Radiography

Radiography

- Roentgen tube – x- ray tube:

Cathode – anode – tension

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

Radiography

- Imaging method completing clinical examination of patients

Radiography

Principle:

X- rays going through various materials (tissues) are absorbed – image on the film

(a special suspension AgBr – silver bromide) or digital receptors

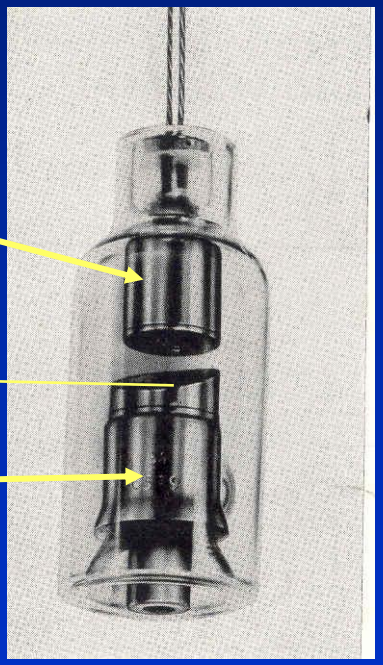
Rigid CCD Digital Sensor Sirona Dental Systems, LLC	Digital Phosphor Plate Air Technique, Inc.	F-Speed Dental Film Kodak Dental Systems

Roentgen tube
X ray tube

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

Focus – made of wolfram

Anode



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

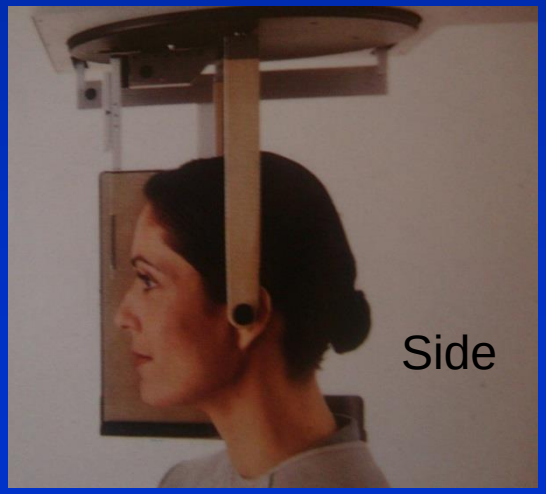
Extraoral and intraoral radiography

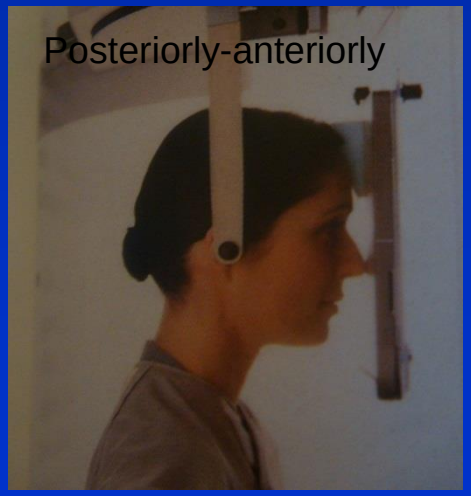
Intraoral – the film is placed in the oral cavity – a special x-ray apparatus.

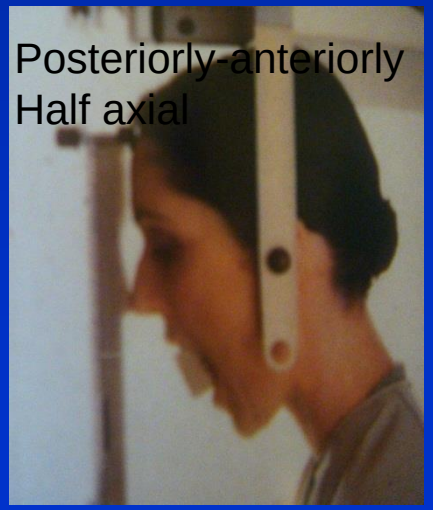
- Teeth
- Alveolar bone
- Periodontal space
- Fillings
- Caries
- Level of endodontic treatment

CT

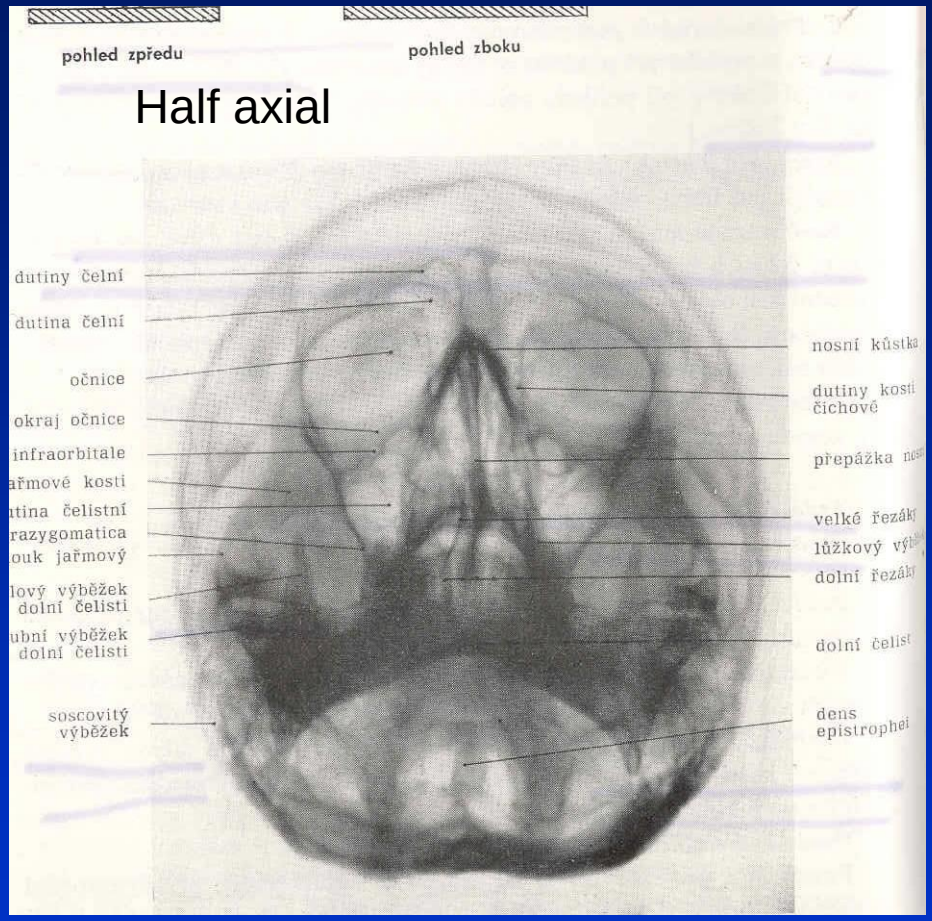

OPG

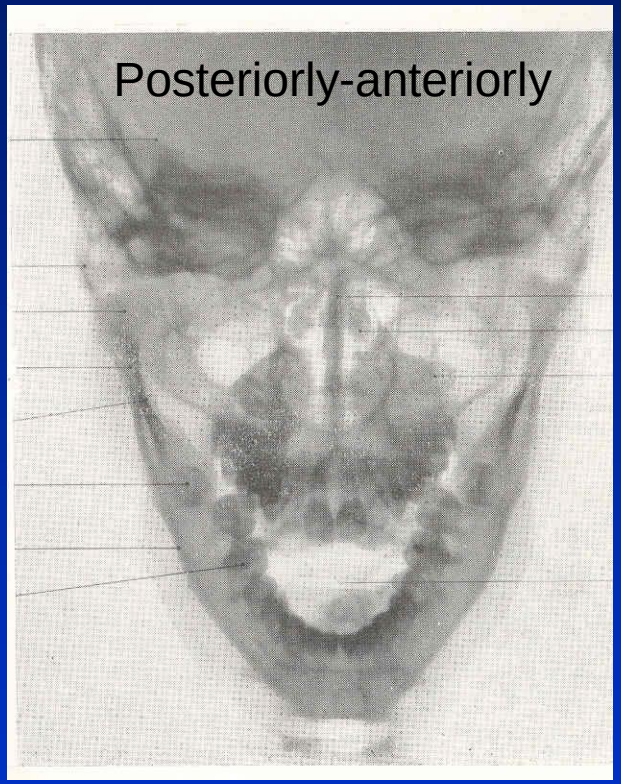

Side

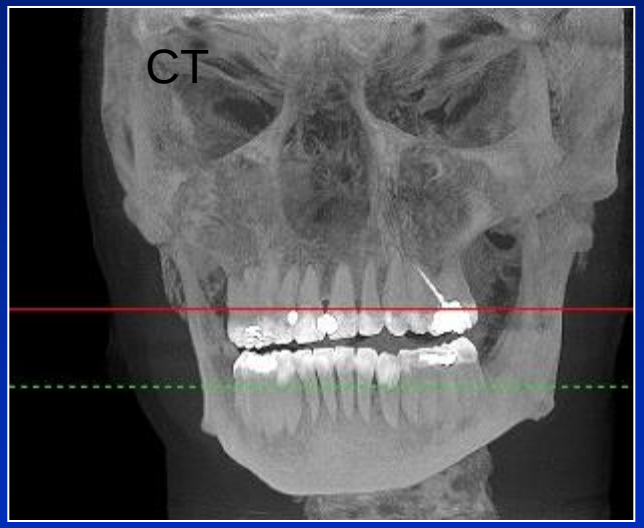

Posteriorly-anteriorly

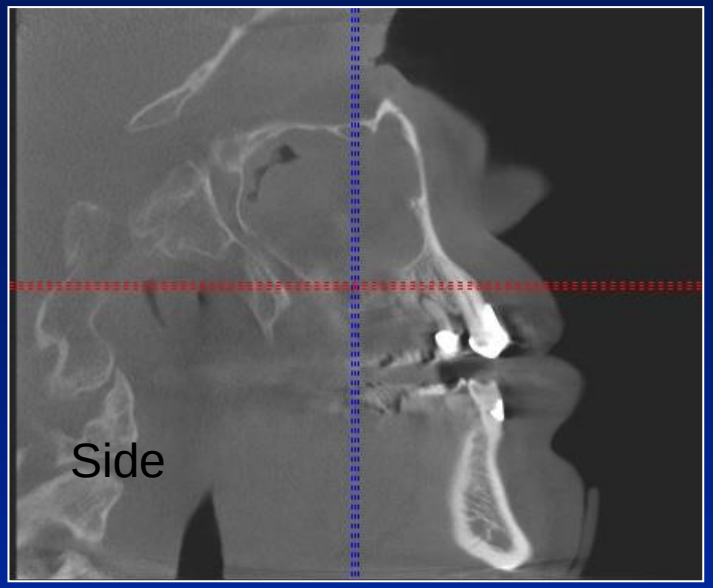

Posteriorly-anteriorly
Half axial

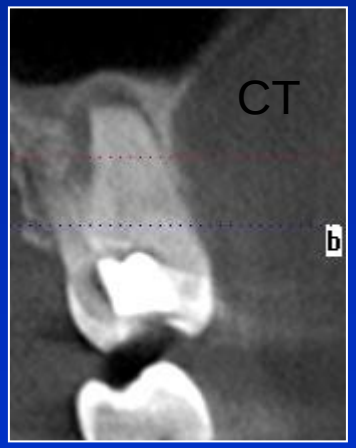
OPG


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


Posteriorly-anteriorly







CT, 3D possibility

Intraoral radiography

Film or recepotor placed in oral cavity

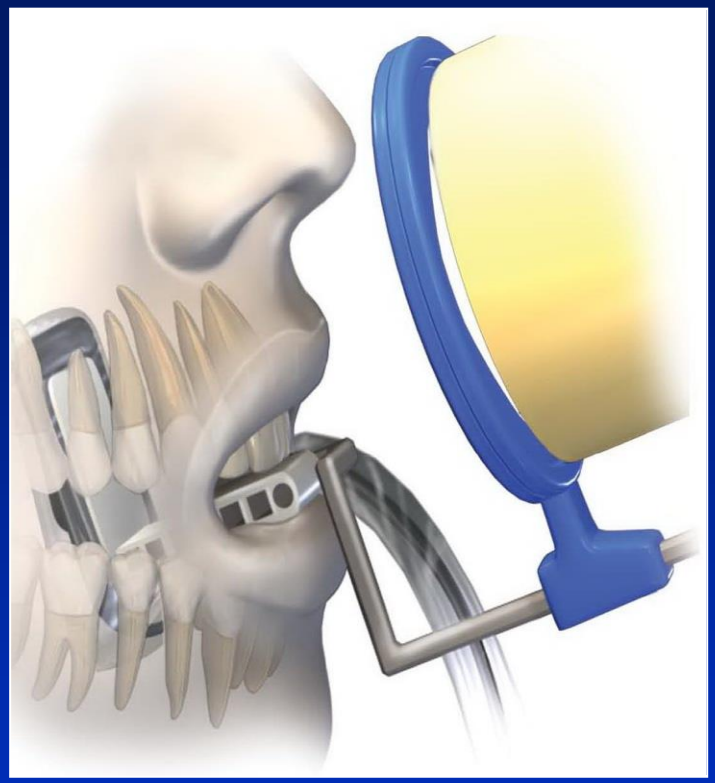
Special apparatus

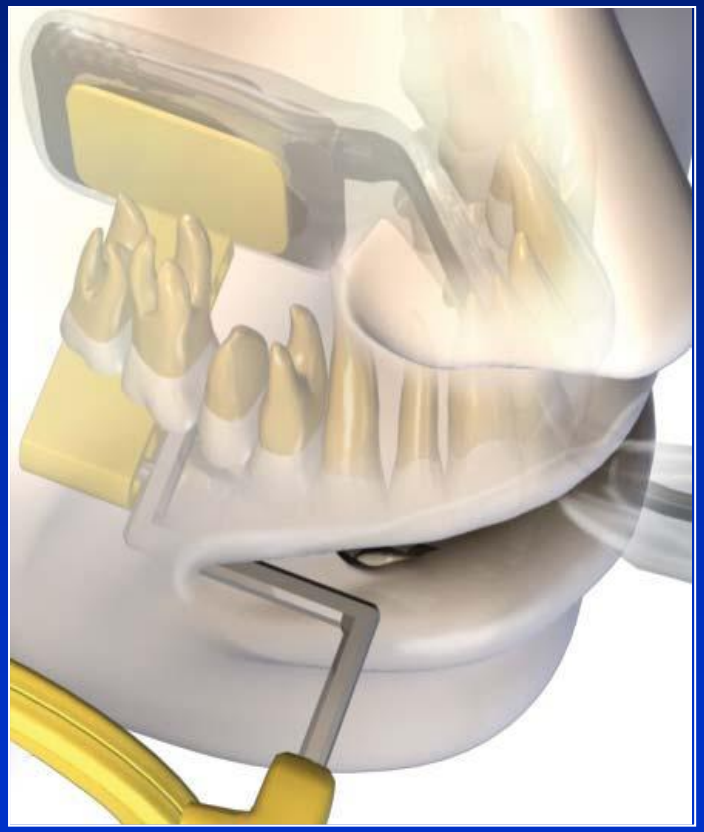
- Teeth
- Alveolar bone
- Periodontal space
- Fillings
- Caries
- Impacted teeth
- Level of endodontic treatment

Position of the tubus

- In vertical plane
- In horizontal plane

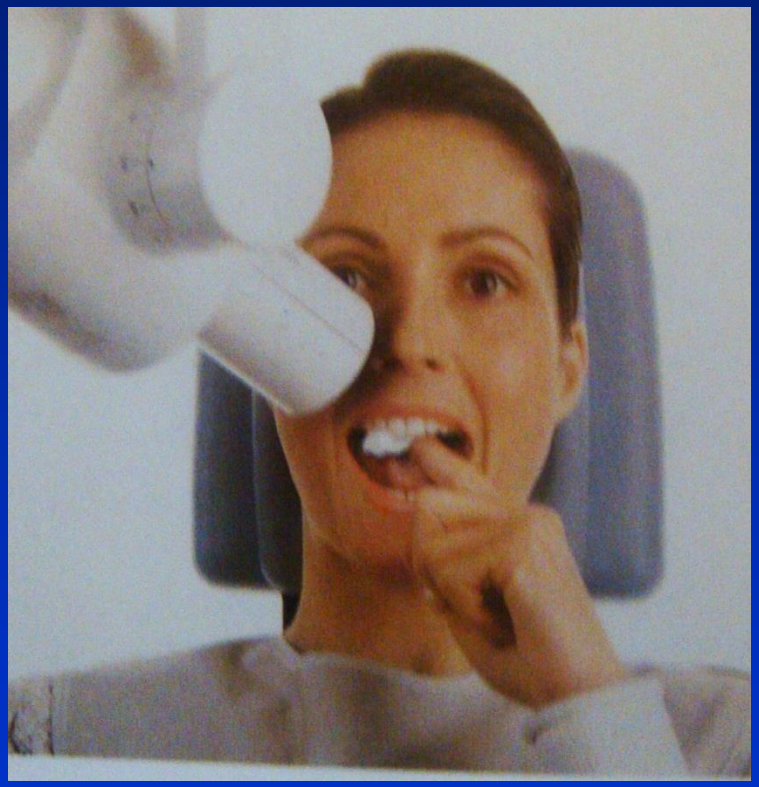
In vertical plane



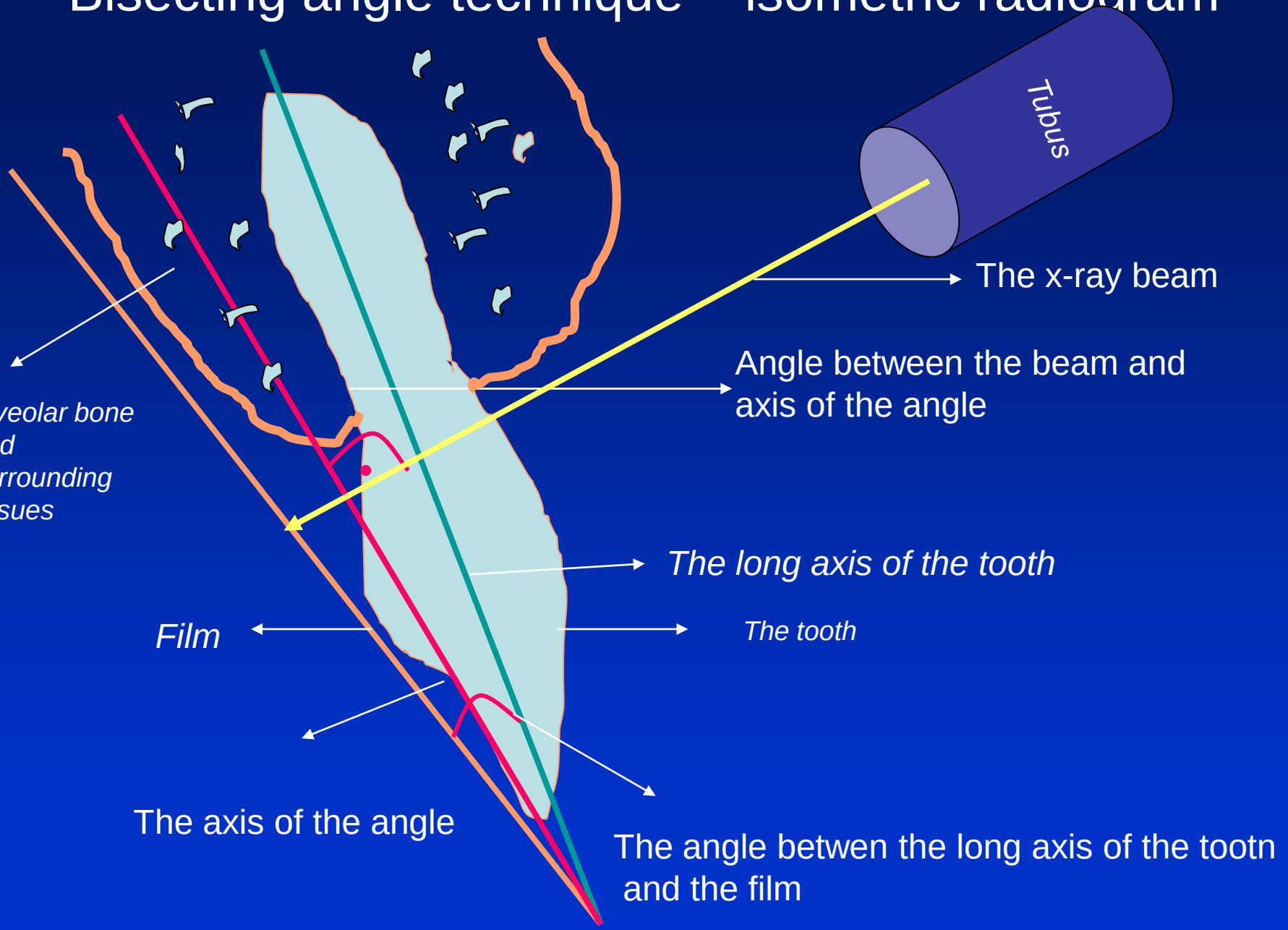


Paralleling technique
Film or receptor in a special holder
Parallel to long axis of teeth

If paralleling technique is not possible use the bisecting angle technique



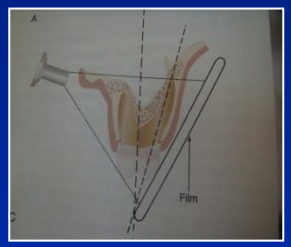
Bisecting angle technique – isometric radiogram



Hypometric and hypermetric picture

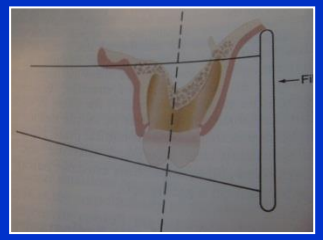
Hypometric – the picture is smaller

Central beam goes perpendiculary on the tooth



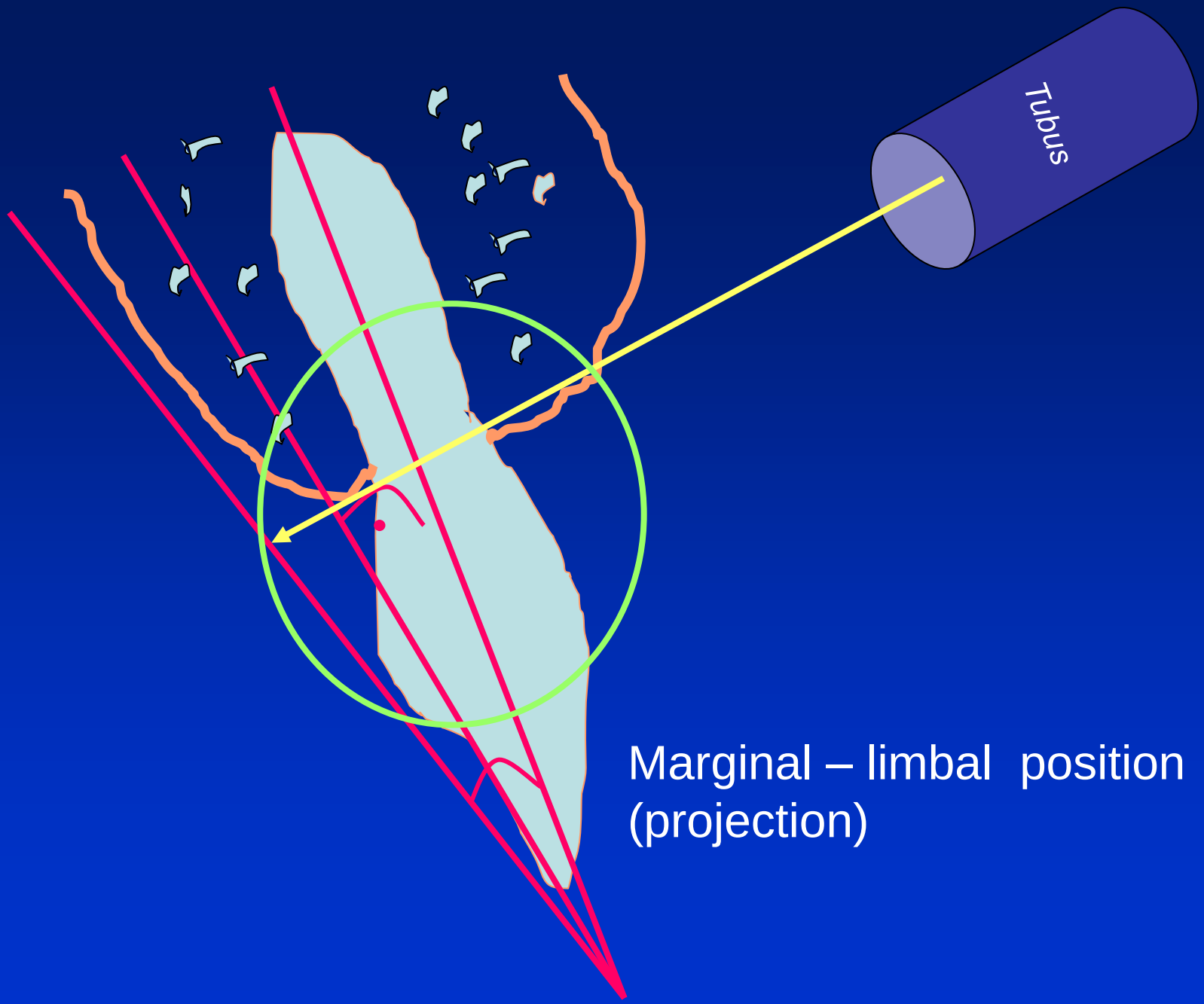
Hypermetric picture – the picture is bigger

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

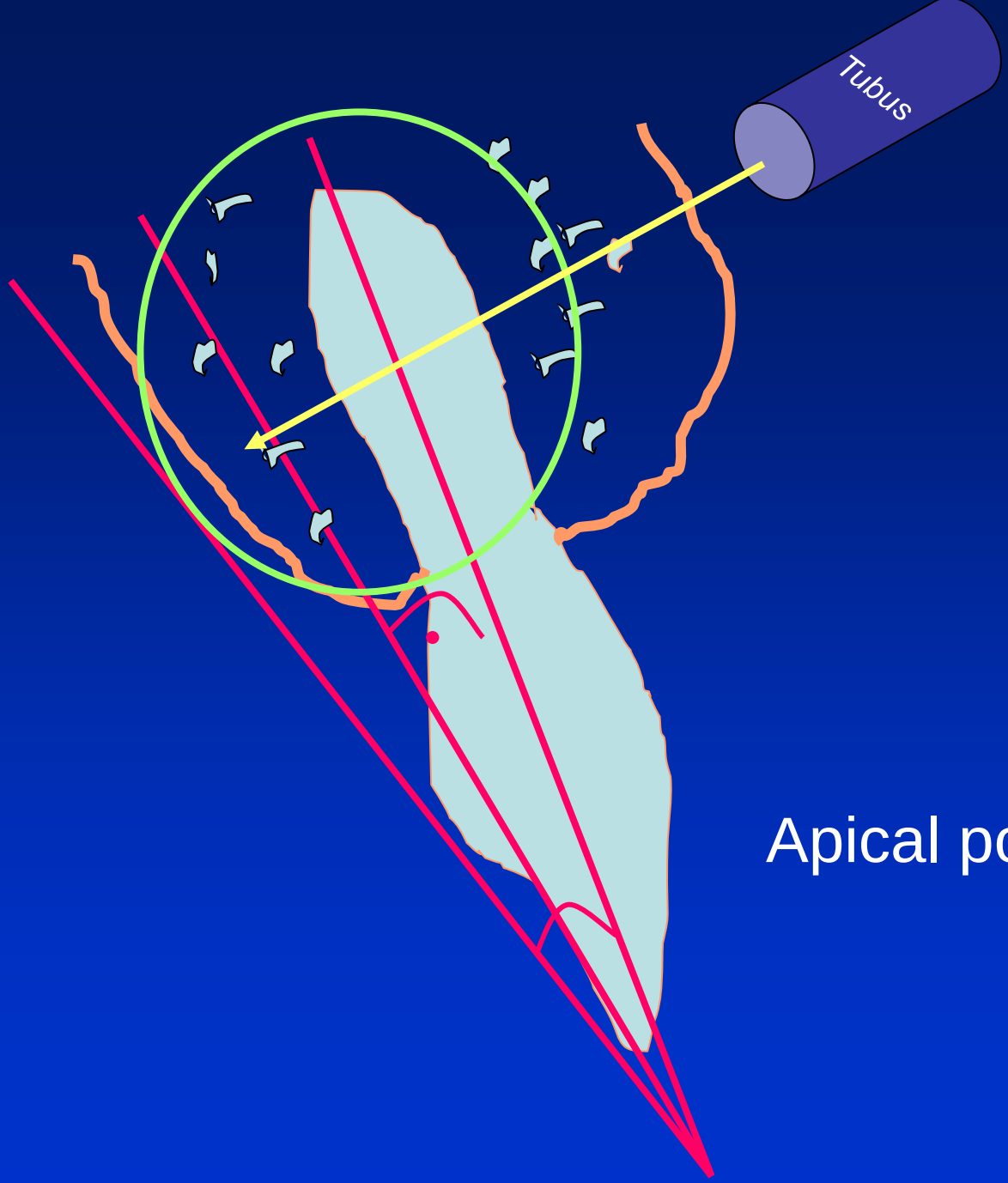


The tubus can have various position

- 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.



Marginal – limbal position (projection)

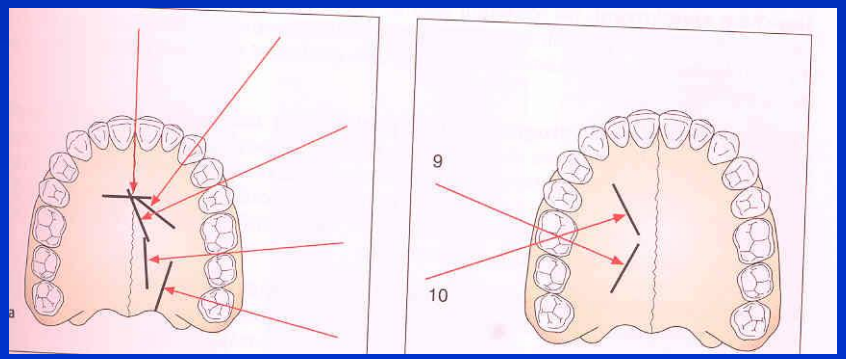


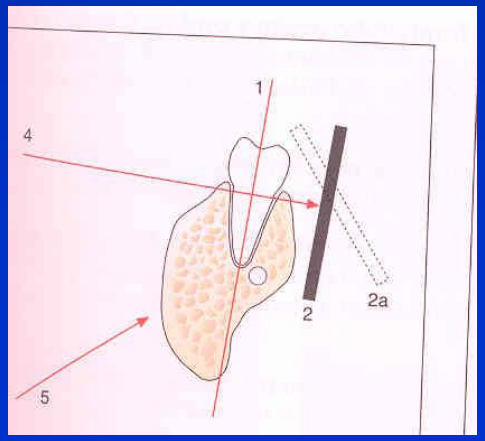
Apical position - projection

In horizontal plane

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. canine)





Bitewing

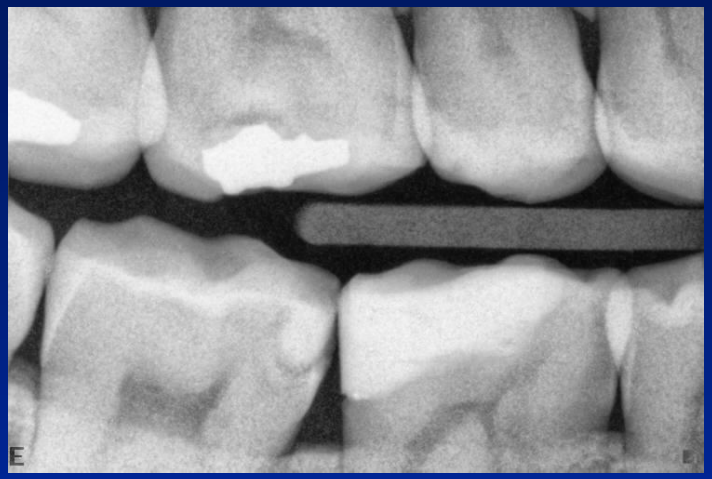
Film or receptor is placed in a special holder, patient bites into
The central beam goes parallel to interdental septa
Crowns of teeth are well seen – good for early diagnosis of dental caries in posterior area

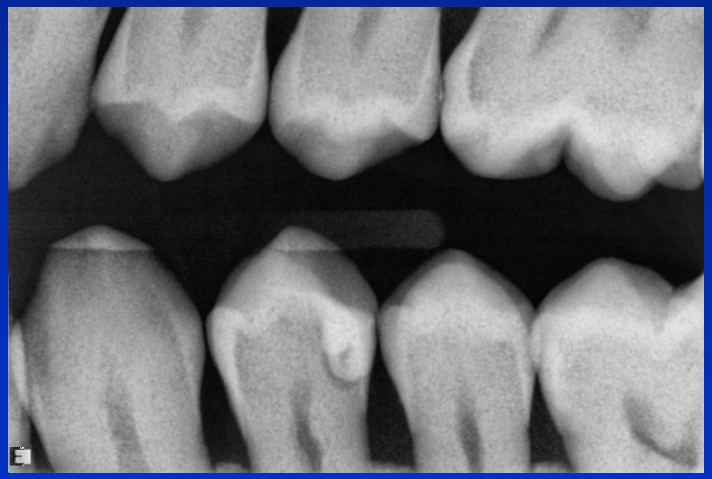
Principle of imaging

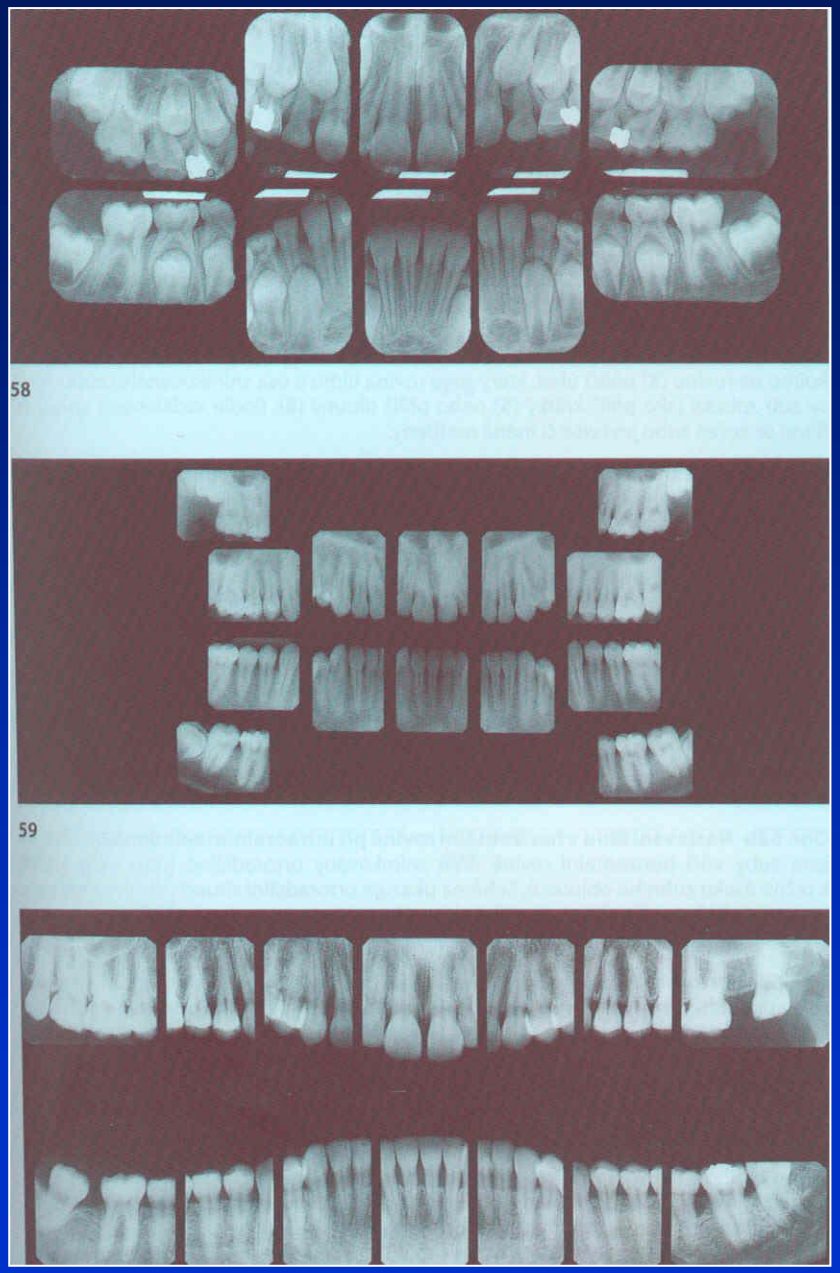
- Irradiation is absorbed in various materials esp. in hard tissues. Accc to amount of absorbed irradiation radioopacity or radiolucency can be seen.

Radiolucency – dark

Radioopacity - white





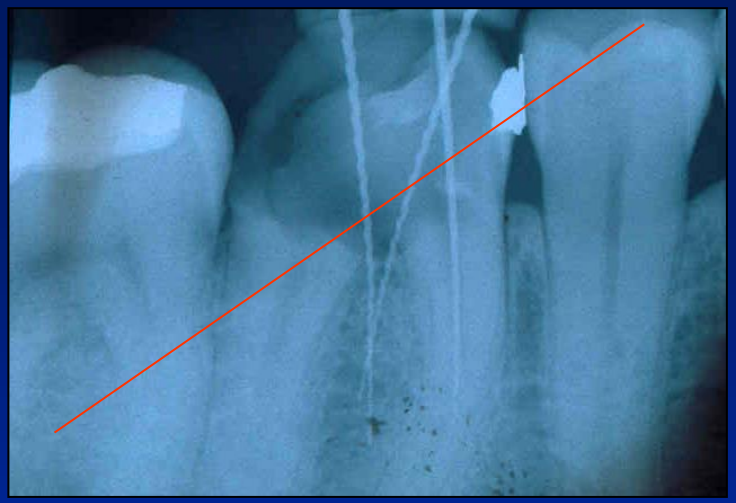


- Rtg status

i.o.

LR

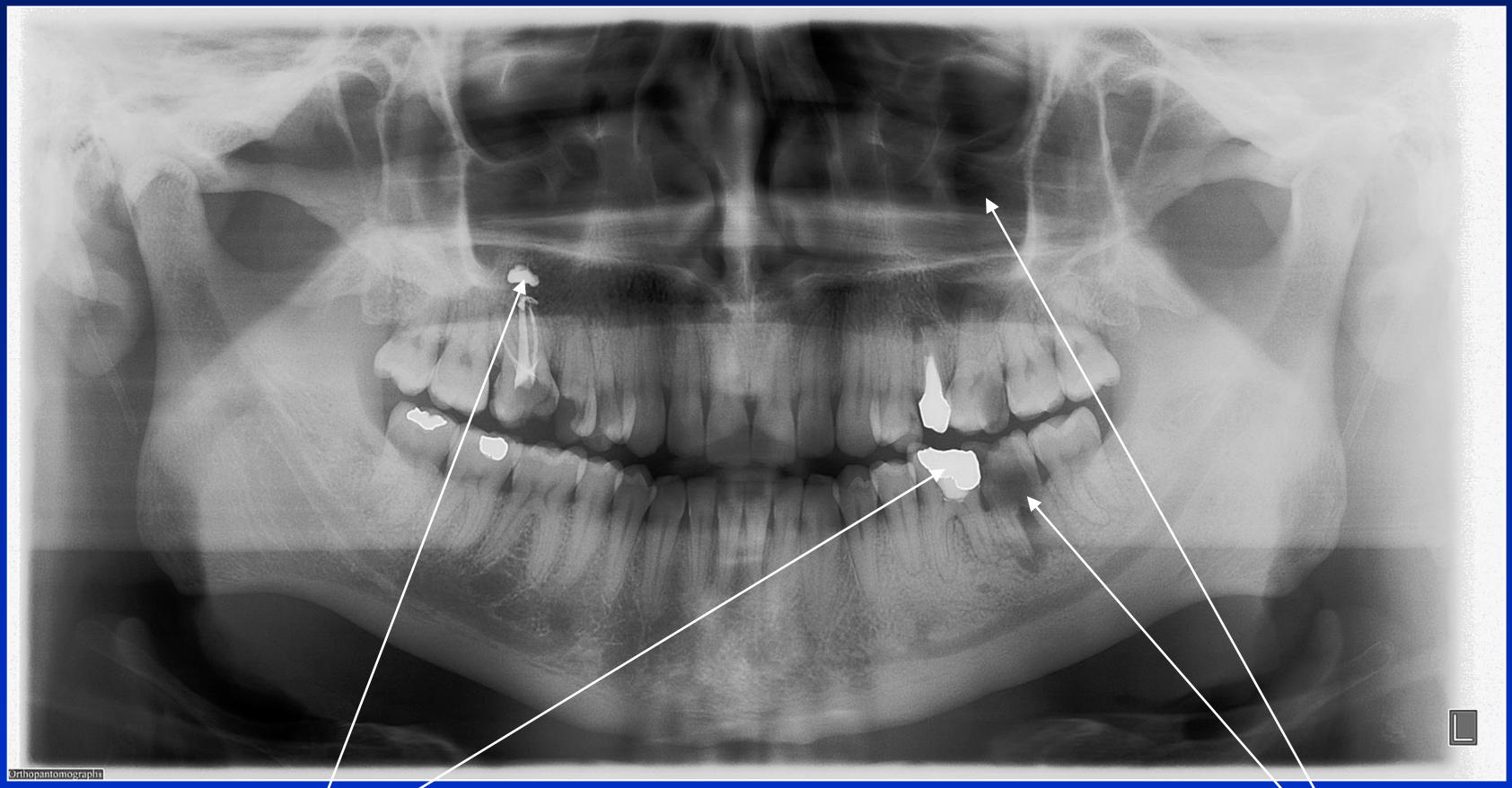
LR



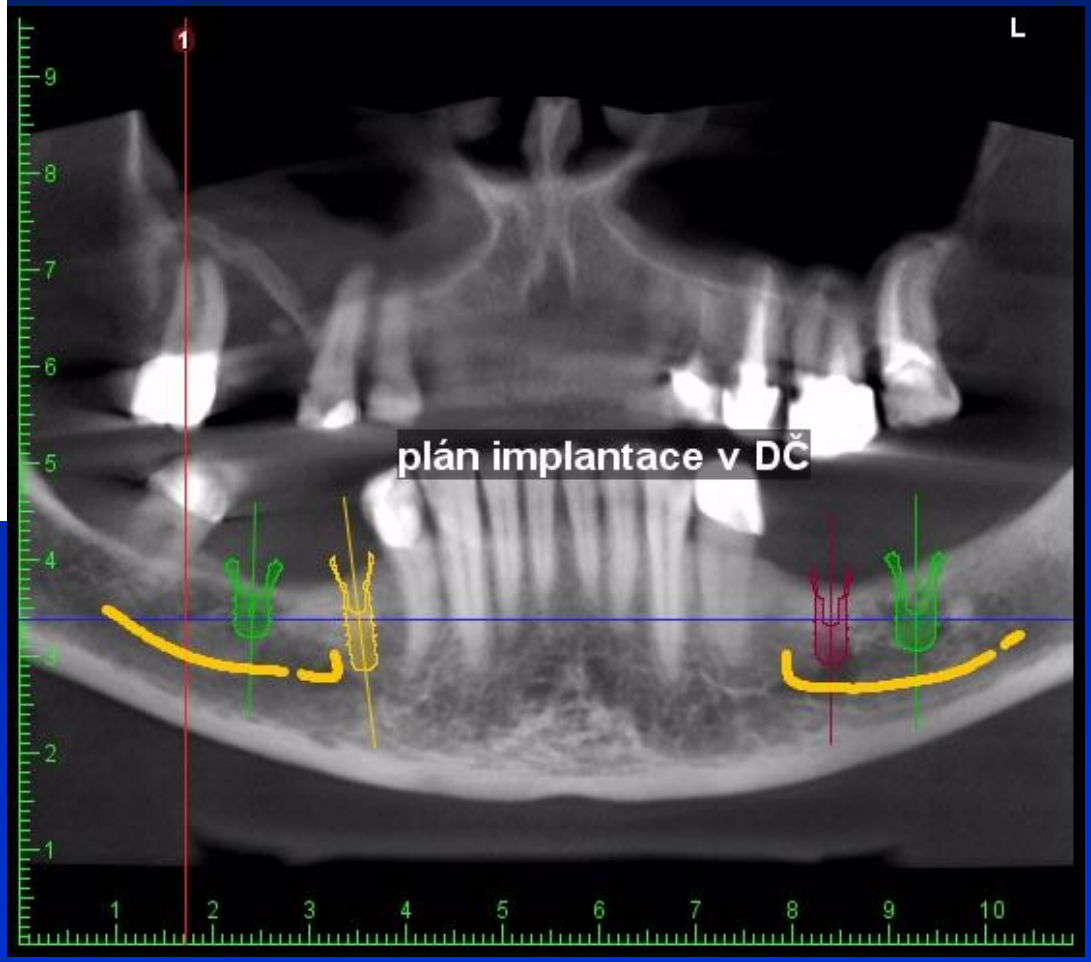
LR

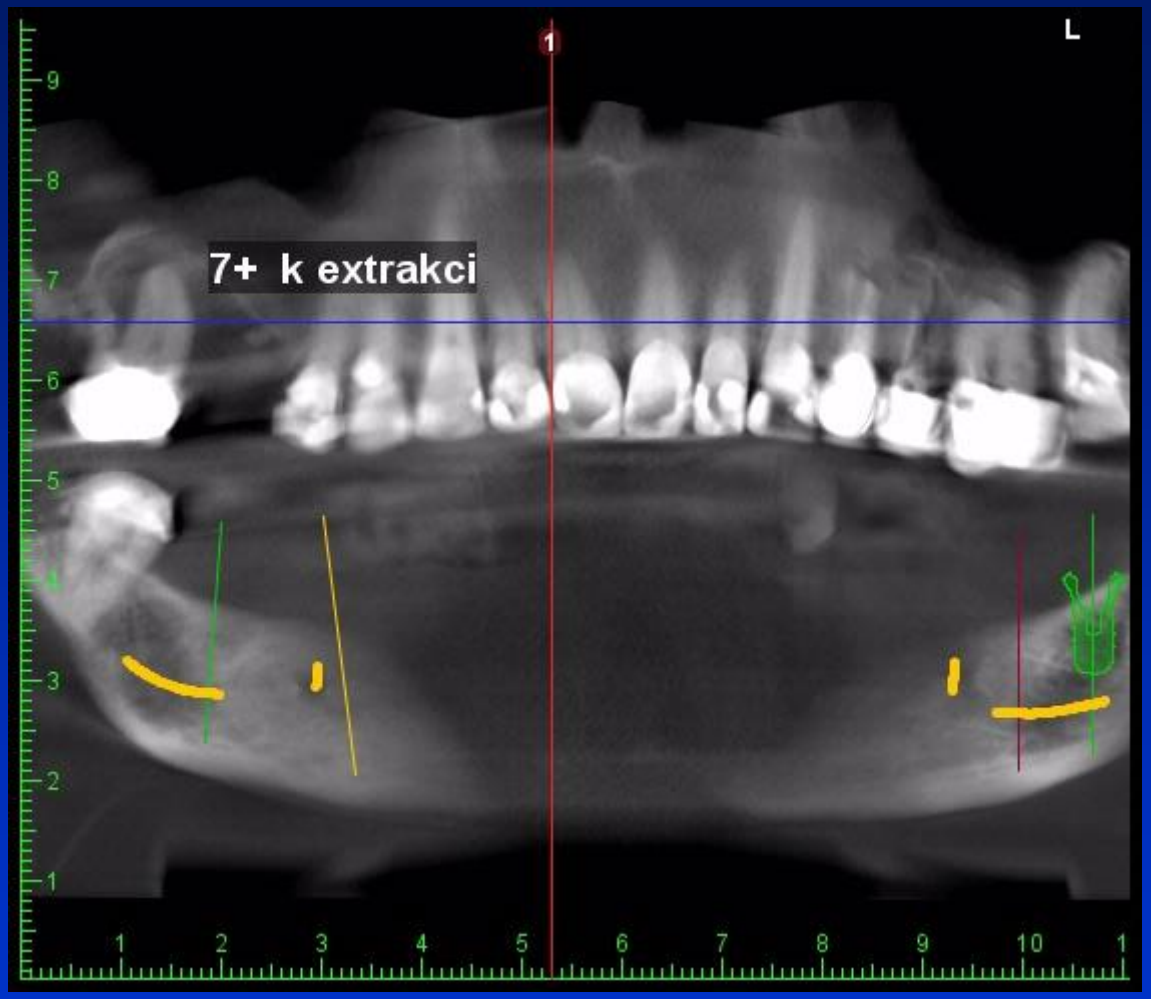
OPG

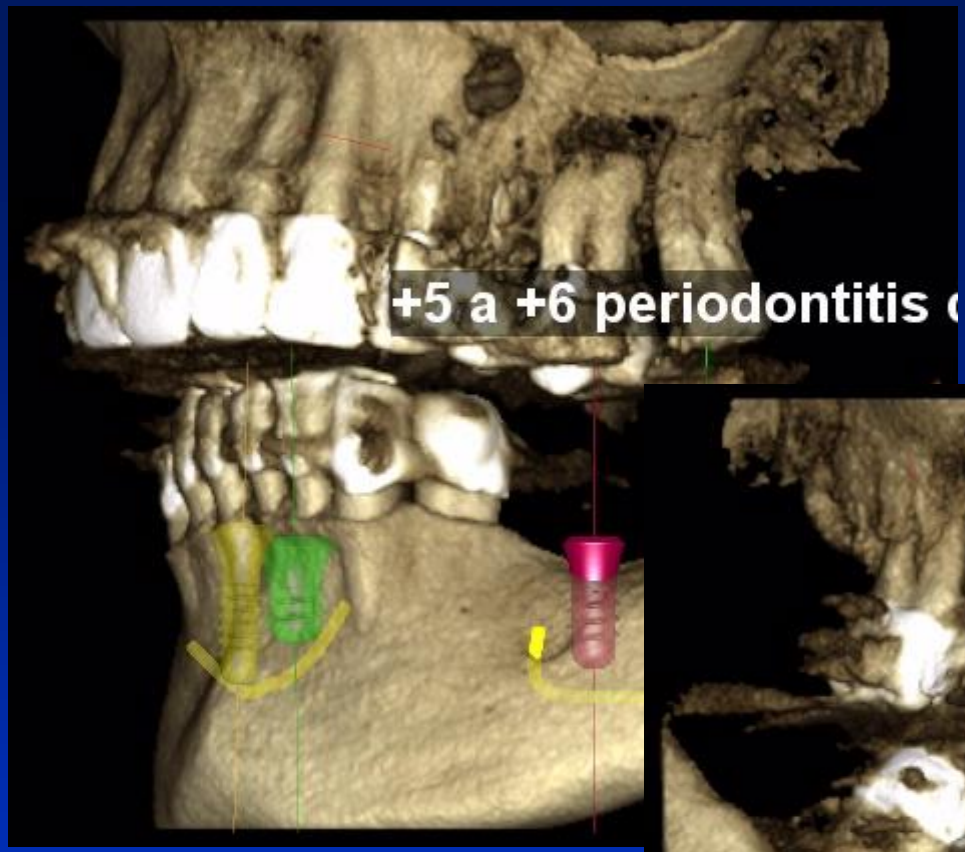

Orthopantomograph

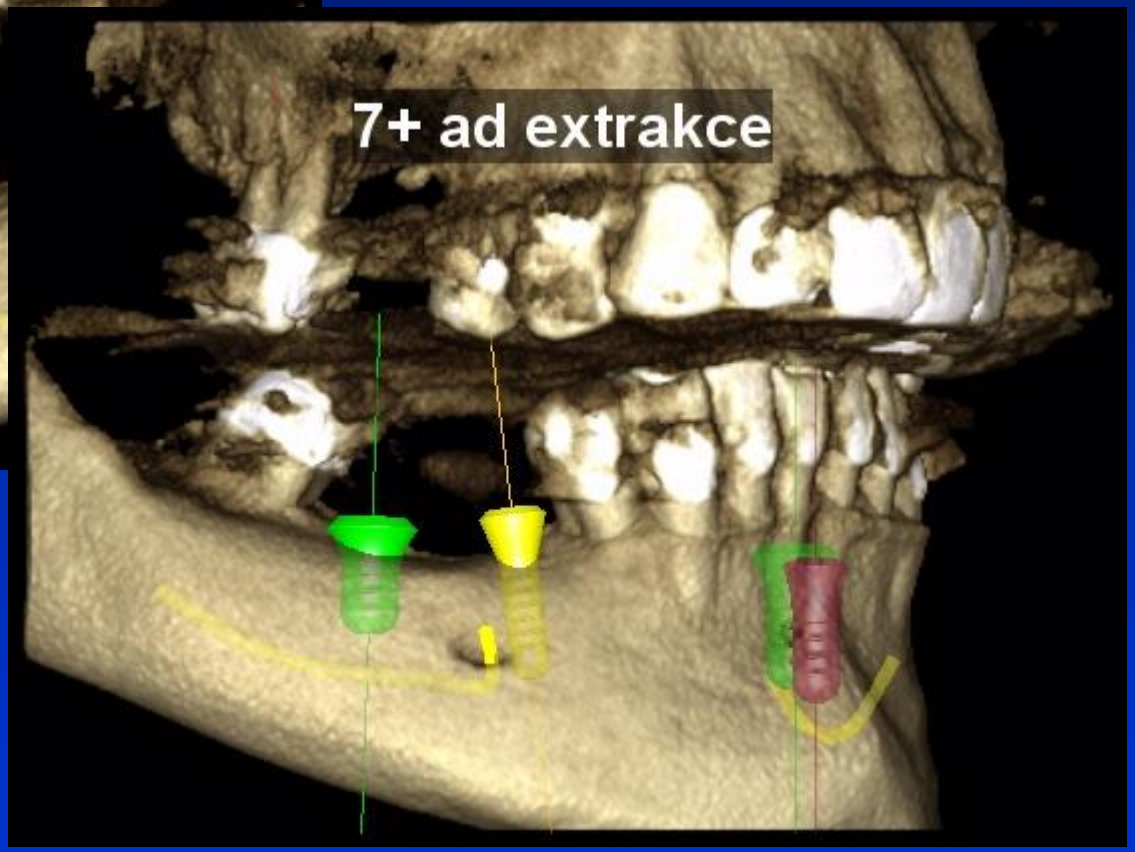

radioopacity
radiolucency

CBCT




7+ k extrakci
L
1


+5 a +6 periodontitis

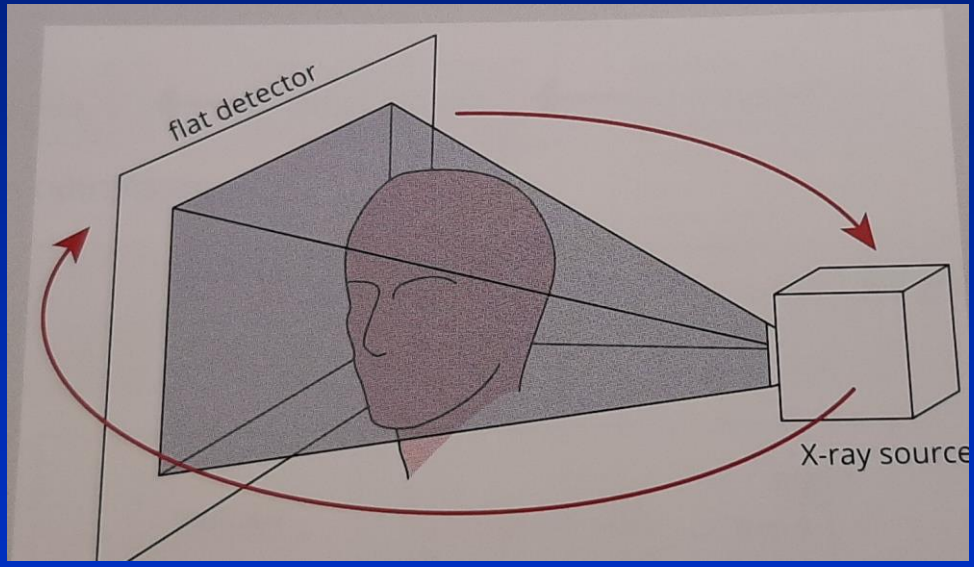

7+ ad extrakce


+5
B
L


+6 DB kořen
B
L

CBCT – cone beam computer tomography

CBCT
Source and detector trotate



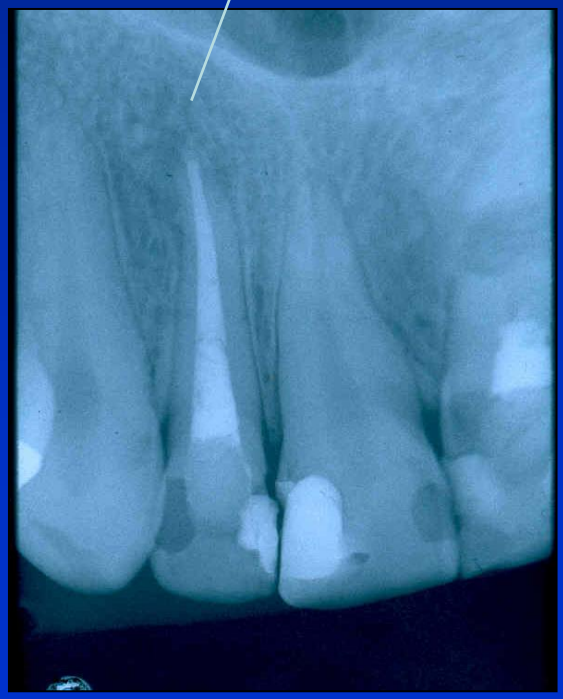
CBCT – cone beam computer tomography

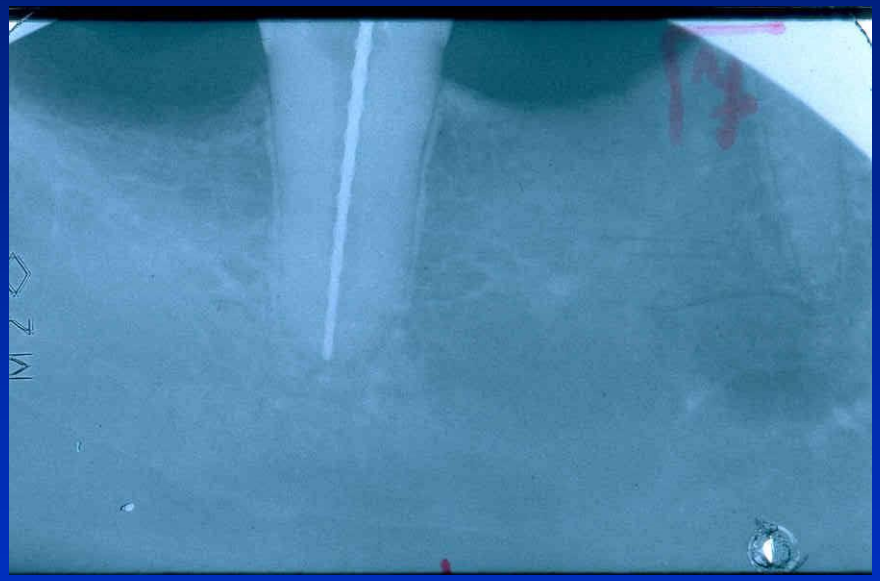
- High diagnostic effect
- Endodontics
- Omplantology
- Surgery
- Traumatology

Radiogram before the treatment

Radiogram aftre the treatment

Radiogram 6 month post.op.





Radiogram with inserted root canal instrument