The aim of orthodontic treatments

To treat esthetic complains
To solve the functional problems (chewing, speech, TMI)
Prevention
(Unreal expectations: improvement the quality of life: better job, new relationships, marriage etc. )
Skeletal and dental anomalies are treated

Angle classification
(based on: anteroposterior relationship of the jaws)

Angle II. anomalies

Angle III. anomalies
Angle I.
normocclusion
Angle II. - Distocclusio

Angle II/1

Angle II/2
Angle III – progenia - mesiocclusio
Skeletal and dental anomalies are treated

Vertical problems

Deep bite and open bite

Transversal problem
Grouping of orthodontic anomalies

Removable appliances

Fixed appliances
Removable appliances

- Active plates
- Passive plates
- Functional, bimaxillary appliances

(To improve the relationship between the upper and lower jaw)
Frankel-appliance, Hansa-appliance, Bionator, Aktivator
Functional, bimaxillary appliances
Grouping of plates

Passive

Upper passive (retention) plates

Active

Upper active plate
Active plates screw !!!!!
The screw is activated in the direction of the arrow (10 days, 2 weeks)
Elements of removable appliances

- Acrylic base plate
- Labial bow
- Clasps
- Active element

(Hawley) retention plate
Elements of removable appliances

- Acrylic base plate
- **Labial bow** 0,7-0,9 mm stainless steel wire
- Clasps
- Active elements

![U-loop](image1.png)

![U-loop](image2.png)
Labial arch

Labial arch holds the appliance in the mouth and able to tilt the incisors backward (retrusion)

0.7 – 0.9 mm stainless steel alloy
Labial arch

Vertical bending: right-angle 90’
by one third of canine (mesial arm)

Flat Nose Plier

or

Classic Universal Plier
Labial arch

- Bend the loop (Wire bending plier, Round & Concave Plier or Double Rounded Jaw Plier)
- The mesial and the distal branches of the loop have to be parallel
Labial arch

Bend the end of the wire palatinally
Elements of removable appliances

- Acrylic base plate
- Labial bow
- Clasps
  - Adams clasp
- Aktív elemek
- Adams clasp
Elements of removable appliances

Acrylic base plate

Labial bow

Clasps

Active elements

Arrow clasp
The elements of the plates

- Acryl basic plate
- Labial bow
- Clasps
- Active elements-springs

Free-ended or finger springs

closing

opening
The elements of the plates

- Acryl basic plate
- Labial bow
- Clasps
- Active elements
- • Console-like springs
Active plates

• Upper typical active plate (the screw is in the middle of the appliance)

• Lower typical active plate
Active plates

Upper atypical active plate (the screw is placed asymmetrically)

Lower atypical active plate
Active plates

Upper atypical active plate with lateral bite raising
(for the treatment of lateral crossbite)
Active plates
Y-plate

Upper Y-plate

Lower Y-plate
Bertoni-screw
(instead of Y-plate)
Flat nose plier  Wire bending plier

Classical universal plier
Oral screen

Against bad habits
Grouping of orthodontic appliances

Intraoral appliances
Extraoral appliances
Intra-, extraoral appliances

Extraoral appliances:
Chin cap –
in progenie (III. class)
Intra-, extraoral appliance:

Reverse Headgear

Facemask

sagittális expansion of the maxilla
Inta -, extraoral appliance: headgear

- Distalisation of upper jaw (or upper molars)

- Influence of vertical anomalies
Elements of fixed appliances
Fixed appliances

- Multiband appliances
- Direct bonding technic

Elements:
- Brackets
- Bands on the molars ??
- Buccal tubes
- Archwire
- Ligatures
Elements of fixed appliances
(multibond, multibracket appliances direkt bonding technic)

1. Bracket
2. Ligatures
3. Orthodontic archwire
Components of the Multiband Appliance

- Rigid connectors, called **molar tubes** and **brackets**
- Archwires, and other elastic sources of force
- Auxiliaries (Everything else needed to get the job done.)

The dot is always on the distogingival wing of the bracket.
Elements of fixed appliances

Bottom of the bracket

Huge surface for the bonding material

hook
Metal brackets

- Stainless steel
- Titan
- Gold
Ceramic or plastic brackets
Ceramic brackets

- **Disadvantages:**
  - expensive
  - it’s no possible to renew
  - fragile
  - difficult to remove
  - more difficult to set the ligatures

- **Advantage:**
  - esthetic
Signs on the brackets

• Arrow in the long-axis of the brackets
• The arrow shows the gingival part of the bracket
• Dot on the disto-gingival wing (by upper incisors and canines)
Bonding brackets

• Steps
• 1. Mechanical cleaning
   (metal burs, rubbers)
• 2. isolation: lip retractor, cotton rolls, saliva retractor
3. Drying with bensin or alcohol
• 3. etching:
  -- phosphoric acid
  -- gel
  -- 30 seconds
• 4. washing:
  -- 30 seconds with water
  -- isolation again
  -- drying again
5. Bonding (etch-bond)
• 6. Placing of brackets
• 7. remove of the overflown of bonding material
• 8. polymerisation
Positioning of the brackets

- In the middle of the crown
  - vertically
  - horizontally
- brackets positioners are used
Bonding materials

- composites
- glasionomer cements

- two components,
  mix
  - Paste-paste
  - Powder-liquid
- no-mix materials

- light curing komposite and glasionomer bonding materials
- self curing „glue”
Placing Orthodontic Bands

- Three major steps in banding:
  - separation of adjacent teeth
  - sizing and fitting the band to the tooth
  - cementation and cleanup
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Separator Plier:
Direct bonding tubes
Ligatures

- Elastic
- Metal
- Single
- Continuous
Single ligatures

Elastic ligature (sologumi)

Metal ligature (szöcske = grasshopper)
Single elastic ligature

Needle holder
Single elastic ligature
Metal ligature
Metal ligatures
Self-ligating brackets
Continuous elastic ligature (to close gaps)
Continuous elastic ligature (to close diasthema)
Continuous elastic ligature (to close gaps)
Continous metal ligature

Main function is fixing of the teeth
Indirect bonding
Indirekt bonding
Removing Fixed Appliances

- Bands are lifted off the tooth with band removing pliers
- Metal brackets are easily removed by gently squeezing them with How pliers
- Ceramic brackets must be removed with great care to avoid enamel fracture.
- Residual cement and adhesive is removed with a scaler or metal finishing bur. or rubber
Quad-helix

Hyrax

Fixed expanders

in mixed and permanent denture

rapid palatinal expansion
(ripping of midpalatal suture)
Hyrax
(rapid palatinal expansion - 3 weeks)
Fixed appliances for the treatment of II. class anomalies

- Herbst-appliance
- Jusper Jumper
- Forsus spring stb.
Orthodontic Implants
Anchorage
Orthodontic Implants
Anchorage
Inclined plane against frontal crossbite
Weingart plier

Ligature Cutter

Distalend Cutter

Laboratory Wire Cutter
Weingart-Plier:
- universal plier: with it we set and take out the arhwires to 6 from its place, activate MB appliances’ accessorial appliances (QH, TP-arch…), remove brackets and activate removable appliances: labial arch, clasps, springs

Needle-holder
Nikkel-titanium wire

1. Leveling phase
Twist-flex or coaxial wire

1. Leveling phase
2. Leading phase—the movement of lateral teeth

Wire: quadrangular stainless steel wire

Force: rubber bands. Ligatures, loops
Leading phase—the movement of lateral teeth
Orthodontic implants
Anchorage
Orthodontic implants
Anchorage
Transpalatal arch
Anchorage
Nance-appliance
Anchorage
Headgear

Anchorage
Lingual-arch
Lipbumper
Anchorage
3. Contraction phase for setting of incisors

- Elastic chain
- Intermaxillary rubbers
- Wire: stainless steel
- Elastic chain
Utility wire

• Connection between molars and incisors
• For the treatment of deep bite, open bite, protrusion, retrusion
Utility wire (inactive)
Activation by deep bite
Activation by open bite
Activation for retrusion (tilting backward)
Activation for sagittal expansion of the front (tilting forward)
Steps of bending

- De La Rosa-Plier:
  - for forming the archwires
  - for ideal-arch forming
Steps of bending
Pliers bending utility wire

Tweed - plier

Nance – plier (steps on the nose)
4. Correction phase

- perfectioning of the occlusion
- correction of teeth’ axis
- treatment of remaining problems (gaps, rotation, tilting stb.)
5. Retention

• There is only one way to completely avoid relapse. At the end of treatment, remove the braces, polish the teeth, make study models and take photographs. And then take the patient out the back door of the office and shoot him. (Dr. Tom Graber DMD, South African Dental Congress. August 1992.)
Length of retention

- Fixed appliance: 1-3 (4-5) years

- A retention should be twice longer than the active treatment

  1 year > 2 years
Fixed retainers

- Ready-made retainer
- Twist-flex wire
- Thin stainless steel wire
Retainers
Resins
Retainers—
Essix retainer
Retainers- Positioner
Retainers - Barrer-retainer
Lingual technic
4 premolars extraction
4 premolars extraction

UPPER ARCH

LOWER ARCH
4 premolars extraction

POST-TREATMENT

Purpose: I. class occlusion
2 premolars extraction

Canines always have to be in normal occlusion !!

Purpose: canines I. class, molars II. class
Extraction of 1 lower incisor

In lower crowding
Removing of wisdom teeth

To avoid relapse and late crowding
Thank you for your attention!