THE HISTORY OF ORTHODONTICS ORTHODONTIC TERMINOLOGY

Dr. Beck Anita, Dr. Macsali Réka

Semmelweis Egyetem
Gyermekfogászati és Fogszabályozási Klinika

SEMMELWEIS
EGYETEM 1769

Contents

1. Prehistoric, Ancient & Middle Ages

2. XVIII. & Early XIX. Century

3. Late XIX. & Early XX. Century

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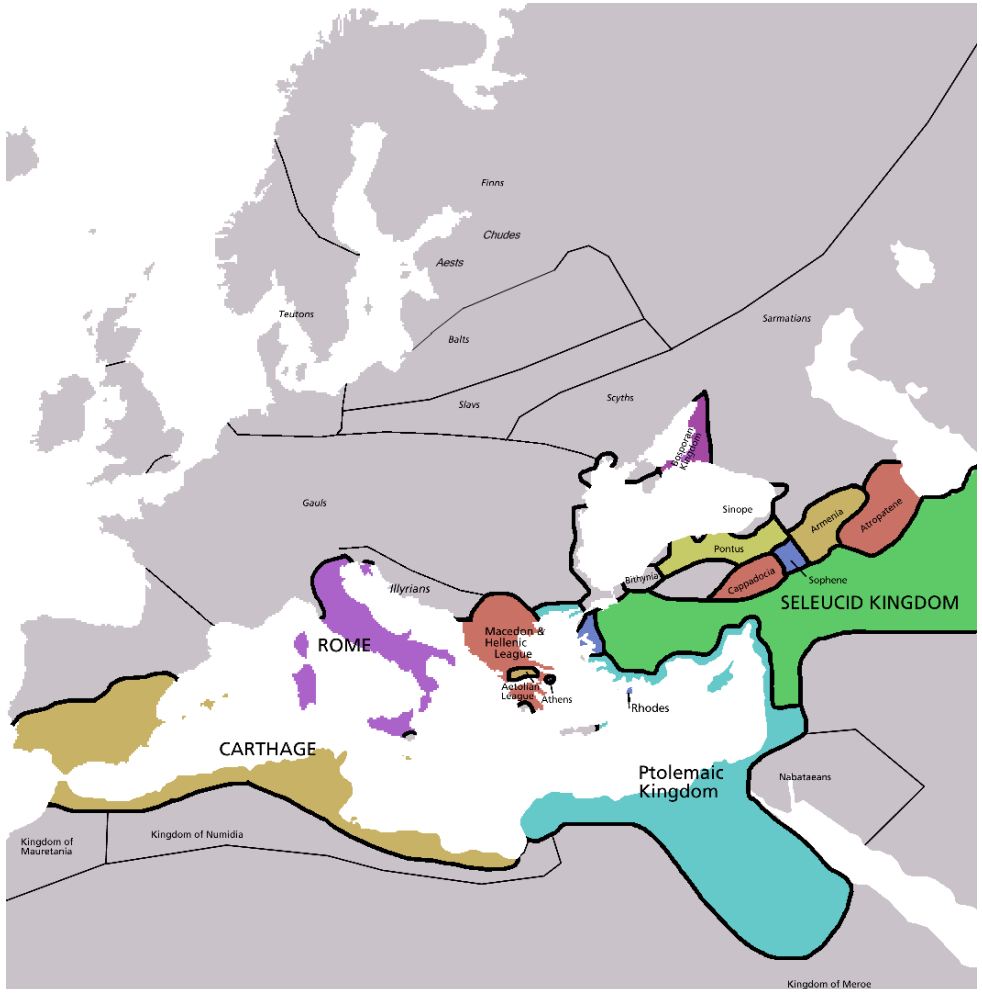
1. PREHISTORIC, ANCIENT & MIDDLE AGES

PREHISTORIC AGE

Crooked teeth were found among Neanderthals (50,000 BC)

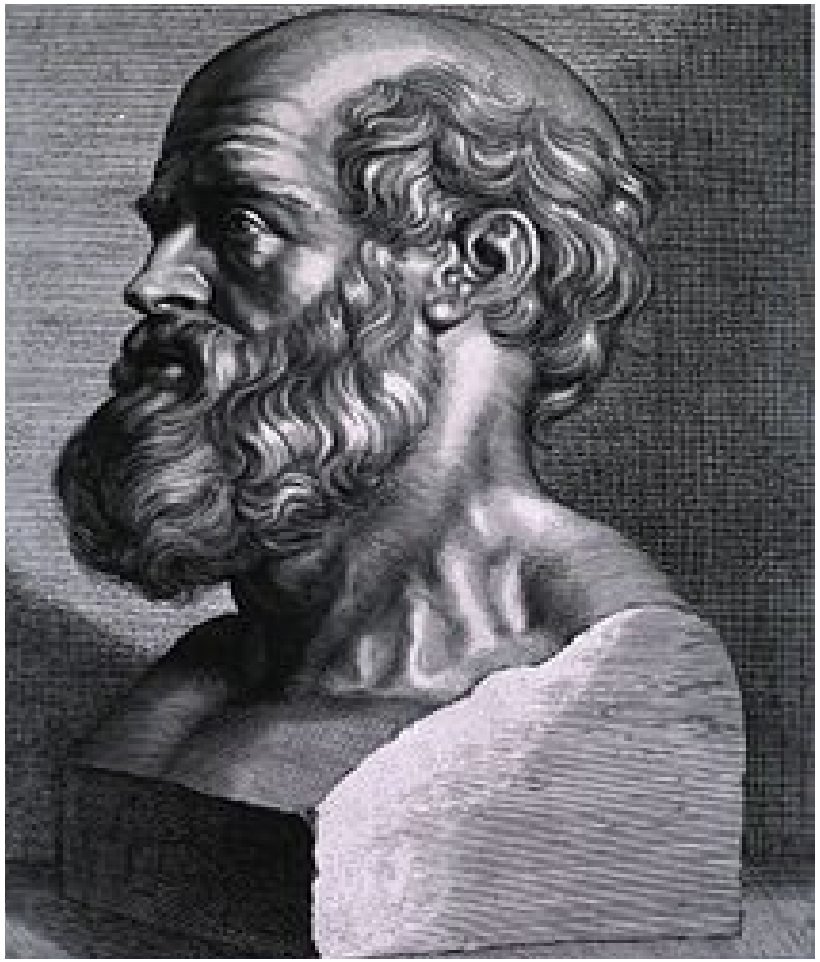
The first written trace of its treatment is originated from 3000 years before

ANCIENT TEXTS



Dental problems and their treatment were mentioned in ancient text, but they were mainly protetical treatments.

Ancient egypt (i.e. 1800)
Syria (i.e. 1000)
Bible, Talmud
Aristotle, Claudius Scribonius Largus, Pliny the Elder and Marcus Valerius Martialis

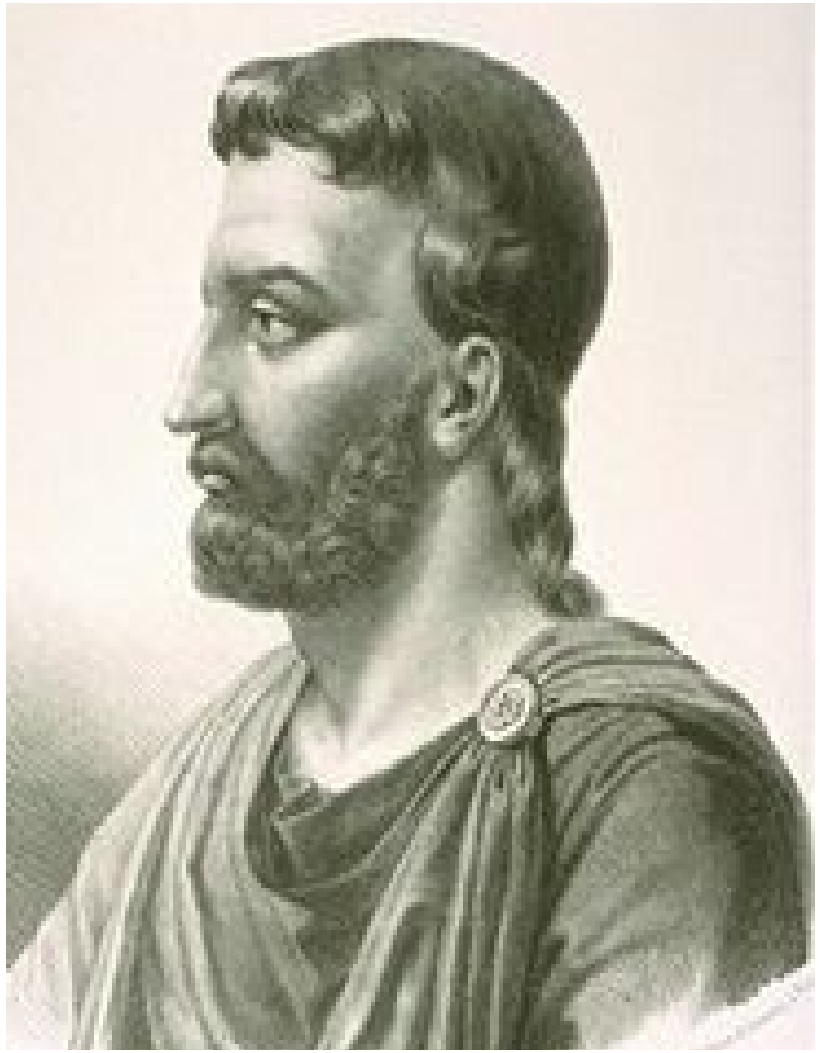


Hippocrates

Around 400 B.C.

The earliest mention of anomalies of the jaw

‘Among those individuals whose heads are long-shaped, some have thick necks, strong members and bones; others have strongly arched palates; thus teeth are disposed to irregularity, crowding one on the other…’



Aulus Cornelius Celsus

25-52 B.C.

Recommended therapy:

1. extraction of persistent deciduous teeth
2. permanent teeth which erupt in the wrong direction ought to be corrected by finger pressure

"In children too if a second tooth is growing up before the first one has fallen out, the tooth which ought to come out must be freed all round and extracted; the tooth which has grown up in place of the former one is to be pressed upwards with a finger every day until it has reached its proper height. And whenever after extraction, a root has been left behind, this too must be at once removed by the forceps made for the purpose which the Greeks call rhizagra."

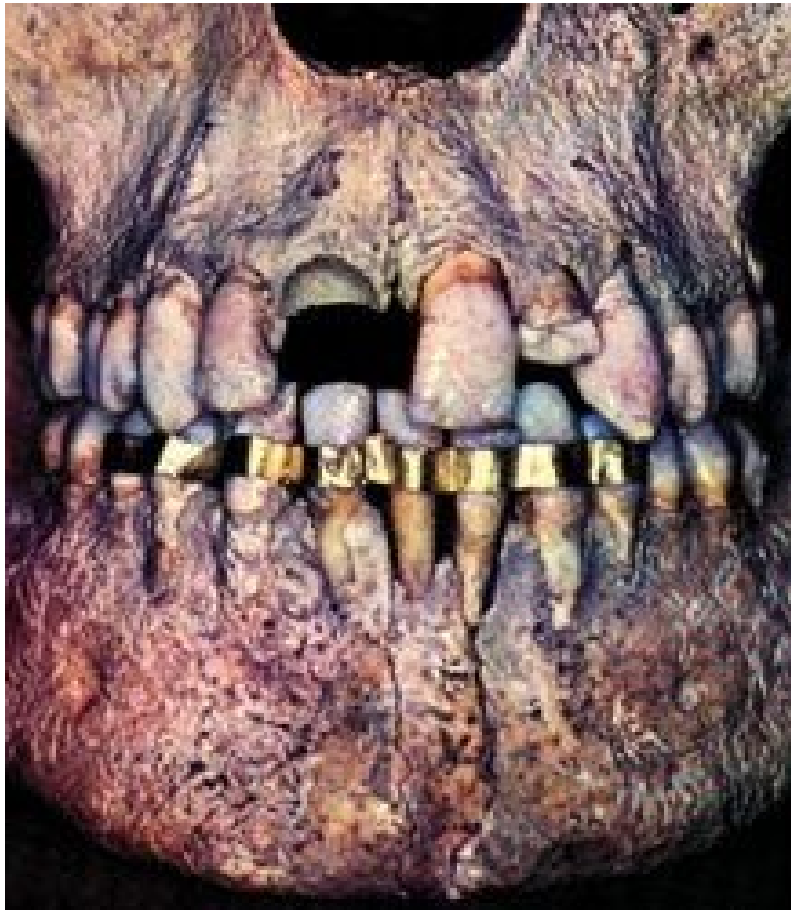
Aelius Galenus

129-199. B. C.

Teeth protruding from the normal row should be carefully *shortened,* using a small iron file, a method that remained in practice until modern times. Galen recommended that if this procedure was painful then it should be spread over several sittings

El-Quatta Egypt,
around 2500 B.C.

Etruscan appliances
7. century B.C.



‘Poggio Gaiella appliance
4. century B.C.

ARCHAEOLOGICAL DISCOVERIES

MIDDLE AGES &THE RENAISSANCE

Dental education in France from 1580

- “operators for the teeth”
- „open or widen the teeth when they are set too close together.”
- 1619 – Fabricius: extraction if teeth are crowded
- Several appliances

2. XVIII. & EARLY XIX. CENTURY

XVIII. és XIX. század eleje

Pierre Fauchard

1678-1761

Initially worked as a „Tooth puller”

1728 Le Chirurgien-Dentiste

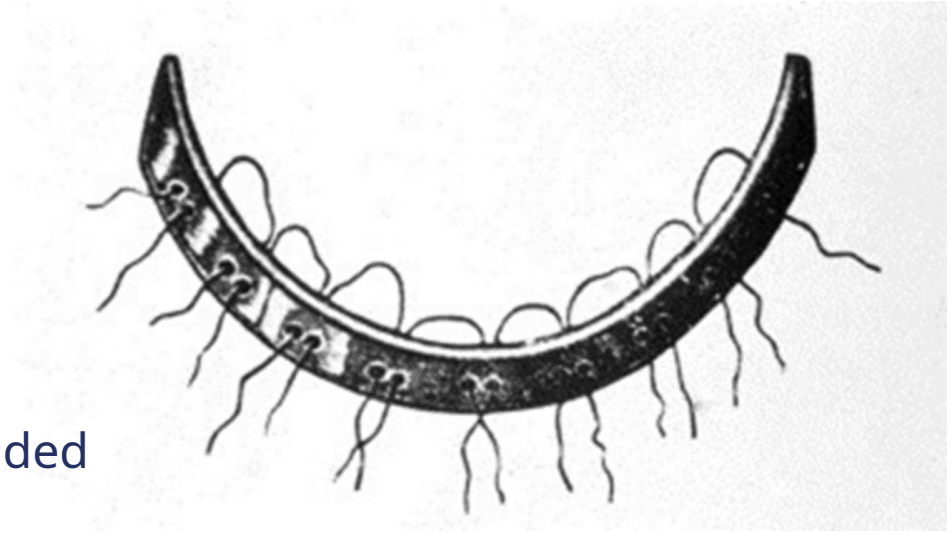
The word „dentist”

Father of Dentistry

„Dentist”

- Oral hygiene, gums, prevention
- Fillings, filing of the teeth
- Cauterizating
- Trepanning
- Aligning the teeth, repositioning them
- Autotransplantation
- Tooth whitening
- Some of them specialized to make dentures

APPLIANCES

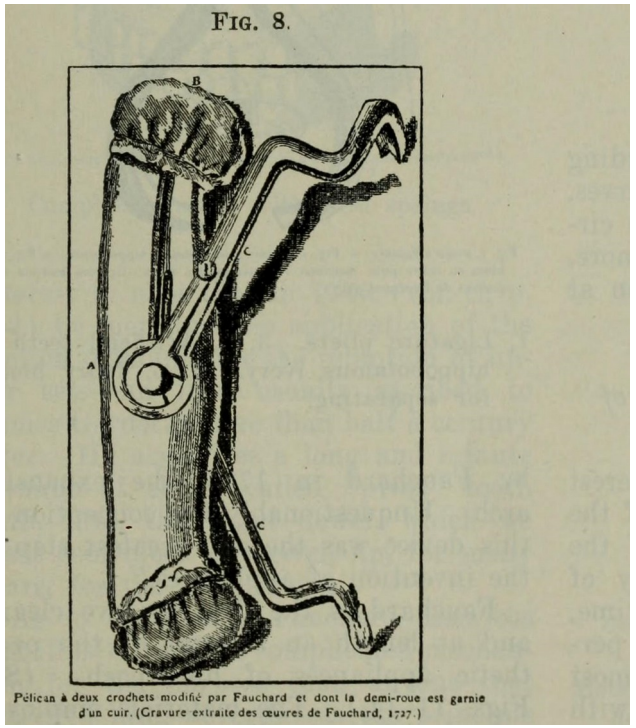


Bandeau

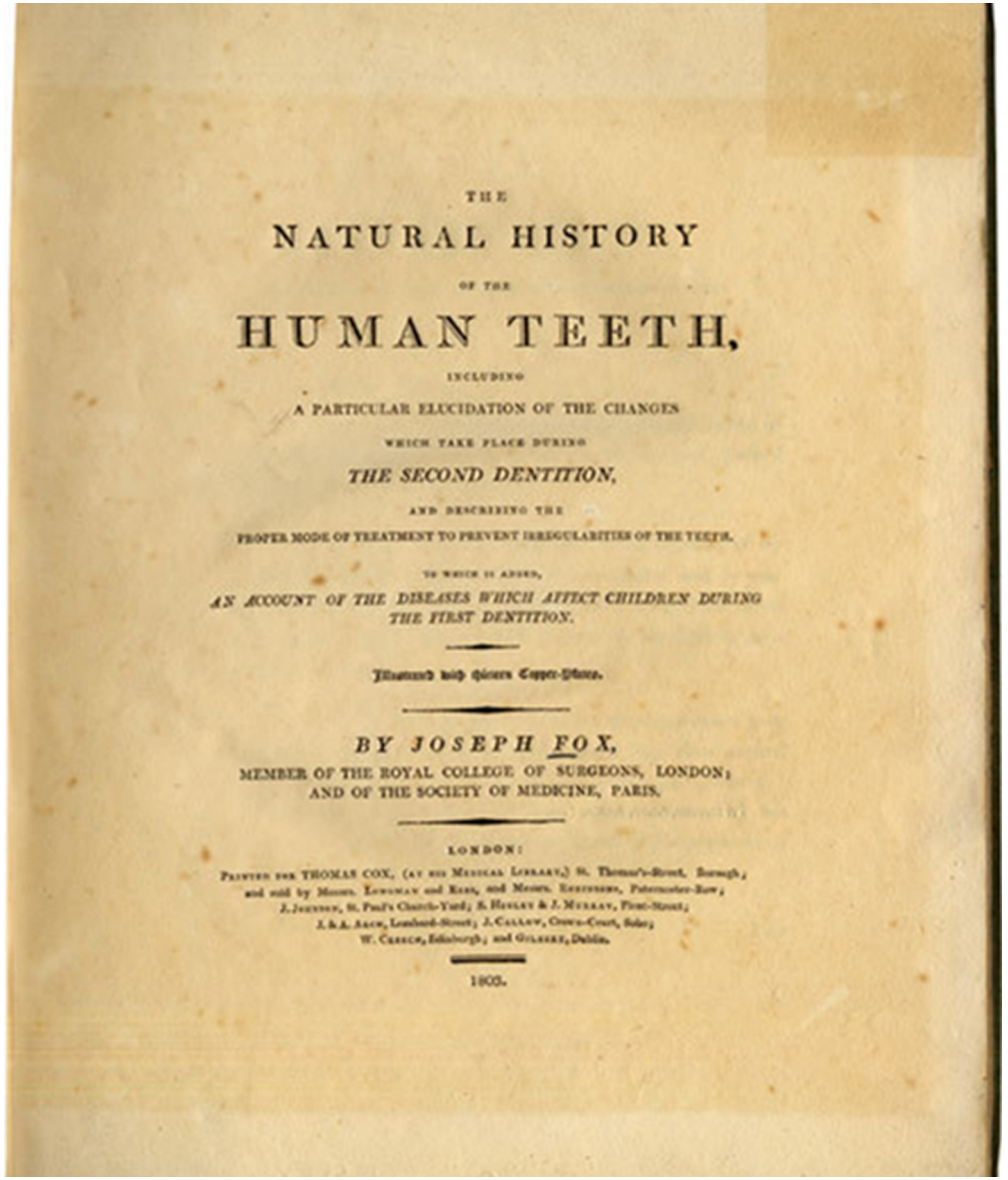
- **Fauchard** developed spring loaded dentures
- *Bandeau*: horseshoue shaped noble metal plate

The teeth were ligated to the plate

- The teeth were repositioned with „pelican”-, then slinting to the neighboring teeth



Pelican



THE

NATURAL HISTORY

OF THE

HUMAN TEETH,

INCLUDING

A PARTICULAR ELUCIDATION OF THE CHANGES

WHICH TAKE PLACE DURING

THE SECOND DENTITION,

AND DESCRIBING THE

PROPER MODE OF TREATMENT TO PREVENT IRREGULARITIES OF THE TEETH.

TO WHICH IS ADDED,

AN ACCOUNT OF THE DISEASES WHICH AFFECT CHILDREN DURING THE FIRST DENTITION.

Illustrated with eleven Copper-Plates.

BY JOSEPH FOX,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, LONDON;
AND OF THE SOCIETY OF MEDICINE, PARIS.

LONDON:

Printed for THOMAS COX, (at his Medical Library,) St. Thomas's-Street, Borough,
and sold by Messrs. Longman and Rees, and Messrs. Richardson, Paternoster-Row;
J. Johnson, St. Paul's Church-Yard; S. Highley & J. Murray, Fleet-Street;
J. & A. Arch, Lombard-Street; J. Callow, Crown-Court, Soho;
W. Creech, Edinburgh; and Gilbert, Dublin.

1803.

Etienne Bourdet

In 1757, he was the first who recommended serial primary tooth extraction and on the other hand, premolar extraction in case of crowding

Joseph Fox

1776-1816
The Natural History and Diseases of the Human Teeth (1814) – 4 sections
First important dental treatise in the XIX. century and remained the best practica book for dentists in English

Fox the first one,

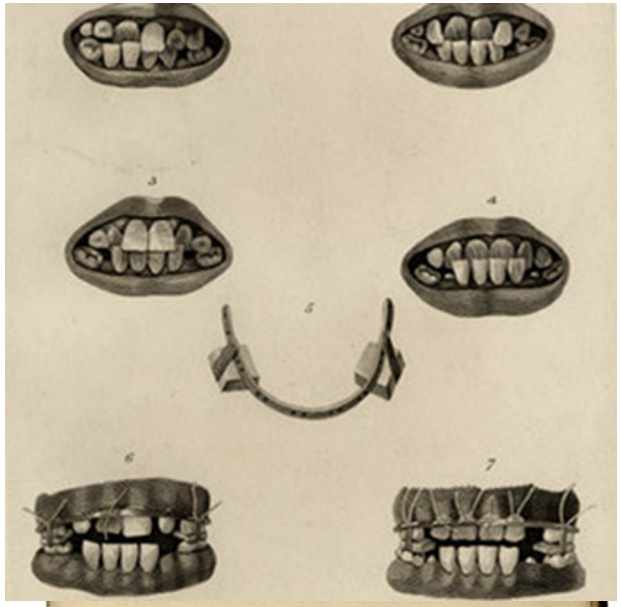
- who classified the malocclusions (1803)
- who wrote down the growth of the mandible(distal extension)
- Who described the correct treatment of orthodontic deviations.

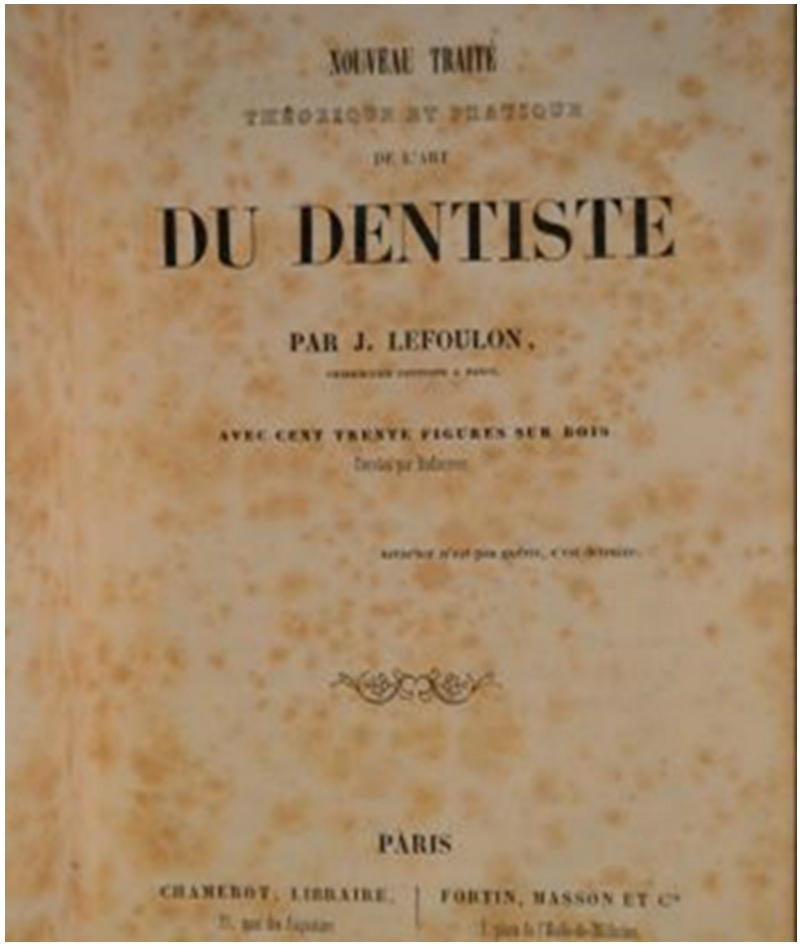
Interested:

- The correct extractions of primary teeth (time)
- The time of the treatment

Between devices:

- The usage of bite-guard in case of open bite
- Expansion arch
- Chin-cap (1802)





Joachim Lefoulon

1776-1816

The first who dealed with **jaw bone orthopedics** and used labial and lingual arches combined

Christophe-Francois Delaberre:
1787-1862

- Crib appliance
- First screw (1815).
- Seperation of the teeth with floss or wooden wedges

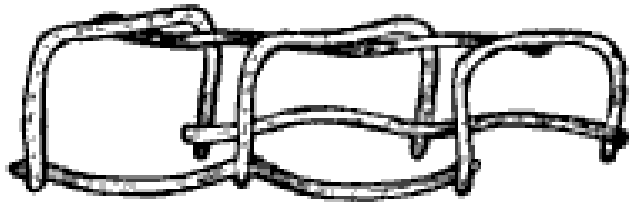


FIG. 828.—The Delabarre crib (1826).

J.M. Alexis Scahnge:

-the first exclusively orthodontic textbook
-screw, ring and usage of rubber tubes

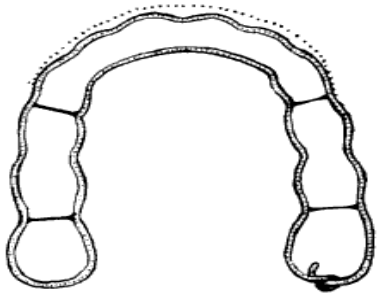


FIG. 832.—The full crib (1877–79).

FIG. 833.—The single crib and spring.

J.S. Gunnel Wahington:

- occipital anchorage

Chapin A. Harris:

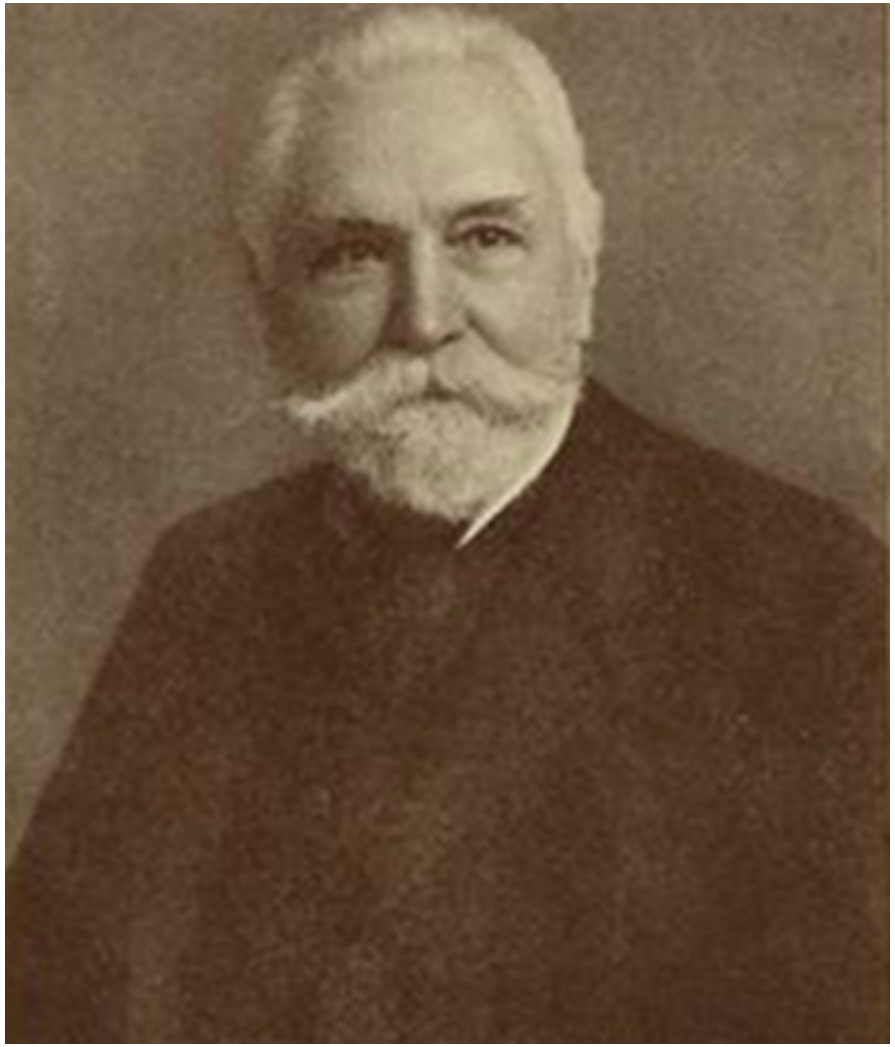
- founded the first dental college at the University of Maryland

Charles Goodyear

1800-1860

- 1839 accidentaly discovered the vulcanization
- E. G. Tucker among the first to use the **new material**, he was the first American who used rubber bands (1846) It didn’t get much attention until Dr. Baker and Dr. Casedidn’t write about intermaxillary elastics

3.LATE XIX. & EARLY XX. CENTURIES



Norman W. Kingsley

1825-1896

- In the USA the first book about orthodontics : he was worked 10 years of it
- write down **Dwinelle** expansion screw (jackscrew)
- „Plate for jumping the bite”

Treating cleft lip and palate

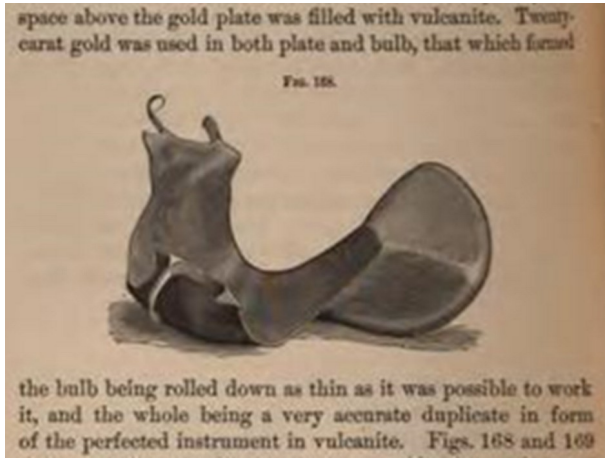
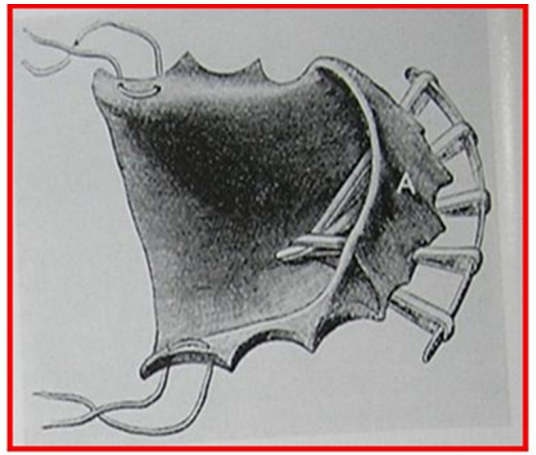

space above the gold plate was filled with vulcanite. Twenty-carat gold was used in both plate and bulb, that which formed

FIG. 168.

the bulb being rolled down as thin as it was possible to work it, and the whole being a very accurate duplicate in form of the perfected instrument in vulcanite. Figs. 168 and 169



Farrar

1875

First orthodontic paper in which he investigated the physiological and pathological tissue alterations which take place in regulating the teeth.

Magill of Erie

1870

invention of dental cement

Coffin

expansion appliance

Talbot

Among the firsts who used X-rays for diagnosis

Edward H Angle

1855-1930

- **„Father of Modern Orthodontics**.” 1878.
- 1900 – founded the first postgraduate program: Angle School of Orthodontia & the first orthodontic society, the American Society of Orthodontists
- 7. Edition of the Treatment of Malocclusion of the Teeth (1907)
- founded the first orthodontic journal in 1907, The American Orthodontist, lasted only until 1912.

Calvin S. Case:

- A Practical Treatise on the Technics and Principles of Dental Orthopedia (1908)
- The Big Extraction Debate with Angle

Martin Dewey:

- Angle’s pupil (1902)
- Non-extraction

Albertt H. Ketcham

- Dental radiology pioneer
- 1926 - Root resorption

4.APPLIANCES OF THE XX.&XXI. CENTURIES

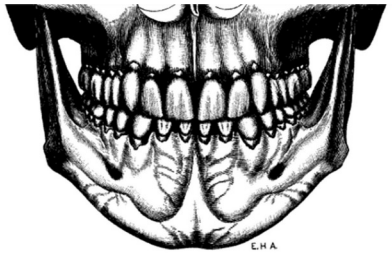
Dr. Beck Anita
Dr. Macsali Réka

Angle requirement in connection with the appliance:

- More cleanable
- Continuous wearing
- No touching with the palate
- Stable
- Relatively small

In 1899 published his **diagnostic system**

Line of harmony
Line of oocclusion



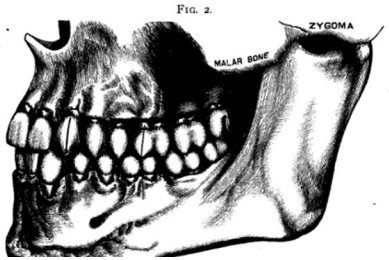


Fig. 2.

Angle school of
Orthodontics

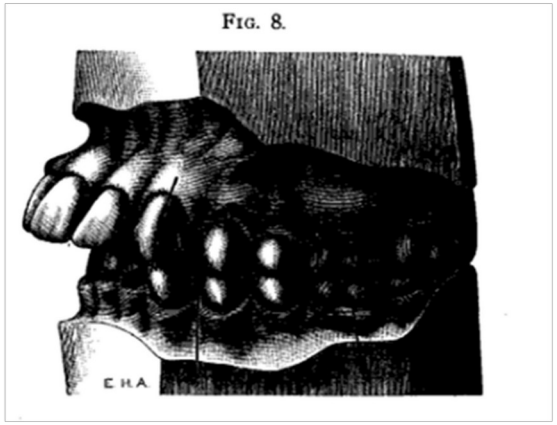


Fig. 8.

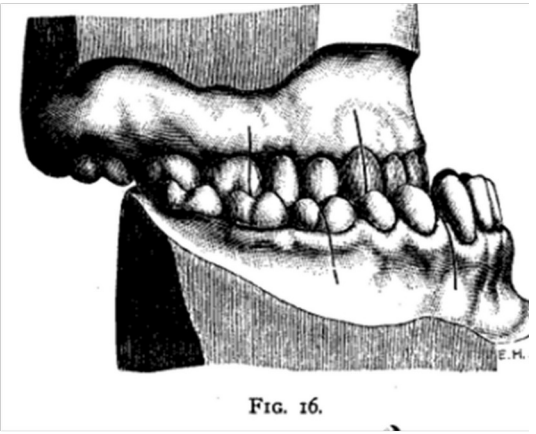
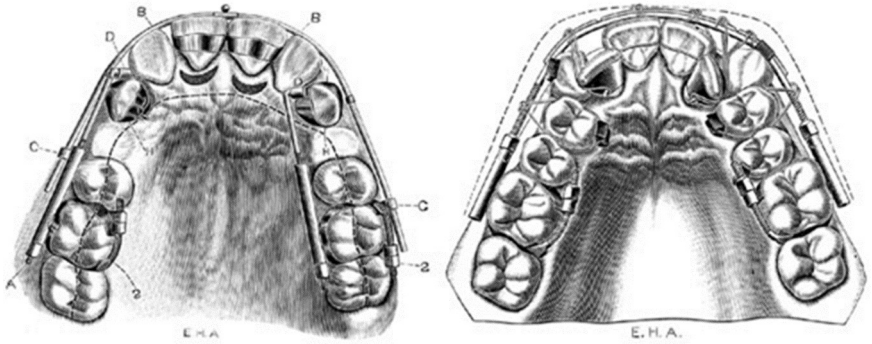


Fig. 16.

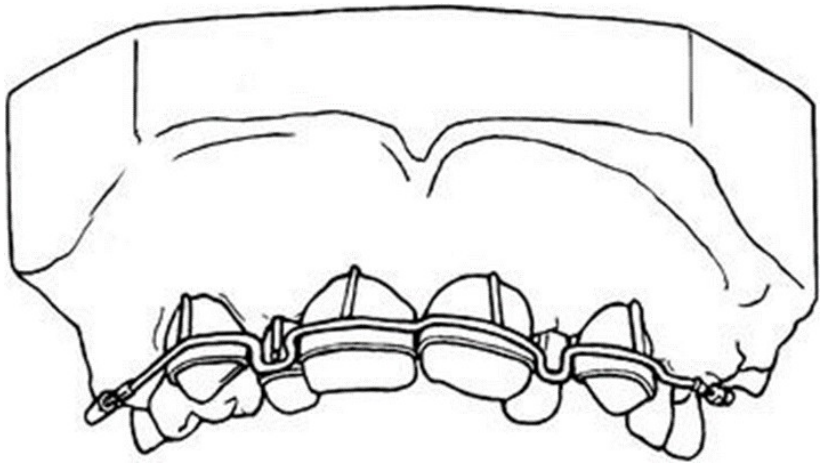
E-arch 1900
„pin and tube” appliance 1910
Ribbon arch 1916
Edgewise appliance 1925



E-arch

- Bands on the molars
- Labial or lingual expansion arch (E-arch) with threaded ends
- The teeth are ligated to the arch

➢ Tipping of the teeth

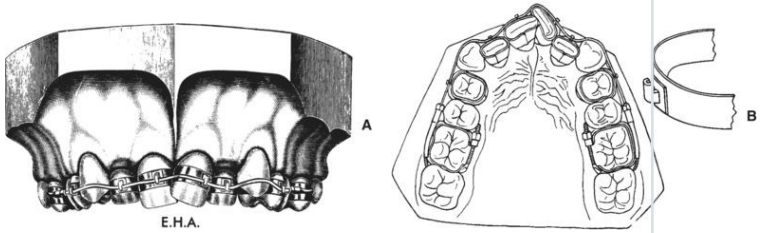


Pin and Tube

- Bands on all the teeth, vertical tubes
- Pins soldered to the arch, repositioned after each movement
- The arch is fitted to the teeth and „ironed out” during the treatment
- Minden fogon gyűrű, vartikális tubussal

➢ Too difficult and time-consuming

➢ No rootcontrol



RIBBON ARCH

Vertical slot

Rectangular wire (ribbon arch) - **.022 x .036-in gold**

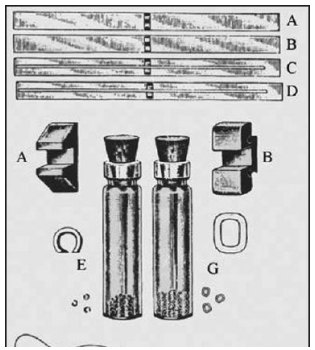
- More flexible
- Threaded ends for expansion
- Fitted to the teeth then „ironed out”

Pins to fix the wire (broke, deformed)

Not enough control

Difficult to insert the arch between the vertical slot on the molar and the horisontal slot on the premolar

Spread



STANDARD EDGEWISE

Horisontal slot

Rectangular edgewise archwire **022 x .028-in gold**

- Fitted to the teeth then „ironed out”
- Later smaller round wre (.022 in) in the initial phase of the treatment

Metal ligature

3-dimensional control

The most popular apliance in the USA

Later SS

.018 slot

Angle students

Tweed, Margolis, Bolton-In some of the cases dental extractions are unavoidable n perfected the standard edgewise technique
Merhson-continuous , soft-power introduction

In Europe:

1928 **Simon** stainless steel appliances -available

Schwarz the new type of expansion screw

Norway school with the functional appliances:: **Andresen and Haupl**

The spread of removable appliances after the II worldworld war are significant ,discover of acyrlate

Functional appliances

ANDRESEN-HAUPL ACTIVATOR

1909

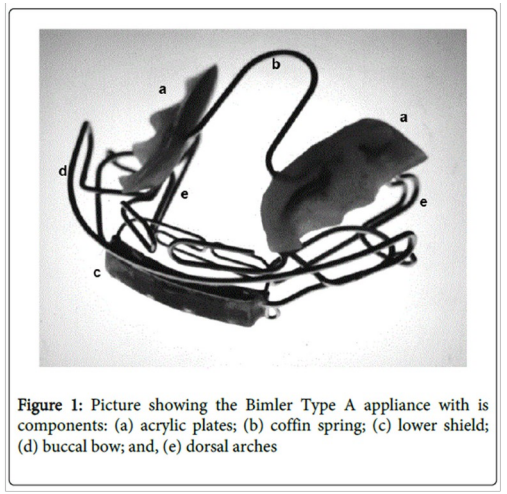
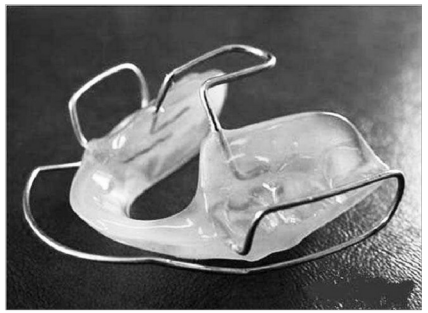


Figure 1: Picture showing the Bimler Type A appliance with is components: (a) acrylic plates; (b) coffin spring; (c) lower shield; (d) buccal bow; and, (e) dorsal arches

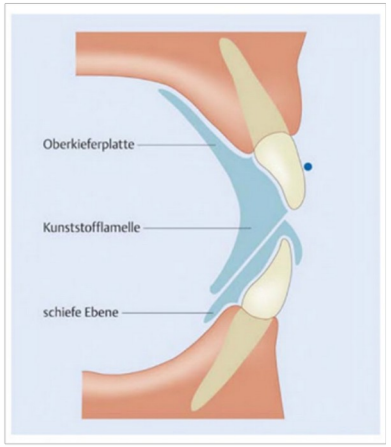
BIMLER APPLIANCE

1949



BALTER - BIONATOR

1950

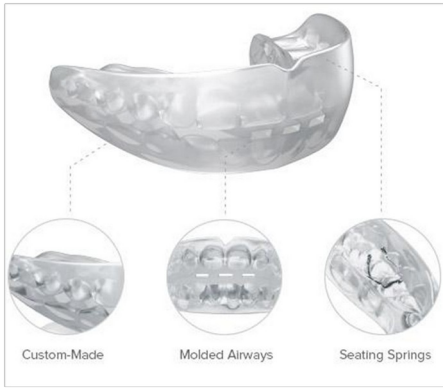


DOPPELVORSCHUB-PLATTE (SCHWARZ)

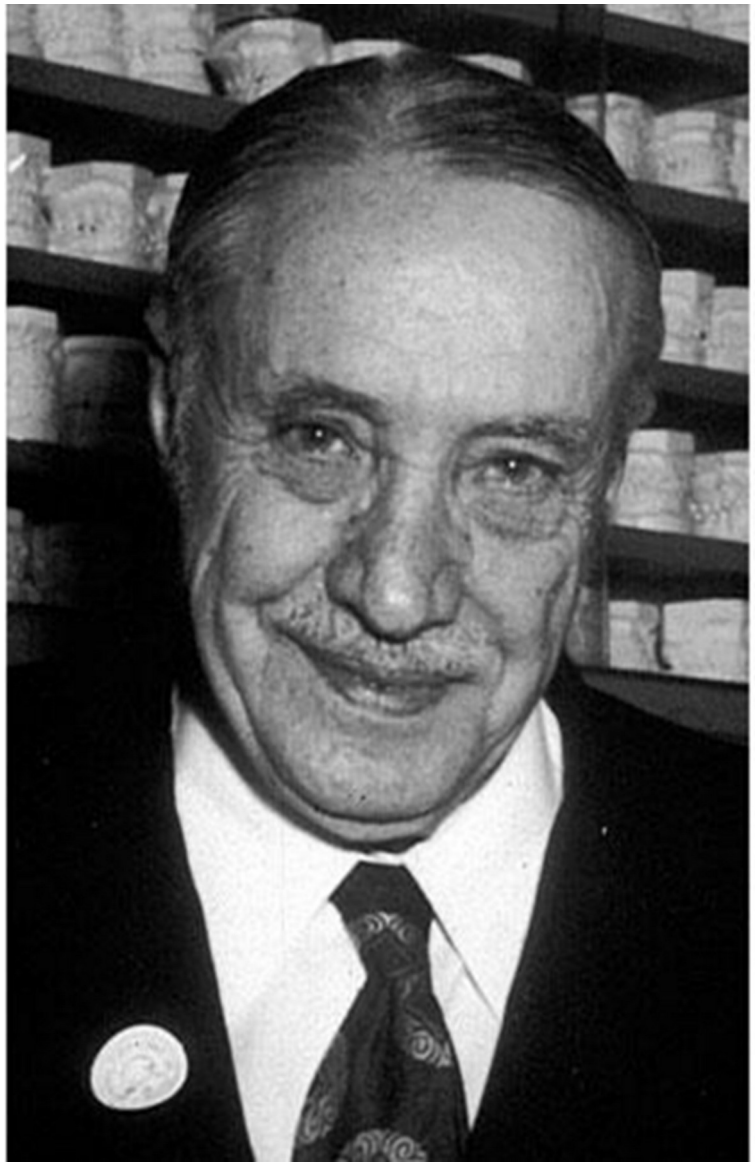
1956

FRANKEL APPLIANCE

1980



KESLING TOOTH POSITIONER



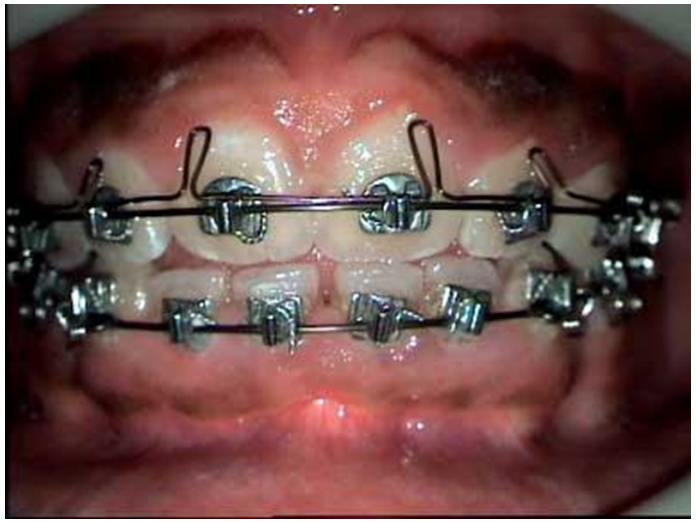
Percy Raymond Begg

1898-1983

Angle’s pupil
Studied the skulls of Australian aboriginals

Begg-technique (**Light-wire** Differential Force method)

- new brackets
- Special SS archwires
- light forces
- 3 phases of the treatment



Joseph R. Jarabak

1901-1981

In 1960, he invited Begg, but got refused so he invented his own **Light Wire technique**

1961 – brackets (.018 slot, preadjusted torque & angulation)

Dr Jarabak was a showman, a truy selfless and dedicated teacher. His profession was his vocation and avocation. He gave a number of courses in light-wire
technique with the assistance of his graduate students.

Robert M Ricketts

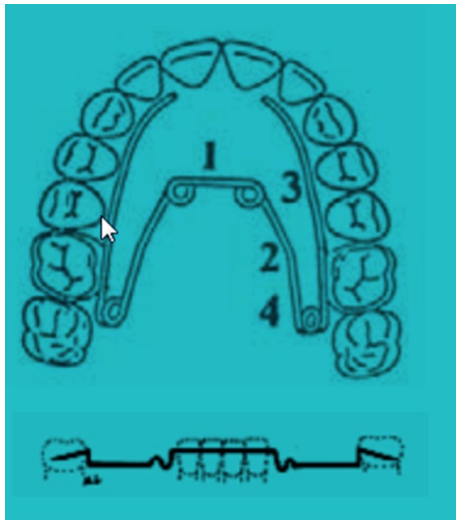
1920-2003

Biology, face orthopedics differential diagnosis, systematic **biomechanical knowledge** is the most important components in the praxis

- Ricketts' cephalometric analysis
Visual treatment objective with growth (VTO)

- Bioprogressive Therapy
.018 slot

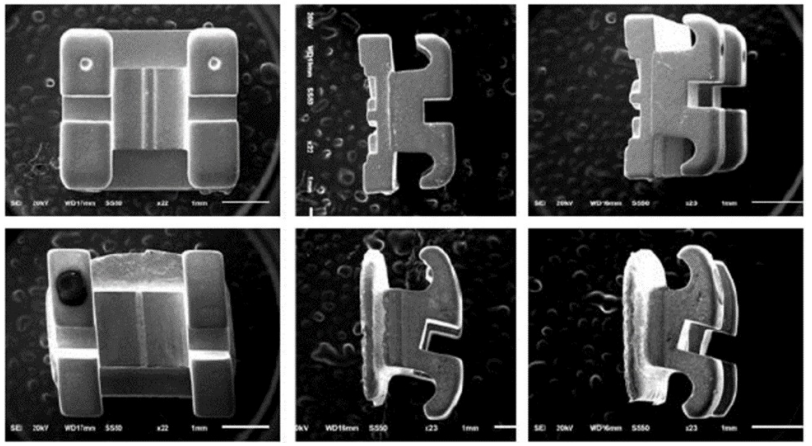
-Esthetics is the most important



Lawrence F. Andrews

Straight wire technique
Triple controll bracket

Six Keys to Normal (Optimal) Occlusion
Six Elements of Orofacial Harmony.
1989 “Straight-Wire, The Concept and Appliance” book.

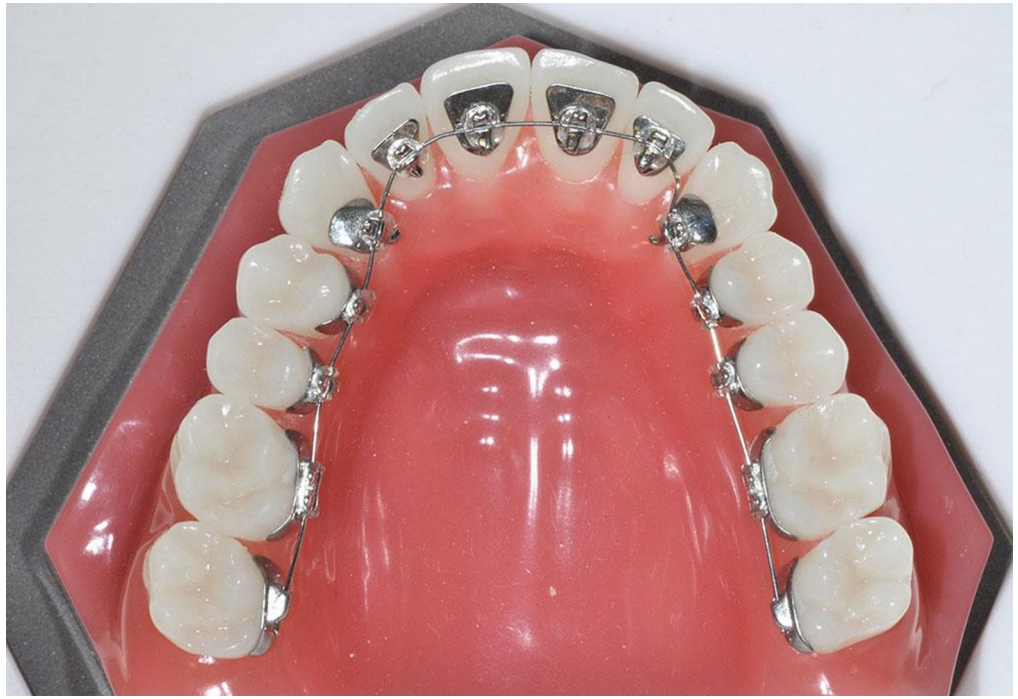


1970s **Kinja Fujita**’s patient was an athlete practicing martial arts
Fujita method in 1978

-lingual multibracket technique – 3 slot: occlusal, horizontal and vertical

-mushroom-shaped archwire.
Class I and II cases treated with premolar extractions

Lingual technique



Aligners

Eugnath dentition

(Anatomy, function,esthetic)

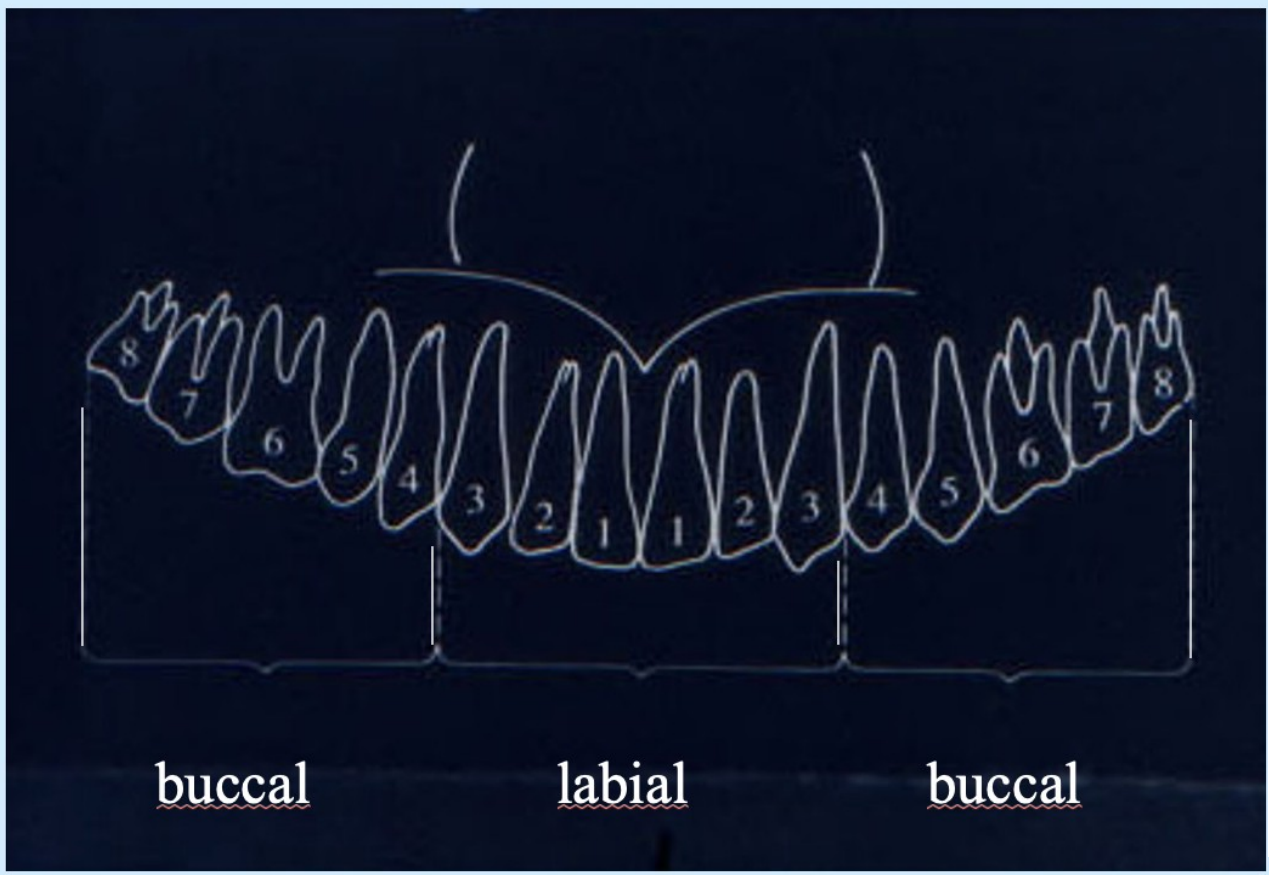
Occlusion
Muscles: static

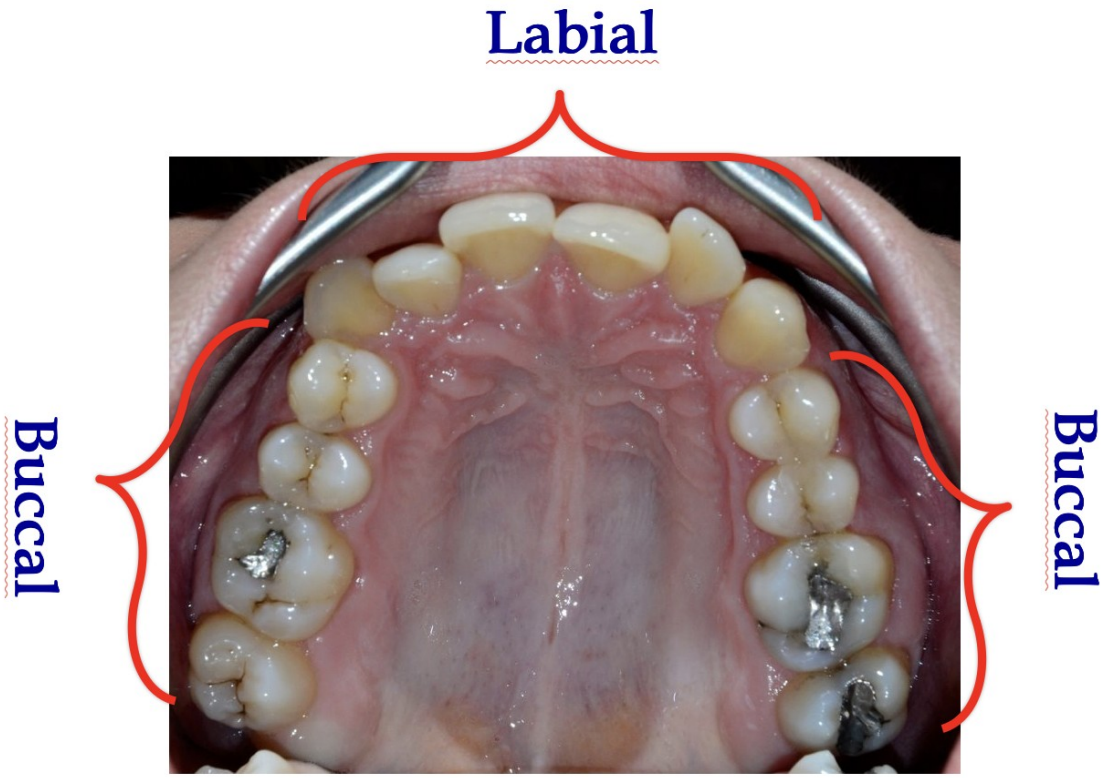
Articulation:
Muscles: dynamic

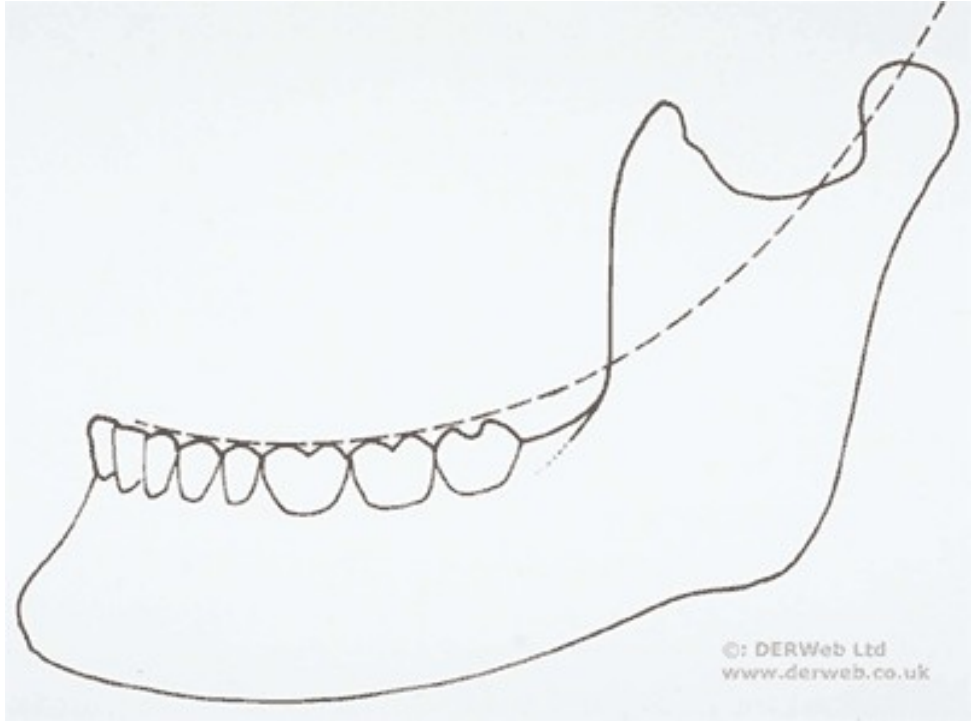
Rest position

Interocclusal space

Segments



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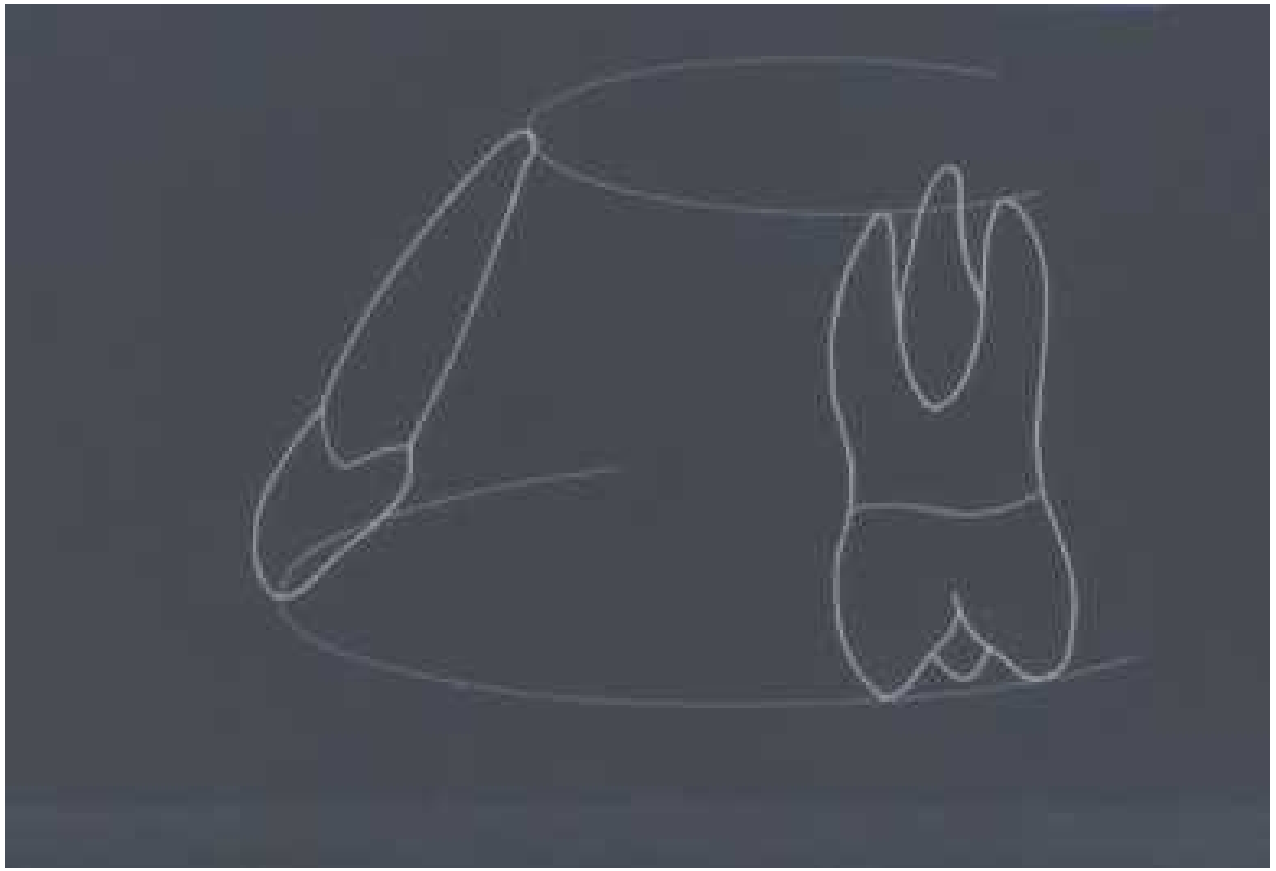
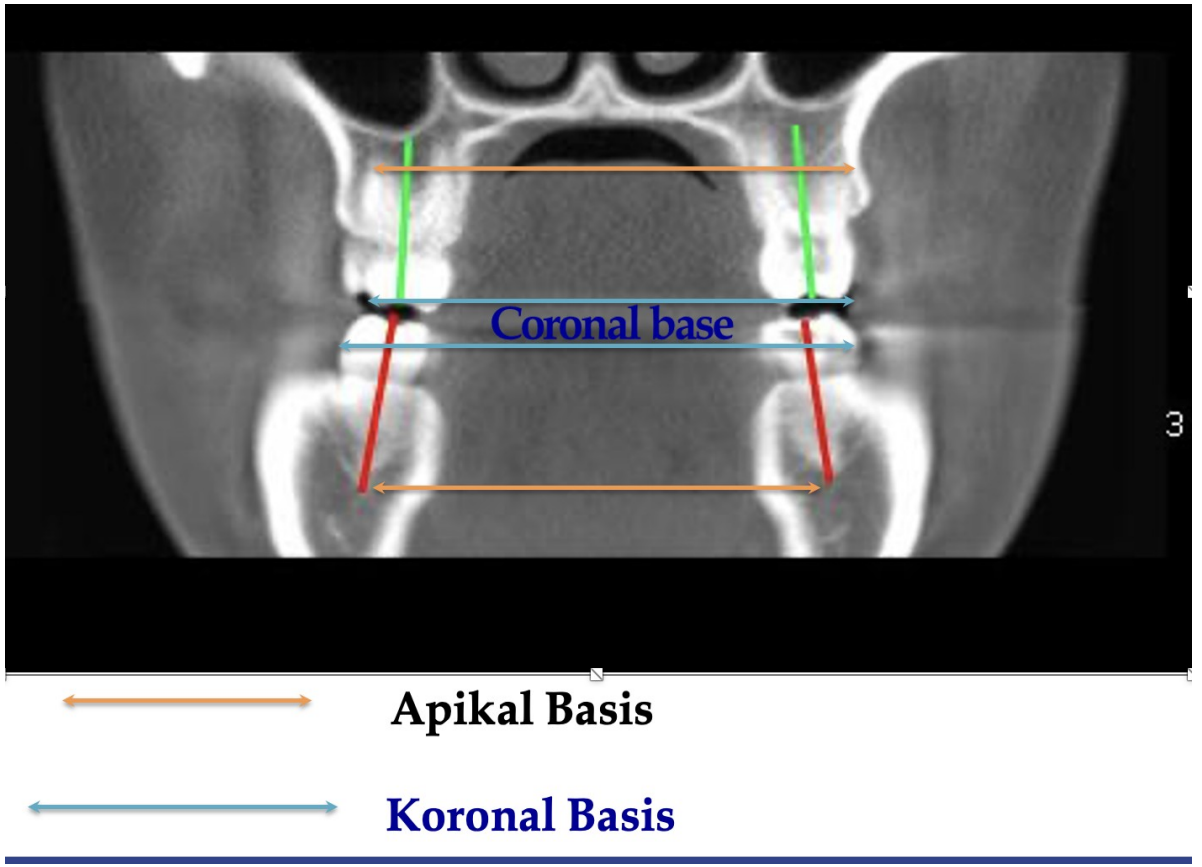
Spee- curve


Okklusionsebene
Wilson Kurve
©: de Cassan-ZAS

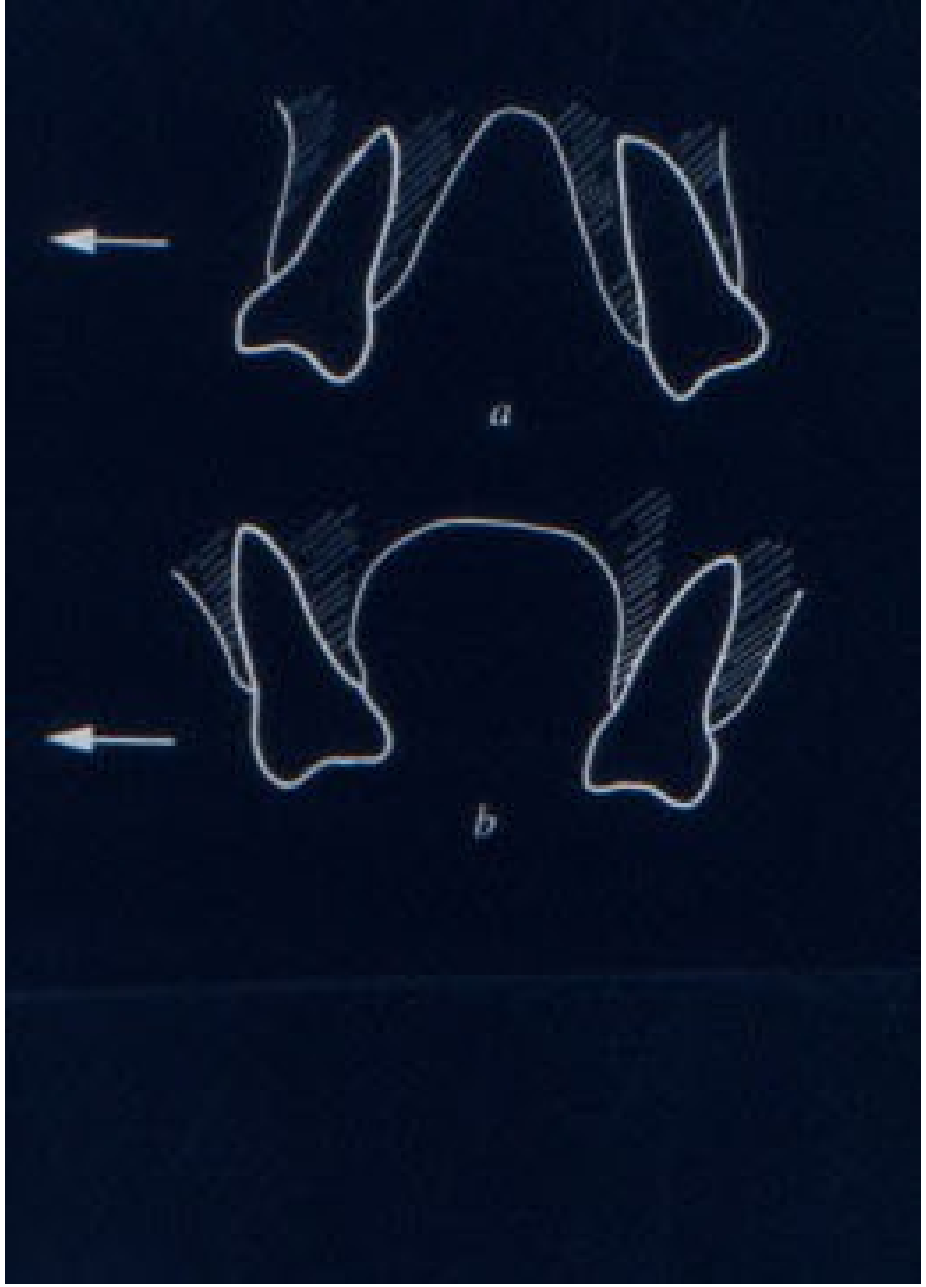
Apical and coronal base



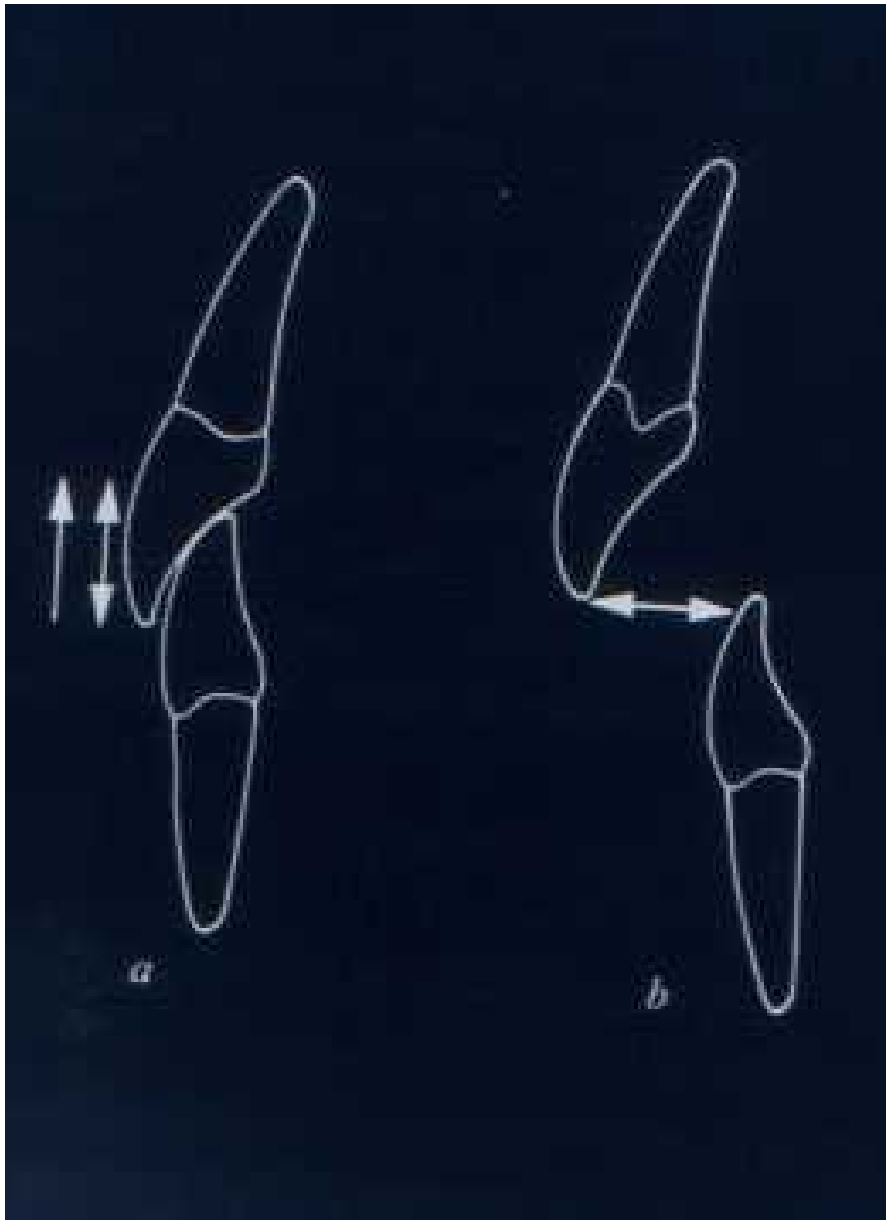


narrow apical and wide coronal base

wide apical and narrow coronal base

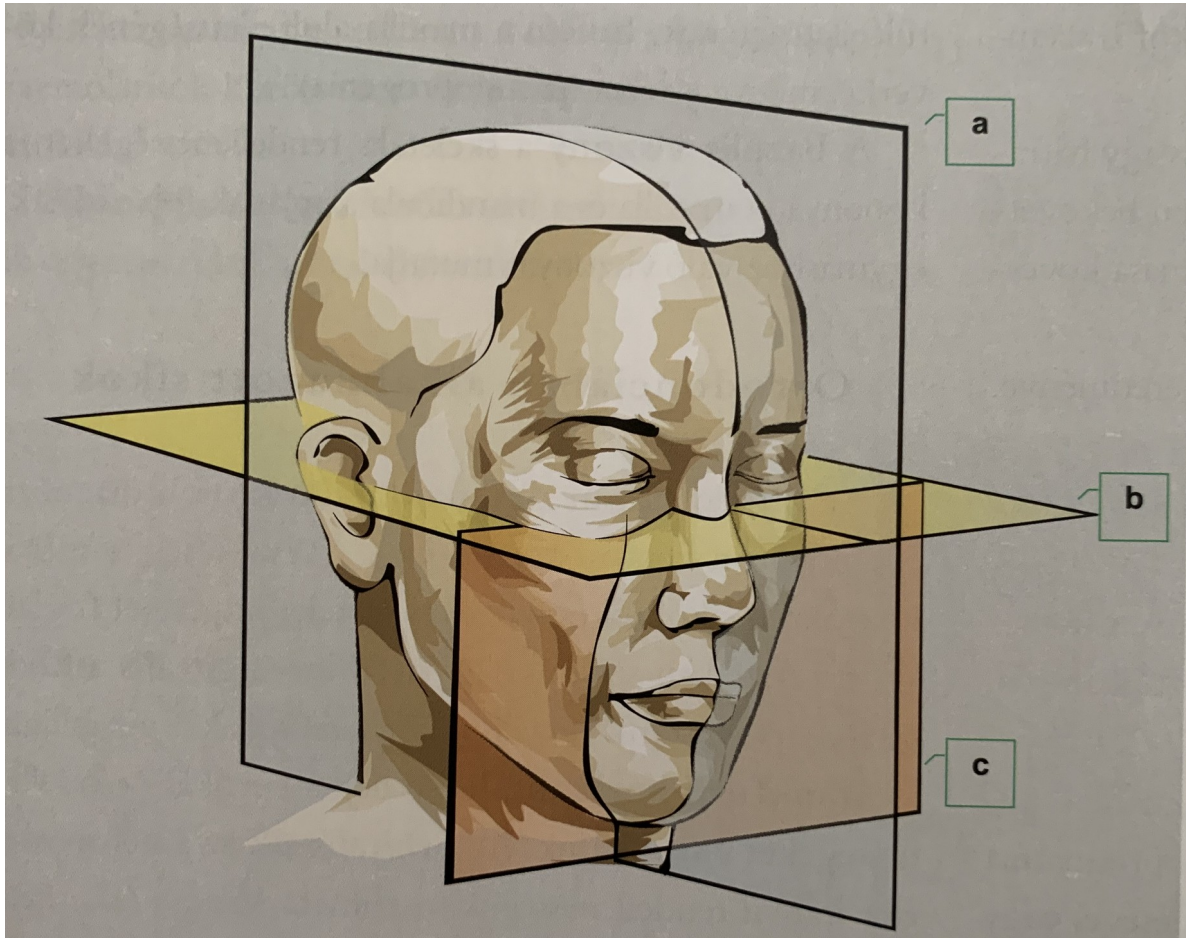


Overbite



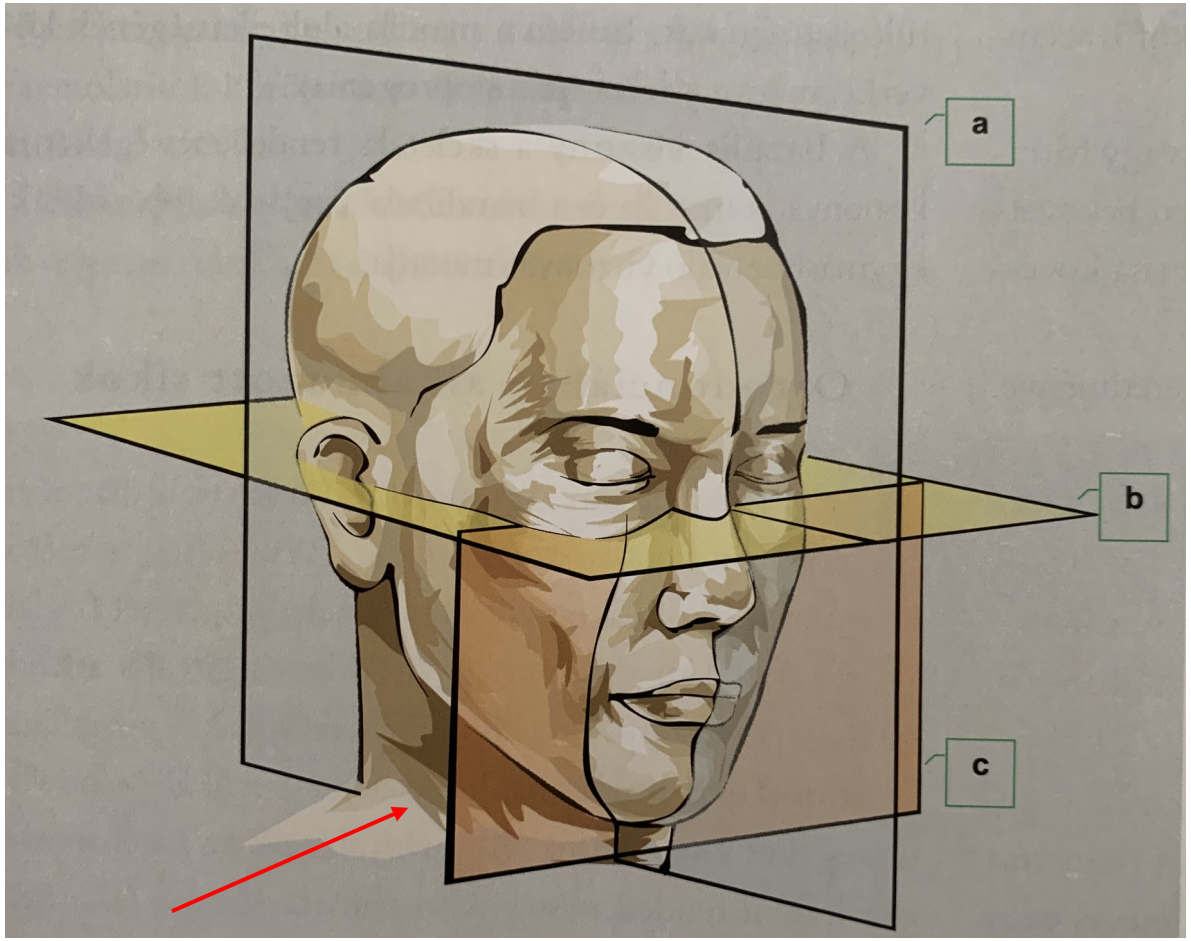
Overjet

Simon diagnostic planes



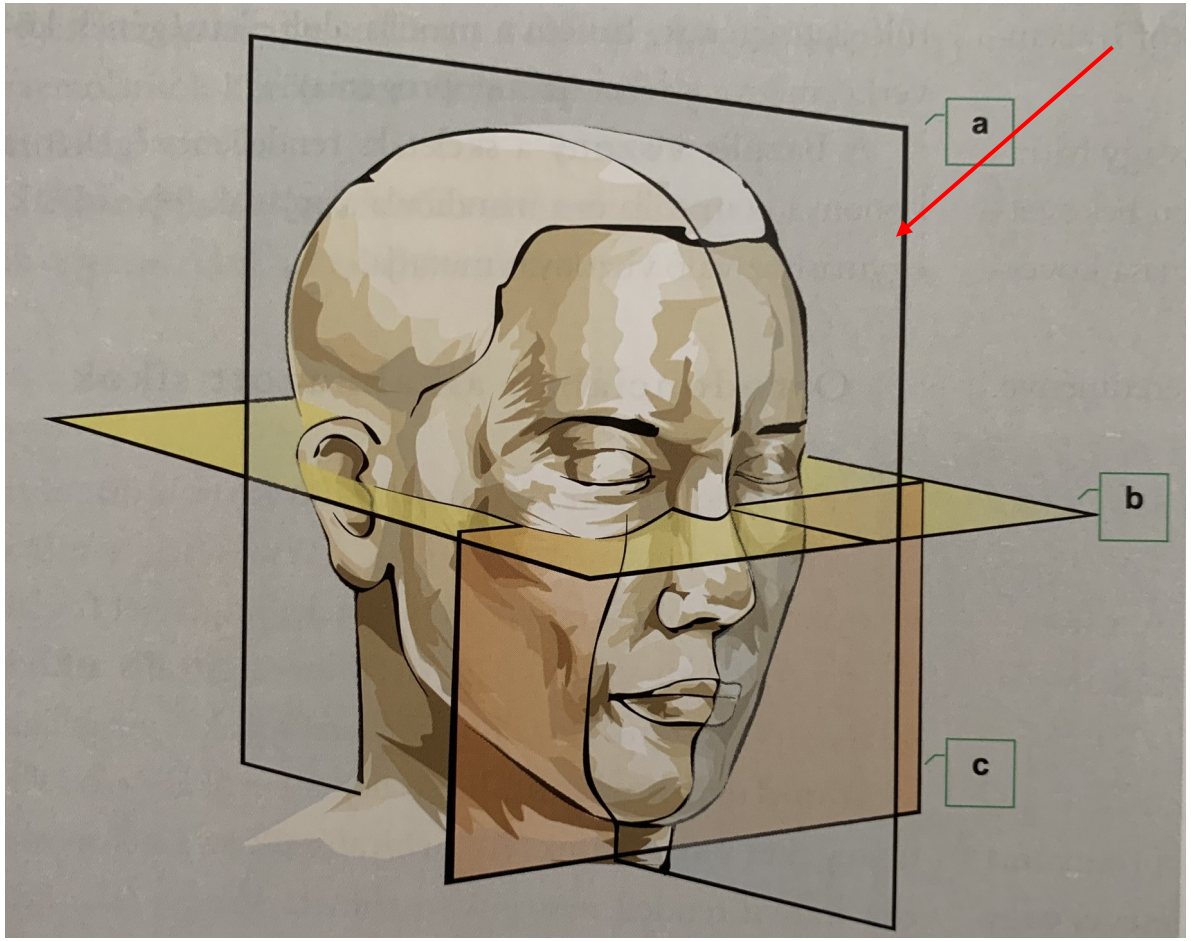
Fabian G,. Gábris K., Tarján I.:Gyermekfogászat, fogszabályozás és állcsont-ortopédia 2. kiadás

orbital plane



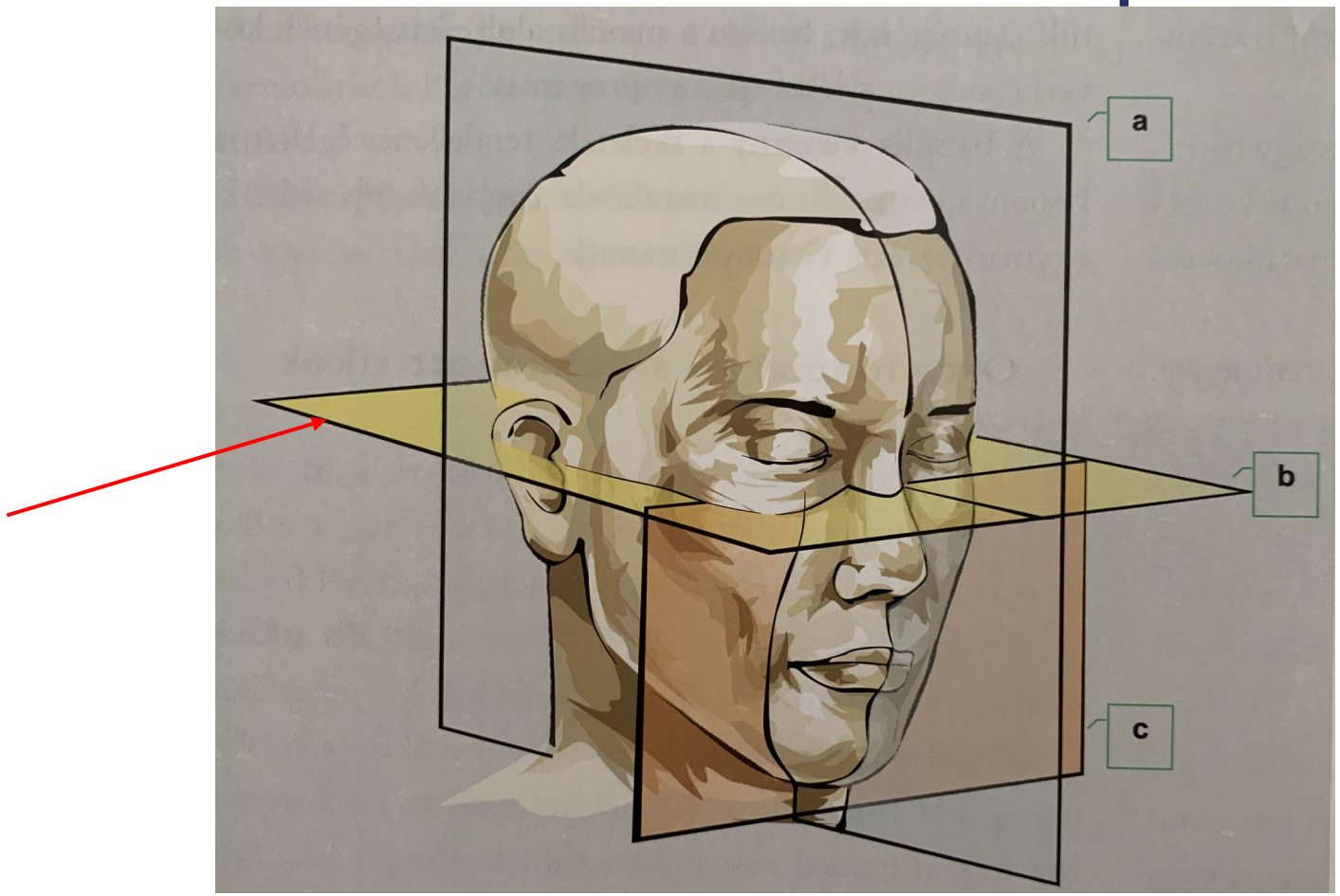
Fabian G,. Gábris K., Tarján I.:Gyermekfogászat, fogszabályozás és állcsont-ortopédia 2. kiadás

midsagittal plane



Fabian G,. Gábris K., Tarján I.:Gyermekfogászat, fogszabályozás és állcsont-ortopédia 2. kiadás

Frankfurt horizontal plane



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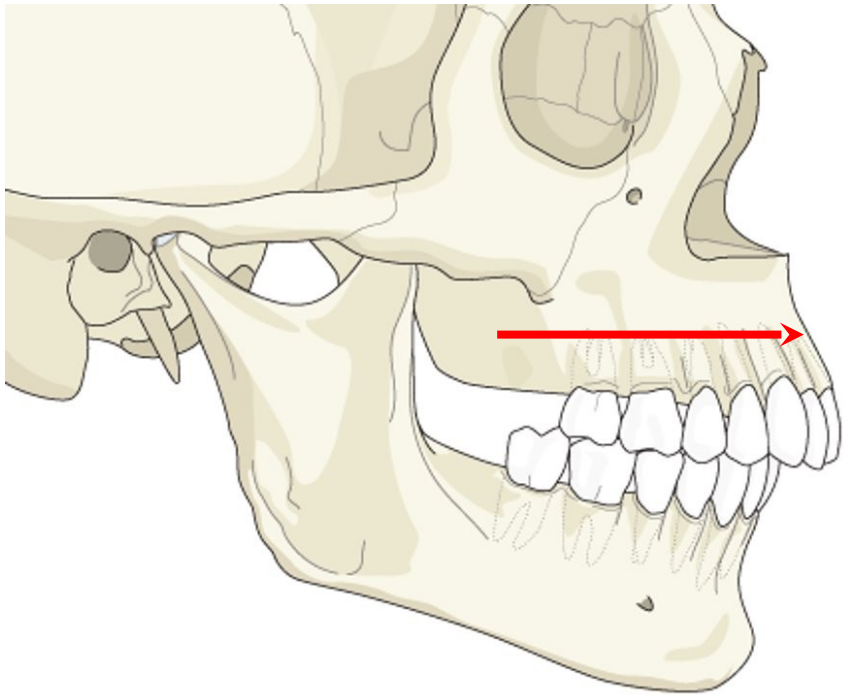
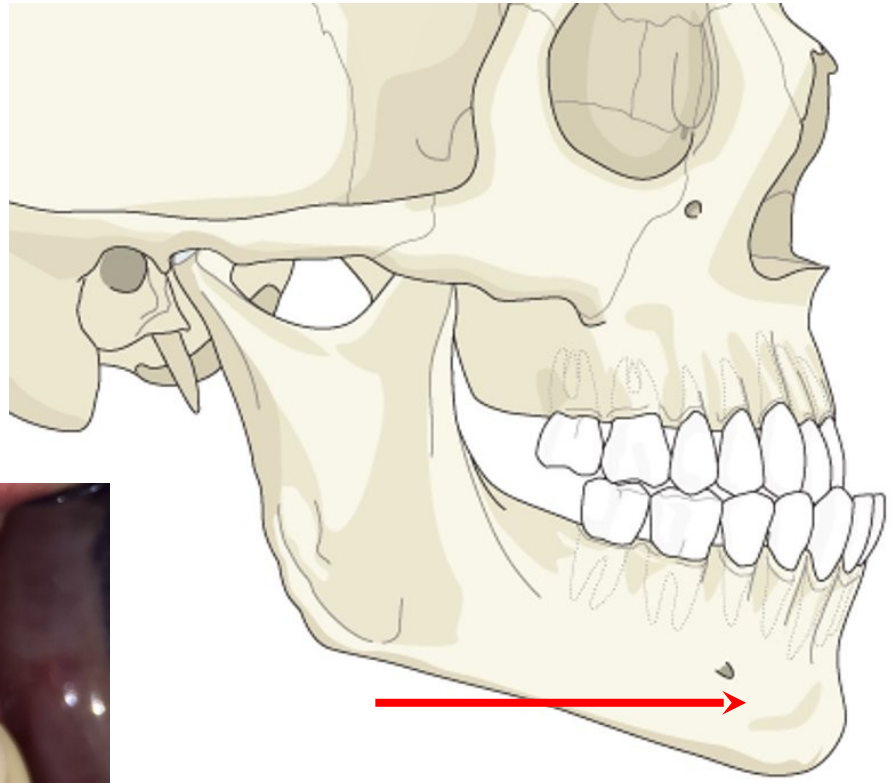
Sceletal discrepancy

- Prognathia
- Retrognathia
- Progenia
- Micrognathia
- Microgenia
- Asymmetry
- Sceletal open bite
- Sceletal deep bite
- Transversal discrepancy

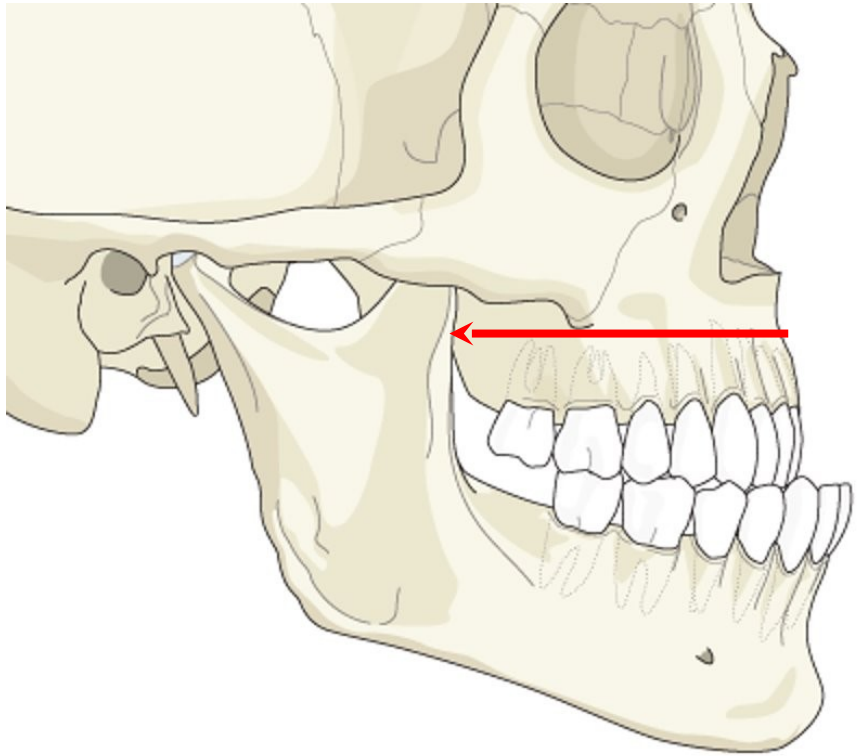
Prognathia



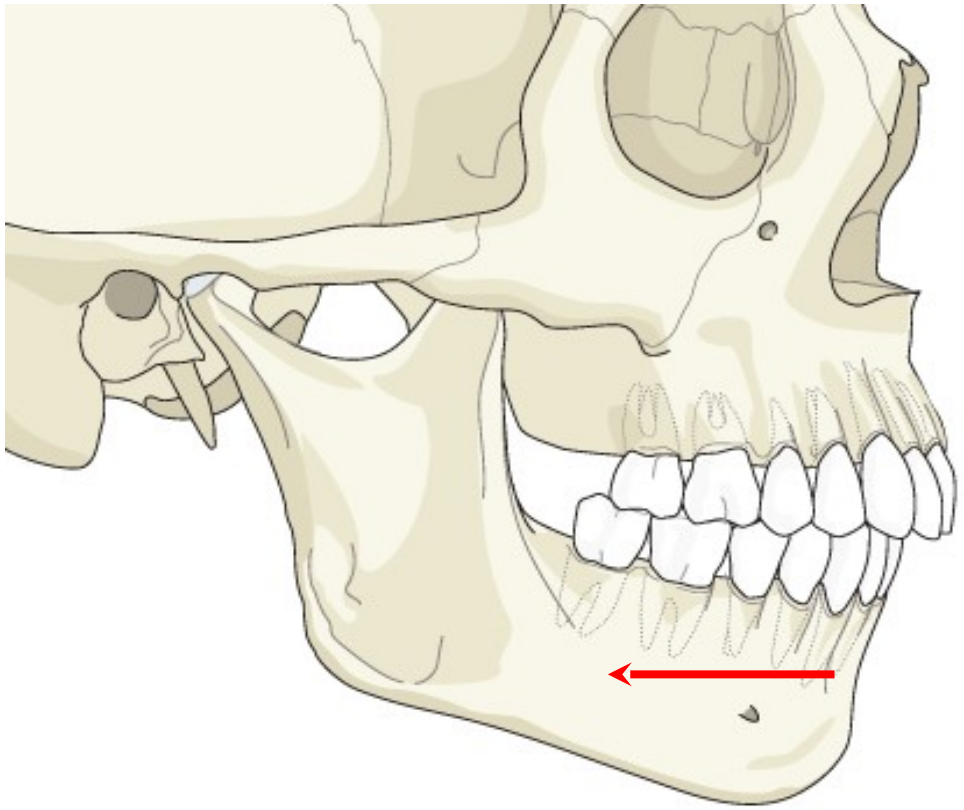
Progenia



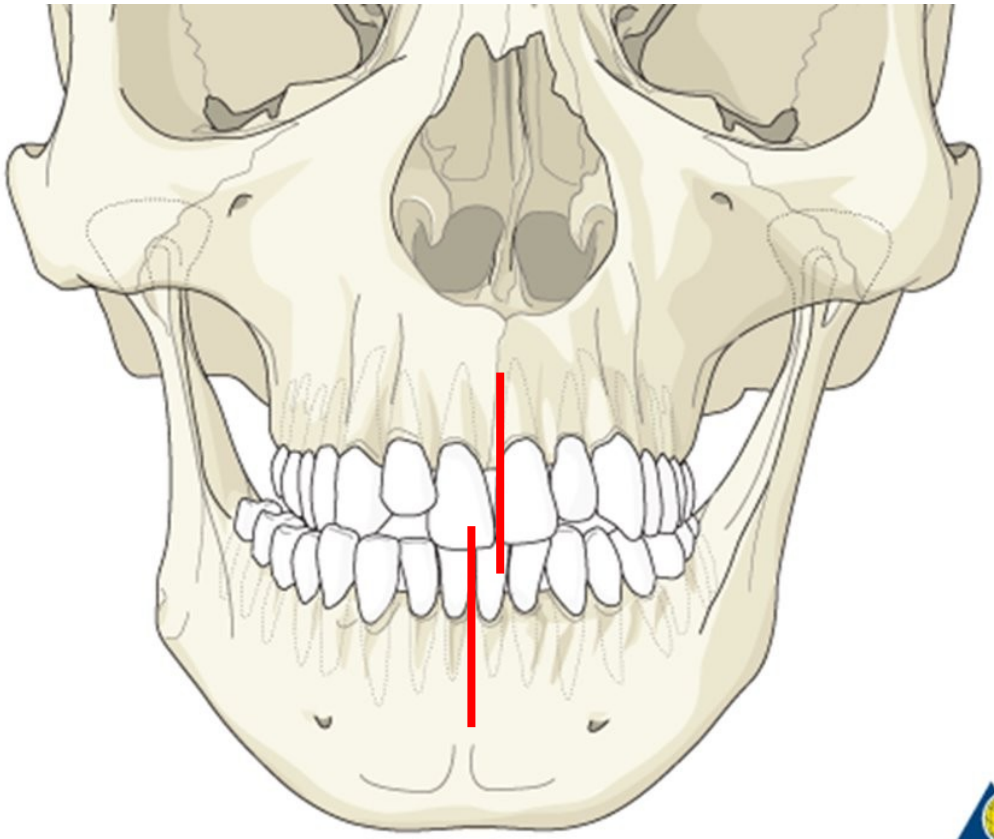
Micrognathia

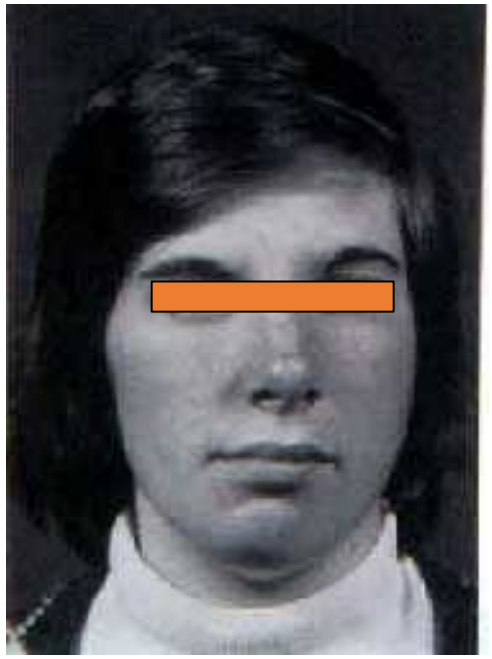


Microgenia

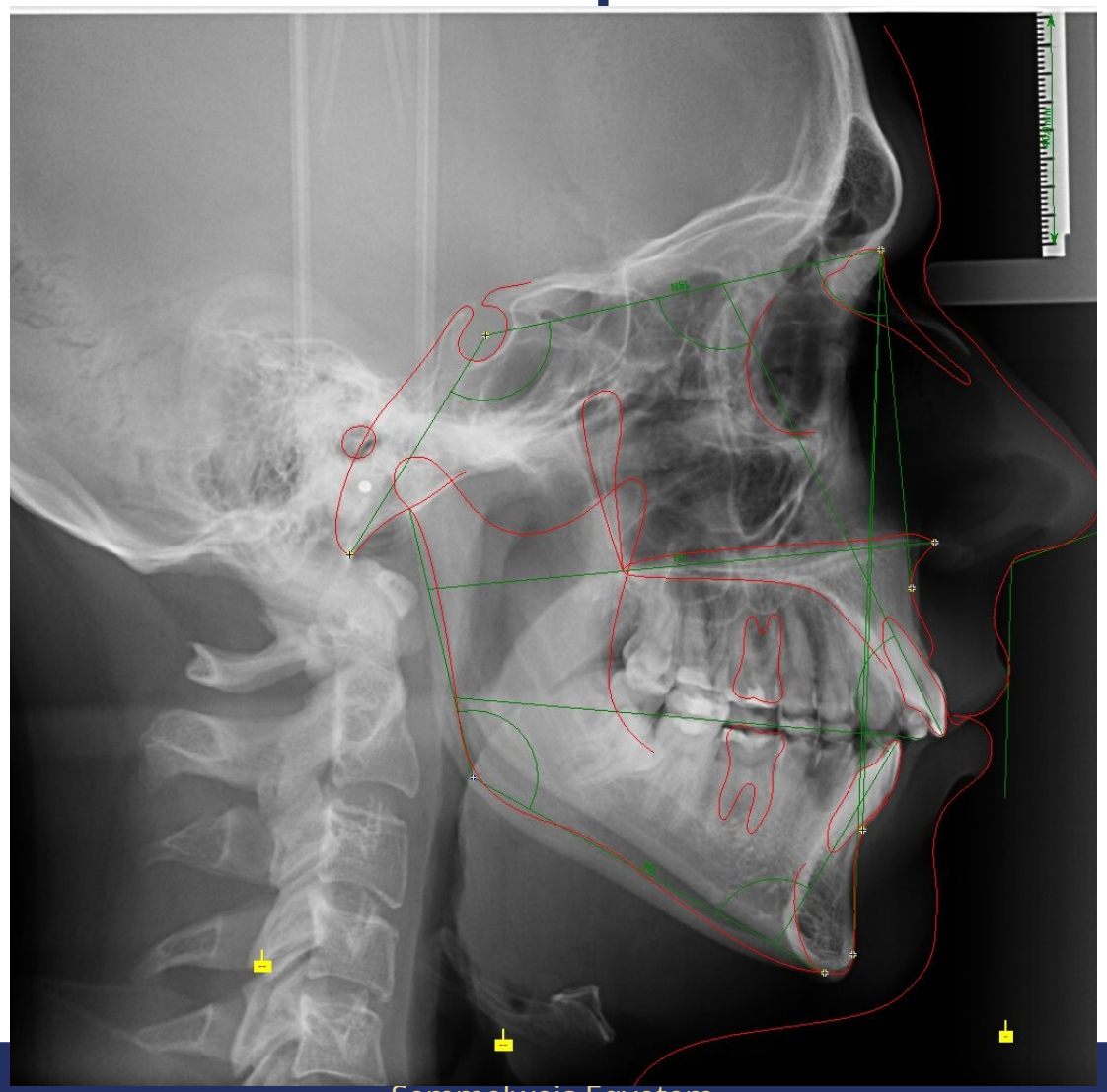


Asymmetry

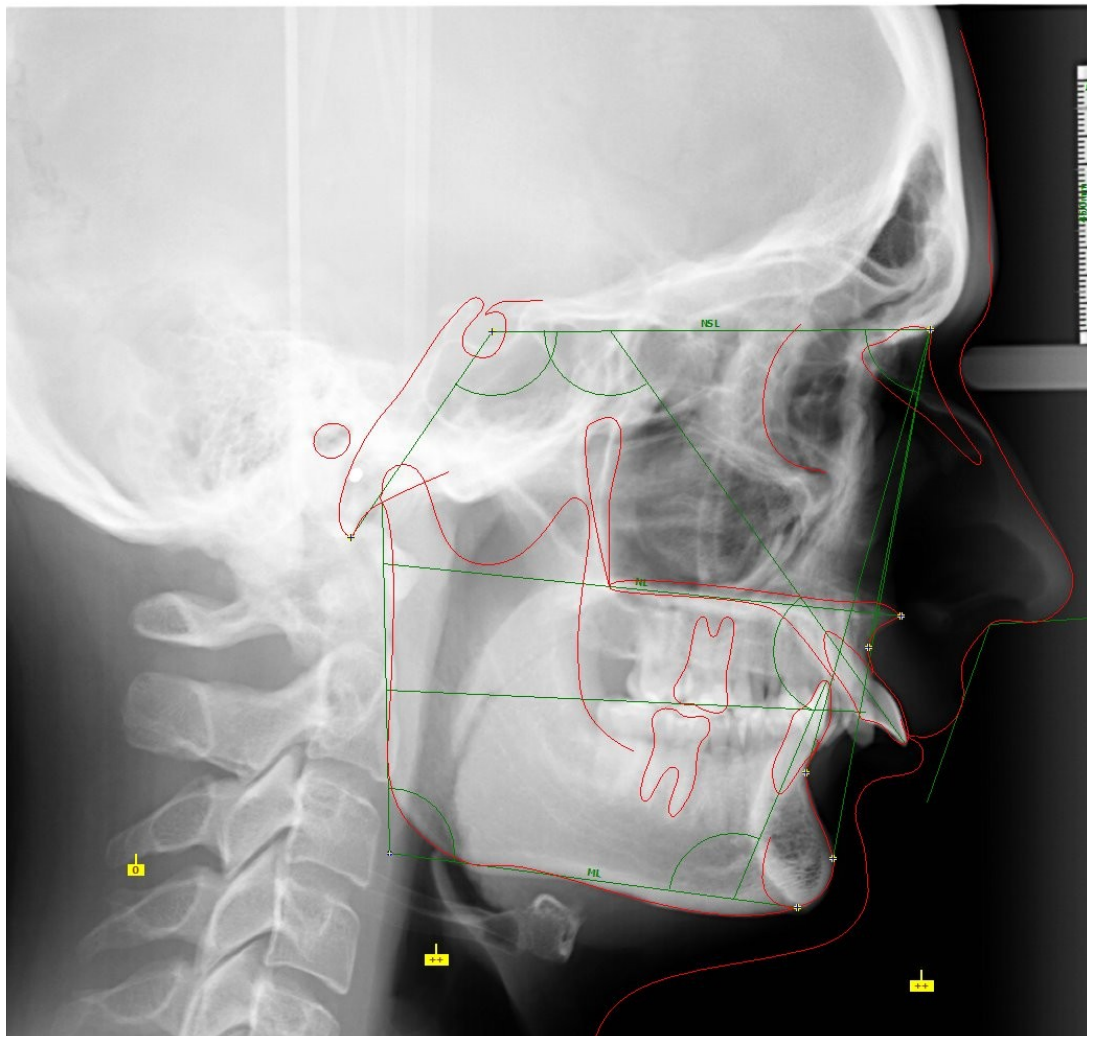




Sceletal open bite



Sceletal deep bite



Sceletal transversal discrepancy

Dentoalveolar bite discrepancies

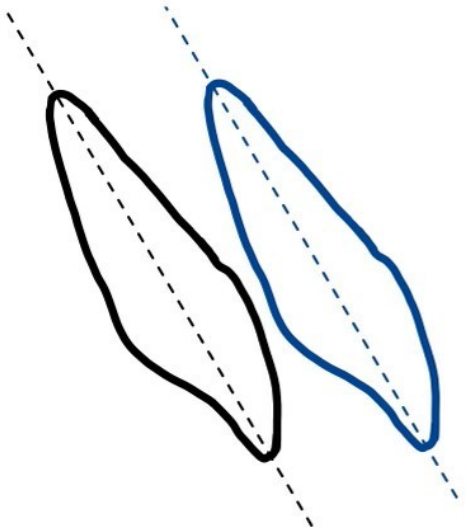
- Open bite
- Deep bite
- Upper/lower incisor protrusion/ retrusion
- Upper/lower incisor proclinatio/reclinatio
- Crossbite *(individual teeth,front, lateral- unilateral/bilateral)*

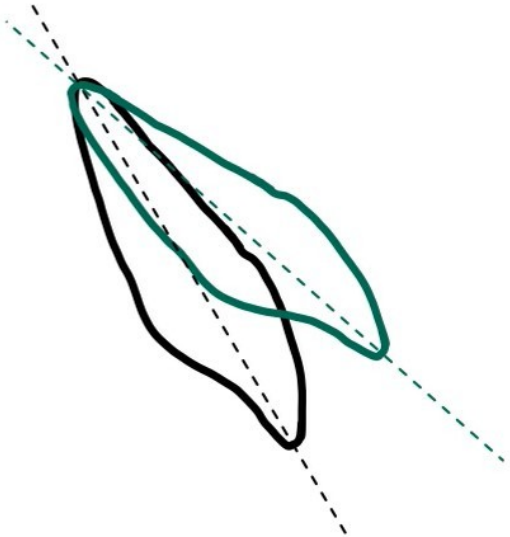
Open bite

Lateral open bite

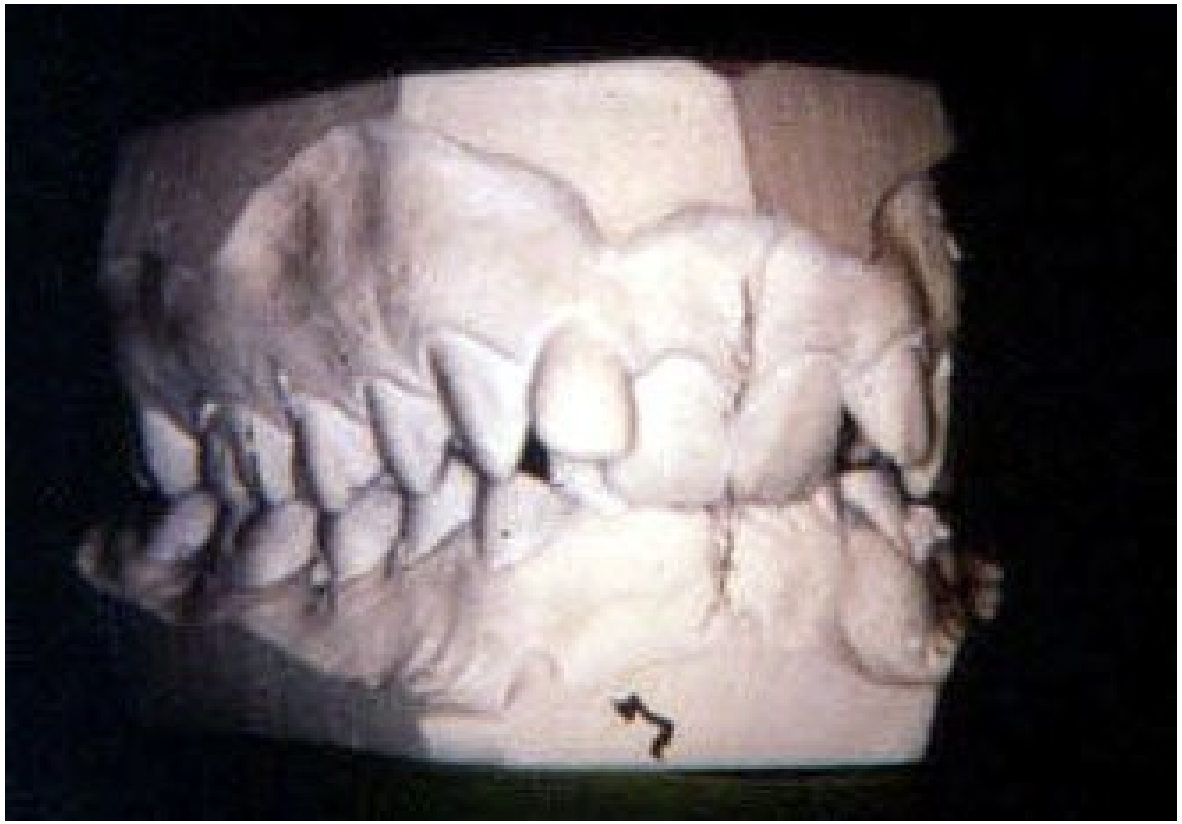
Deep bite

Protrusion and proclination

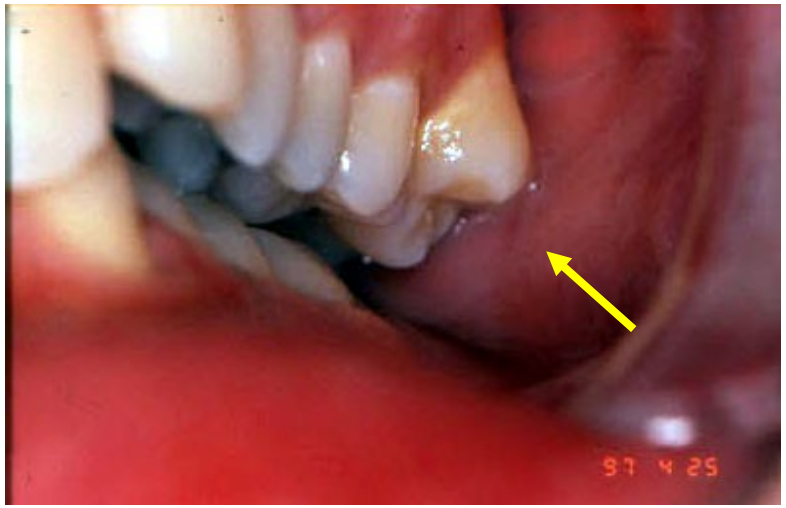




Retrusion and reclination



Crossbite

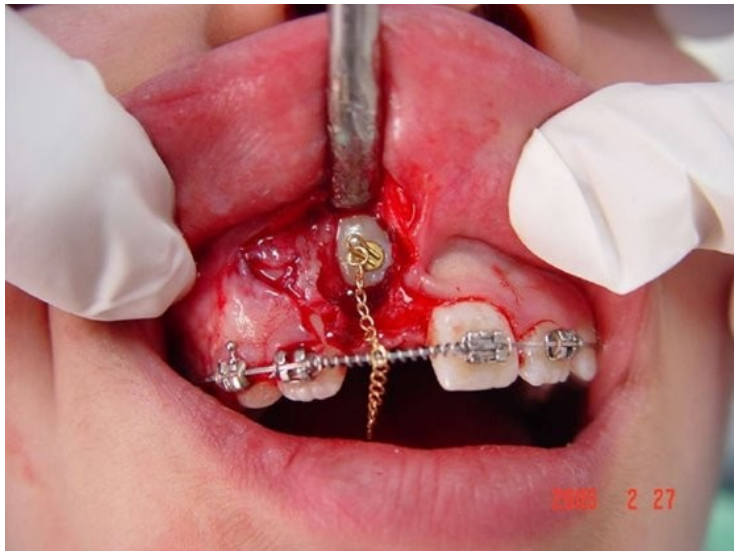


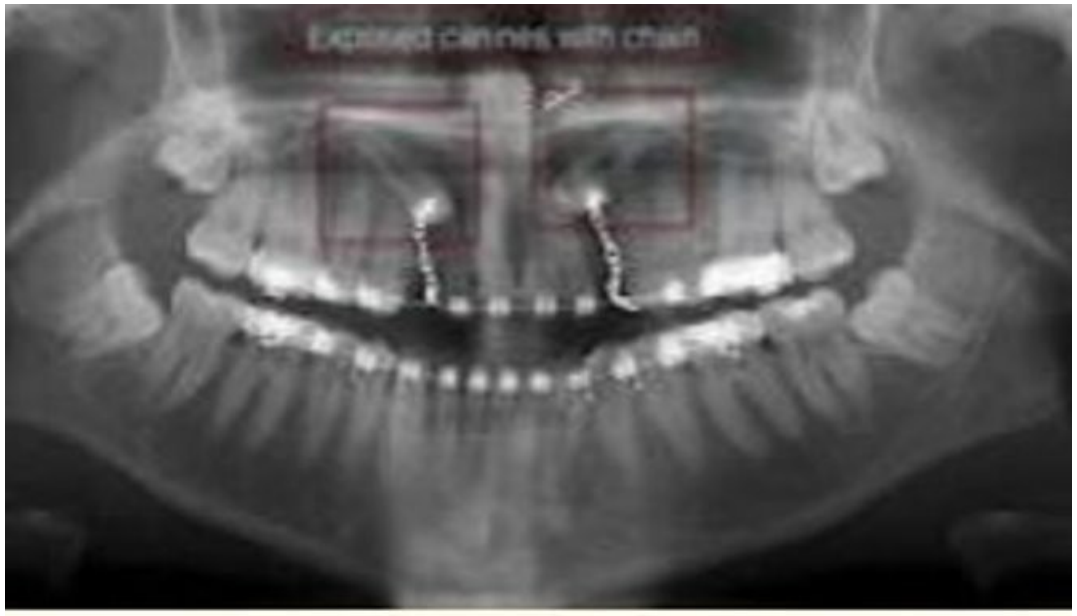
Dental discrepancies

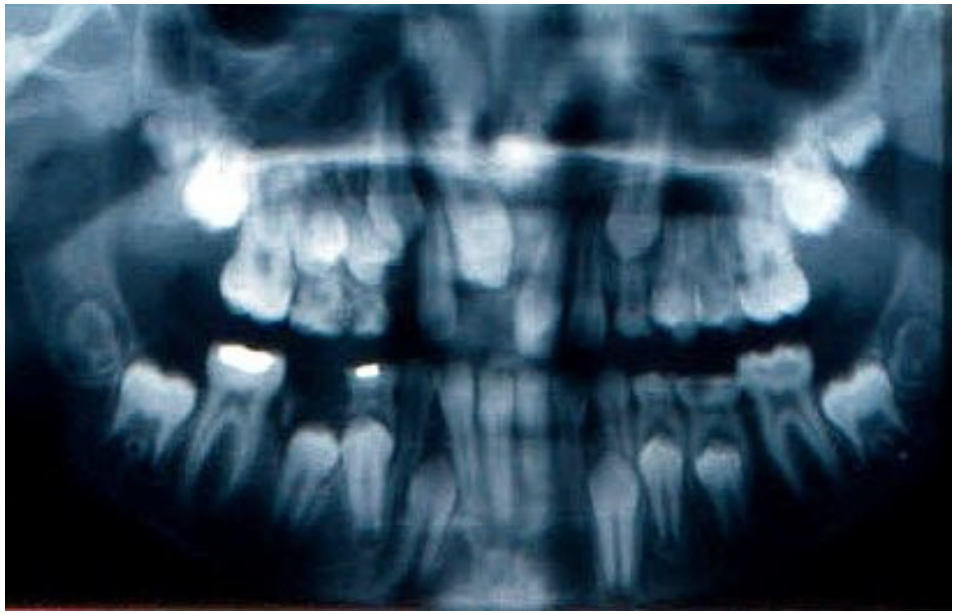
- Ectopia
- Retention, impaction
- Traumatic occlusion
- Transposition
- Individual teeth crossbite

Ectopia

Retention, impaction



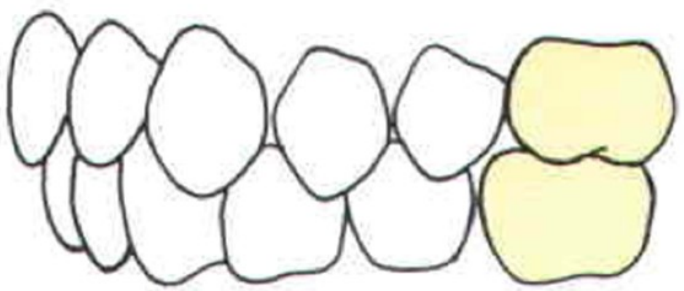




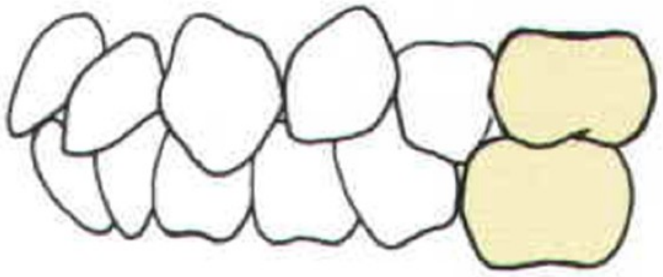
Traumatic occlusion

Transposition

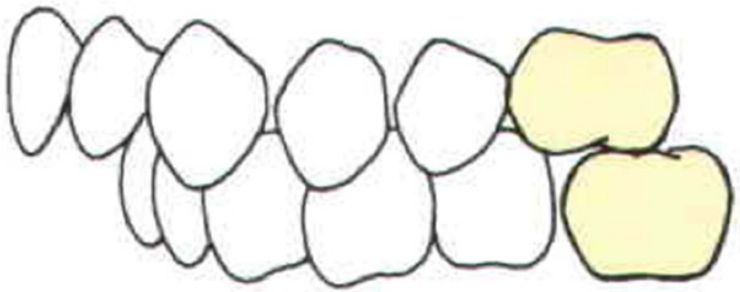
Angle-classification



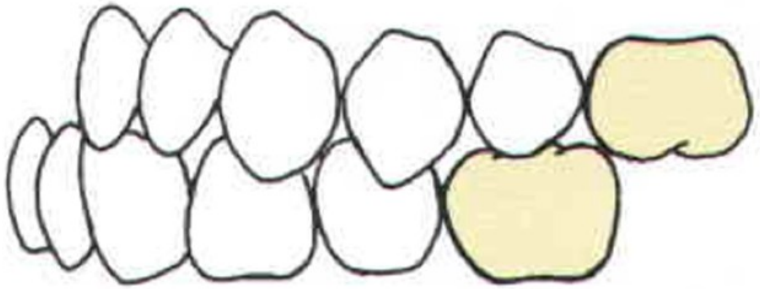
Normal occlusion



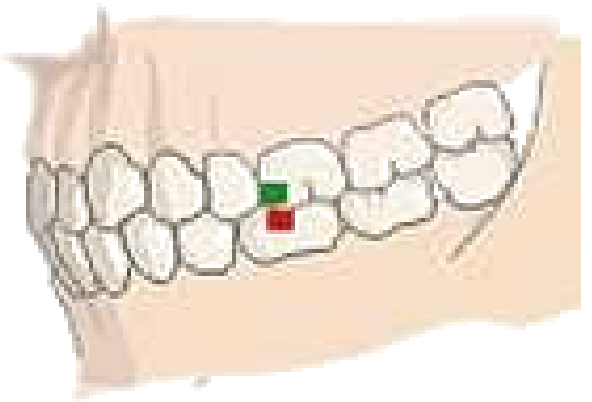
Class I malocclusion

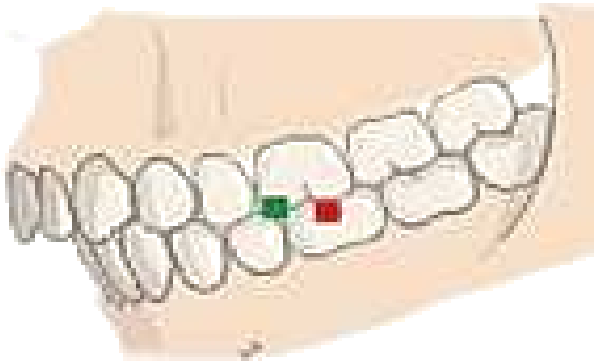


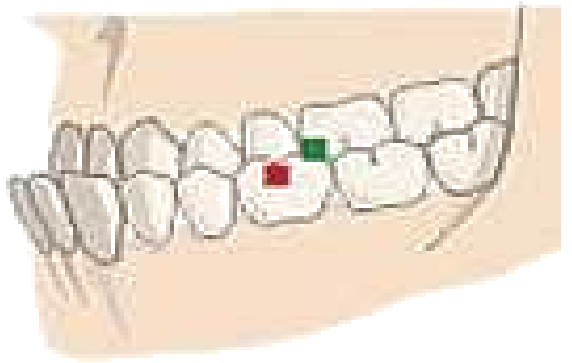
Class II malocclusion



Class III malocclusion

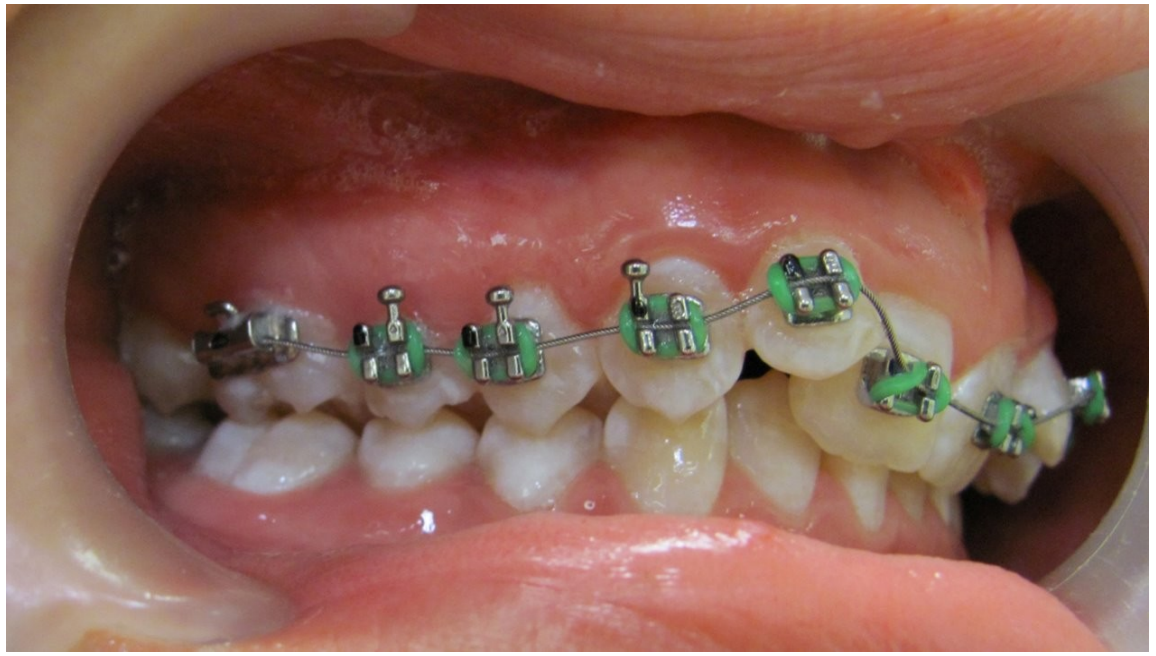






Angle I.

Angle II.



Angle III.

Thank you for your attention!

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EGYETEM 1769

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Gyermekfogászati és Fogszabályozási Klinika

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