treatment of early loss of primary teeth (orthodontists try to avoid the extractions of primary teeth)

Over-retained primary teeth

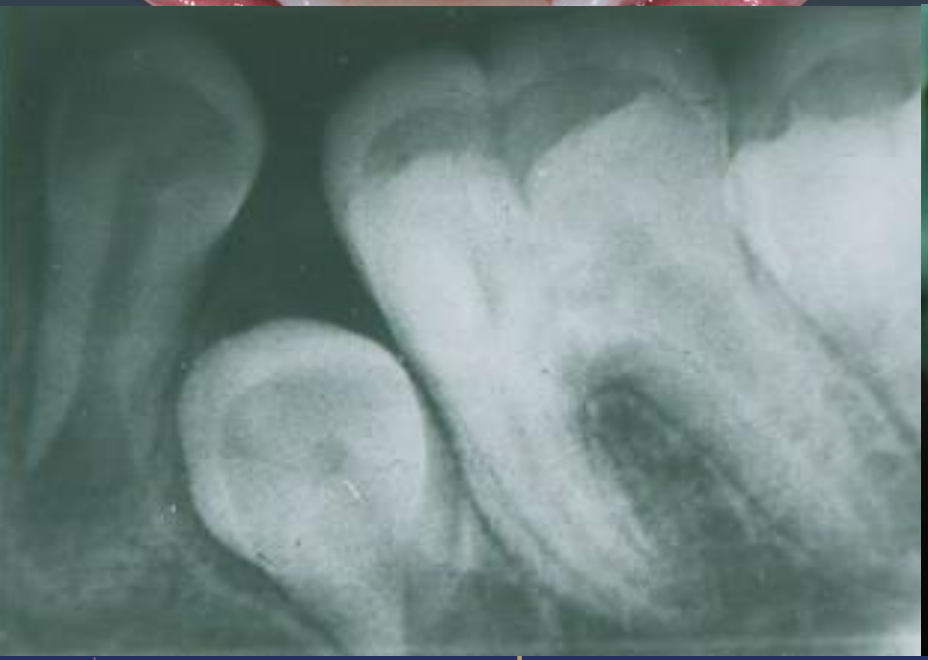
Hotz serial extractions

Extraction of dens neonatalis

Treatment of early extractions in primary and/or mixed dentition

- We have to treat the consequences of early extractions of primary molars and canines
- Space mainteners have to be used

Primary teeth extractions

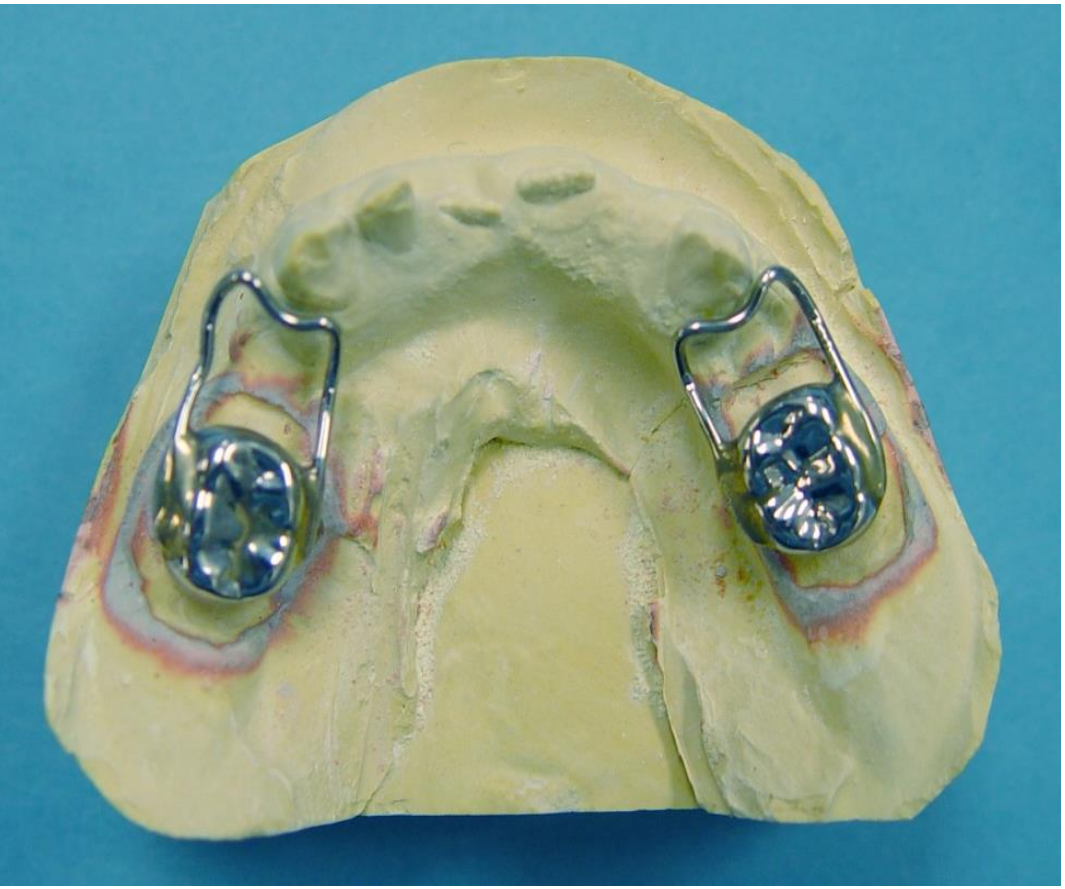


First primary molar extraction – space mainteners

metal band on the second primary molar + wire

First primary molar extraction – space mainteners

metal crown (on the second primary molar) +wire



-Metal crown is correct treatment of the decayed second primary molar and Keeps the space maintener

Upper second primary molar extraction – Nance appliance

Space maintainers

Extractions of premolars – lingual arch

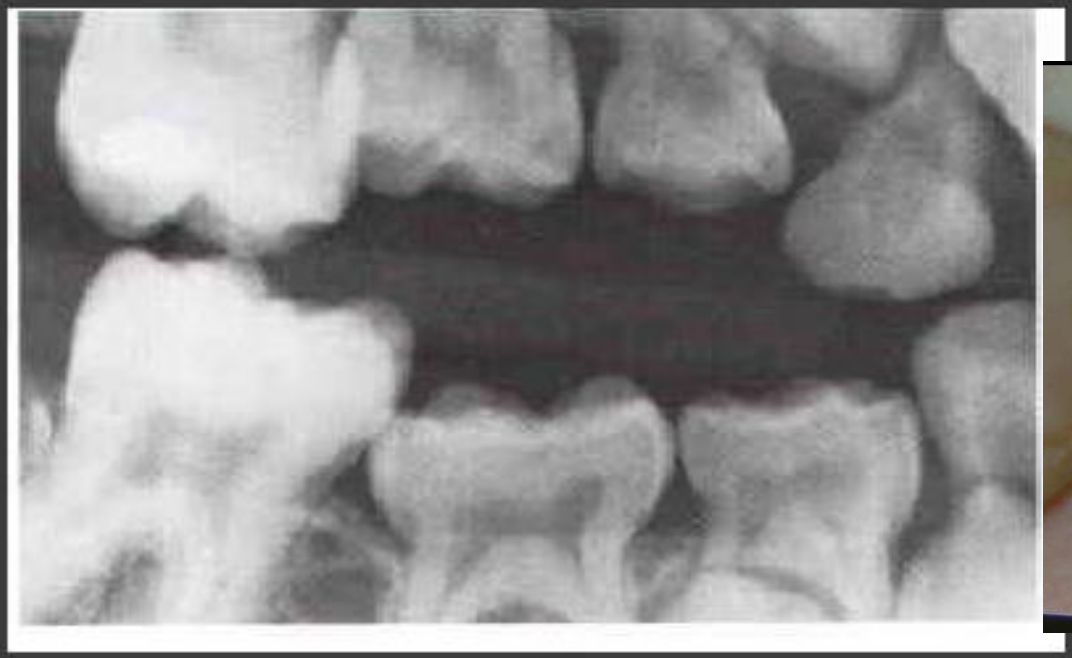
Space mainteners

- - **Lingual arch should not be placed with primary incisors**

Over-Retained Primary Teeth

Once the primary tooth is out, if space is adequate, moderately abnormal facial or lingual positioning will usually be corrected by the equilibrium forces of the lip, cheeks and tongue

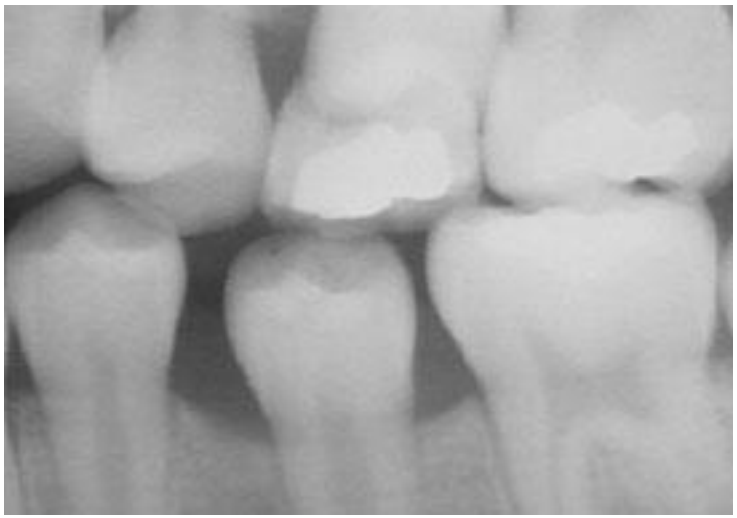
Ankylosed Primary Teeth



This radiograph demonstrates both anterior and posterior teeth tipping over adjacent ankylosed primary molars. The ankylosed teeth should be removed if significant tipping and space loss are occurring

Leeway-space !!!

Permanent premolars are smaller than the primary molars.
We can gain some place.
Space mainteners prohibit the mesialisation of the permanent first molar and
Leeway space can be used for the treatment of anterior crowding or ectopic canine etc



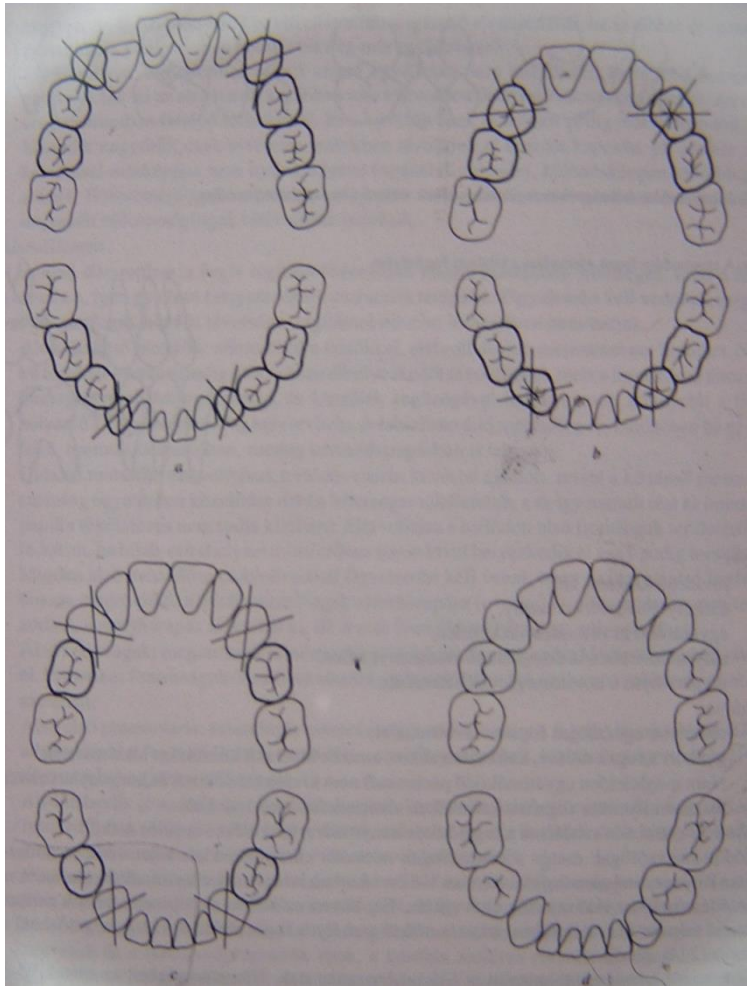
Systematic Extractions – by Hotz

when

- There’s no place enough for the permanent teeth (Moyers-index)
- Crowding, narrowing (zk.10mm)

and

- There’s no serious skeletal problem
- Angle I. (sagittal relationship)



Steps of serial extractions

1. 53,63,73,83 extraktion (primary canines)

Alignment of permanent incisors

2. 54,64,74, 84 extraktion (primary first molars)
3. 14,24,34,44 extrakcion (permanent first premolars)

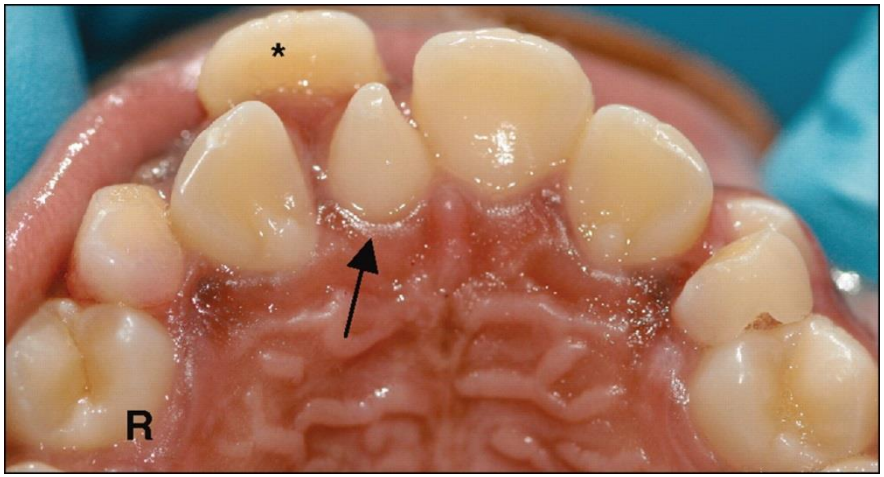
Permanent canines erupt in the place of the premolars

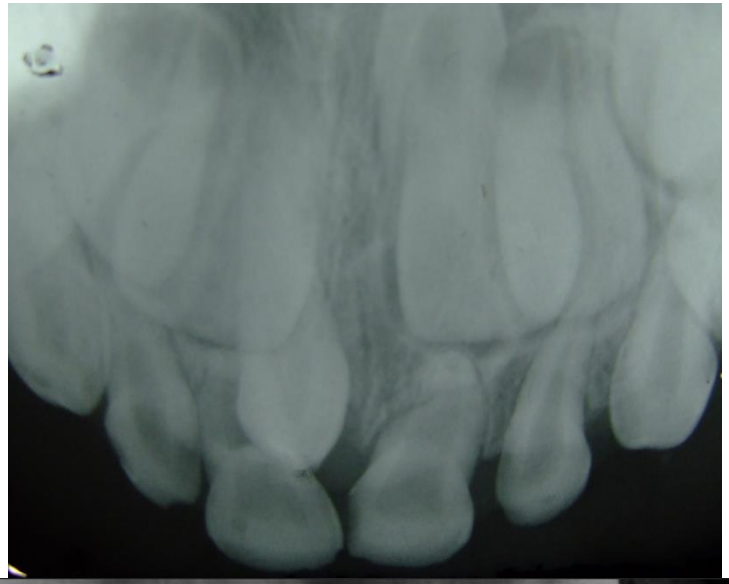
- **The crowding can be solved without orthodontic appliances**

Supernumerary teeth always have to be extracted

Mesiodens

Mesiodens





Reasons of orthodontic extraction (we need place)

- Extractions by crowding, narrowing, lack of place
- Extractions for the compensation of sagittal anomalies
- Extractions by (bimaxillary) protruded incisors

- Mostly premolars are extracted in orthodontic

Extraction in Orthodontics

Extraction of permanent teeth

- Extraction of upper incisors (almost never)
- Extraction of lower incisors (sometimes 1)
- Extraction of canines (almost never)
- Premolars !!
- Molar extraction (rarely)
- Wisdom tooth extractions !!
- Assymmetric extractions (rarely, we try to avoid it)

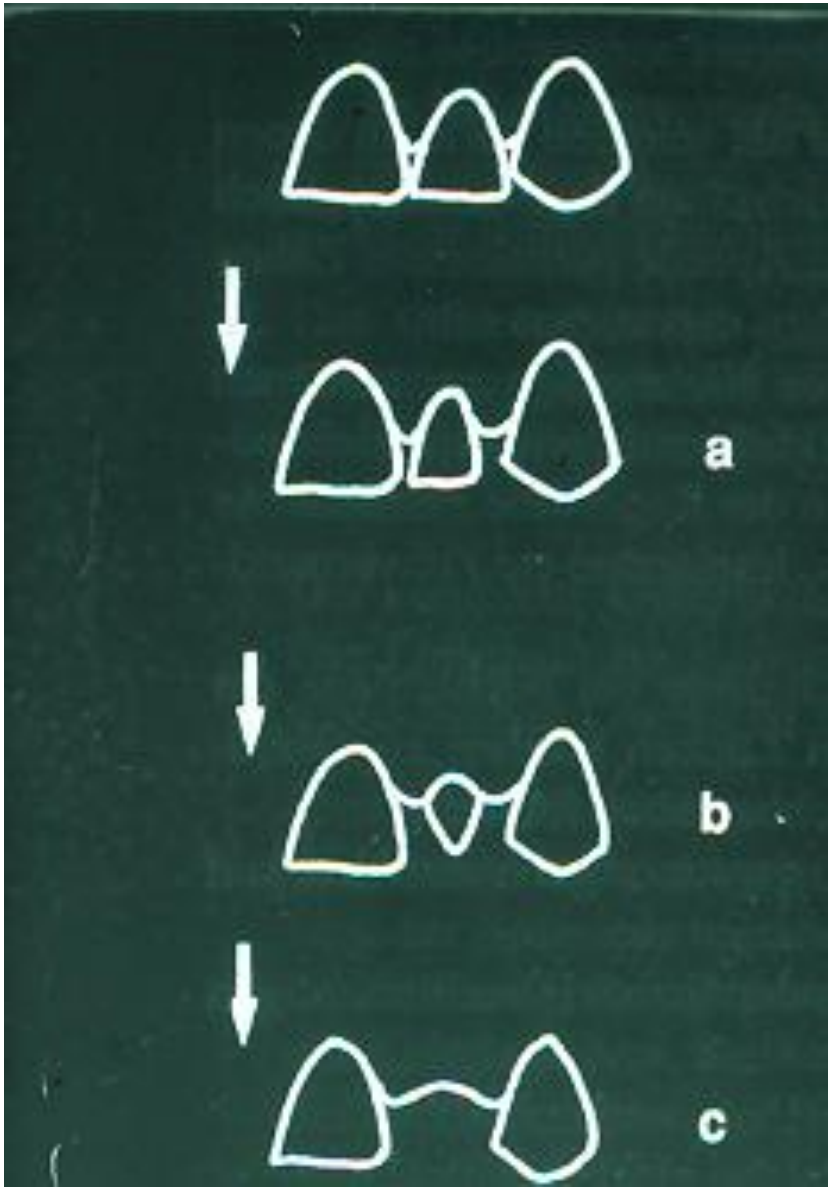
Extraktions of upper incisors

There's no orthodontic indication of permanent incisors' extractions, but .....

- Morphological deviations of the crowns, trauma (also in primary denture), fracture, dilateration....)
- Unilateral aplasia of lateral incisors

  (mainly by peg shape lateral incisor)

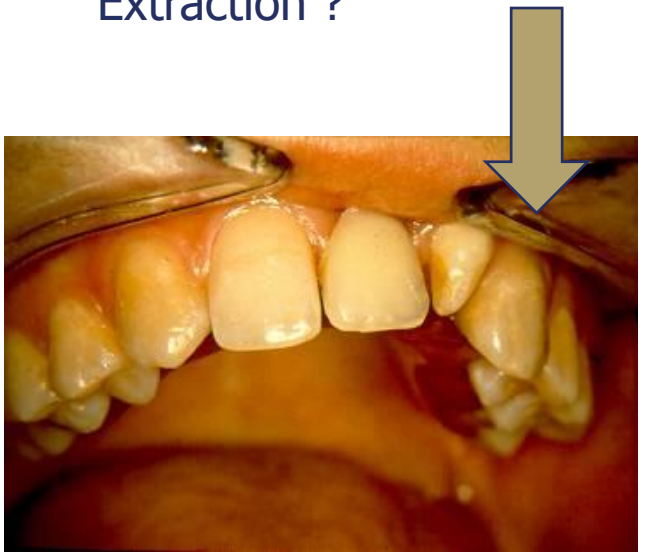

'98 3 13



Variability of the upper lateral incisors (often assymetrical)

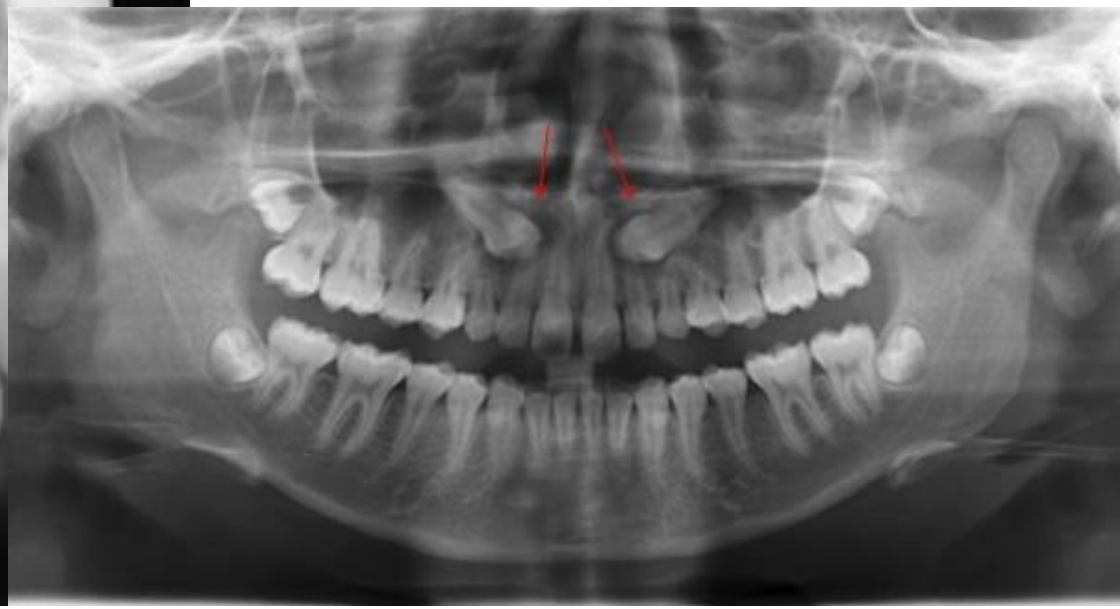
Peg shape

Extraction ?



Extraction of canines

- Orthodontists always try to avoid the extraction of the impacted canines
- Sometimes the position of the canine is so unfavourable that the extraction is avoidless




R
L


cted canine
Dr. Yalçın Ergir
ORTHODONTIST


impacted canine
Dr. Yalçın Ergir
ORTHODONTIST


pre-brace


week 10


week 18


Licensed to Ashouri, Nahal
Dolphin

Extraction of premolars
(if we can not avoid extraction because of crowding or protrusion)

- The most frequently extracted teeth in orthodontics are the premolars
- Mostly the first premolars are extracted
- The second premolar is extracted if the first premolar is healthy and the second one is decayed, filled etc.,
- By II. class anomalies upper first premolars and lower second premolars are extracted

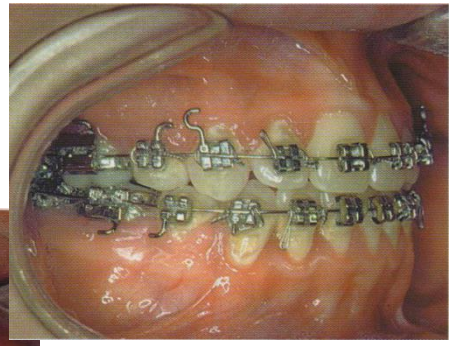
TREATMENT OF GENERAL ANOMALIES

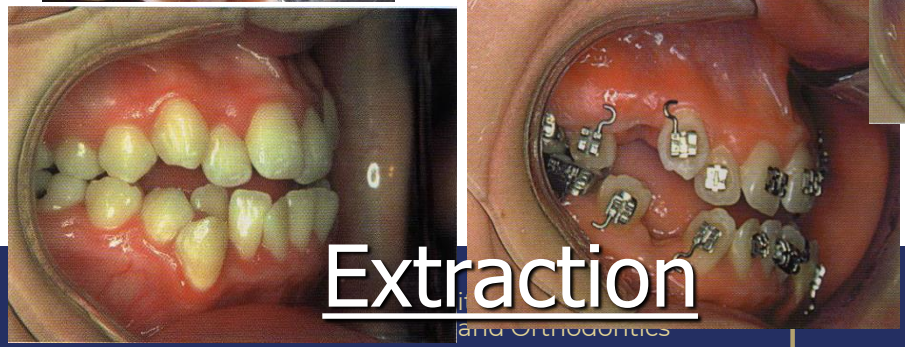
Crowding

- Mild crowding

- Moderate crowdi

- Severe crowding





Extraction

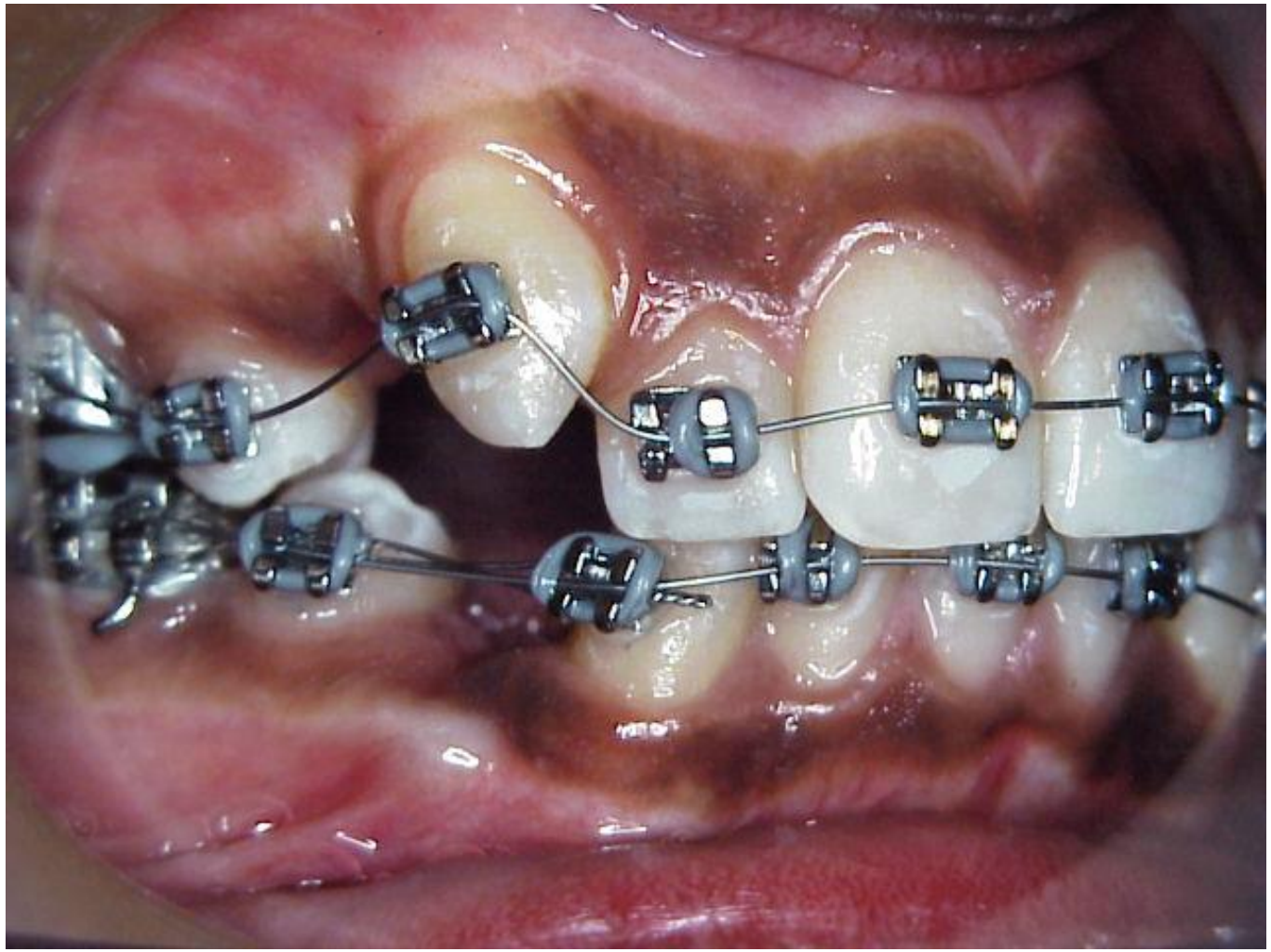
Ectopic lower premolar

Crowding

I. class

4 premolar extractions

Extraction of 4 premolars



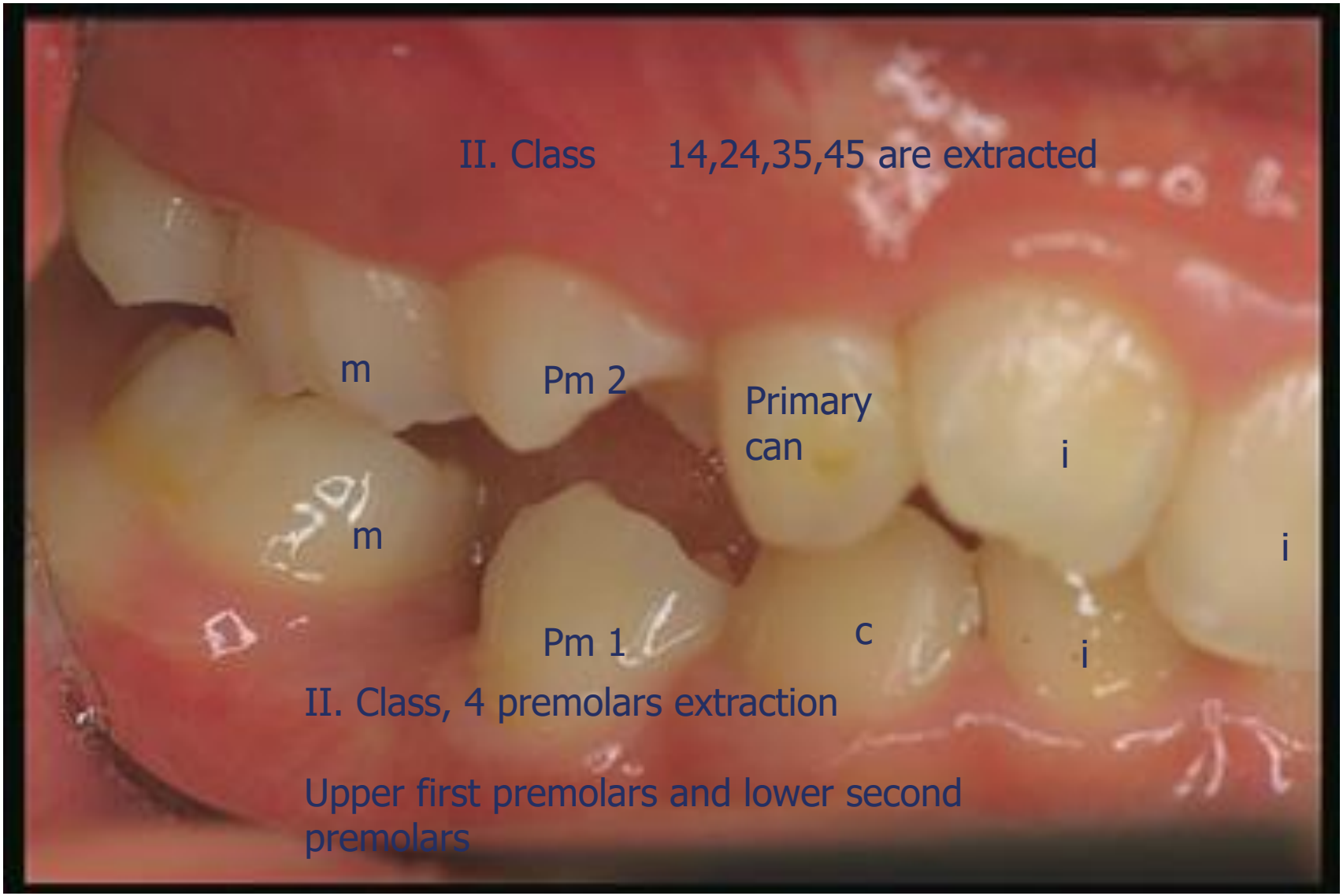
I. Class

First premolars
are extracted

4 premolars extraction in II. class cases

II. Class, 4 premolars extraction

Upper first premolars and lower second molars


II. Class 14,24,35,45 are extracted
m
Pm 2
Primary
can
i
m
i
Pm 1
c
i
II. Class, 4 premolars extraction
Upper first premolars and lower second
premolars


C


II. Class, 4 premolars extraction
Upper first premolars and lower second premolars

CLASS II MALOCCLUSION
EXTRACTION OF FOUR PREMOLARS
DIFFERENTIAL ANCHORAGE

PRE-TREATMENT

SLIGHTLY CONVEX SOME LIP PROTRUSION

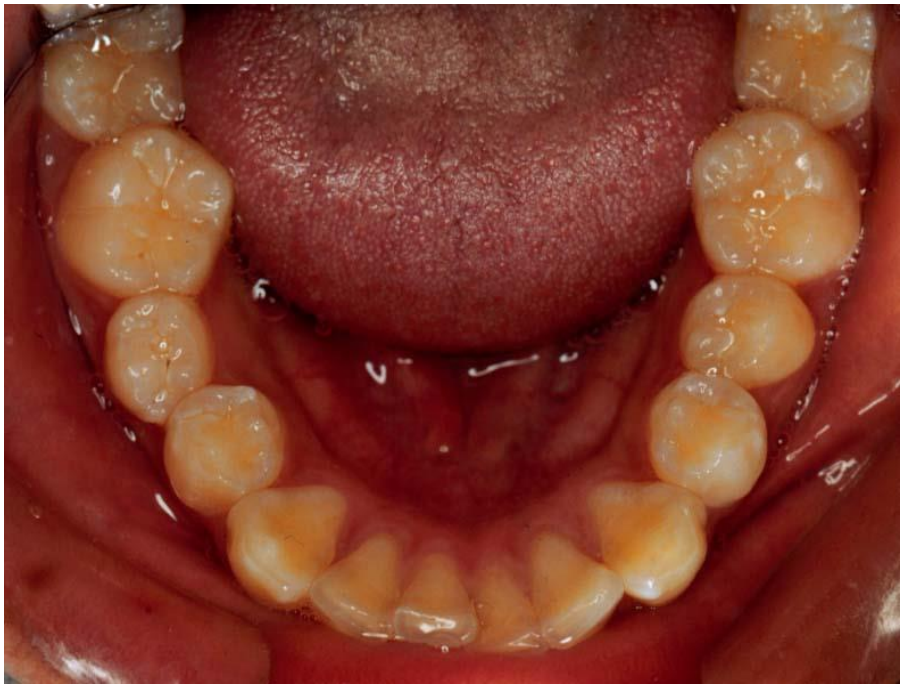
CLASS II MALOCCLUSION
EXTRACTION
DIFFERENTIAL ANCHORAGE

II. Class, 4 premolars extraction

Upper first molars and lower second molars

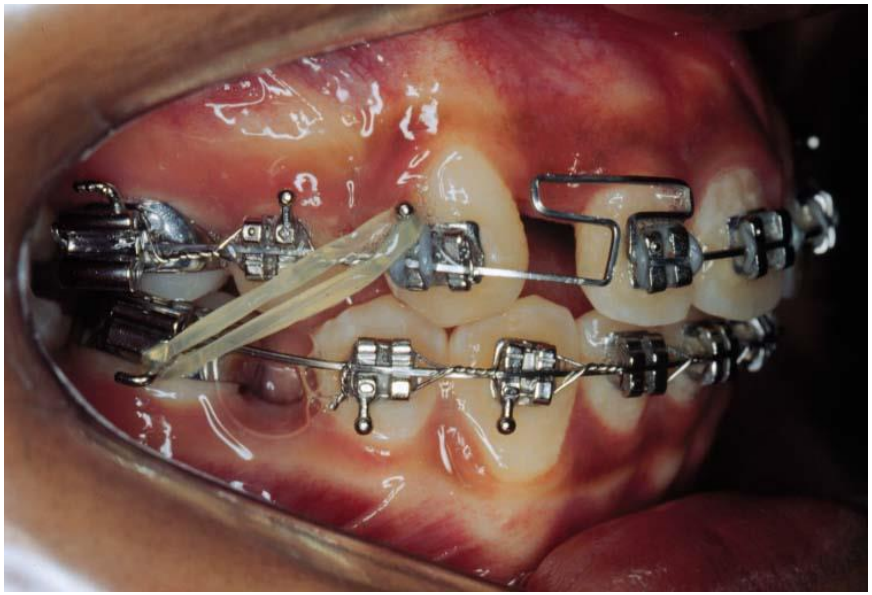
PERMANENT DENTITION
CLASS II SUBDIVISION RIGHT
MODERATE OVERJET
BIMAXILLARY PROTRUSION !!!

CLASS II MALOCCLUSION
EXTRACTION
DIFFERENTIAL ANCHORAGE



MILD CROWDING
BIMAXILLARY PROTRUSION !!!

CLASS II MALOCCLUSION
EXTRACTION
DIFFERENTIAL ANCHORAGE



EXTRACTION OF
UPPER FIRST PREMOLARS +
LOWER SECOND PREMOLARS

CLASS II MALOCCLUSION
EXTRACTION
DIFFERENTIAL ANCHORAGE

UPPER ARCH

LOWER ARCH

CLASS II MALOCCLUSION

DIFFERENTIAL ANCHORAGE

POST-TREATMENT

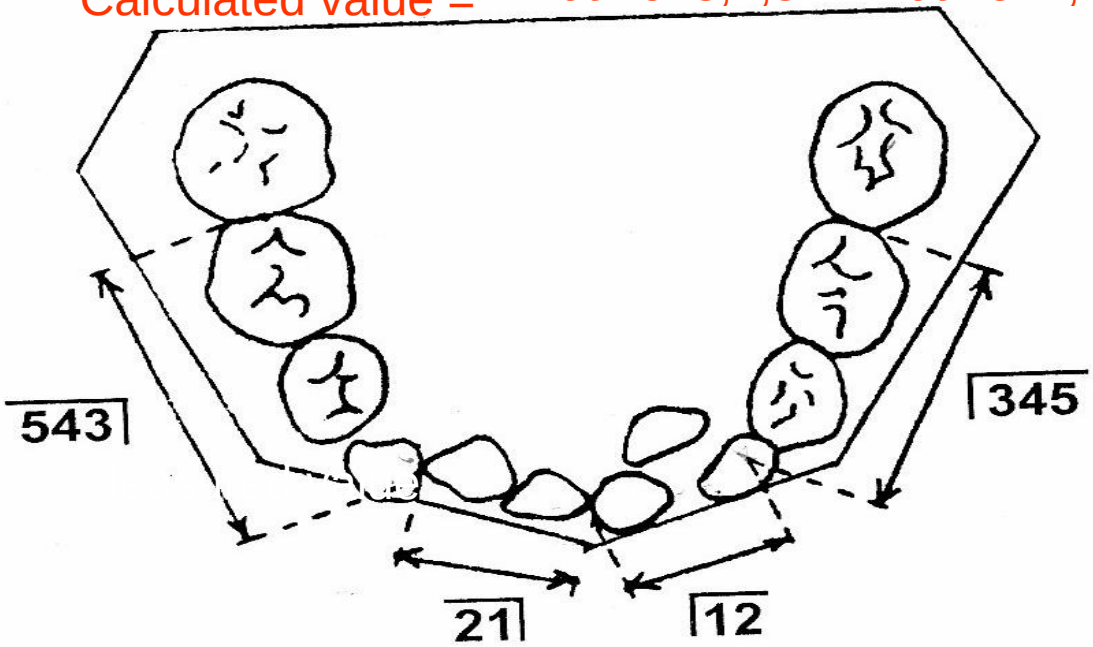
Arch perimeter analysis (place analysis)

- We have to compare the calculated-necessary place (width of the teeth)

and the actual place (measured on the model)

Steiner analysis – place analysis

Calculated value = Width of 3,4,5 Width of 2,1,1,2 Width of 3,4,5



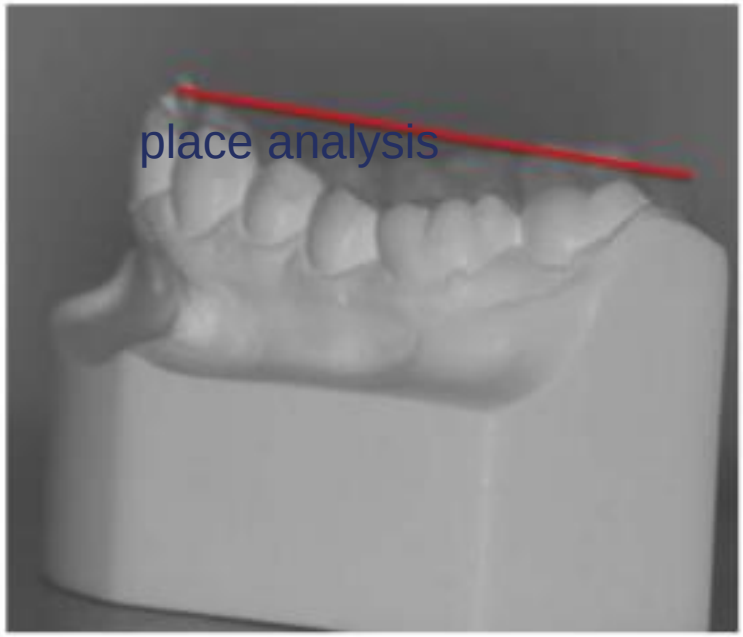
A R

	543	21	12	345
MEGLÉ	2	11	9,5	20
SZÜKS		12	11,5	23
KÜLÖN	−2	−1	−2	−3
A KÜLÖN	3		−5	

Measured value
Calculated value
Difference
Sum of differences

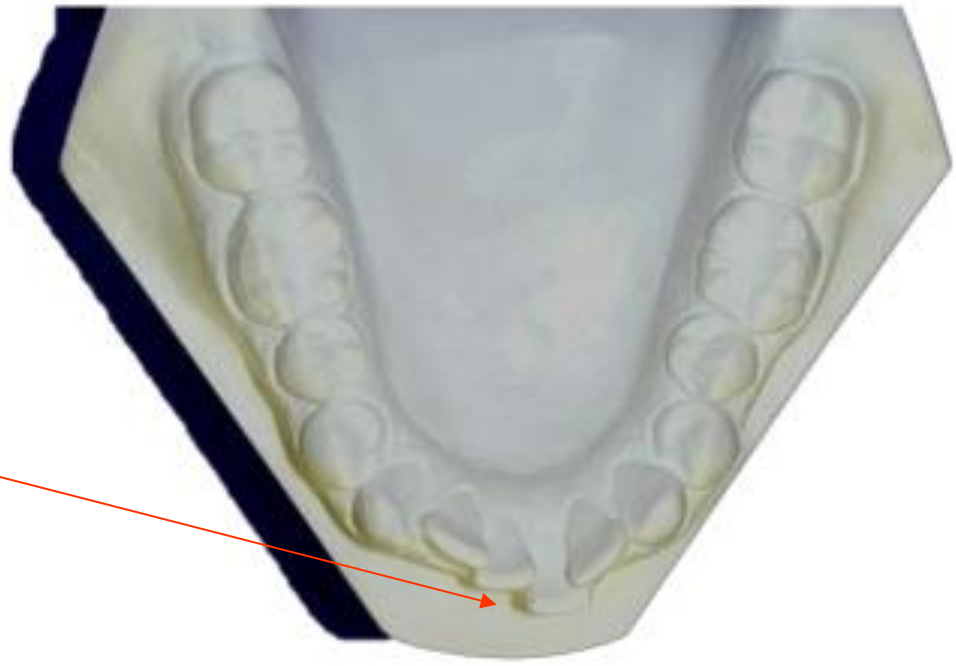
Curve of spee

- Flat (normal)
- Deep. Probably a skeletal malocclusion



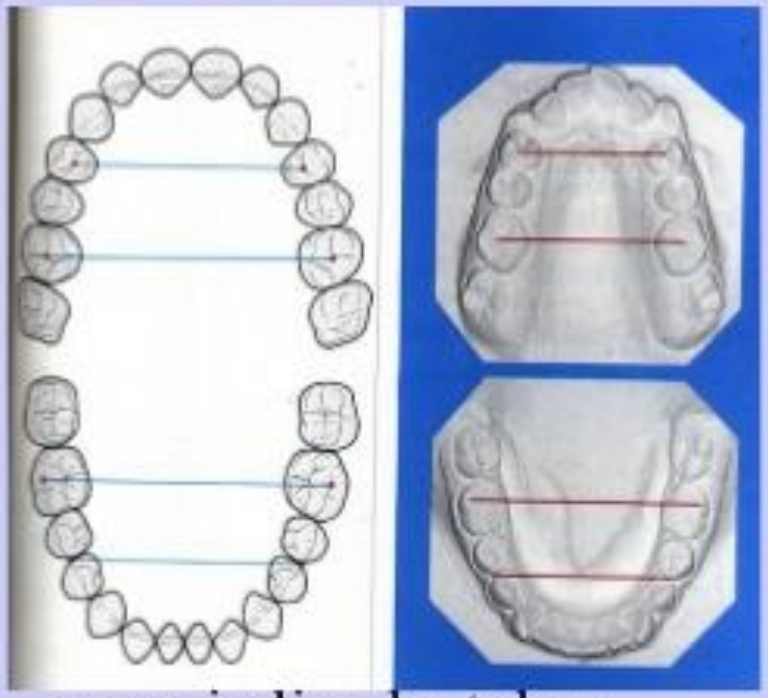
- There are different factors to consider

- Inclination of the lower incisors
- Non-apparent available space (non anatomic restorations)



PONT'S ANALYSIS

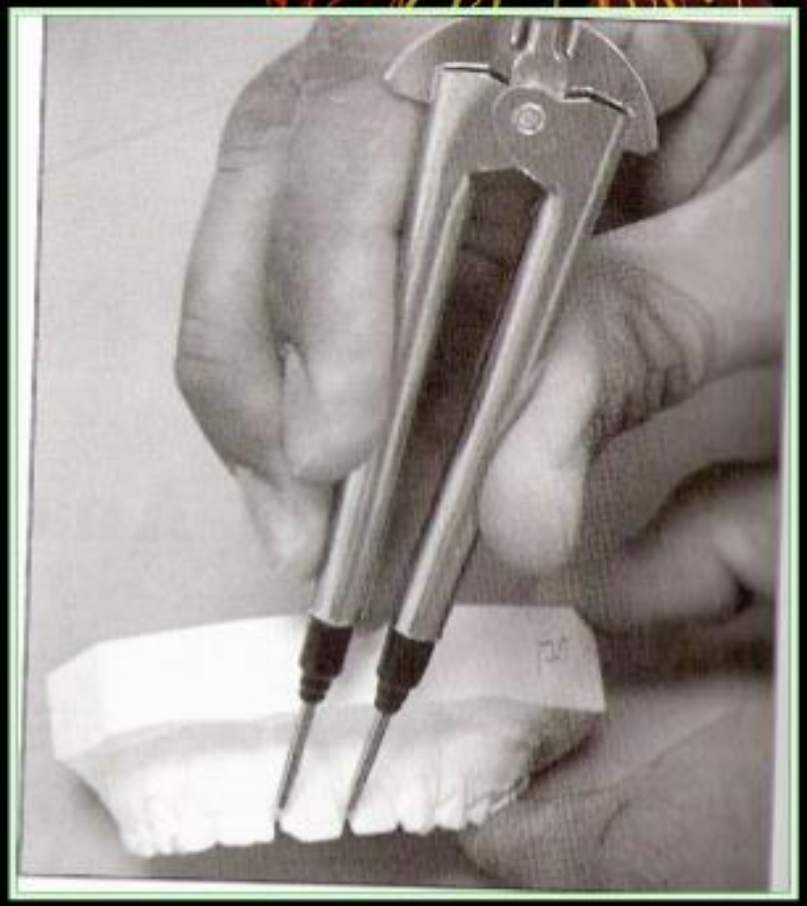
- Pont's in 1909 presented a system whereby mere measurement of Incisors automatically gives width of the arch in premolar &molar region



Pont-index

Procedure

- The greatest width of incisors is measured with calipers recorded on a line, & their sums when recorded in millimeters
  this is termed as *"sum of incisors" (SI)*



- *Calculated premolar value (CPV)*

  The expected arch width in the premolar region is calculated by formula:-

$$\frac{SI \times 100}{80}$$

- *Calculated molar value (MV)*

  the expected arch width in the molar region:-

$$\frac{SI \times 100}{64}$$

Pont-Index

- If the difference between the optimal premolar, molar distance and the measured premolar, molar distance is less then 5 mm EXPANSION

- If the difference between the optimal premolar, molar distance and the measured premolar, molar distance is more then 8 mm EXTRACTION

- Between 5-8 mm BORDERLINE CASE

•Szisztémás extractio
•Kompenzáló extr. korai tejfog eltáv. után
•Bölcsesség fogak eltávolítása
•Metsző fogak extractiojának feltételei
•Felső második molárisok extractioja
•Praemolarisok extractioja
•Aszimmetrikus extractio indikációja
•Fogeltávolítás torlódás esetén
•Sagittalis eltérések esetén végzett extractiok

Extraction by sagittal anomalies

Compensation of sagittal anomalies

- medium degree Angle II
- low degree Angle III cases

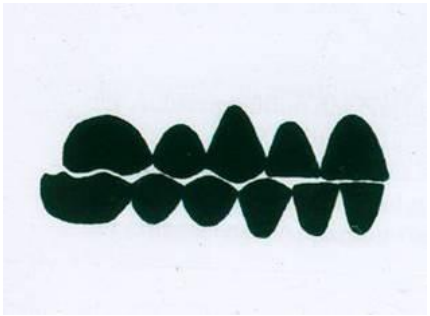
Extraction of upper premolars

Dental compensation of the sagittal sceletal anomaly

Reasons:

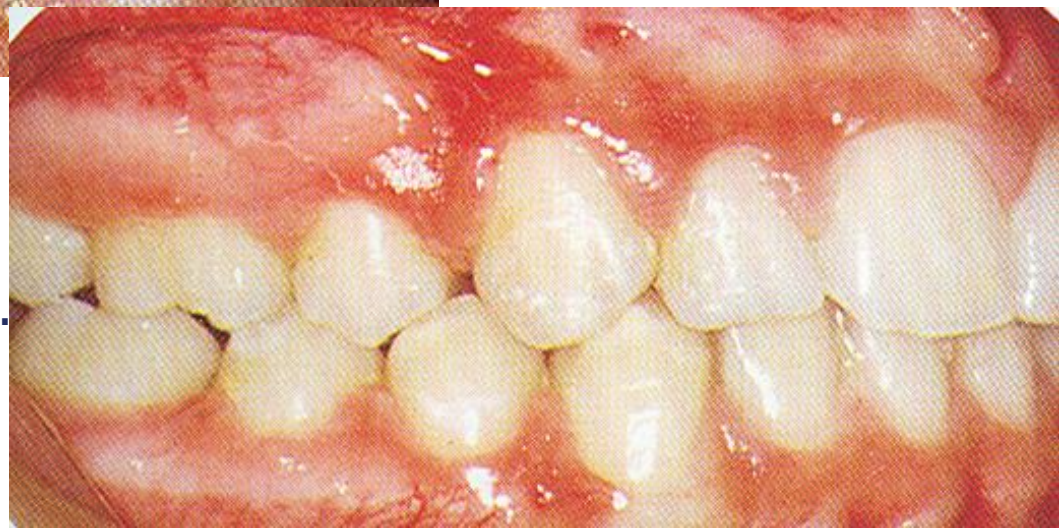
1. Sagittal anomaly, overjet, protrusion stb.

.



Anchcorage: Microvis implant

Extraction of upper premolars

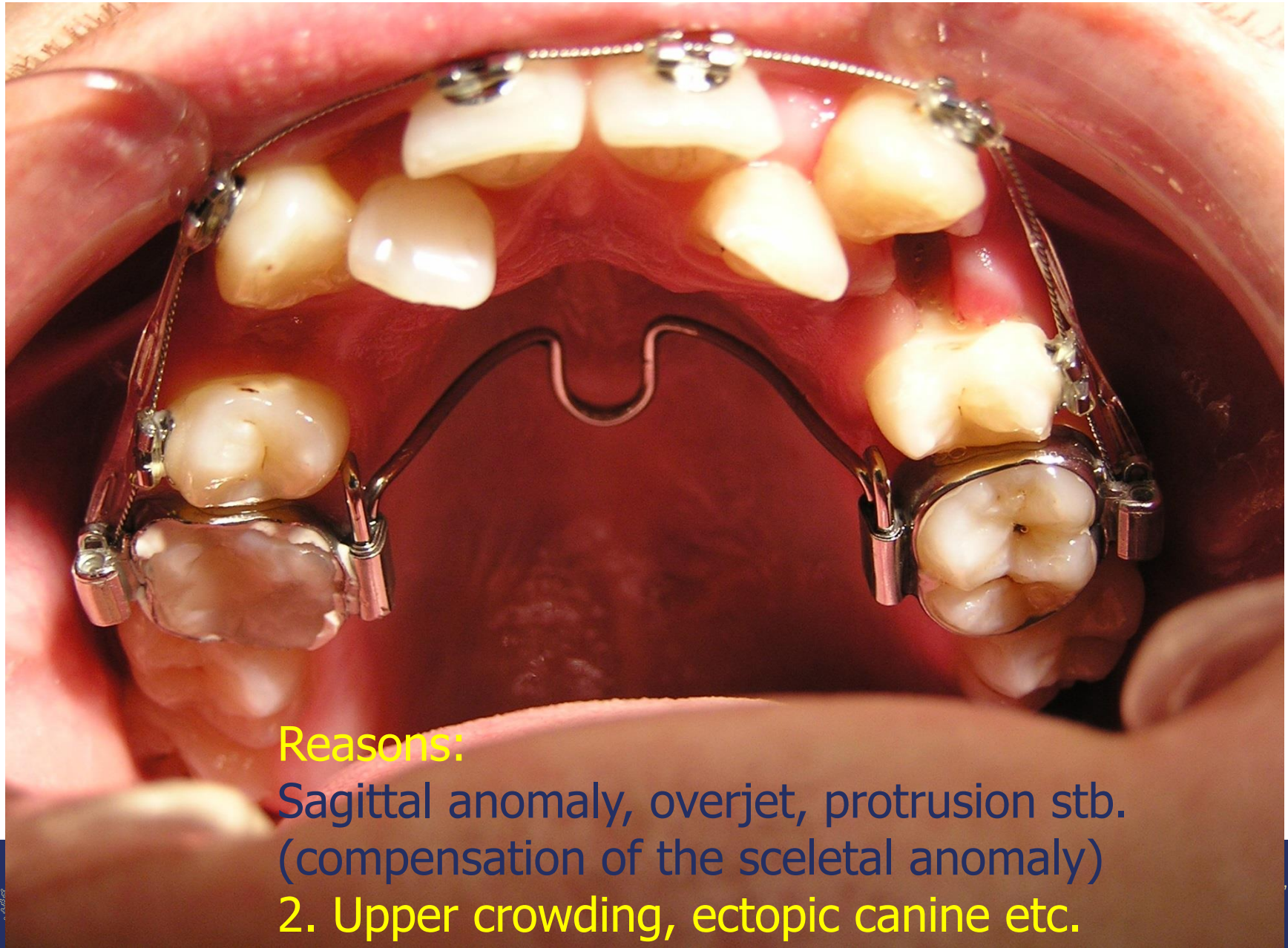


Reasons:

Sagittal anomaly, overjet, protrusion stb. (compensation of the sceletal anomaly)

2. Upper crowding, ectopic canine etc.

Extraction of upper premolars



Extraction of upper premolars

Reasons:

Sagittal anomaly, overjet, protrusion stb.

(compensation of the sceletal anomaly)

2. Upper crowding, ectopic canine etc.

Face profile !!!

Extraction of lower permanent incisors

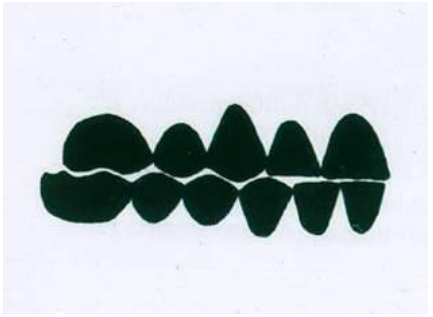
Extraction of lower permanent incisors

Extraction of lower permanent incisors

Bimaxillary protrusion with lower crowding, I. class

Dr. Miklós László Kaán,
associate professor

Kenza LAHLOU, Aalloula EL HOUSSAINE



Mild III. class, lower crowding
Compensation of the sceletal anomaly

Extraction of lower permanent incisors, advantages

- It’s easier sometimes to remove 1 incisor than 2 or 4 premolars
- It doesn’t influence the profile
- The occlusion doesn’t change in the molar and premolar area
- Shorter treatment time
- Less tooth movement

Extraction of lower permanent incisors, disadvantages

- Midline shifting
- The occlusion is not always perfect
- Dark triangles interdentally

Which lower incisor… ?

- The central incisor is smaller and weaker
- Most labially positioned
- Injured or treated tooth

•Szisztémás extractio
•Kompenzáló extr. korai tejfog eltáv. után
•Bölcsesség fogak eltávolítása
•Metsző fogak extractiójának feltételei
•Felső második molárisok extractioja
•Praemolarisok extractioja
•Aszimmetrikus extractio indikációja
•Fogeltávolítás torlódás esetén
•Sagittalis eltérések esetén végzett extractiok

Indication of assymmetric extraktion

- Extraction of one lower incisors
- Sometimes assymetric anomalies are solved with asymmetric extractions

Avoid it !

Balancing extraction

Balancing extraction

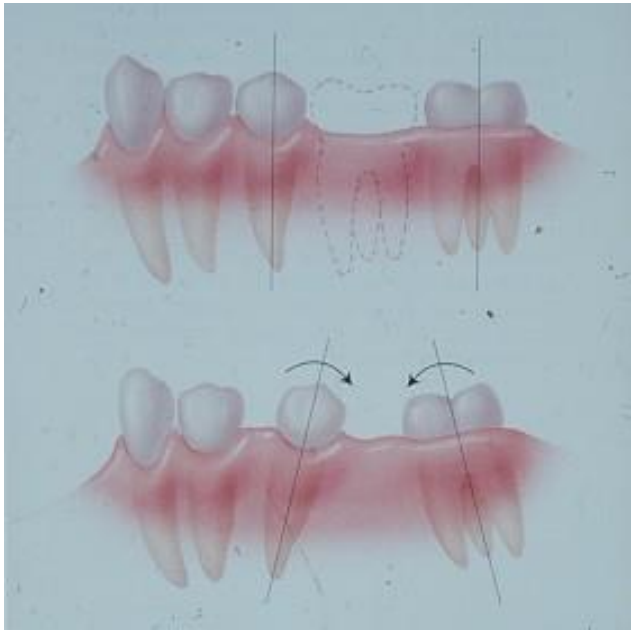

Balancing extraction

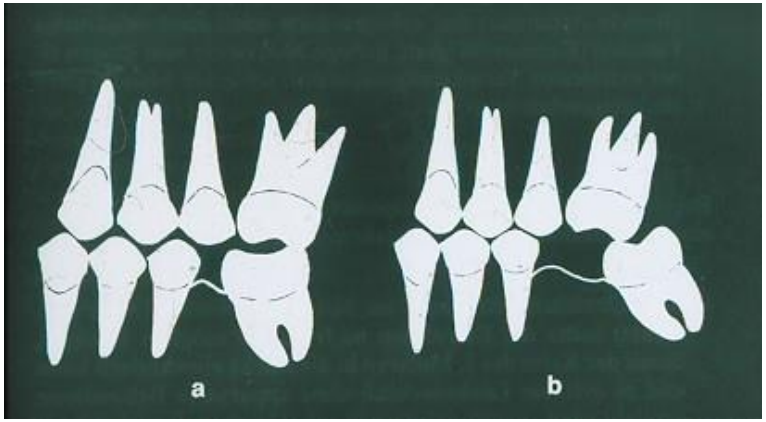
Balancing extraction

Timing of first molar's extraction (10 – 12 years)

(reason: gangrena, periostitis, periodontitis etc.)

There's no orthodontic indication of first molar extraction





Extraction of upper second molar and distalisation of the first molar with headger

- **The role op upper second molar extraction in orthodontic treatment *1: A case report**
  T. M. Graber D.D.S., M.S.D., Ph.D.* **Kenilworth, Ill., USA**
  Available online 10 June 2004

Treatment of second class anomalies

Second molar extraction in orthodontic treatment

American Journal of Orthodontics, *Volume 72, Issue 6*, *December 1977*, *Pages 599-616*

David W. Liddle

Extraktion of wisdom tooth

- Wisdom tooth can cause:

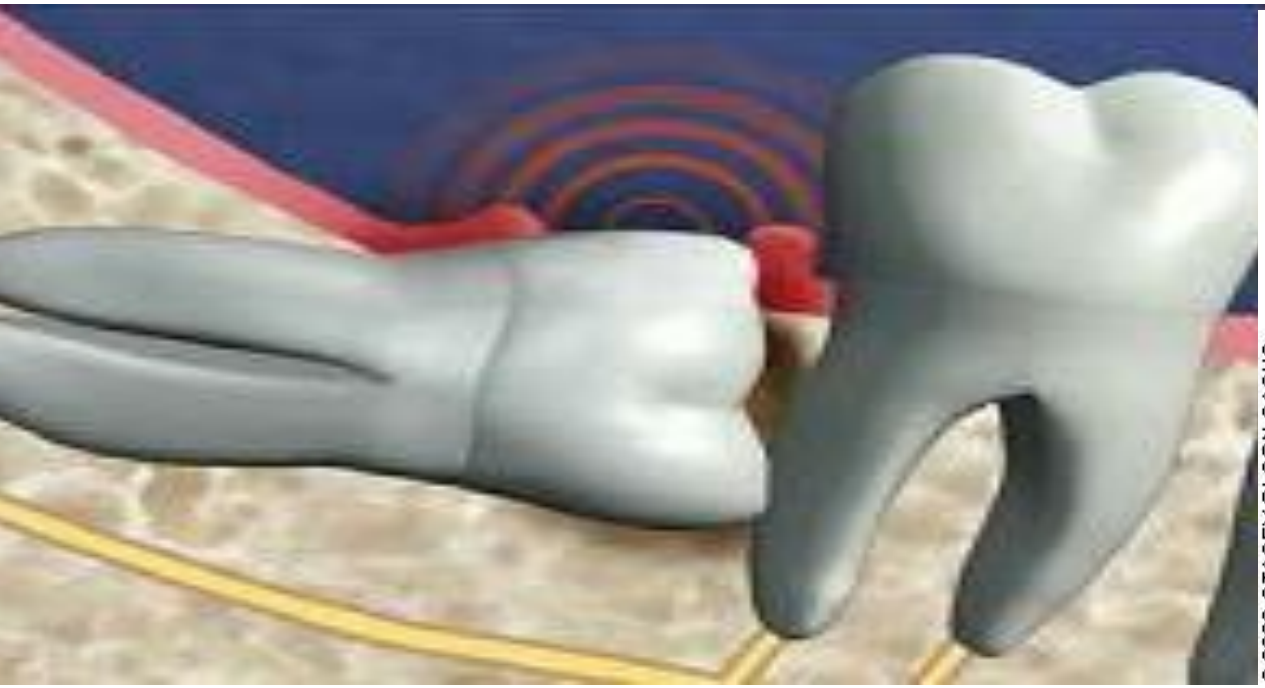
- Relapse after orthodontic treatment
- Tertiary crowding
- Pain, pressure
- Pericoronitis
- Bad oral hygiene (difficult to clean)

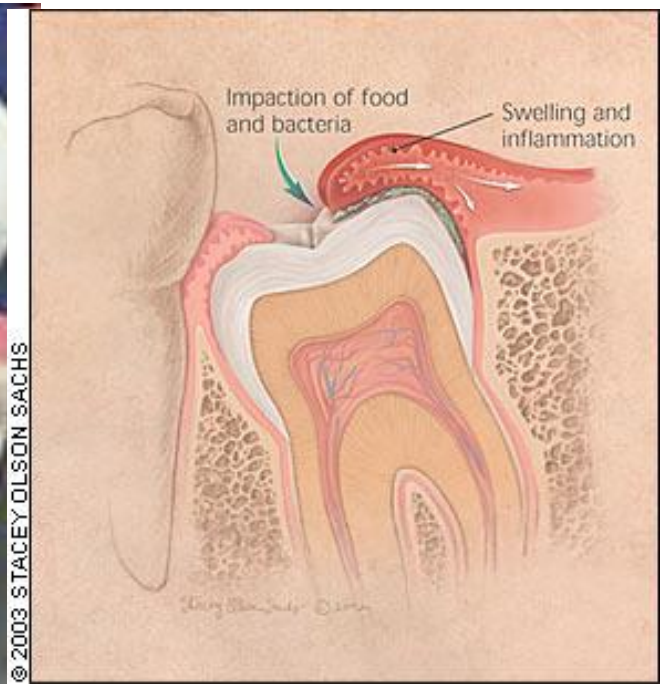
Extraktion of wisdom tooth

Pericoronitis

Wisdom tooth can cause:

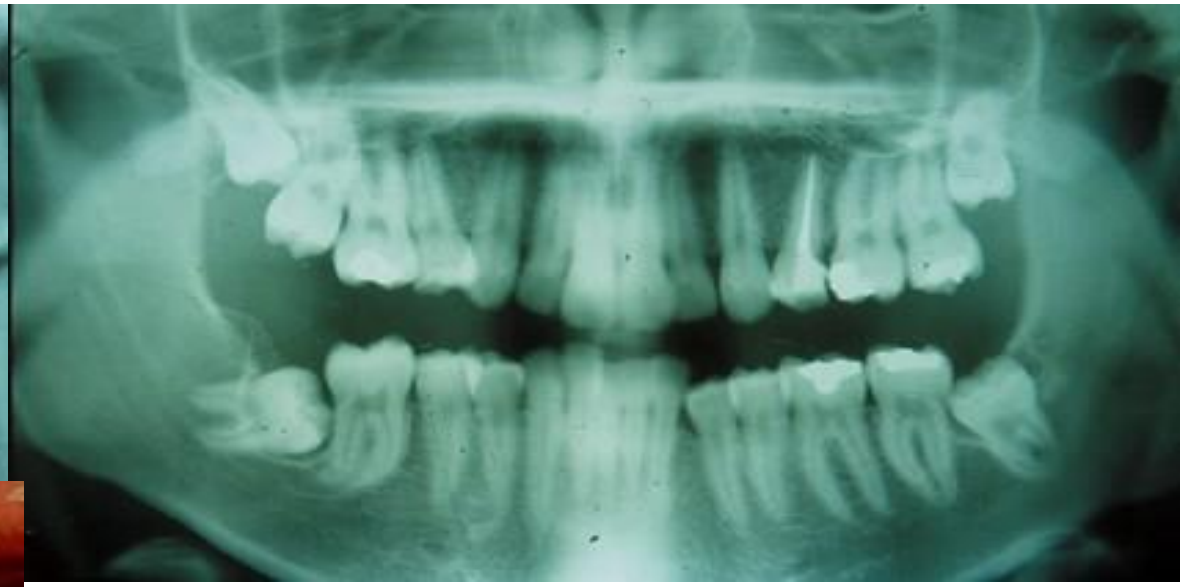
Relapse after orthodontic treatment
Tertiary crowding
Pain, pressure
Pericoronitis
Bad oral hygiene (difficult to clean)





Extraktion of wisdom tooth

Orthodontic indication



Wisdom tooth can cause:

Relapse after orthodontic treatment
Tercier crowding

Are the wisdom teeth responsible for the relapse ?

The wisdom teeth are often responsible for the relapse, but without (or after the extraction of) third molars relapse might be also evolved

- R Kaplan, Mandibular third molars and postretention crowding, *Am J Orthod* (1974)
- A. Ades, D Joondeph, R Little and M Chapko, A long-term study of the relationship of third molars to mandibular dental arch changes, *Am J Orthod Dentofacial Orthoped* (1990)
- Lifshitz, AB. An evaluation of the mandibular third molar influence on the arch length and postretention crowding [Master thesis]. University of Iowa, 1982
- ME Richardson, The aetiology of lower incisor crowding, *J Irish Dent Assoc* (1980)
- Bishara SE, Treder TE, Damon P, Olsen M. Changes in the dental arches and dentition between 25 and 45 years of age. Angle Orthod (1996)

Thank you!

MOYERS MIXED DENTITION ANALYSIS

- The purpose of a mixed dentition analysis is to evalute the amount of space available in the arch for the erupting permanent canines and premolars. In this analysis the size of the unerupted permanent cuspids and premolars are predicted from the knowledge of the sizes of certain permanent teeth that are already erupted in the mouth.

- The moyers analysis predicts the combined mesio-distal width of 3,4,5 based on the sum of the widths of the four lower permanent incisors.

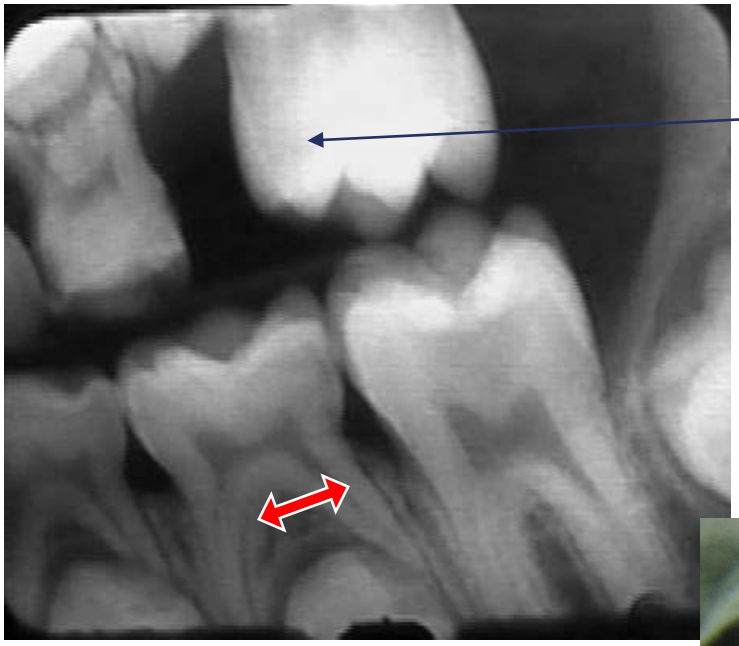
- the mesio-distal width of the four lower incisor are measured and summed up.the amount of space available for the 3,4and 5 after incisor alignment is determined by measuring the distance between the distal surface of lateral incisor and the mesial surface of first permanent molar.

Moyers- index

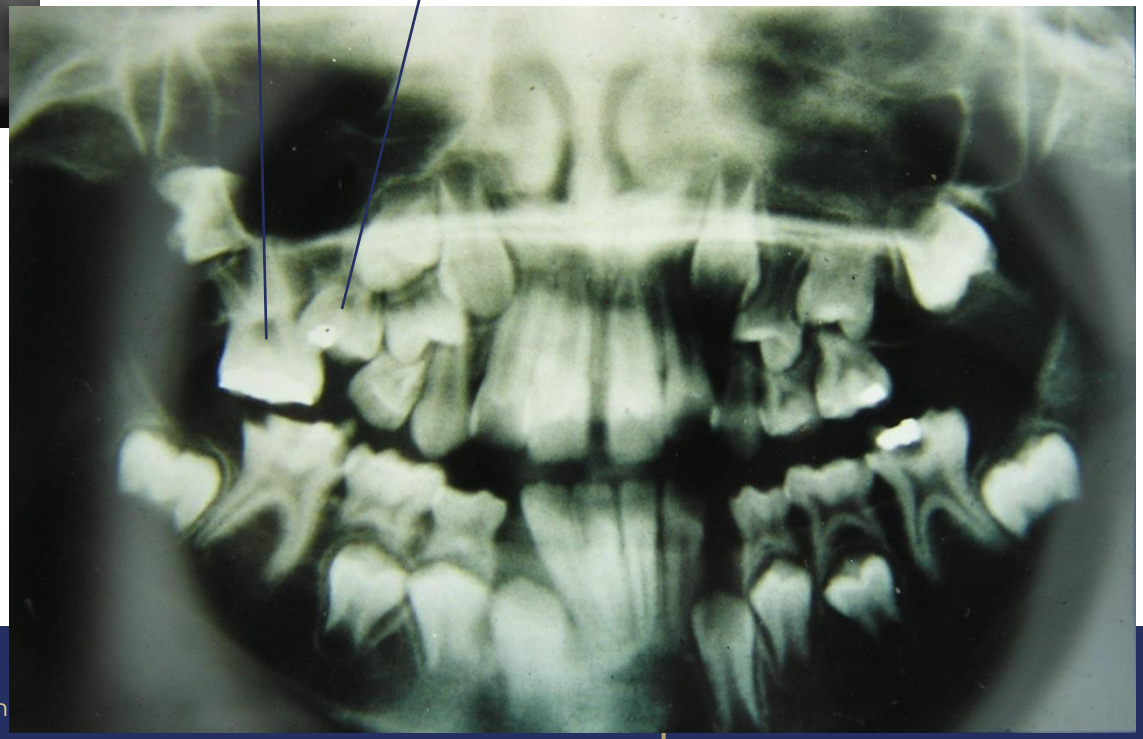
- Total mandibular incisor width

	width of 345
19.5	20.6, 20.1
20.0	20.9,20.4
20.5	21.2,20.7
21.0	21.3,21.0
21.5	21.8,21.3
22.0	22.0, 21.6
22.5	22.3,21.9
23.0	22.6,22.2
23.5	22.9, 22.5
24.0	23.1, 22.8

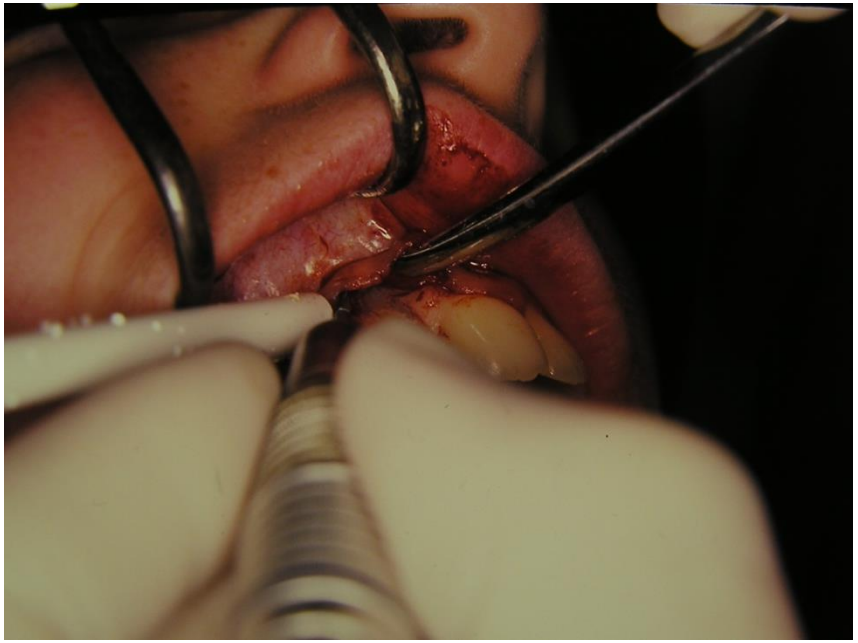
Early extraktion

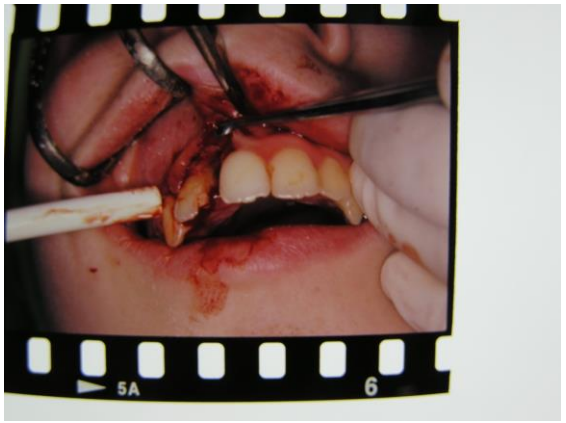


- 26 mesialisation
- 16 mesialisation and
- 55 in secundaer Infraocclusion



Dissection of a doubble tooth and extraktion of the half tooth




5A
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