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Restorative dentistry I.
5 th lecture

1. Periodontal diseases related to restorative treatment
2. Preparation trauma
3. Importance of the x-ray investigation in restorative dentistry

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Restorative dentistry I.
5 th lecture

1. Periodontal diseases related to restorative treatment

Mistakes of making filling can cause periodontal diseases

- Reconstruction of the contact point:
- Contact point – contact area!
- The space below the contact area is a caries danger area – plaque accumulation!
- The interdental papilla is retracting during ageing – interdental oral hygiene is important!

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Mistakes of making filling can cause periodontal diseases

- Reconstruction of the contact area is very important!
- Remember – by reconstruction the contact area remember that:
- Contact area is made of the filling material only. The axial walls are situated 0,5mm from the natural contact area.
- By reconstruction is important to study the contact area!

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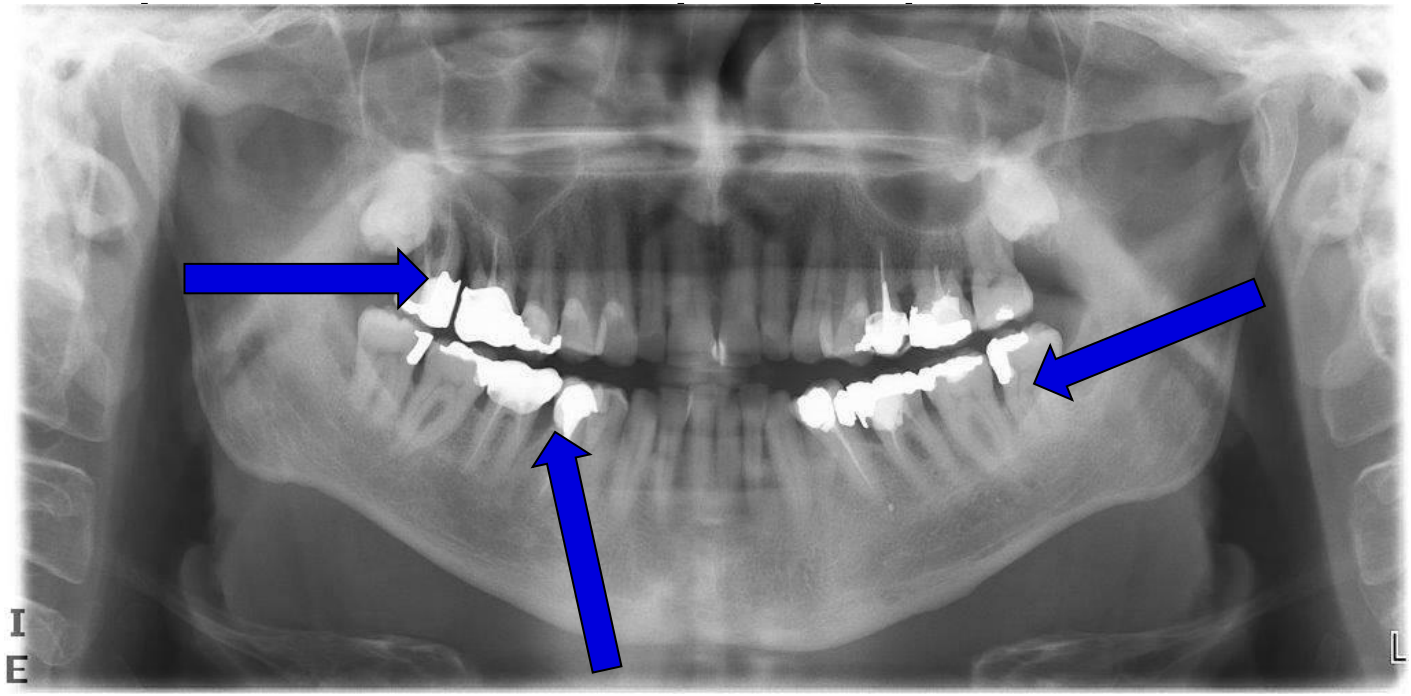
Clinical conseqences of the most common mistakes – the contact point is missing



Retention of food
Plaque accumulation
Inflammation
Bone resorption
Periodontal pocket

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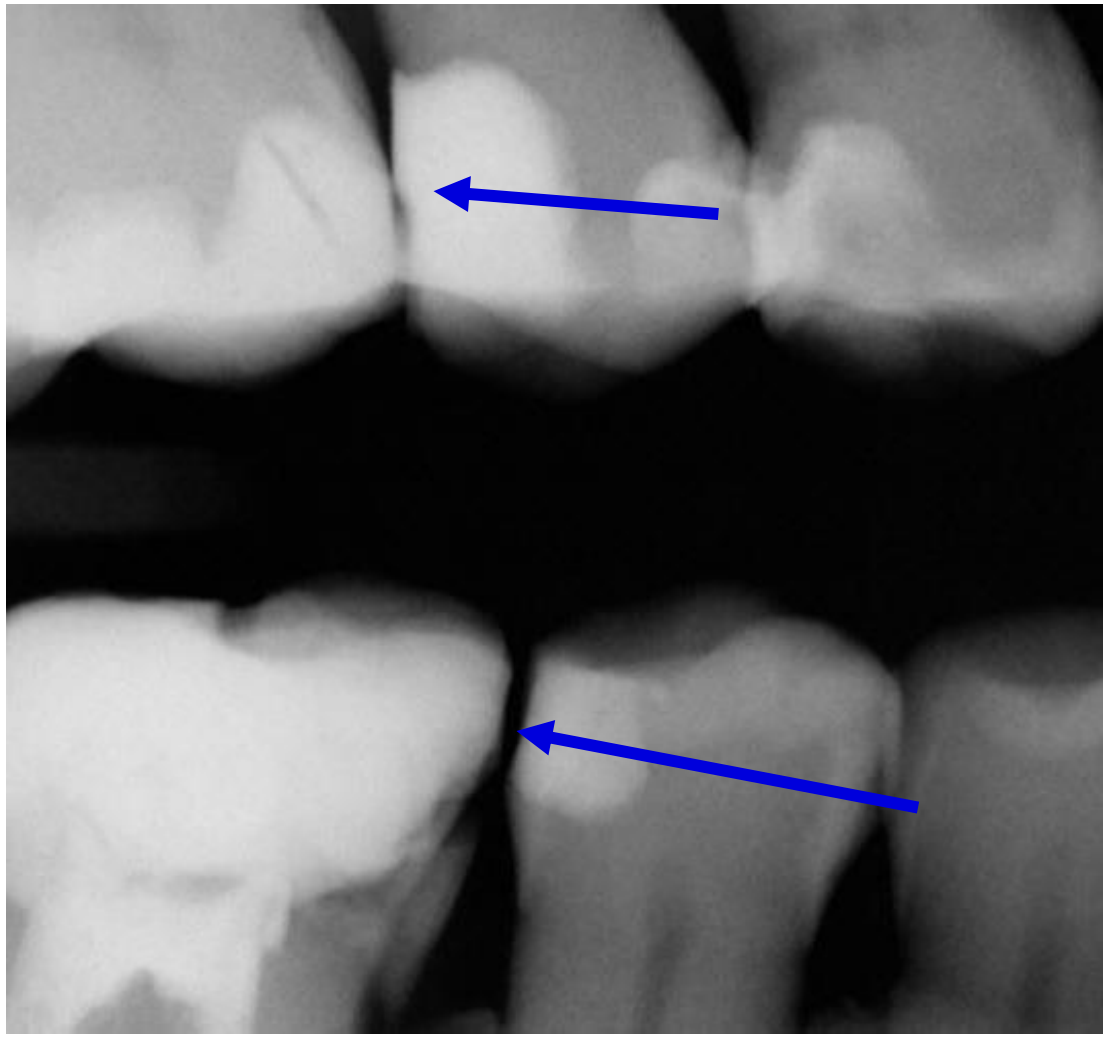
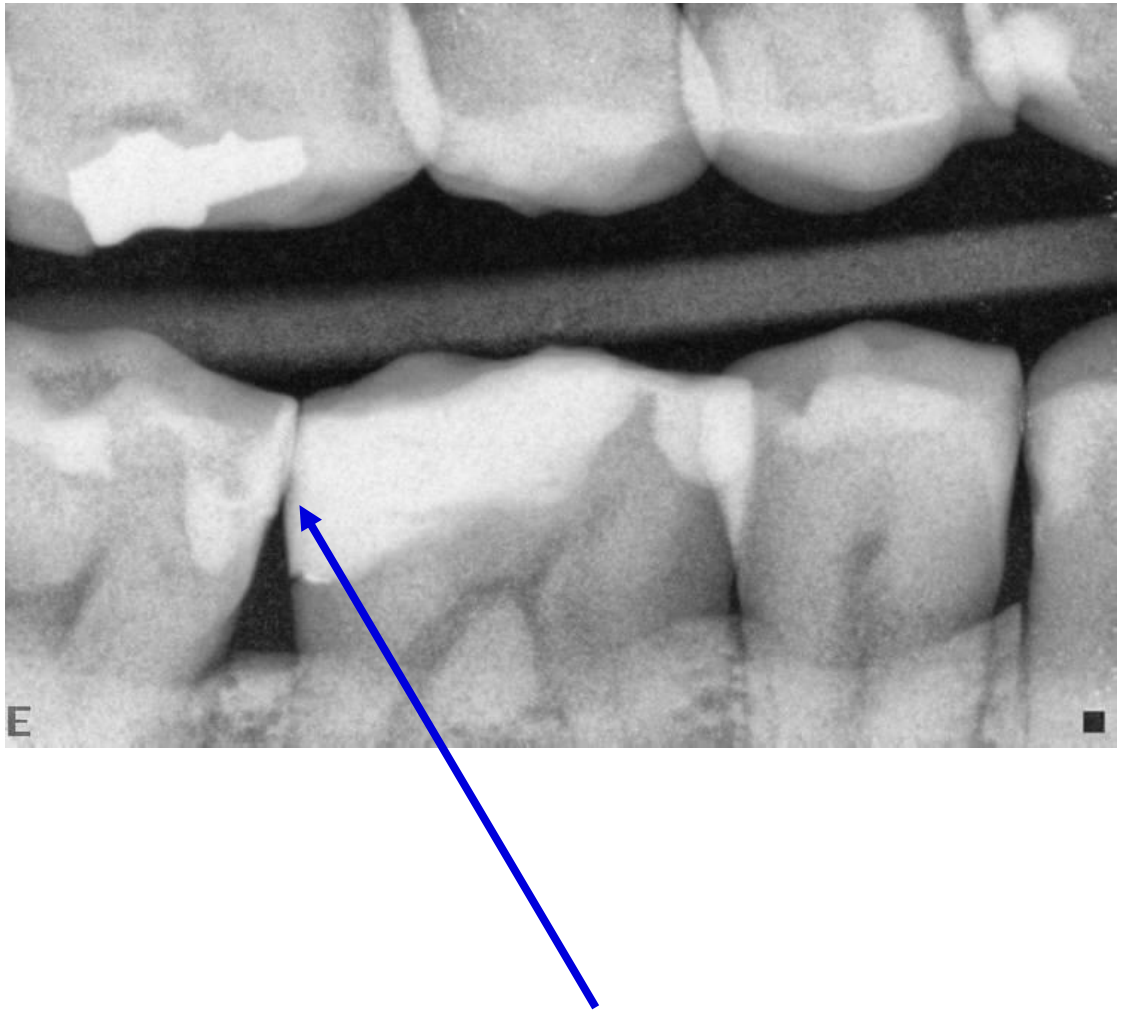
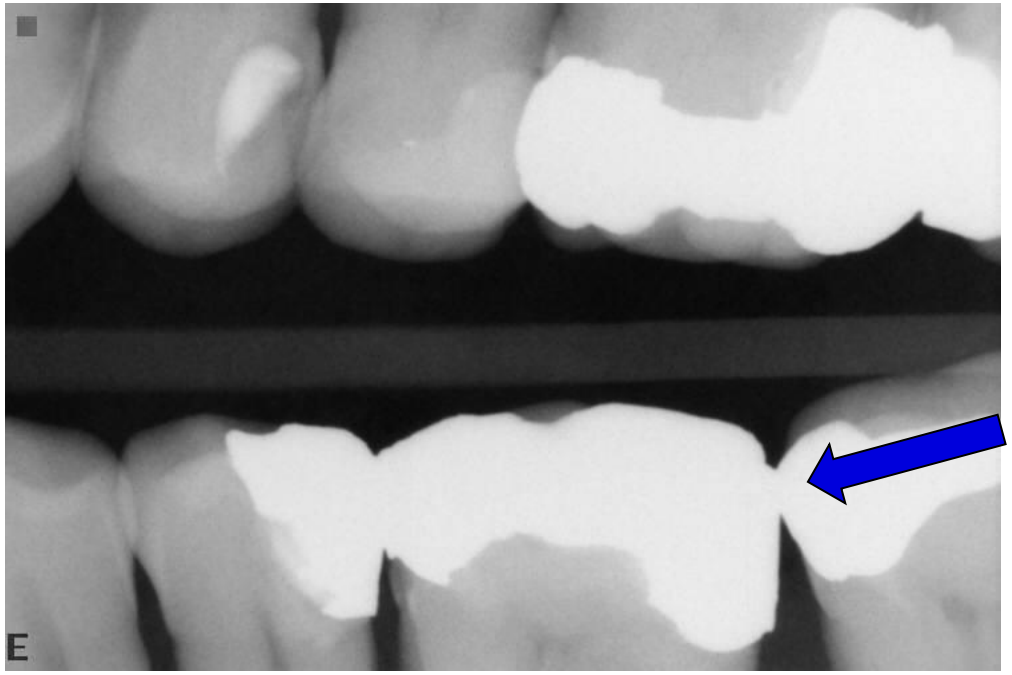




Bad contour, overhang



Contact area too narrow

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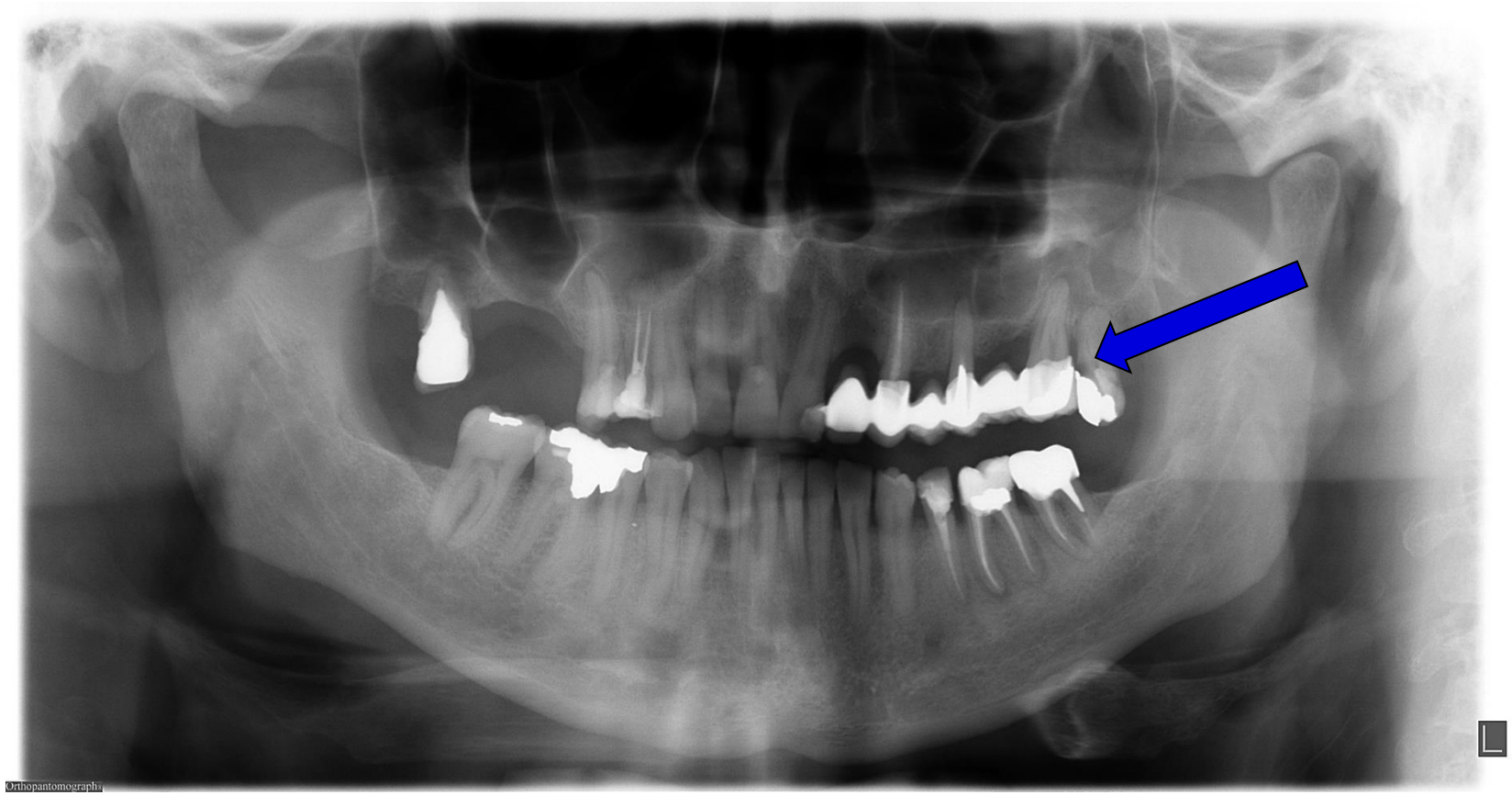
Clinical conseqences of the most common mistakes – the overhang



Retention of food
Plaque accumulation
Inflammation
Bone resorption
Periodontal pocket
Mechanic irrtiation
Secondary caries

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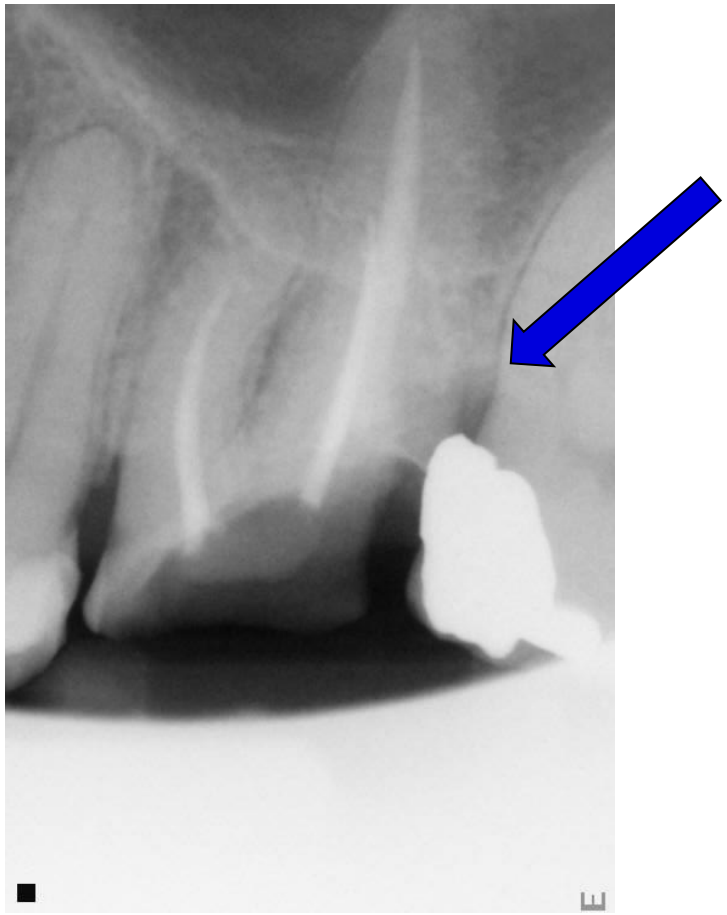

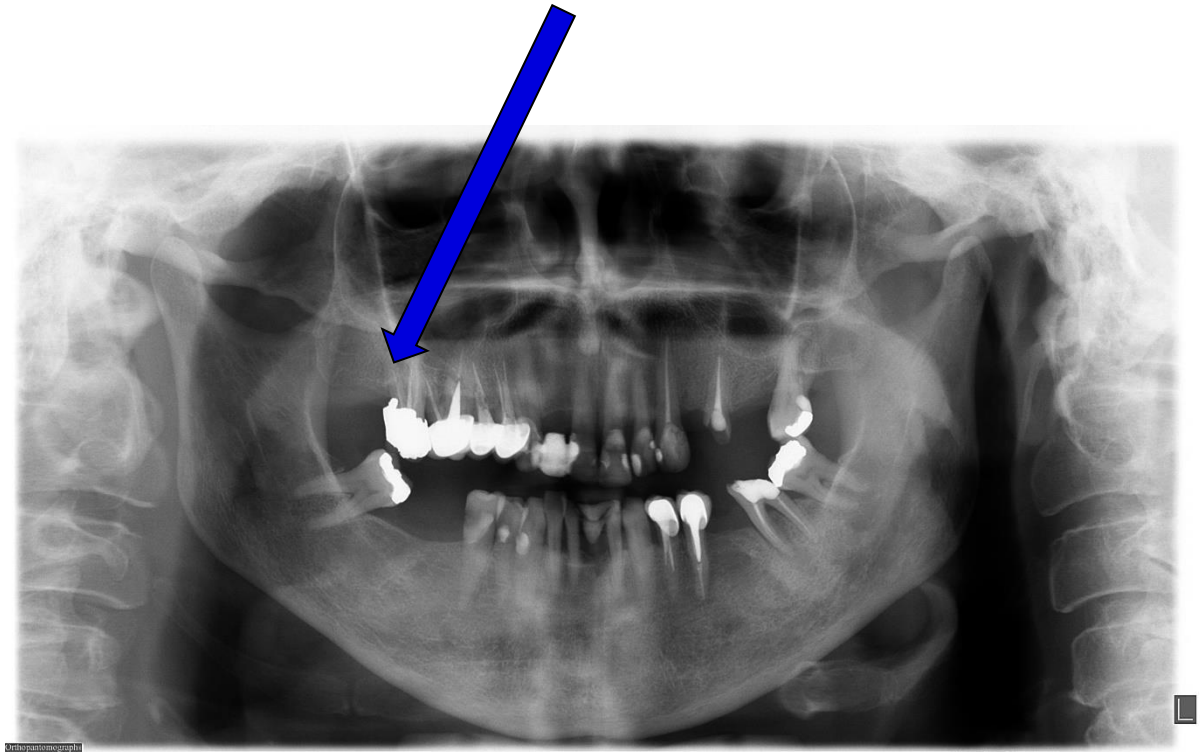

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Clinical conseqences of the the other mistakes – trauma

Separation ring

Matrix band

Preparation instruments

Wedges

Necrotizing agent – necrosis of papilla od bone.

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Restorative dentistry I.
5 th lecture

1. Management of deep caries

Deep caries – D4

- Caries pulpae proxima

- Caries ad pulpam penetrans

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Caries pulpae proxima

- Dentine between the caries lesion and dental pulp
- No symptoms
- Indirect pulp therapy: indirect pulp capping

Calcium hydroxide cement, premanent filling.

Caries ad pulpam penetrans

- No symptoms

- Symtomatic (pulpitis?)

Caries ad pulpam penetrans

– No symptoms

Vitaliy +:

1. Indirect pulp capping (intermittent excavation)
2. Pulpotomy (aseptic approach, rubber dam)

Caries ad pulpam penetrans

– Symptoms

Vitaliy +:

1. Pulpotomy (aseptic approach, rubber dam)

- Partial
- Coronal
- Deep

Caries ad pulpam penetrans

- No symptoms

Vitality - :

Root canal treatment

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Preparation techniques and their clinical consequences – preparation trauma

Preparation

Power driven

- Rotary
- Alternative

Hand

- Excavator
- Chisel

Preparation techniques

- Pressure – max hand preparation – risk of excavators
- Vibrations
- Heat – due to friction

    - increases with rpm (turbine max)

Consequences in enamel, dentin, cementum

- Rotary preparation with high speed handpiece, turbine:

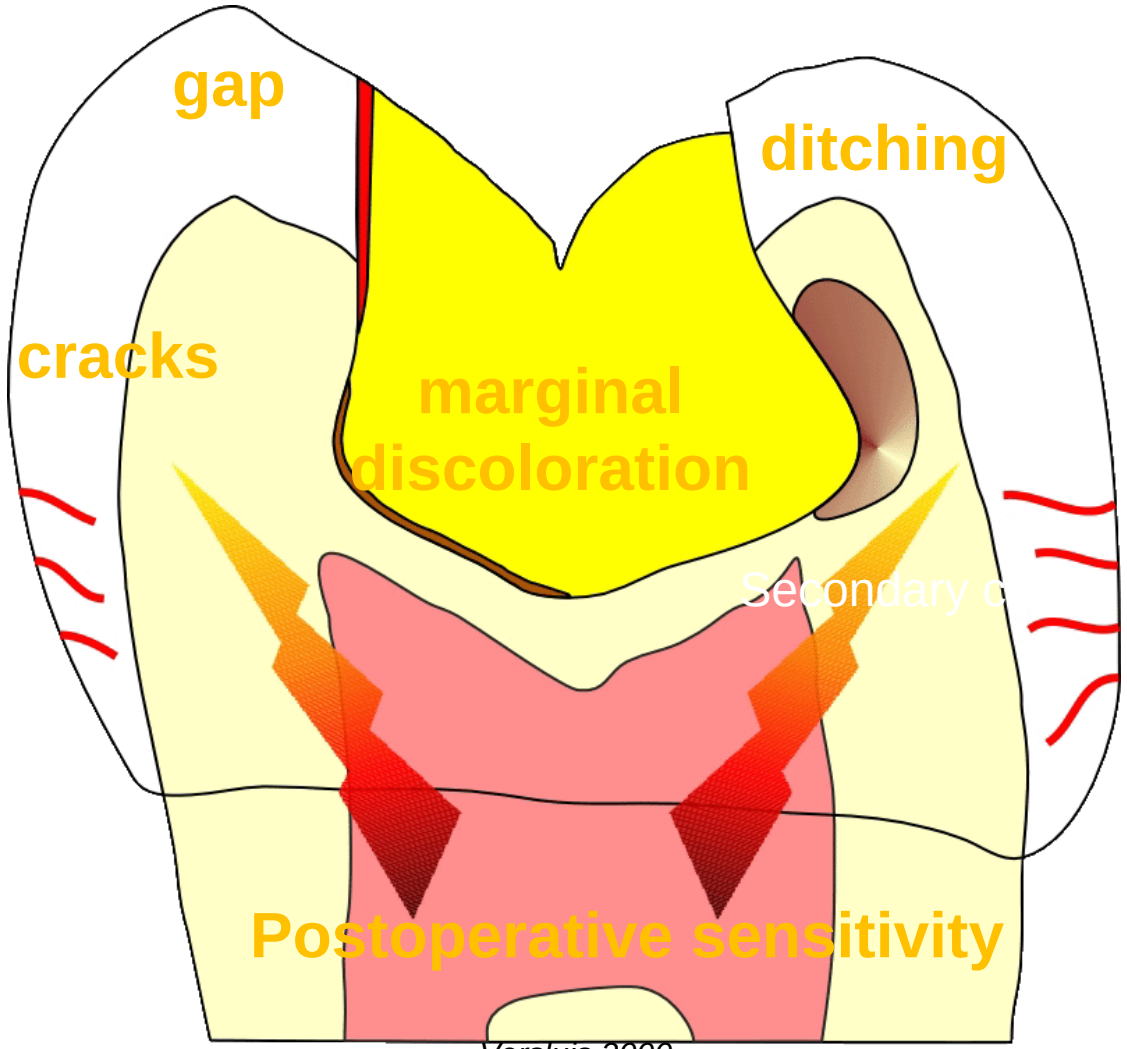
- Enamel :shattered borders, cracs. Prevention: gentle interrupted preparation, water cooling.
- Dentine: burnt areas, denaturation of protein.
- Dental pulp: aspiration of odontoblasts into dentine tubules, hyperaemia, infiltration, inflammation.

Postoperative sensitivity

- Pain occuring after the placement of composite restoration
- Studies have reported the frequency of postoperativr sensitivity to be low 5% and high 30%

Postoperative sensitivity - reasons

- Polymerization shrinkage
- Marginal gap
- Suboptimal adhesion
- Inadequate polymerization
- Unvfavourable C- factor and residual dentin thickness
- Pre-existing tooth relatefd factors, such as cracks



Versluis 2000

Postoperative sensitivity prevention

- Correct indication
- Excellent isolation
- Careful investigation using magnification and illumination
- Proper etching
- Proper drying
- Proper curing

Postoperative sensitivity strategy

- Perfect investigation
  - Check occlusion
  - Check margins (sealing?)
  - Check tooth structure

If some reason is found: remove it

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Postoperative sensitivity strategy

- If the symptoms are getting worse
- remove the filling, check the tooth structure carefully,
- use calcium hydroxide with the temporary filling material or bioactive materiál (Biodentine),
- Make a new filling.

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Importance of x-ray in restorative dentistry

Radiography

– Roentgen tube – x- ray tube:

Cathode – anode – tension

Catode (heated) - electrons –against anode – brake - x ray

radiation originates

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Radiography

– Imaging method completing clinical examination of patients

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Radiography

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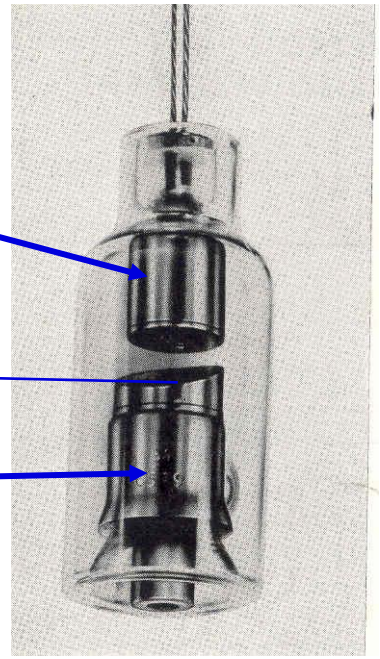
Rigid CCD Digital Sensor Sirona Dental Systems, LLC	Digital Phosphor Plate Air Technique, Inc.	F-Speed Dental Film Kodak Dental Systems

Roentgen tube
X ray tube

Cathode
wolfram
(tungsten) filament inside
(heated – brought to white heat)

Focus – made of wolfram

Anode



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Extraoral and intraoral radiography

– Extraoral:
The film is placed outside of oral cavity
- OPG (orthopantomography)
- Teleradiography
- Special projections of a skull (posteriorly – anteriorly)
- Half axial
- Side projection (TMJ,mandible)
- CT

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Extraoral and intraoral radiography

Intraoral – the film is placed in the oral cavity – a special x-ray apparatus.

- Teeth
- Alveolar bone
- Periodontal space
- Fillings
- Caries
- Level of endodontic treatment

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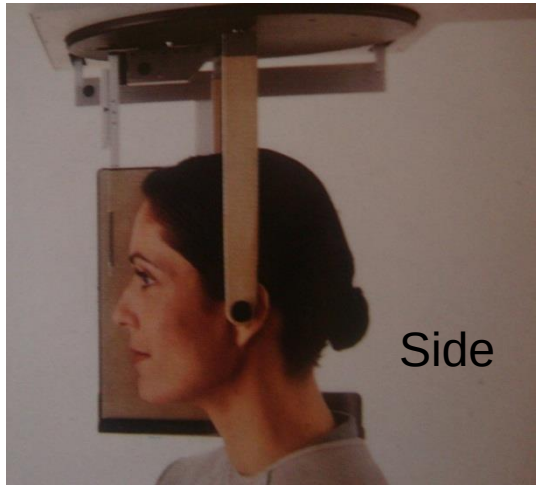
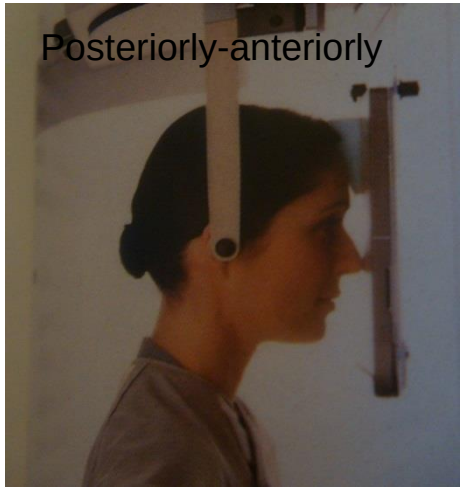
CT

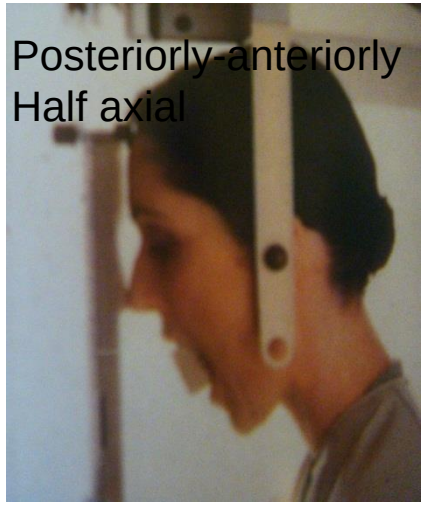
OPG



Side



Posteriorly-anteriorly



Posteriorly-anteriorly
Half axial

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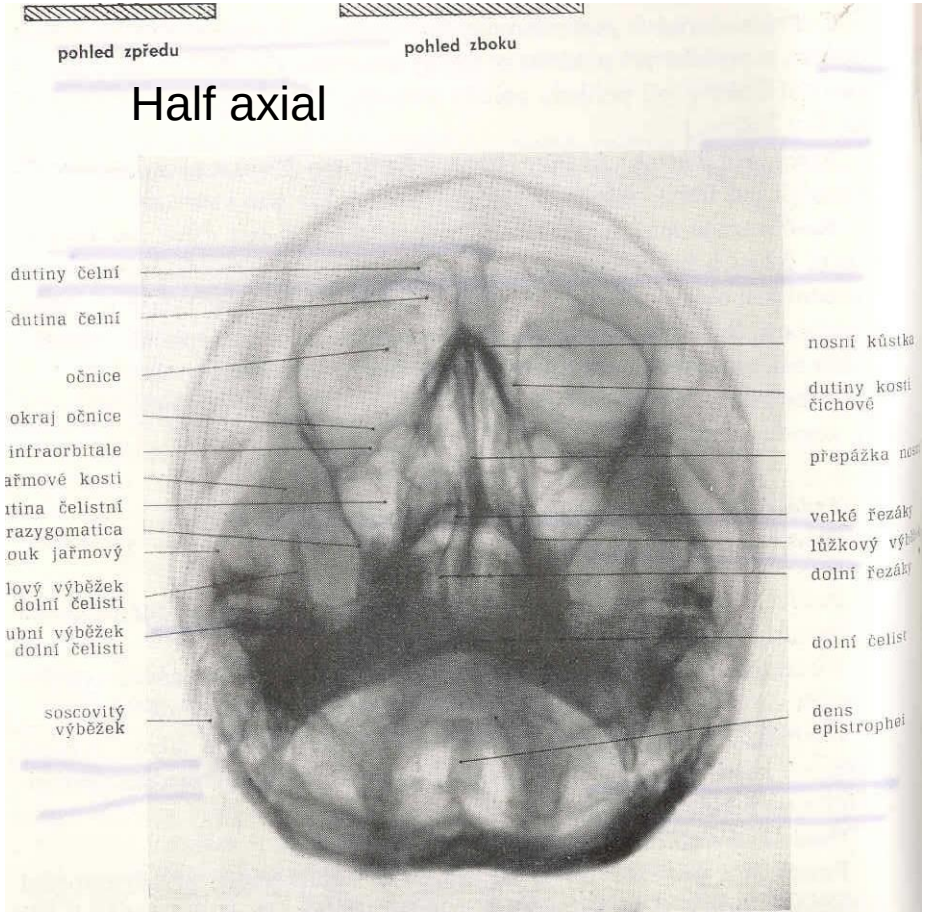
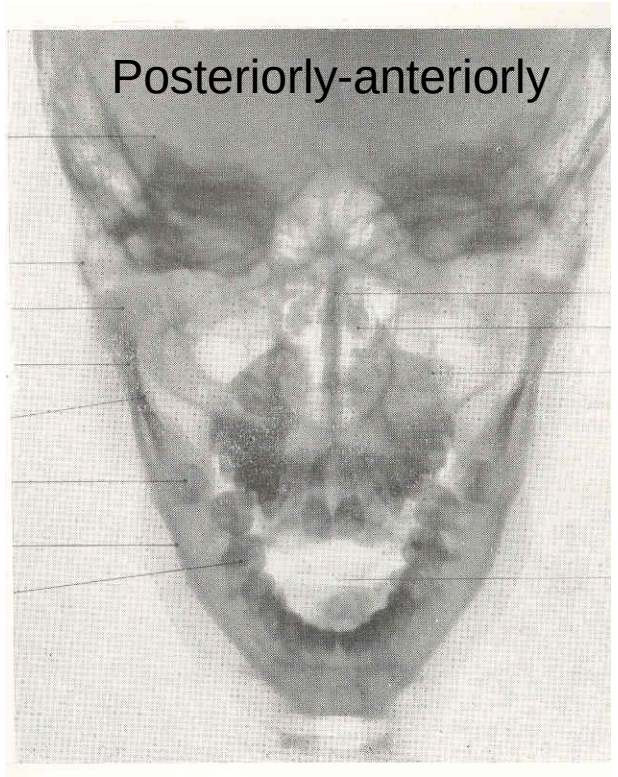

pohled zpředu
pohled zboku
Half axial
dutiny čelní
dutina čelní
očnice
okraj očnice
infraorbitale
ařmové kosti
ıtina čelistní
razygomatica
ouk jařmový
lový výběžek dolní čelisti
ubní výběžek dolní čelisti
soscovitý výběžek
nosní kůstka
dutiny kosti čichové
přepážka nos
velké řezák
lůžkový výb
dolní řezák
dolní čelist
dens epistrophei


Posteriorly-anteriorly

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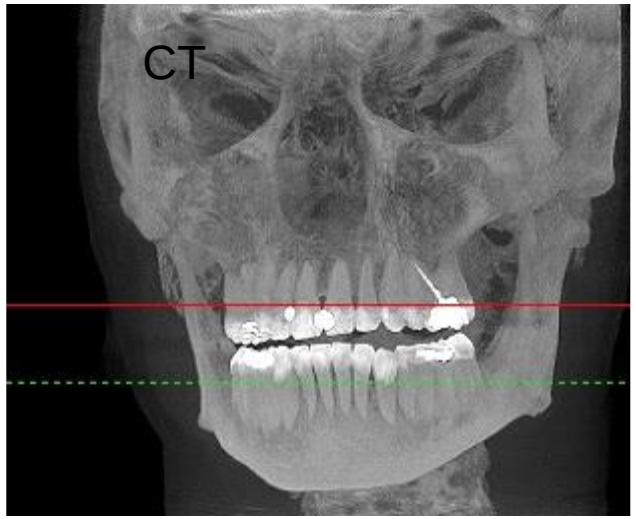

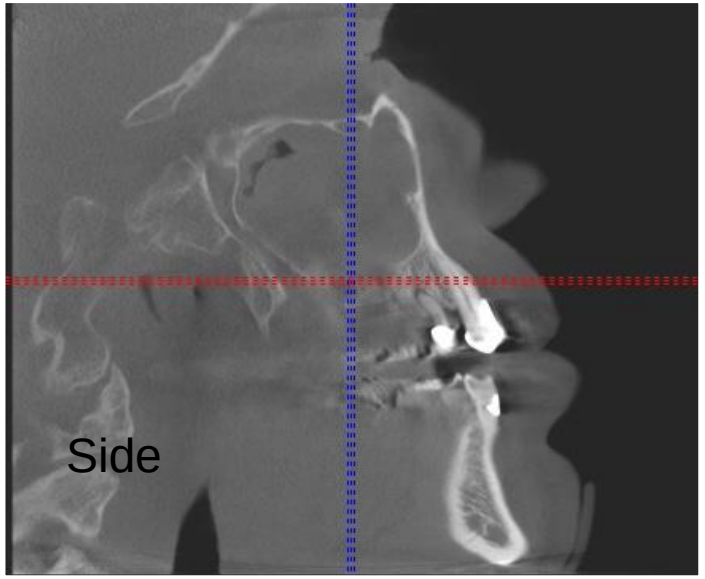

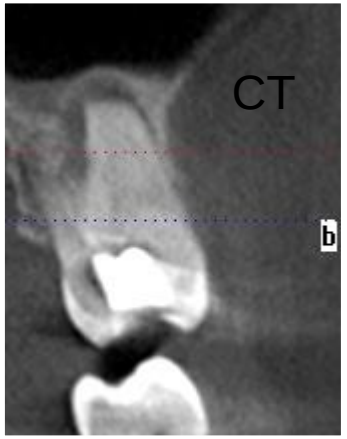

CT, 3D possibility

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Radiography important for the restorative procedures

- Intraoral
- OPG
- CBCT

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Intraoral radiography

Film or recepotor placed in oral cavity
Special apparatus

- Teeth
- Alveolar bone
- Periodontal space
- Fillings
- Caries
- Impacted teeth
- Level of endodontic treatment

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Position of the tube

- In vertical plane
- In horizontal plane

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In vertical plane

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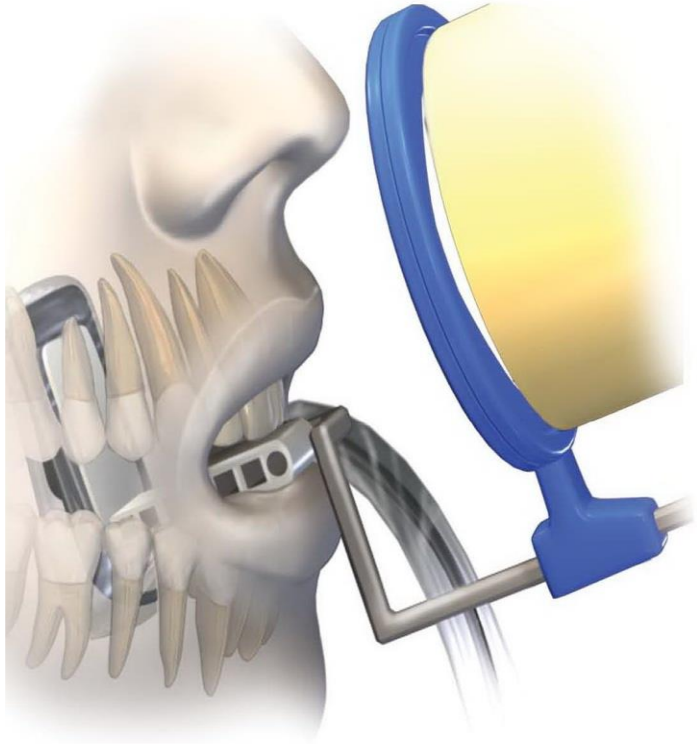

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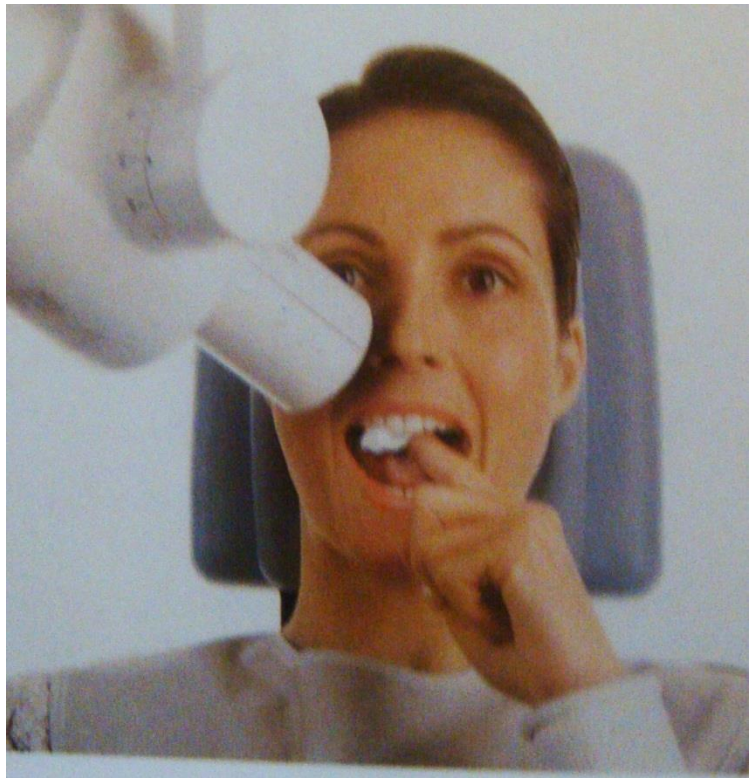
If paralleling technique is not possible use the bisecting angle technique



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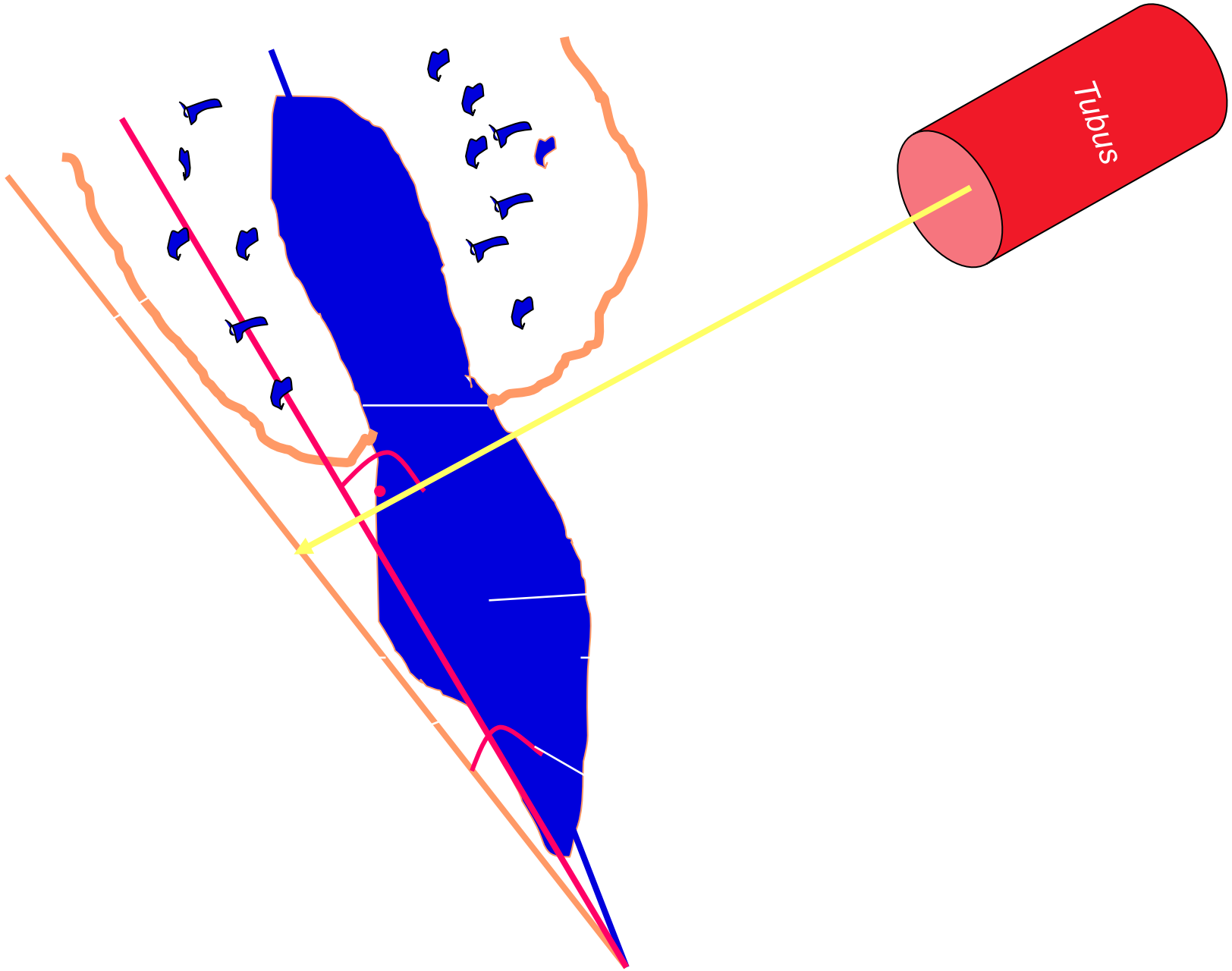

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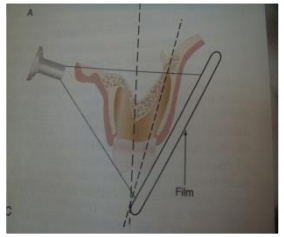
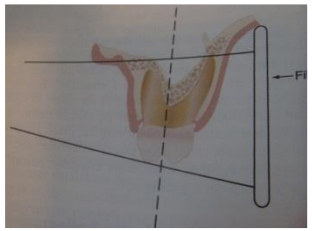
Hypometric and hypermetric picture

Central beam goes perpendiculary on the tooth



Hypermetric picture – the picture is bigger

– central beam goes perpendiculary to the film paprsek goes perpendiculary to the



The tubus can have various position

- Apical projection: the central beam goes through the apex area

- Periodontal projection: the central beam goes through the uper third of the root

- Coronal projection: the central beam goes through the crown.

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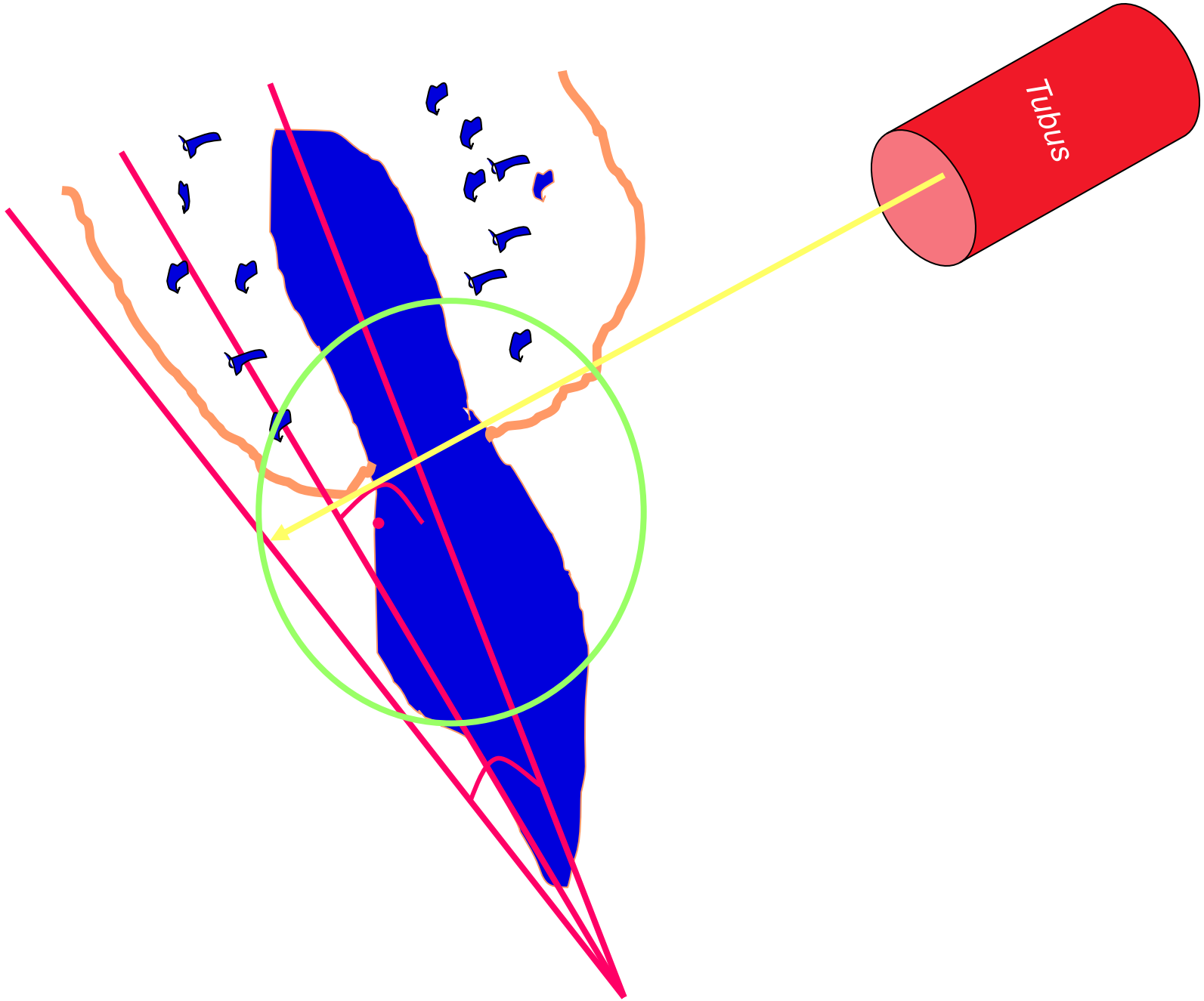

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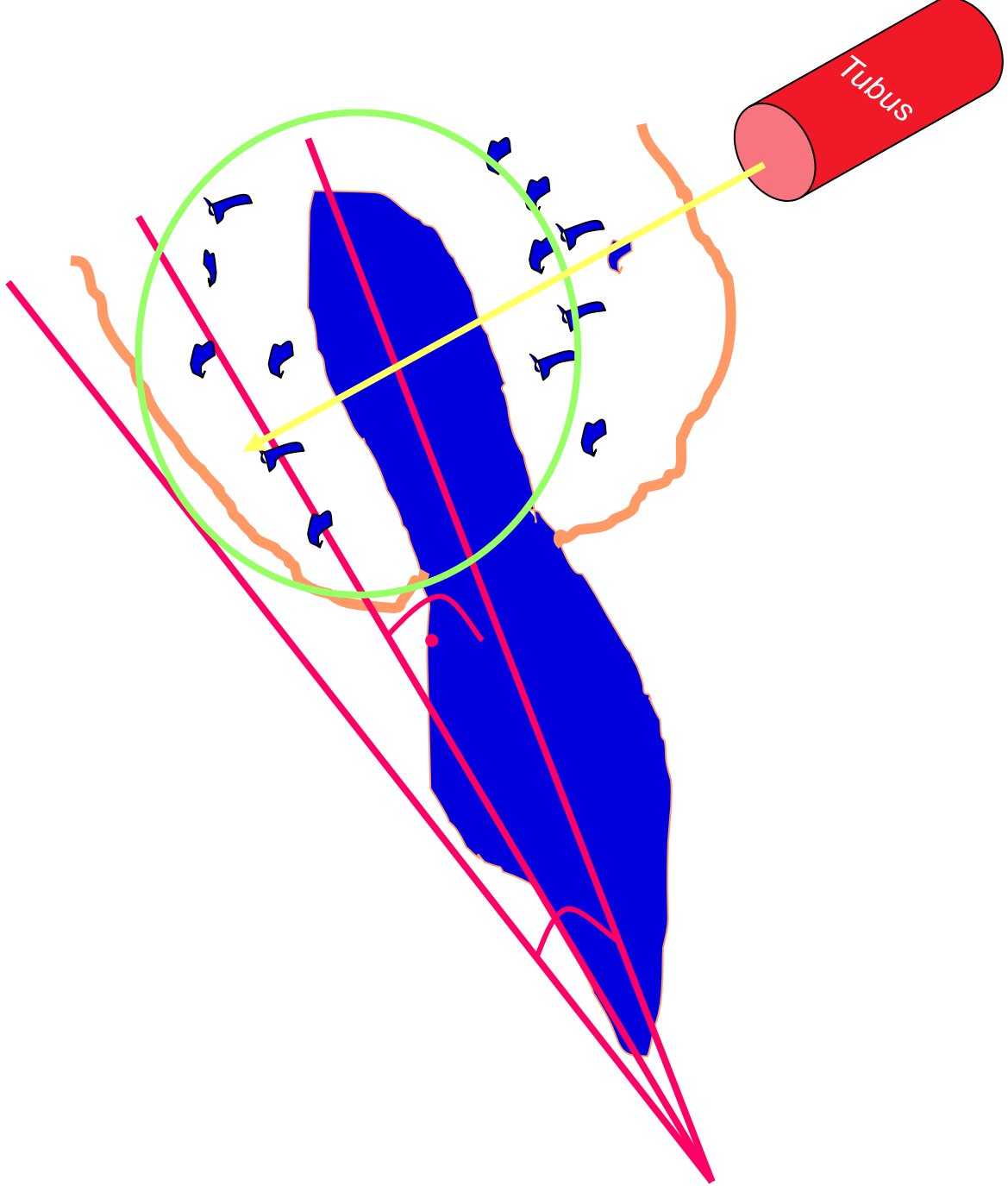

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In horizontal plane

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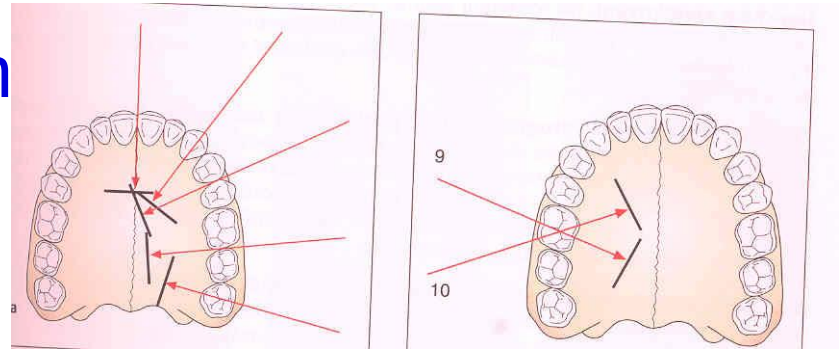
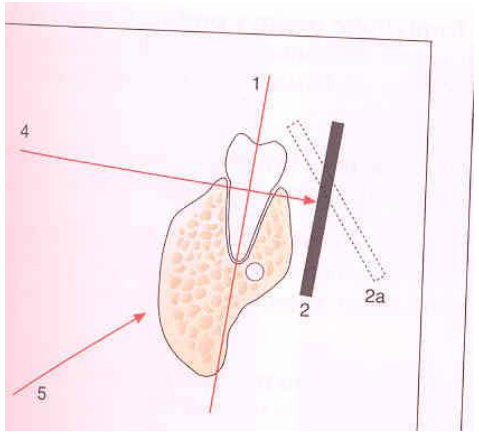
Orthoradial and excentric projection

- Orthoradial – the central beam goes parallel to interdental septa
- Excentric– the central beam goes from distal or mesial side. (Useful for endodontics or impacted teeth esp. can





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Bitewing

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Principle of imaging

– Irradiation is absorbed in various materials

esp. in hard tissues. Accc to amount of absorbed irradiation

radioopacity or radiolucency can be seen.

Radiolucency – dark

Radioopacity - white

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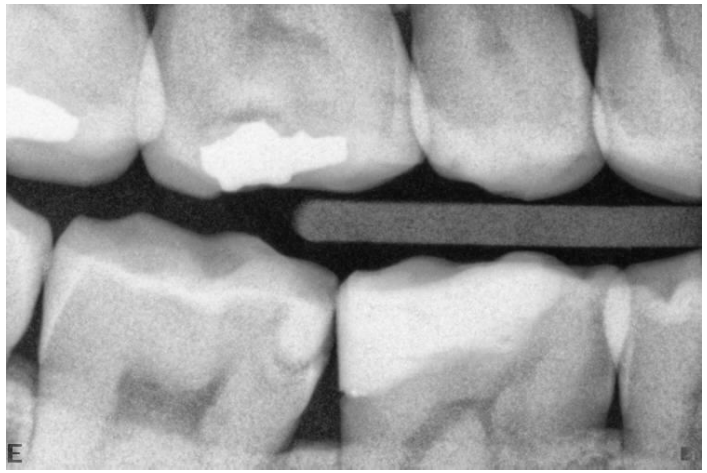

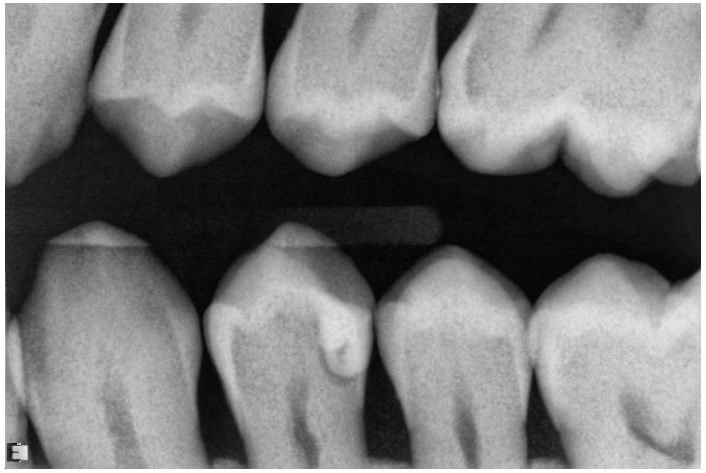

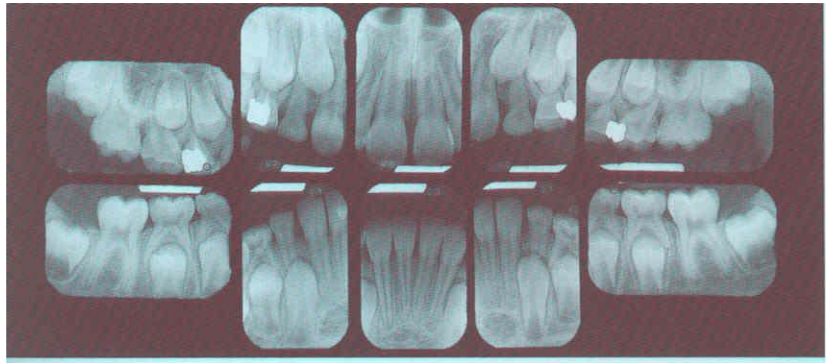

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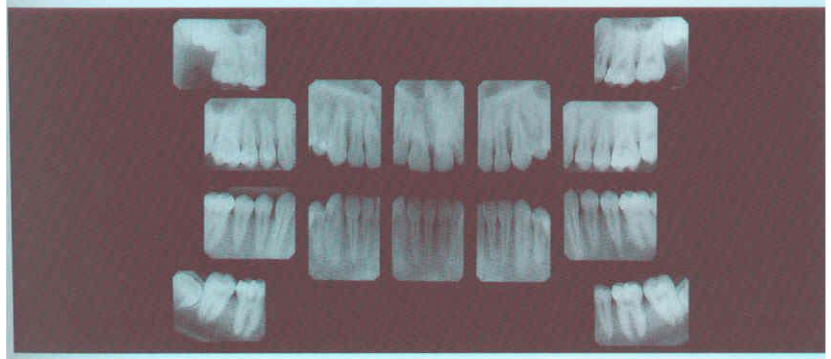

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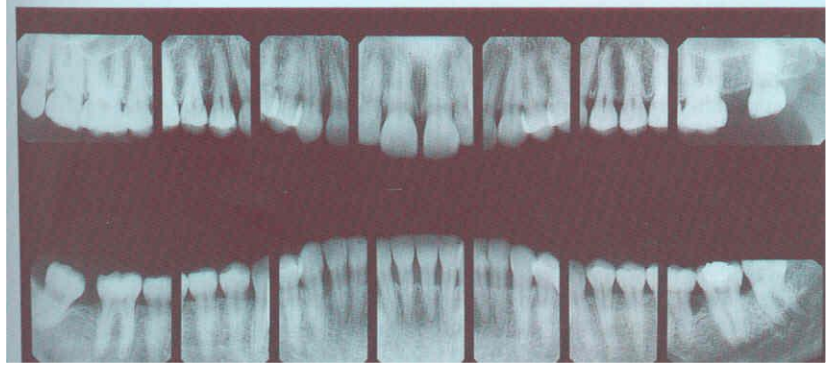

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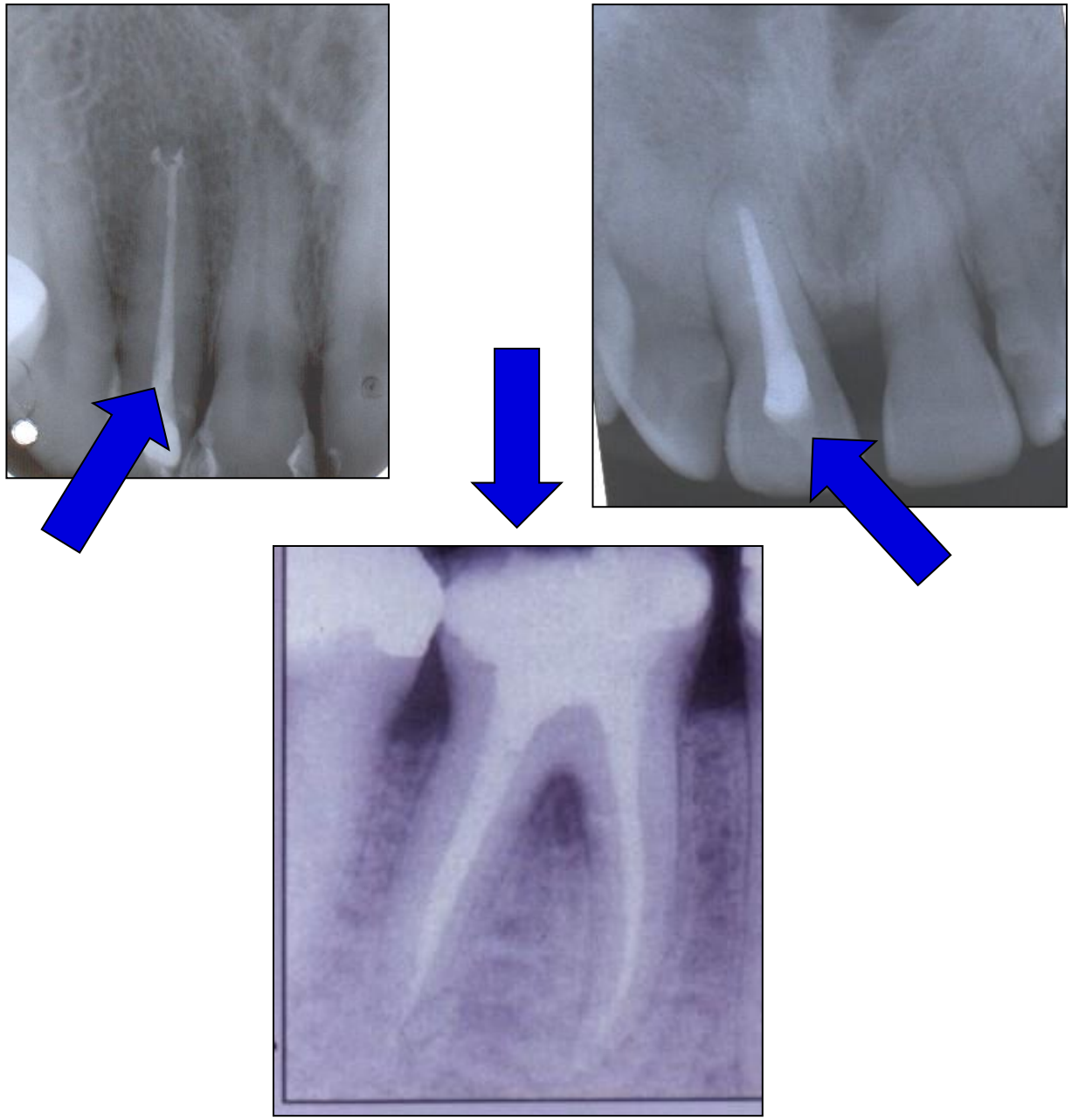

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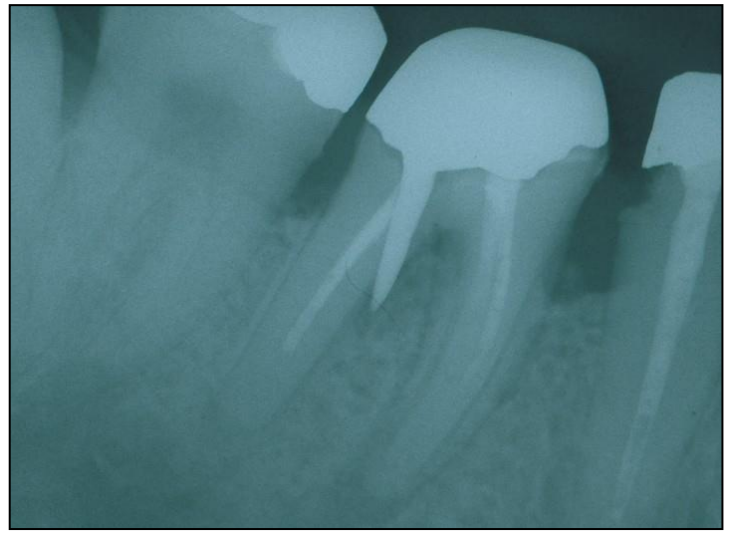

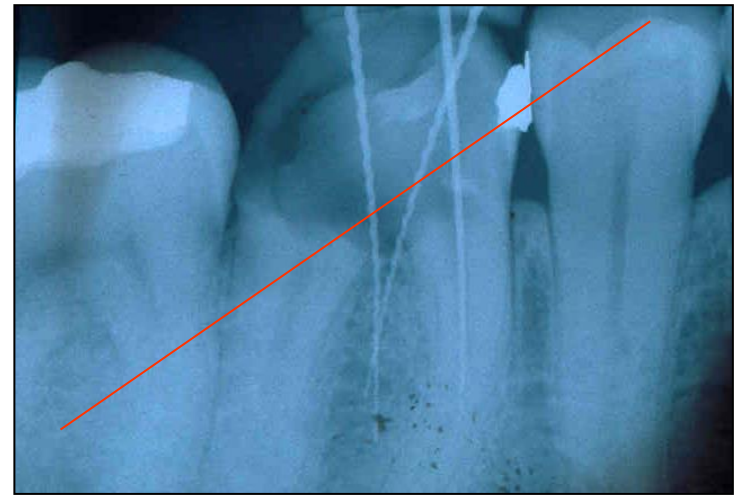

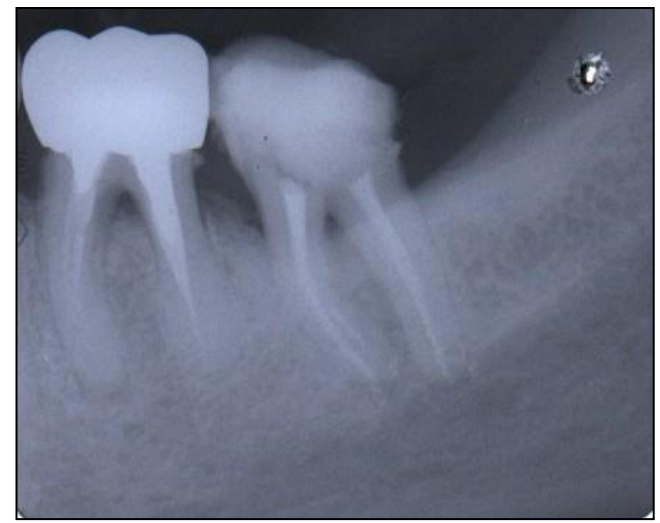

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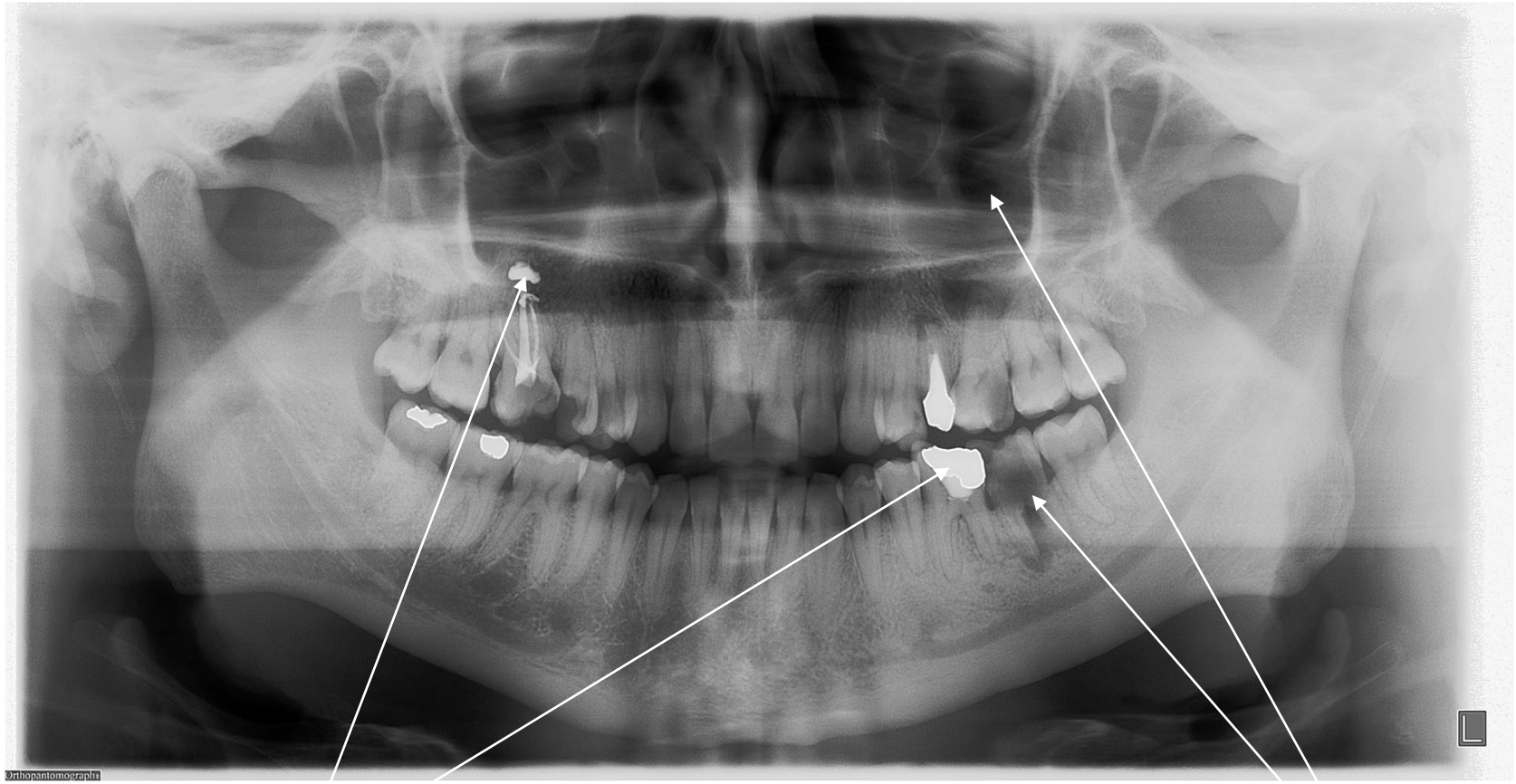

radioopacity

radiolucency

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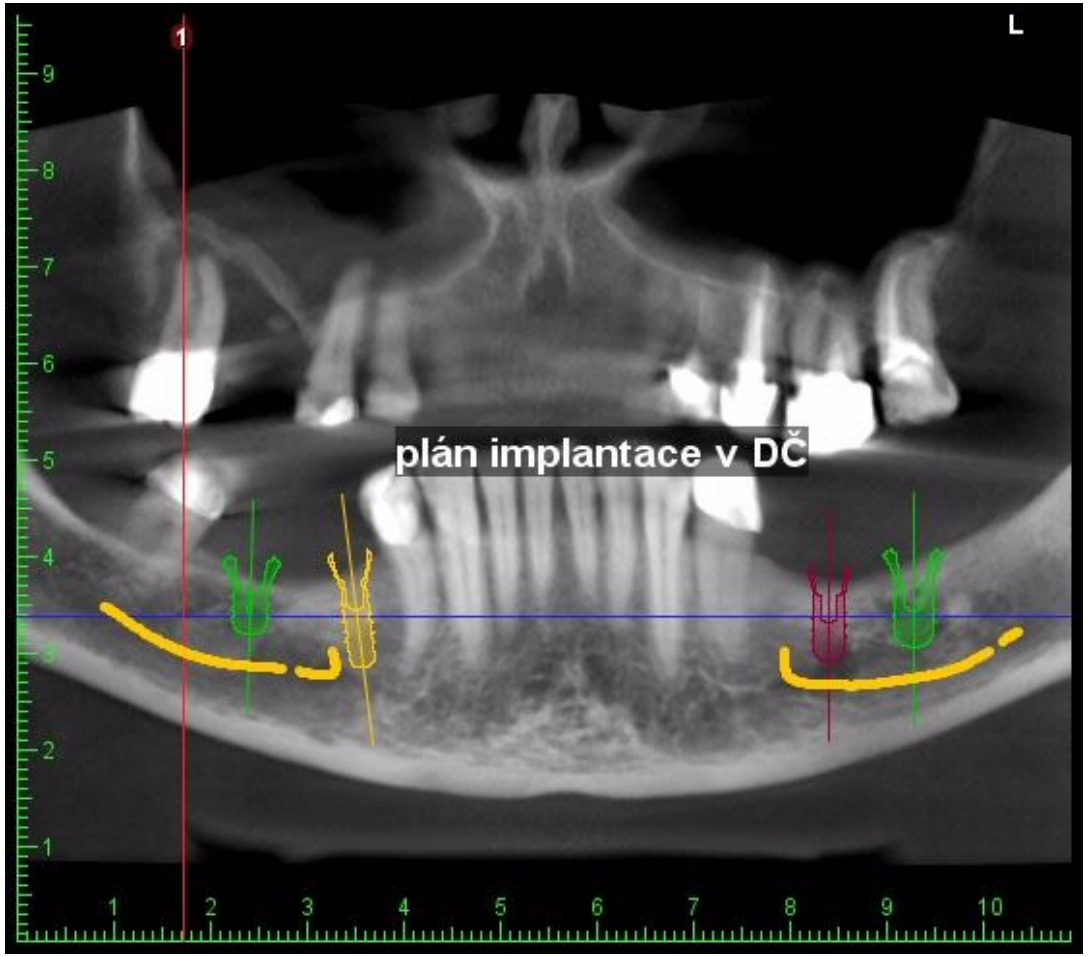
CBCT



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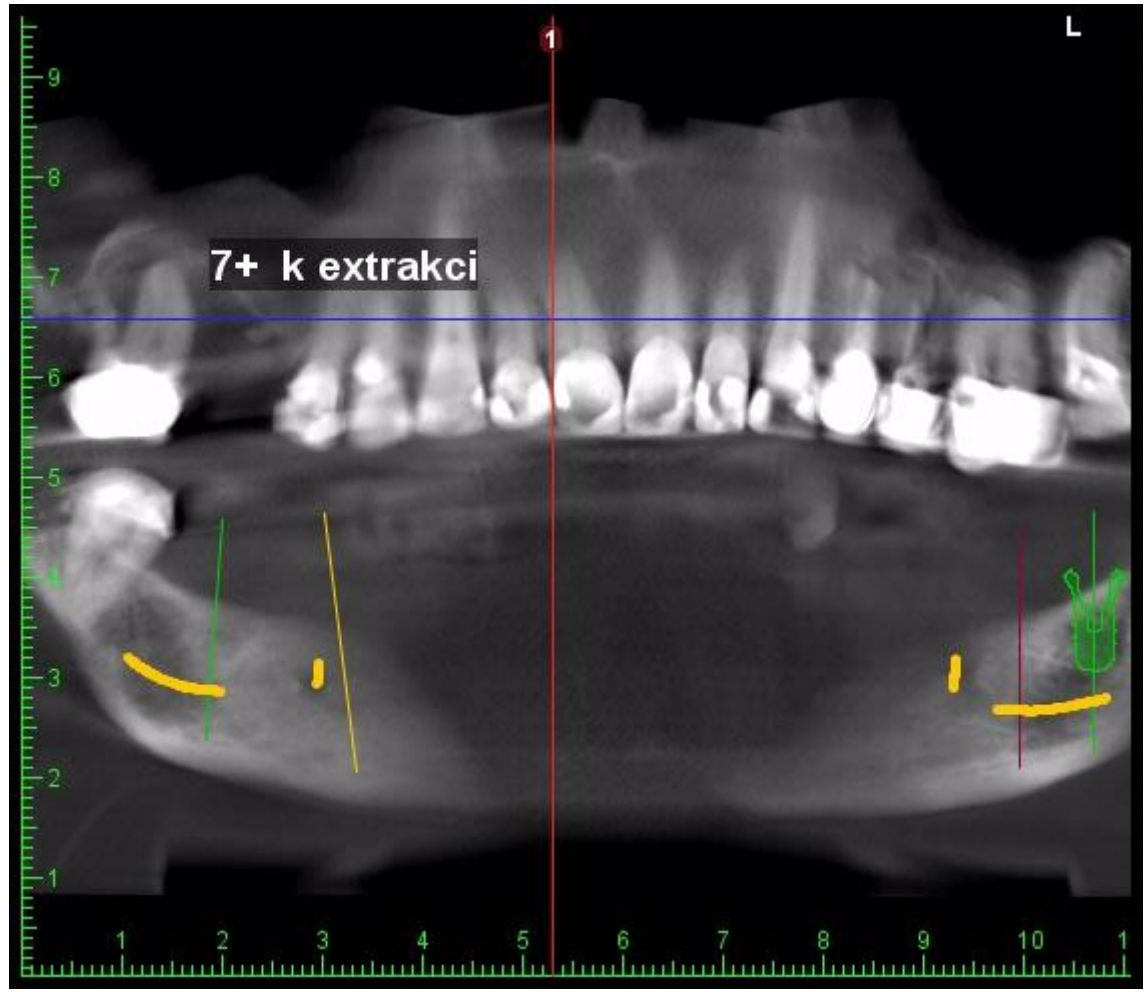
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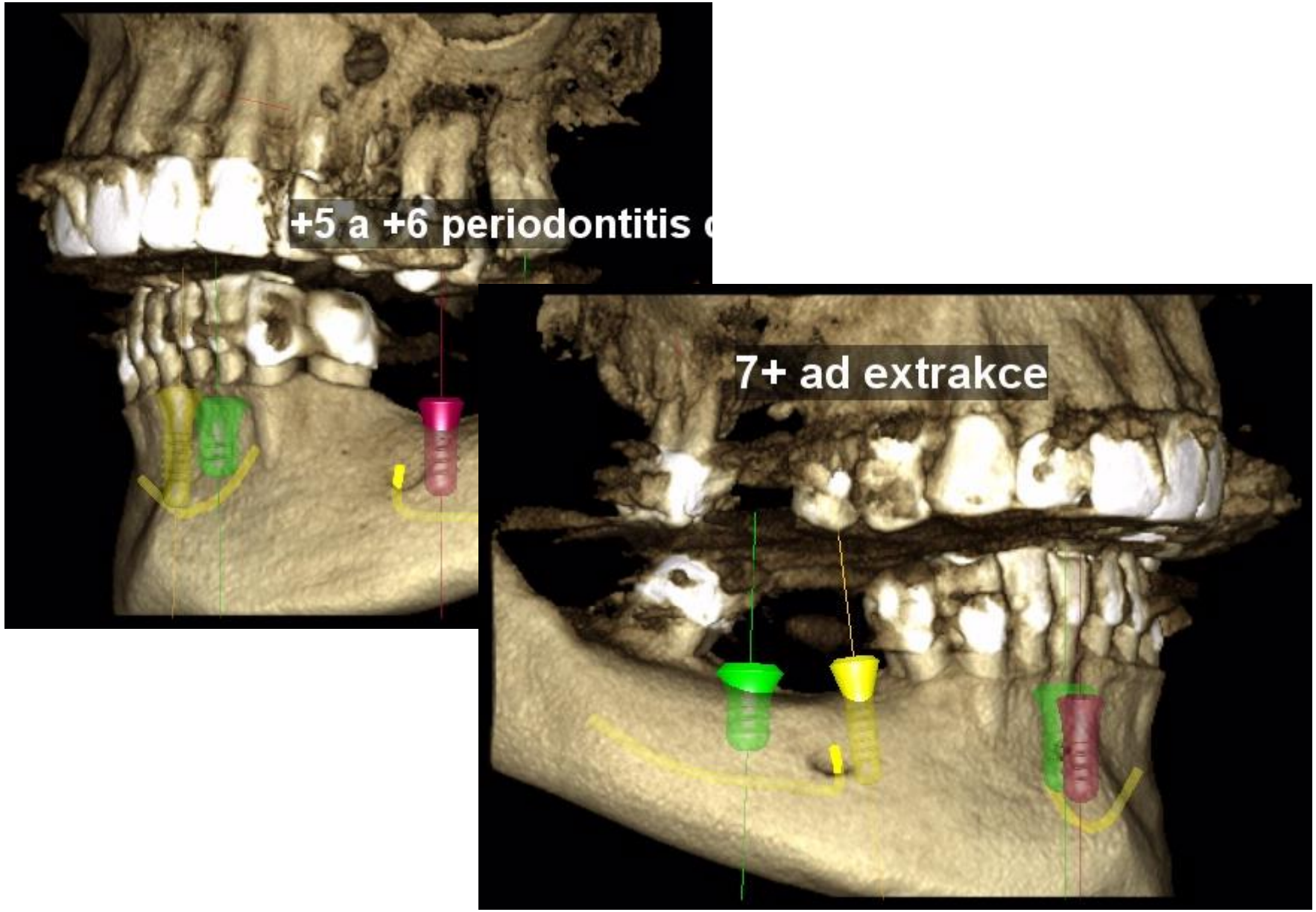
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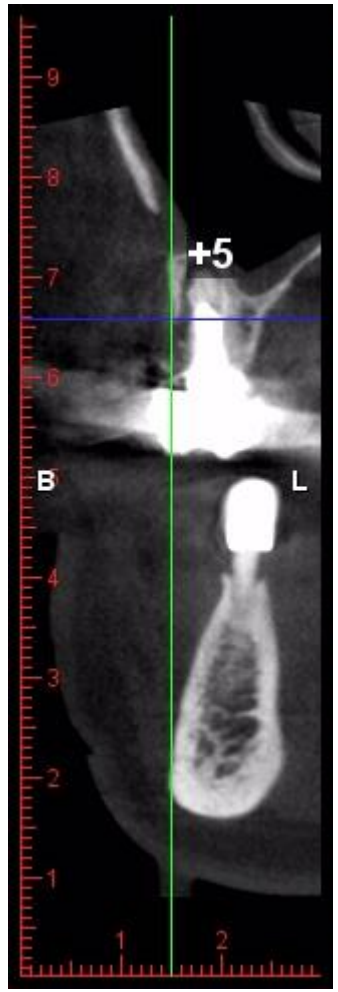
+5
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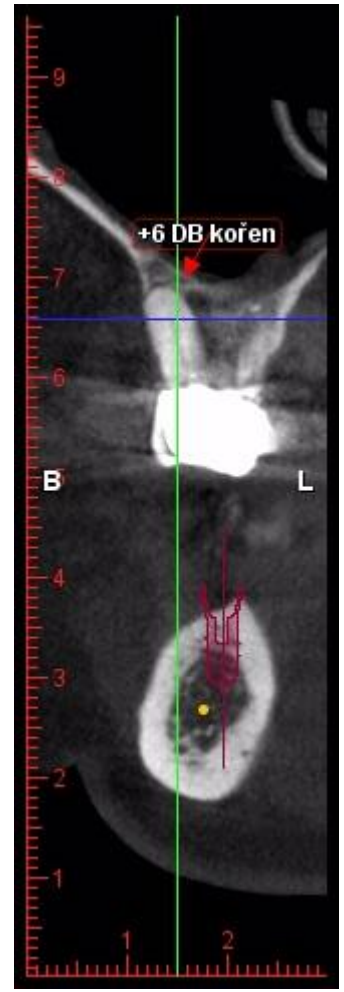
+6 DB kořen
B
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b

Bite Wing

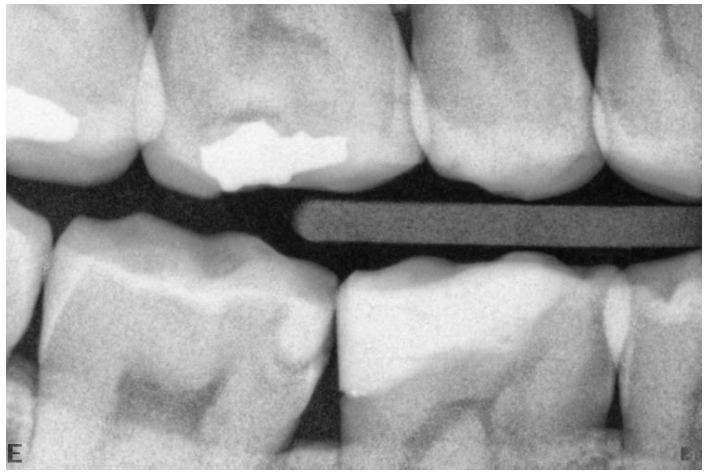
The sensor is situated in a special holder on the oral side of teeth,

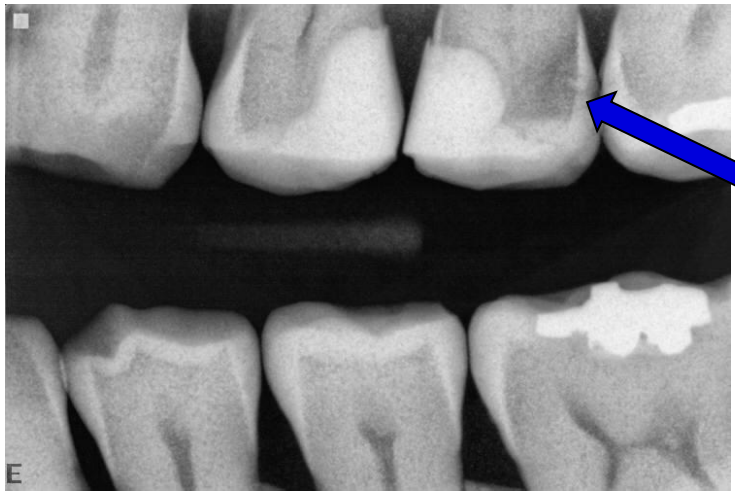
the patient bites to the plate.

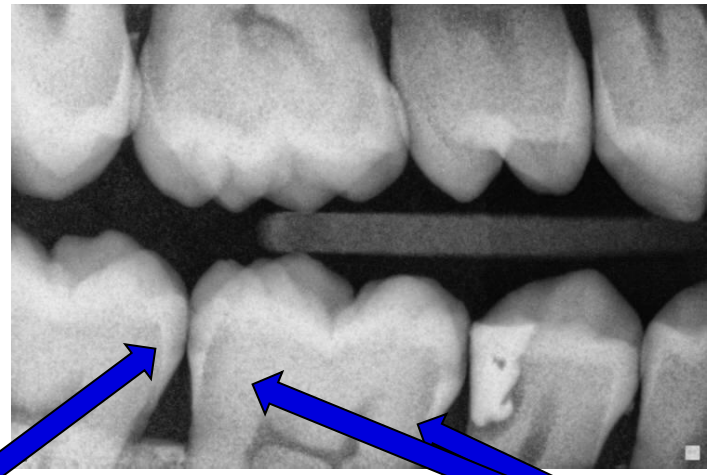
The central beam goes parallel to interdental septa

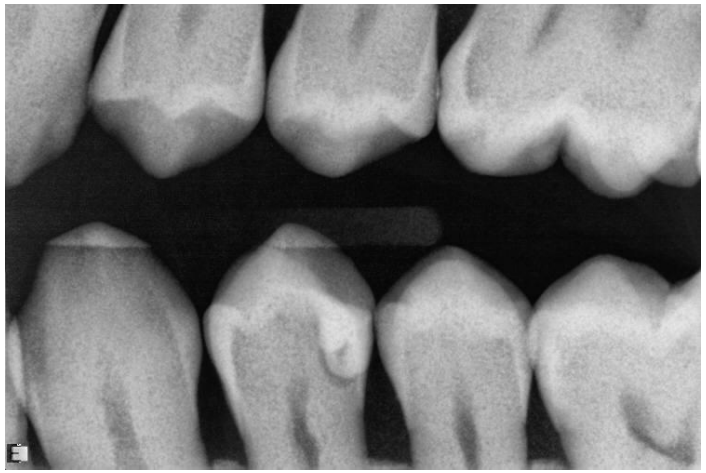
Maxillary and mandibulary premolars and molars are seen.

2 -4 radiograms are needed acc.to the size of the sensor







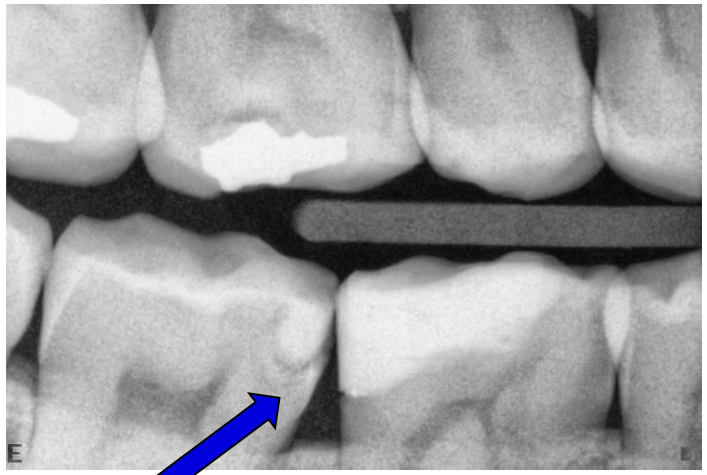


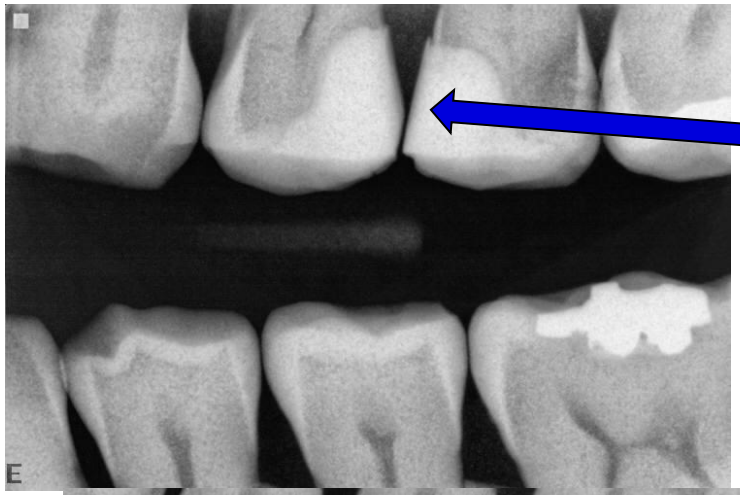
D4

D1

D3

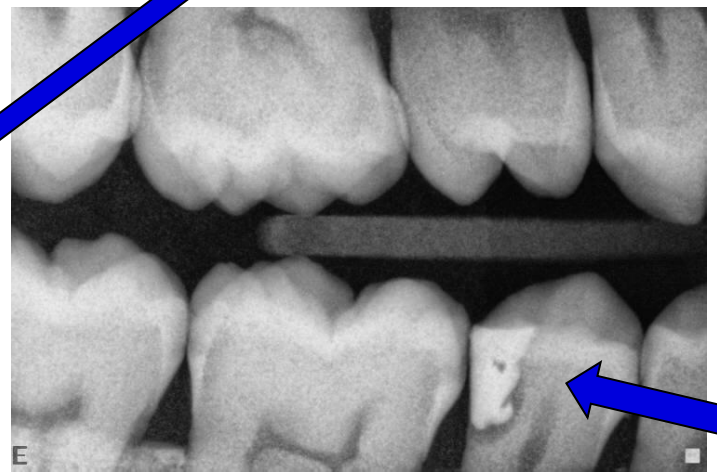
Detection of dental caries

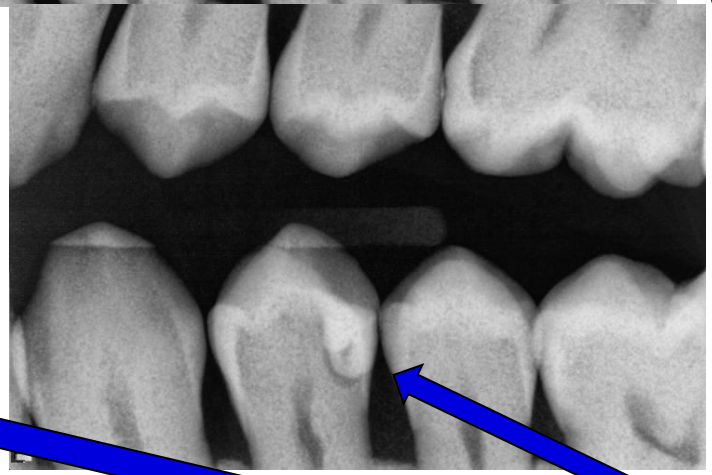




Bad contour
of the filling

Investigation
of quality of fillings

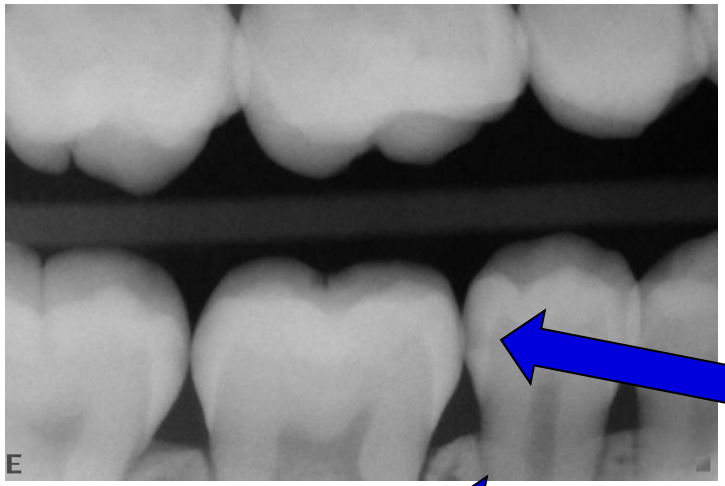




Gap,
Bad
contact
point

Gap,
inhomogenity

D3



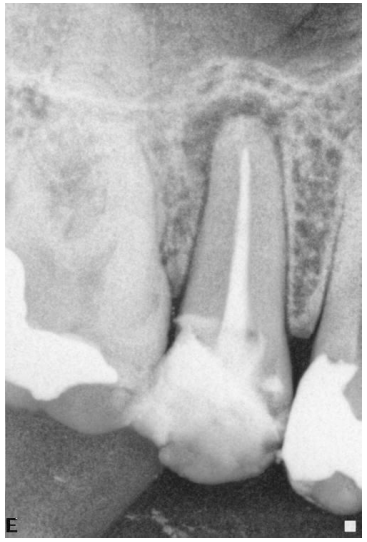
D2

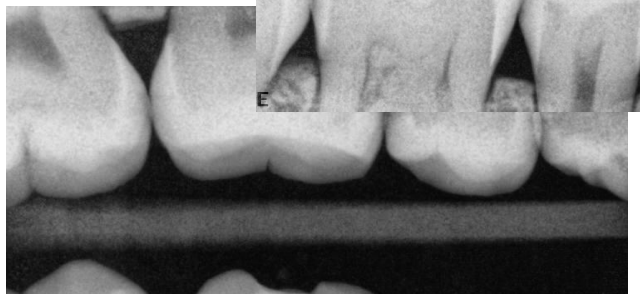
Alveolar bone

MUNI MED

Excentric projection

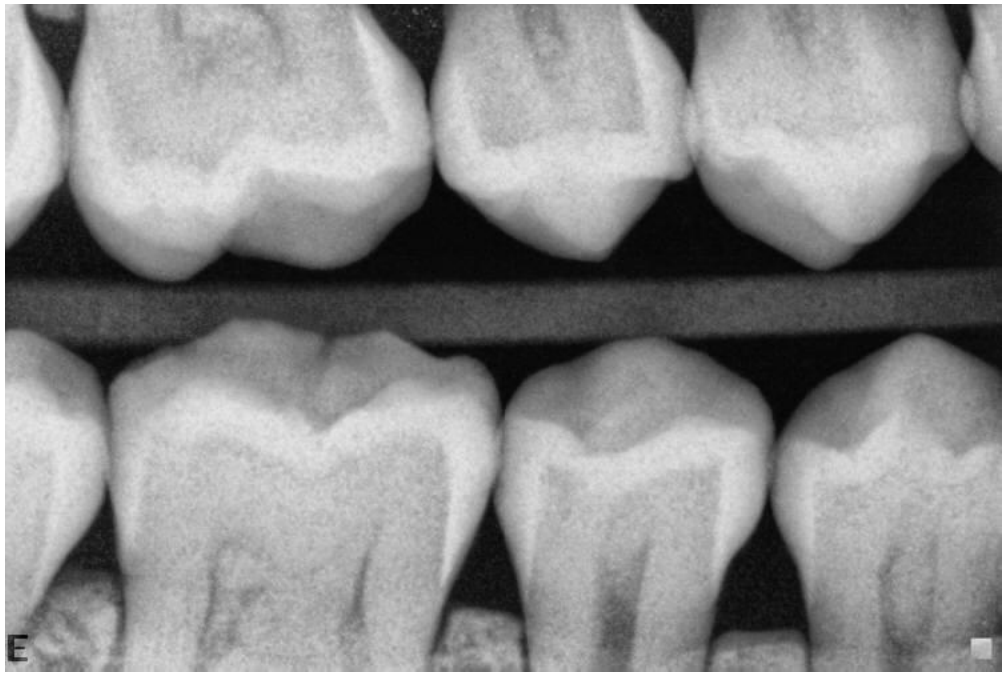
Orthoradial projection,
Bis. Angle, apical position

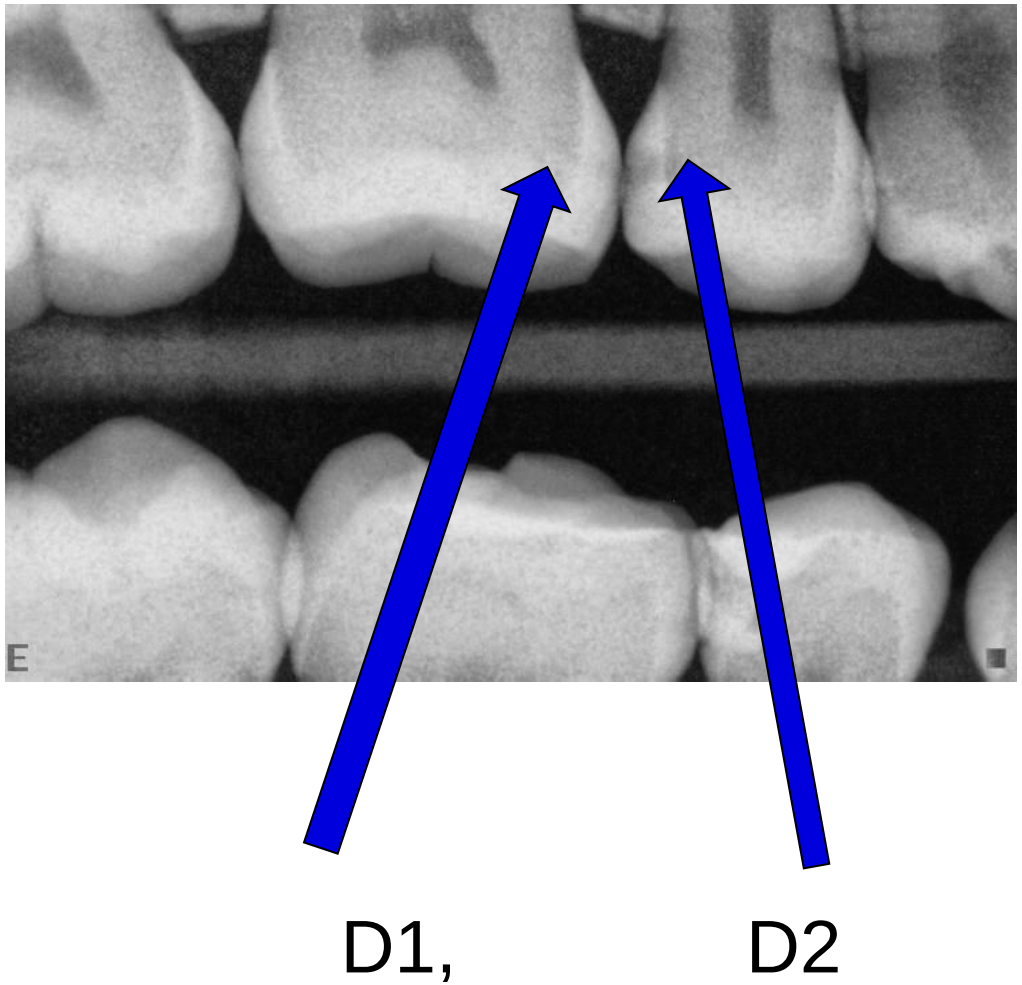




MUNI MED

Bite wing





Overlapping

D1, D2

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Intraoral radiogram – marginal position of the tube

Paralleling or bissecting angle technique

The tube is situated coronally

The level of alveolar bone is well seen

Resorption of alveolar bone
Defects in cervical area – resorptions, roor surface caries
Traumatic defects

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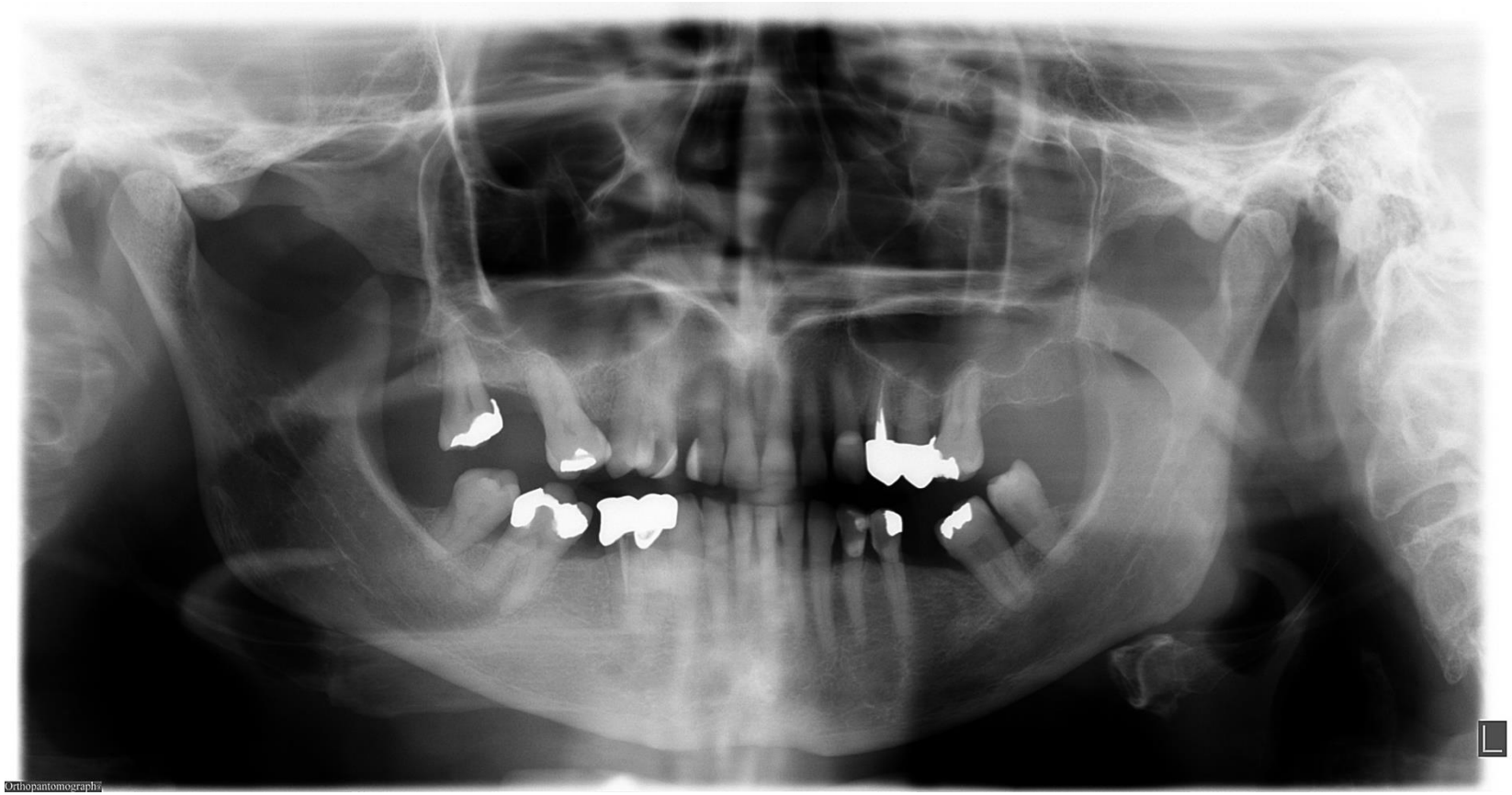
OPG

- Overview – both dental arches.
- Positions of teeth,
- Fillings
- Periapical pathology, pathological processes in the bone
- Resorption of the bone
- Traumatology



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Intraoral radiogram – apical position of the tube

Paralleling or bissecting angle technique

The tube is situated apically

Periapical area is well seen

Periodontal space in apical area
Periapical pathology
Root canal morphology
Quality of the endodontic treatment
Fractures of root

CBCT

Root canal and pulp chamber morphology

Apical pathology

Pathology of surrounding structures

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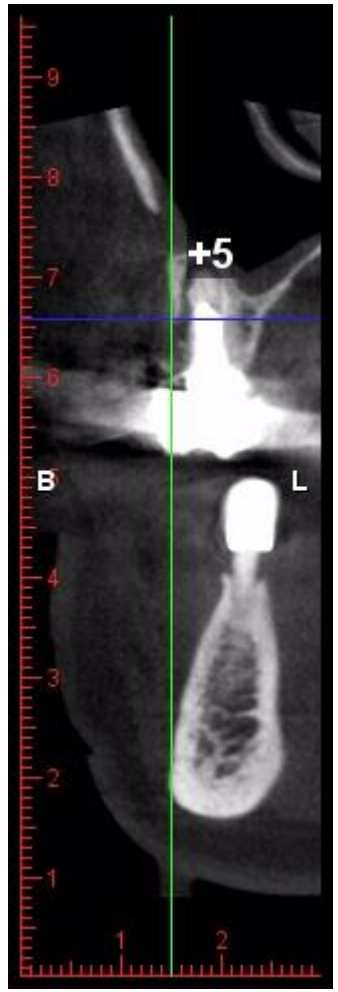
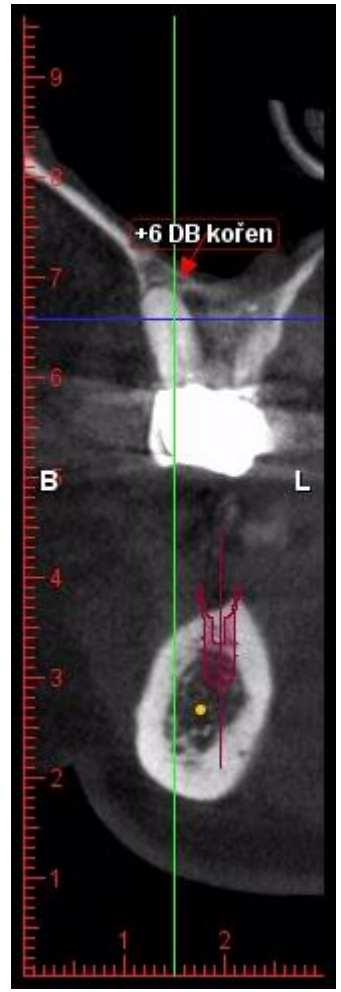

+5
B
L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