LECTURE TITLE:

BISECTING ANGLE TECHNIQUE AND PARALLELING ANGLE TECHNIQUE

Learning Objectives

- To understand the various imaging techniques used for imaging dentofacial region
- To understand the various intraoral radiographic techniques

Contents

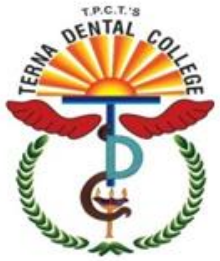
- Introduction
- Radiography of dentofacial region
- IOPA
  - Indications
  - Bisecting angle technique
  - Paralleling technique
- Comparison of bisecting and paralleling technique
- Occlusal radiography
- Bitewing
- Object localization technique

INTRODUCTION
Radiography of Dentofacial Region

- Extraoral
  - Opg
  - Lateral cephalogram
  - Extraoral views for facial bones
  - TMJ
- Intraoral
  - IOPA
  - Occlusal
  - Bitewing

Techniques of IOPA

IntraOral PeriApical radiograph

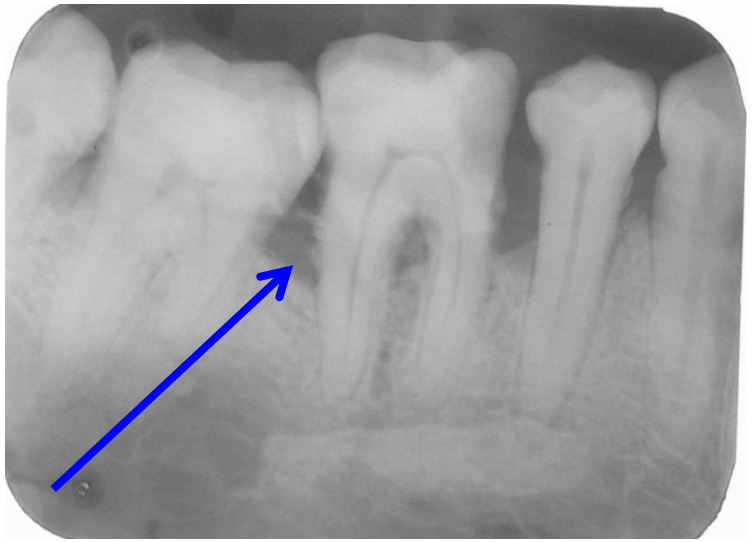


terna
KNOWLEDGE TO EMPOWER

Indication of IOPA

- Detection of apical inflammation.

- Assessment of periodontal status.



- After trauma assessment of teeth and alveolar bone.

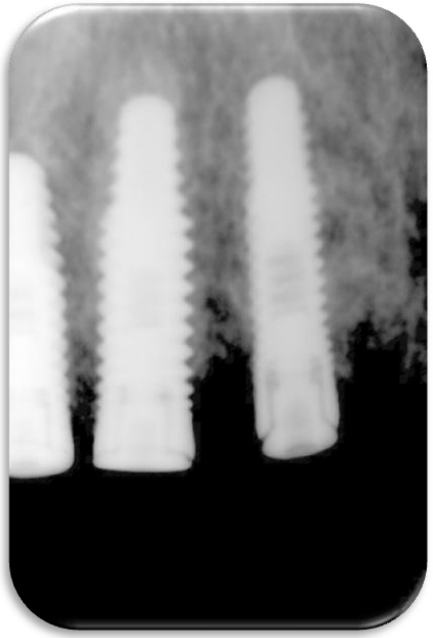
- Assessment of presence and position of impacted teeth.

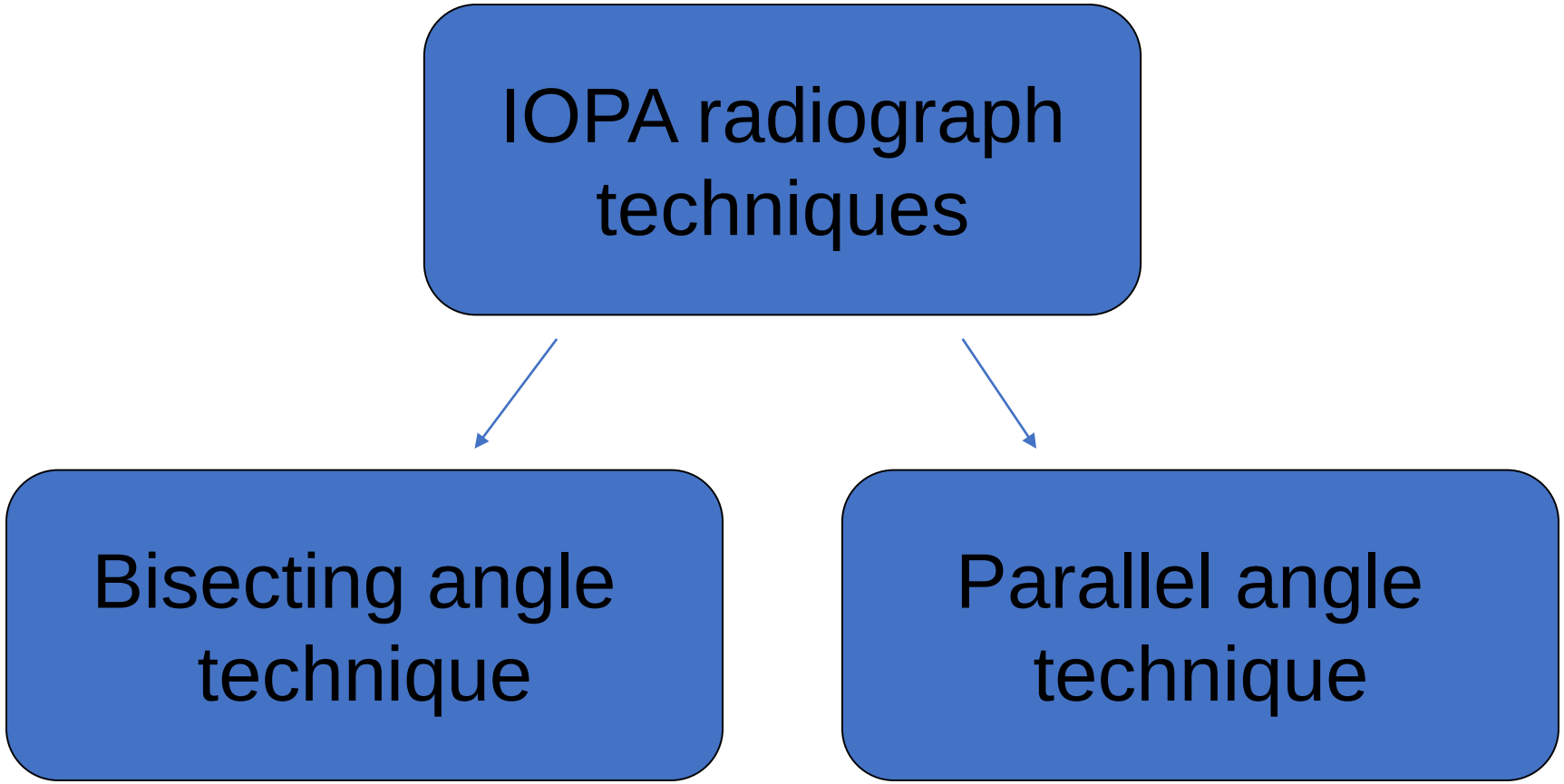
- Assessment of root morphology before extraction.

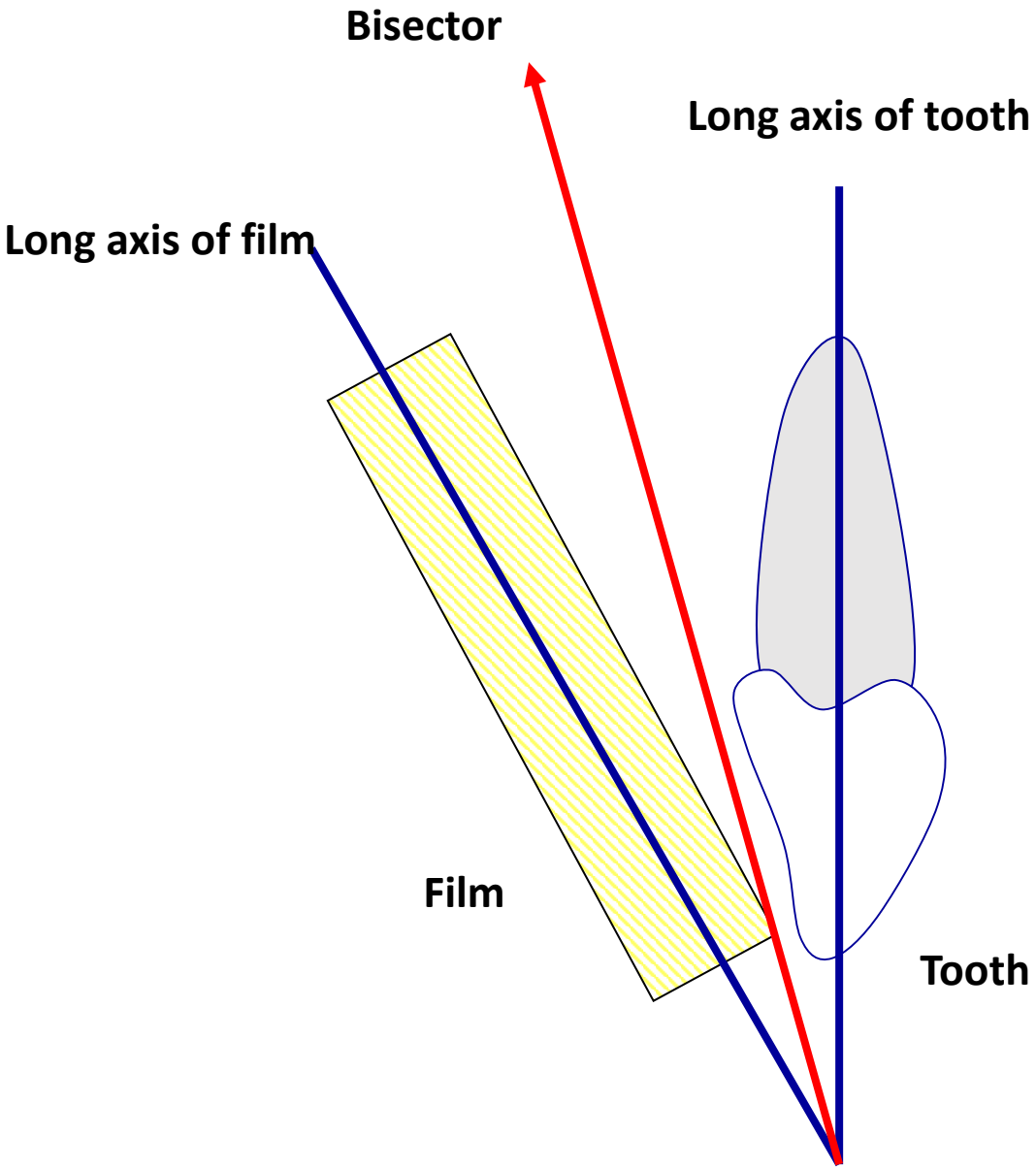
- During endodontic procedure.

- Detailed evaluation of apical cyst and other lesions with in alveolar bone.

- Assessment and position of implant
- For follow up

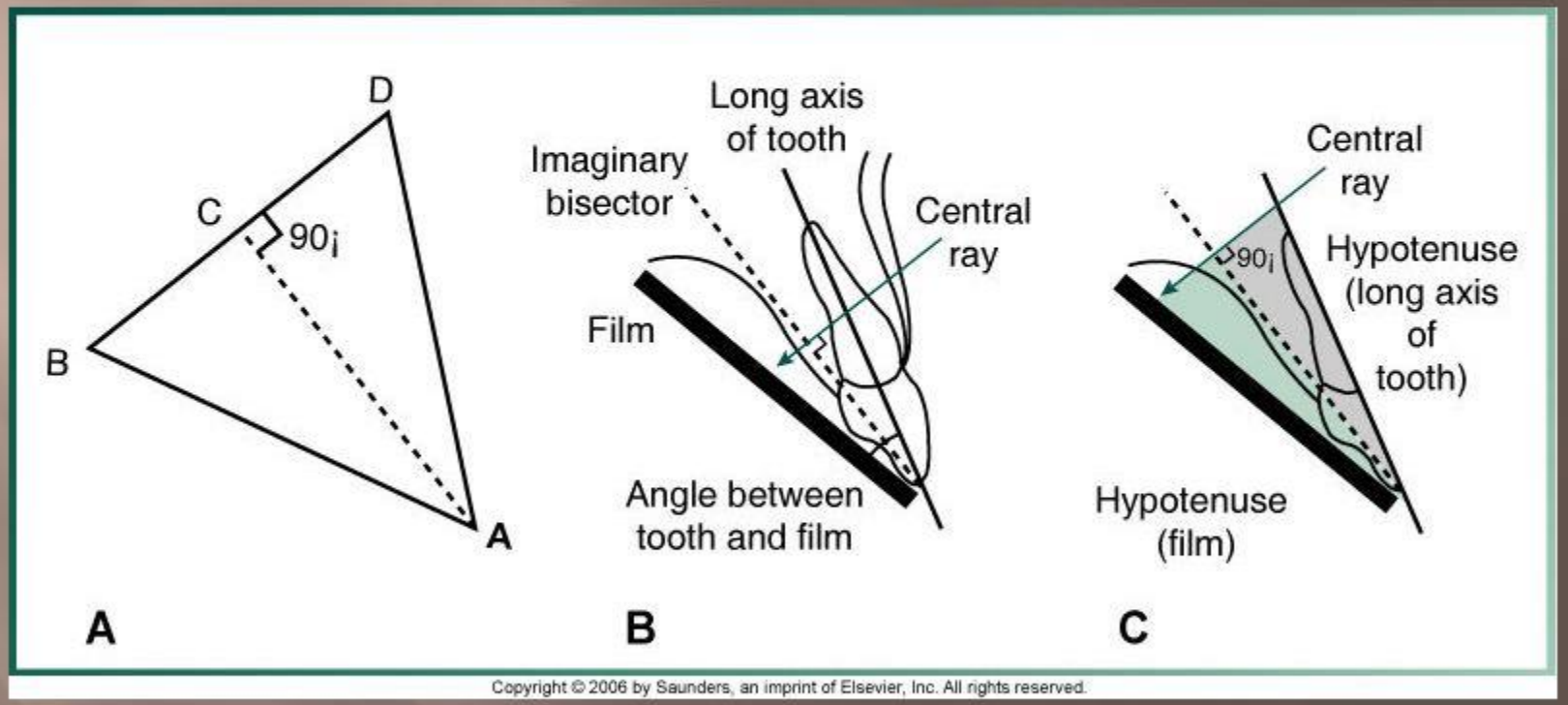



IOPA radiograph techniques
Bisecting angle technique
Parallel angle technique

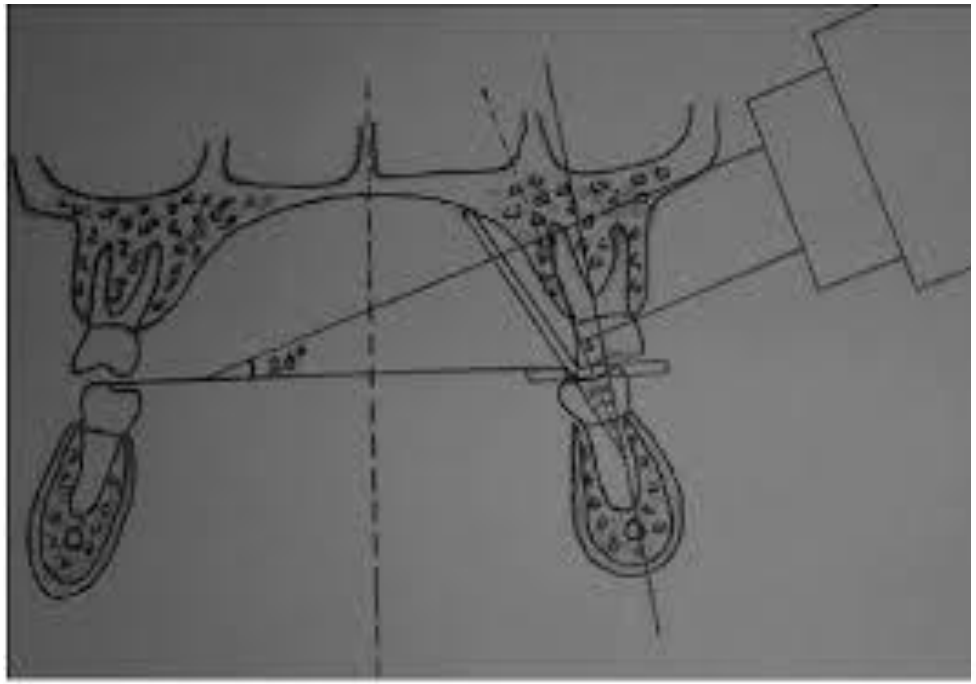


Bisecting angle techniques

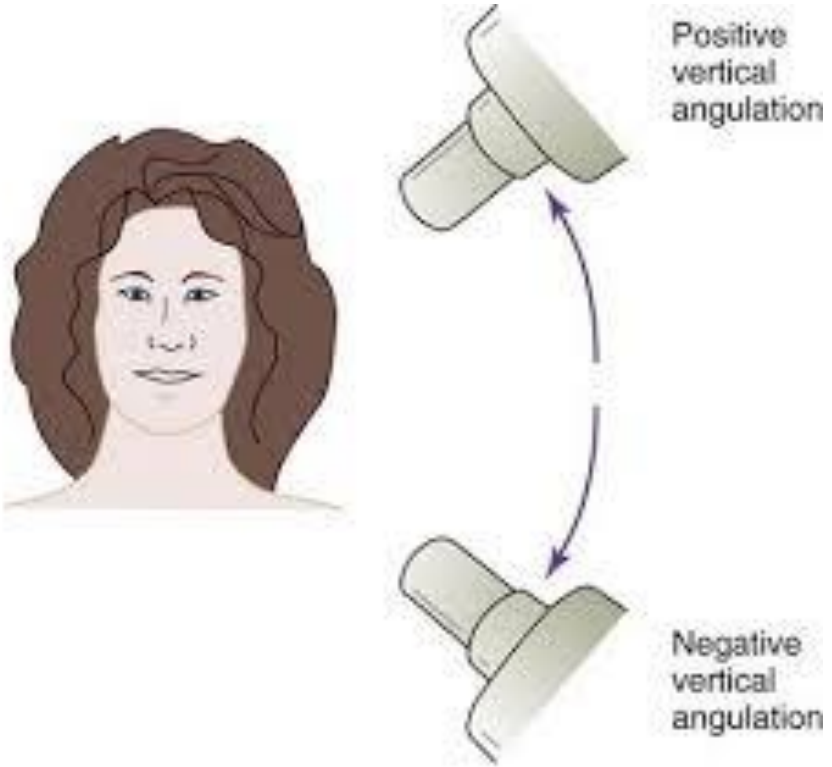
Bisect angle concept

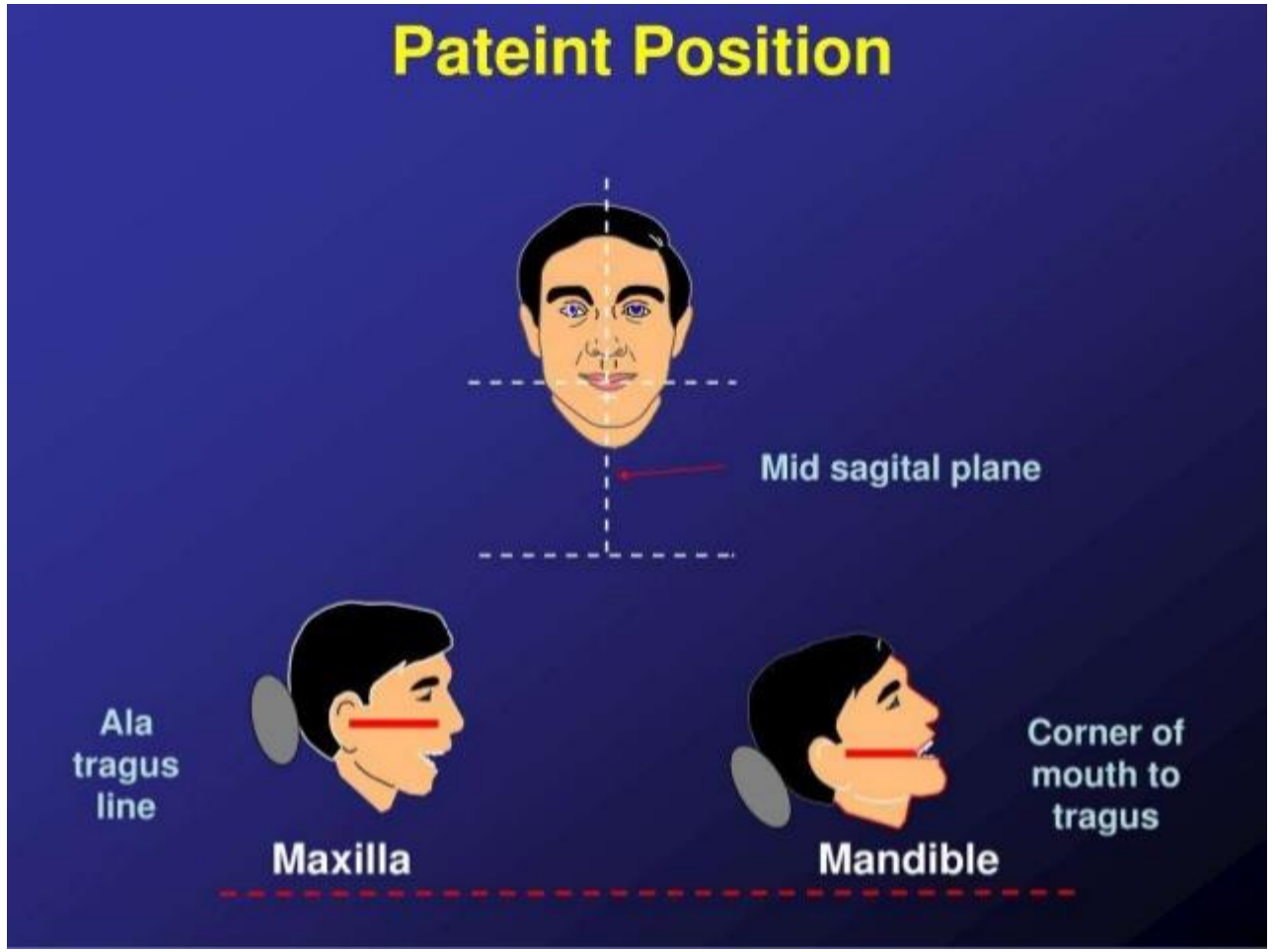


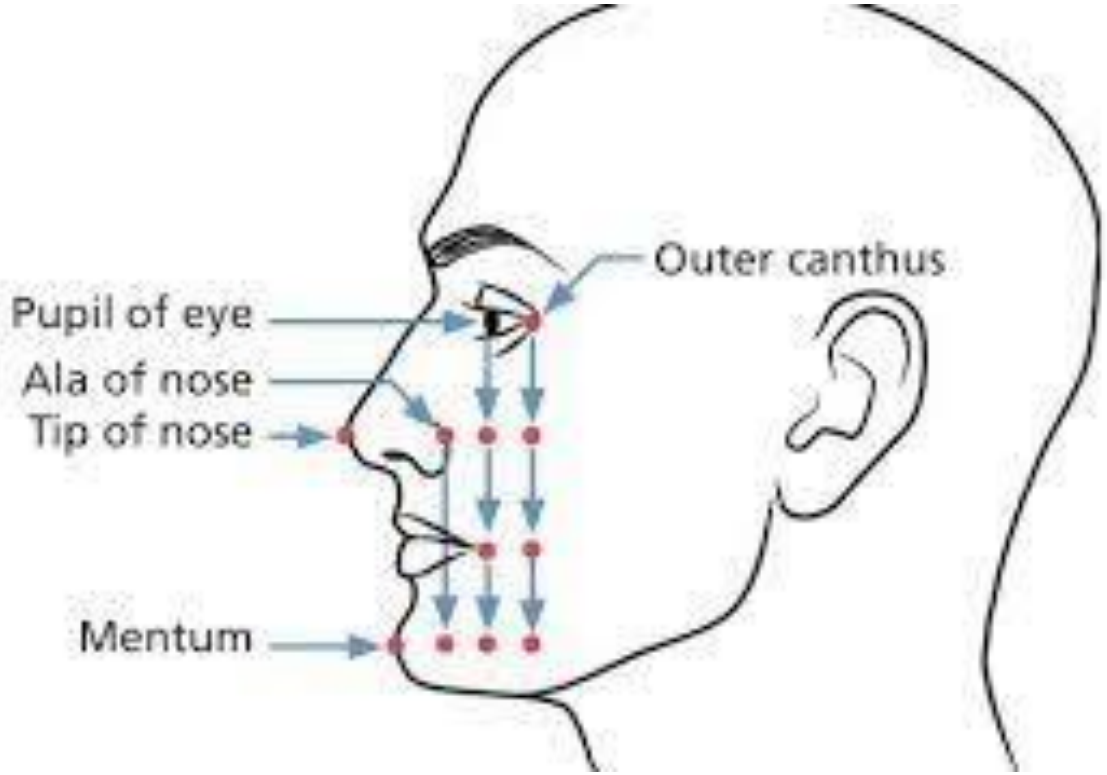
VERTICAL ANGULATION

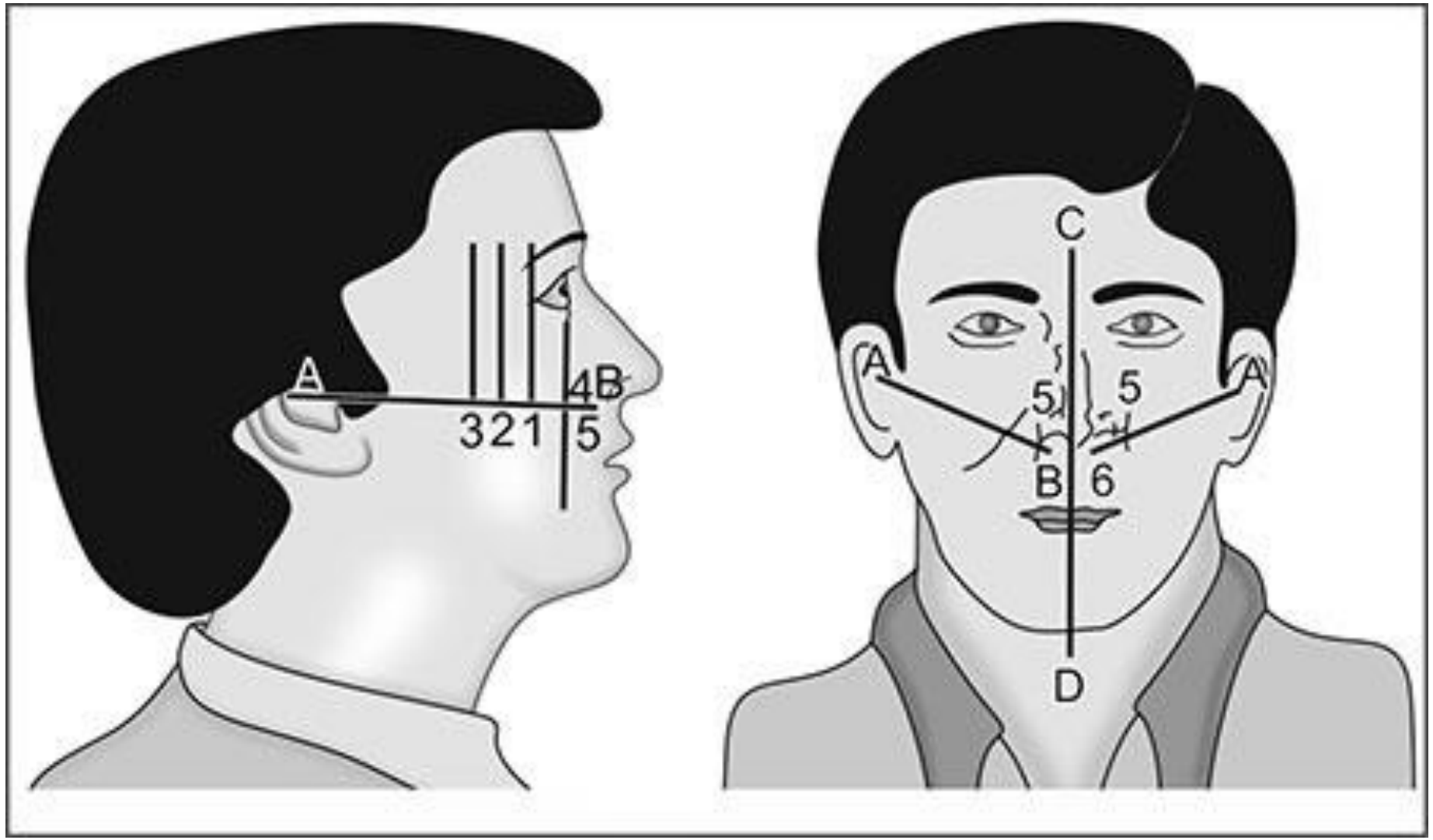


A




Pateint Position
Mid sagital plane
Ala
tragus
line
Maxilla
Mandible
Corner of
mouth to
tragus


Outer canthus
Pupil of eye
Ala of nose
Tip of nose
Mentum


A
4B
321
5
C
A
A
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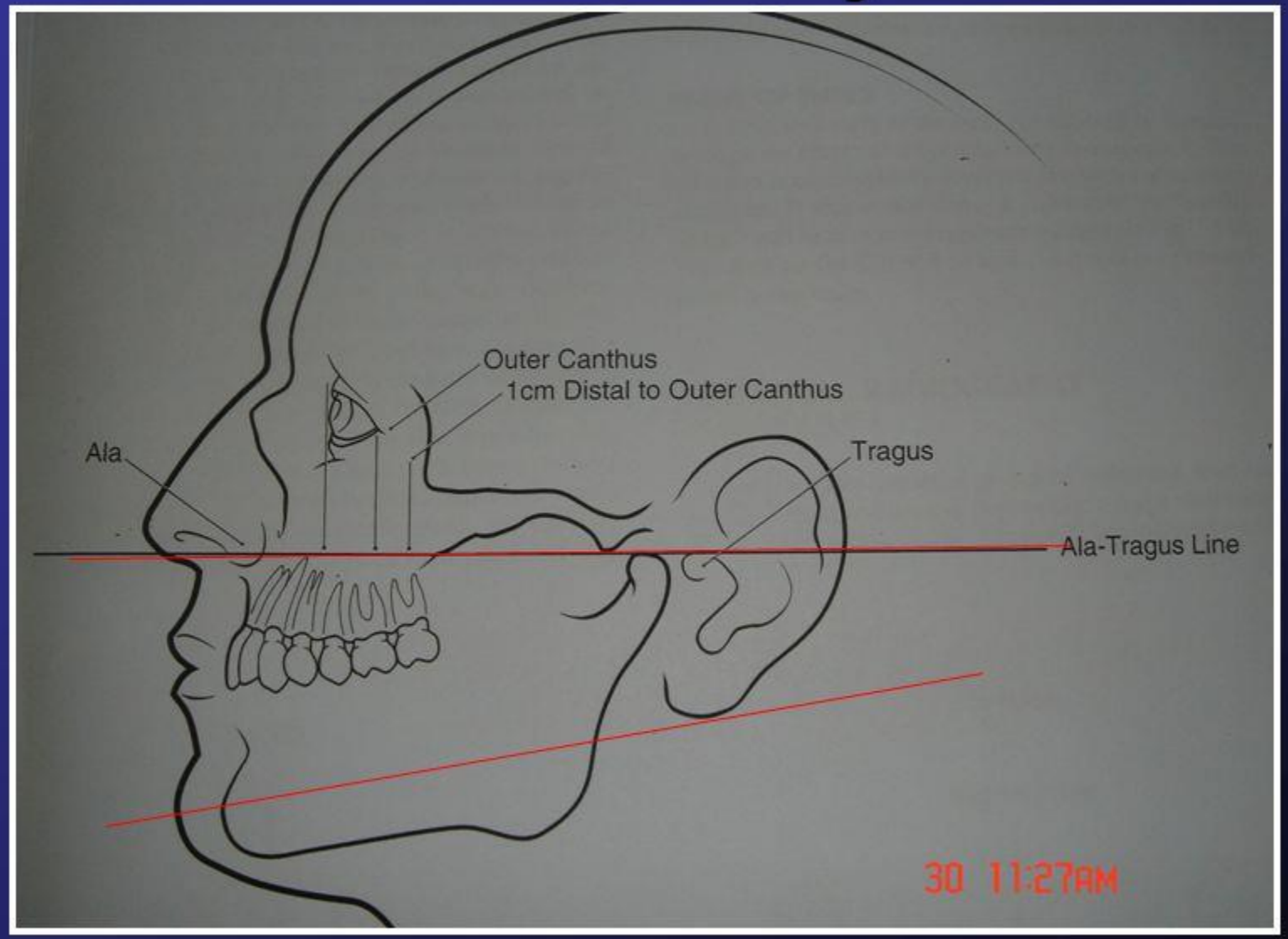
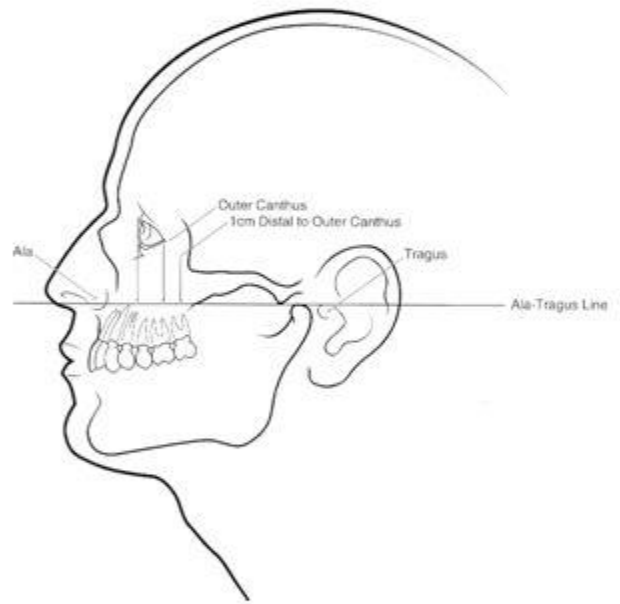
5
B
6
D

Point of entry



Point of Entry

- Central/lateral: side of nose
- Canine: ala of nose
- Premolar: pupil of eye
- Molar: outer corner of eye



Angulation guidelines for bisecting angle projection.

Projection	Maxilla	Mandible
Incisors	+40 degree	-15 degree
Canine	+45 degree	-20 degree
Premolar	+30 degree	-10 degree
Molar	+20 degree	-5 degree

en the occlusal plane is oriented parallel with floor.

Bisecting Angle Technique (Advantages)

When comparing the two periapical techniques, the advantages of the bisecting angle technique are:

1. **More comfortable**: because the film is placed in the mouth at an angle to the long axis of the teeth, the film doesn't impinge on the tissues as much.
2. A **film holder**, although available, is **not needed**. Patients can hold the film in position using a finger.
3. **No anatomical restrictions**: the film can be angled to accommodate different anatomical situations using this technique

Bisecting Angle Technique (Disadvantages)

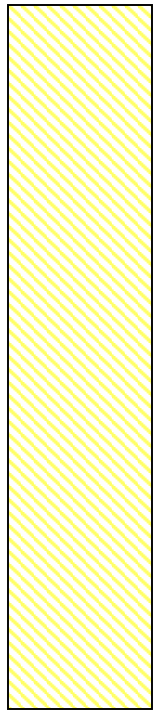
When comparing the two periapical techniques, the disadvantages of the bisecting angle technique are:

1. **More distortion**: because the film and teeth are at an angle to each other (not parallel) the images will be distorted (see next slide).

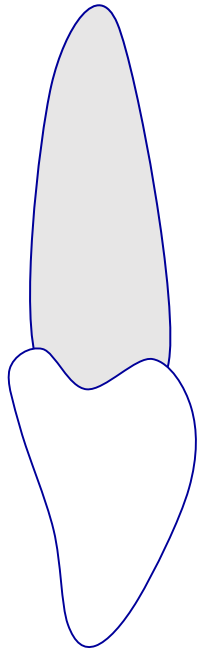
2. **Harder to position x-ray beam**: as mentioned previously, because a film holder is often not used it is difficult to visualize where the x-ray beam should be directed.

3. **Film less stable**: using finger retention, the film has more chance of moving during placement

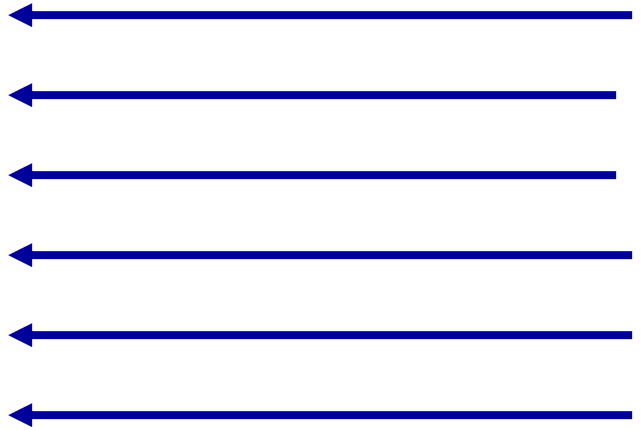
Paralleling techniques



Film



Tooth



X rays

Paralleling Instruments

Short cone

- Increase chance of elongation or shortening of image.
- Shadow of alveolar bone tends to fill interproximal spaces.

Long cone

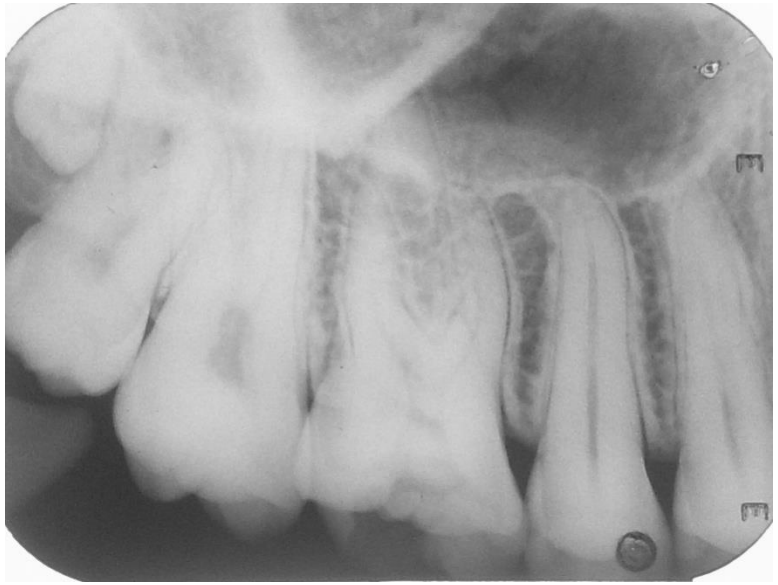
- Image obtained is of almost same size and shape
- Alveolar crest seen in true relationship to the teeth.

- Distortion of image
- Distorted image due to oblique exposure and bending of film.

- Sharp image
- Image of teeth are nearly anatomically accurate, from use of right angle exposure.

Short cone

- Superimposition of zygomatic arch on the teeth.

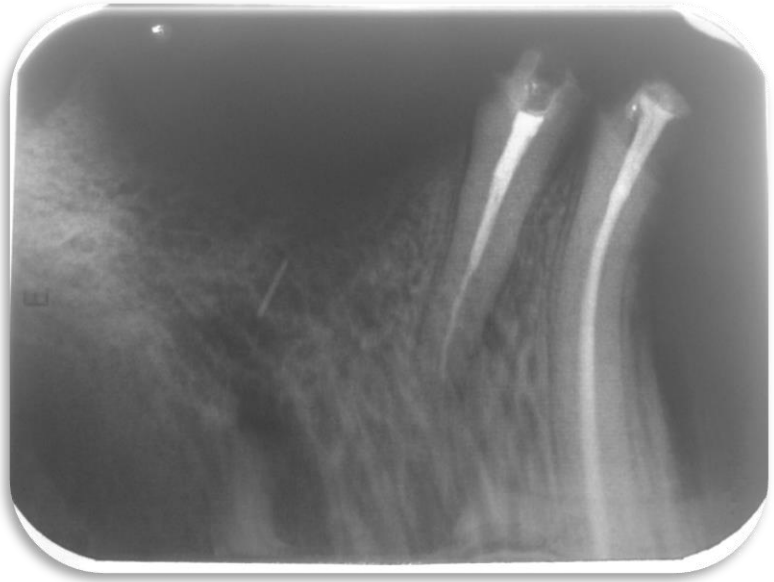


Long cone

- Less vertical angulation avoids superimposition of zygomatic arch

Short cone

- Curved film because of in correct finger pressure



Long cone

- Use of film holding device prevents.

Short cone

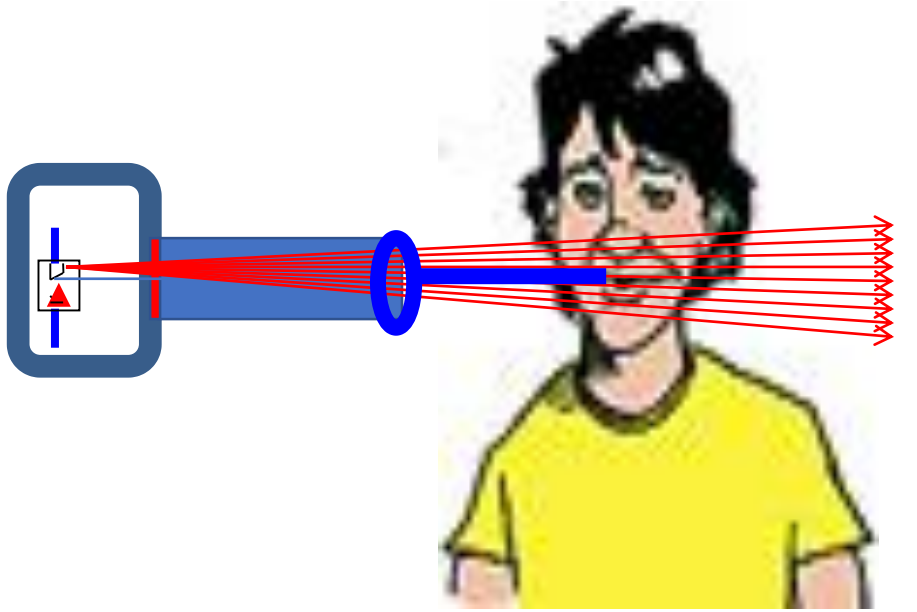
- Easier technique, less space required.
- More effective when the palate is shallow, in children.

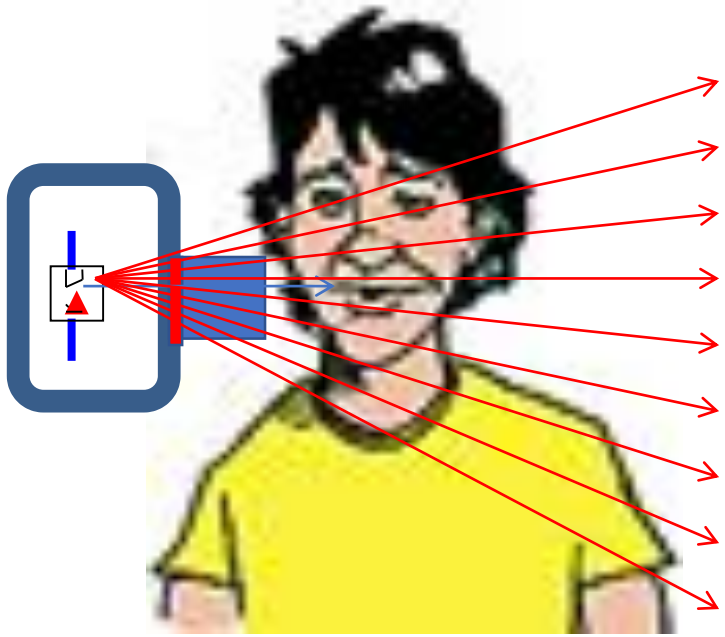
Long cone

- More space required
- In similar situation apices may cut off.

- Cone cut common

- Less chance because of PID





Occlusal radiograph

Types of occlusal radiograph

Maxillary occlusal projection

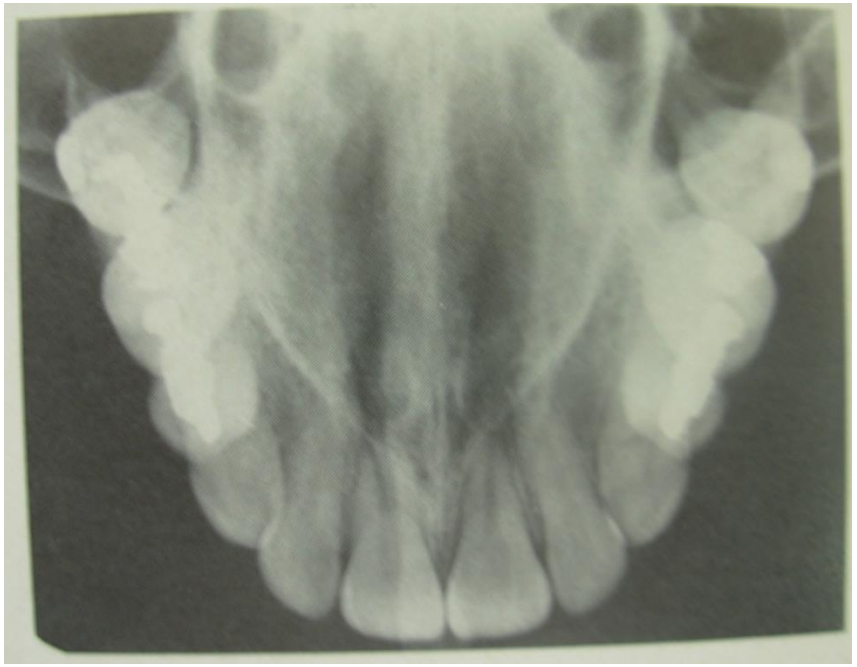
1. Anterior
2. Cross sectional.
3. Lateral.

Mandibular occlusal projection

1. Anterior
2. Cross sectional.

Anterior maxillary occlusal projection

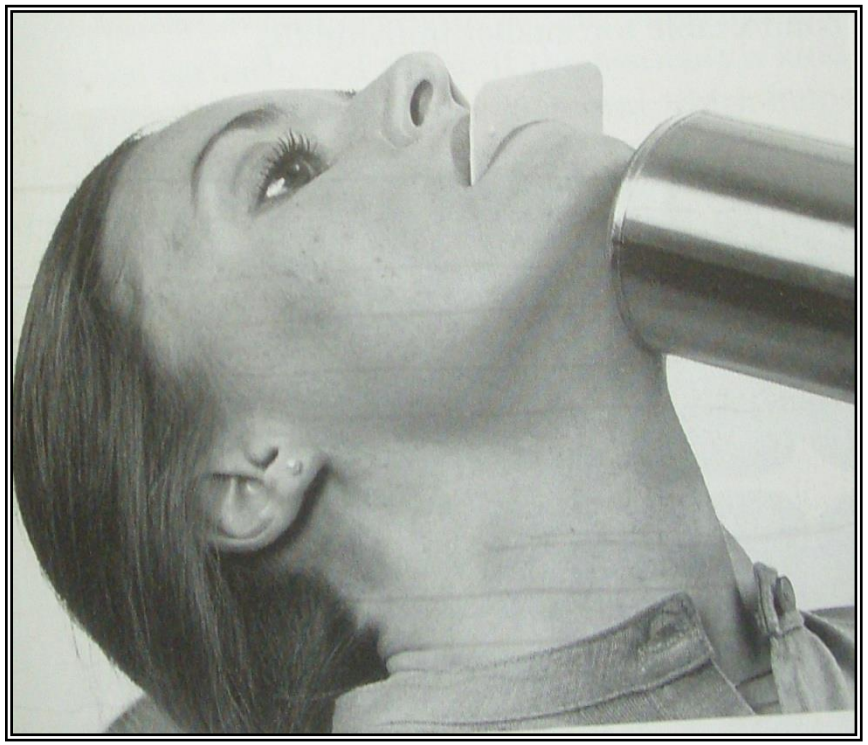
Cross sectional maxillary occlusal projection



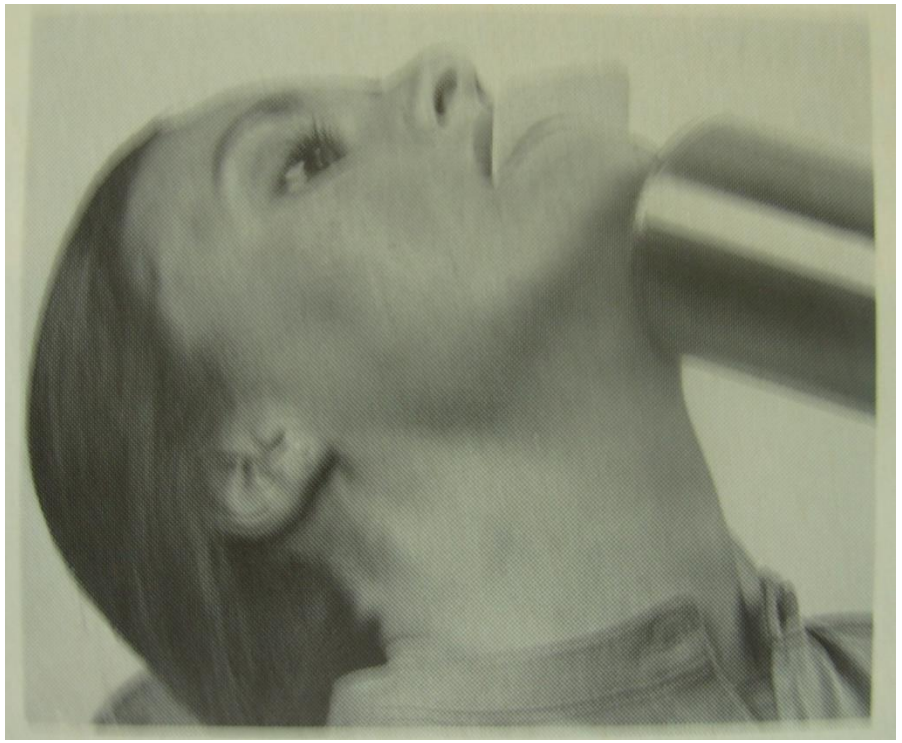
Lateral maxillary occlusal projection

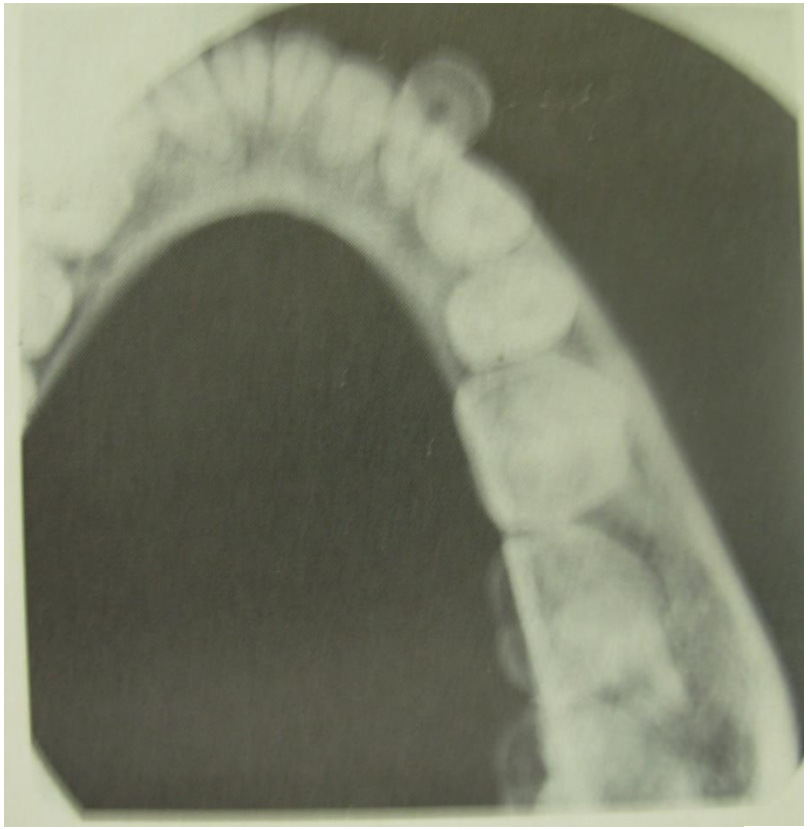
Anterior mandibular occlusal projection

Cross sectional mandibular occlusal projection.



Lateral mandibular occlusal projection





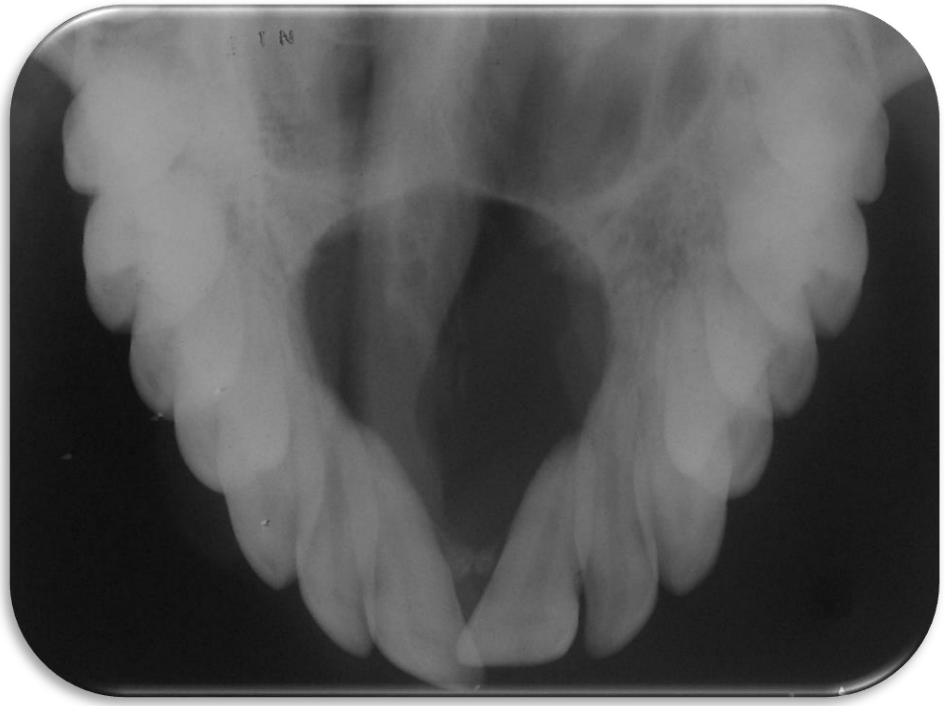
Indications

- Location of supernumerary / impacted.
- Sialolith.
- Pathology of sinus.
- Fractures
- Extent of disease
- Trismus.

Sialolith

Pathology

Radicular cyst



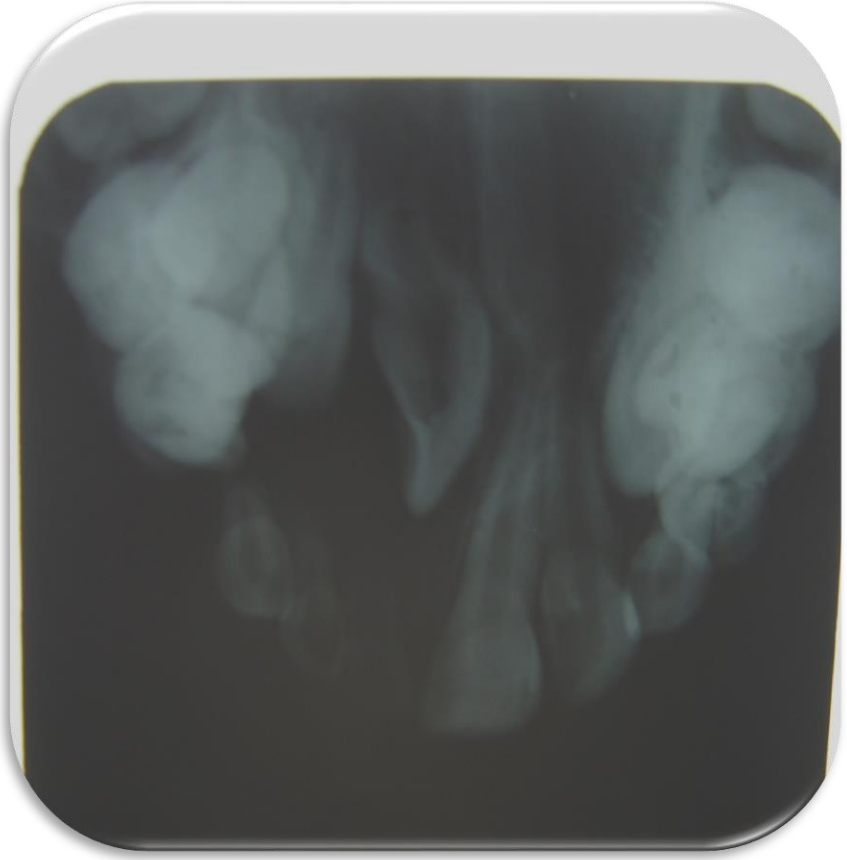
Nasopalatine cyst

Tumor

Cementoblastoma

Ossifying fibroma

Impacted



Supernumerary

Supernumerary

Fracture

BITEWING

- Positive +5-10 degree angulation for all regions
- Central ray is directed through the contact areas of the teeth.
- Film is parallel to the tooth.

Indications

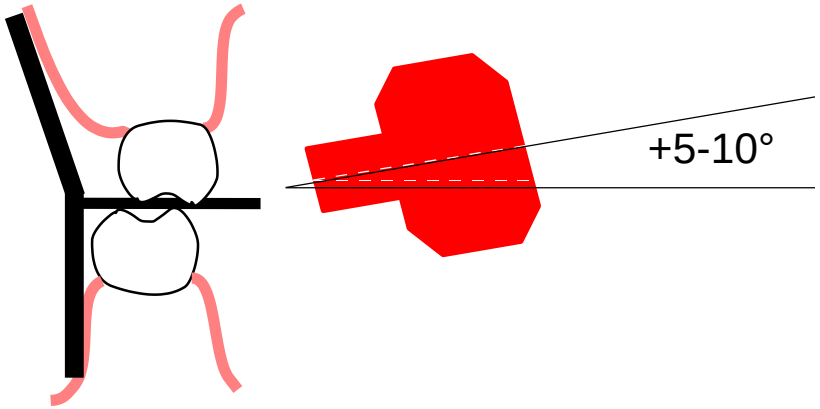
Interproximal Caries

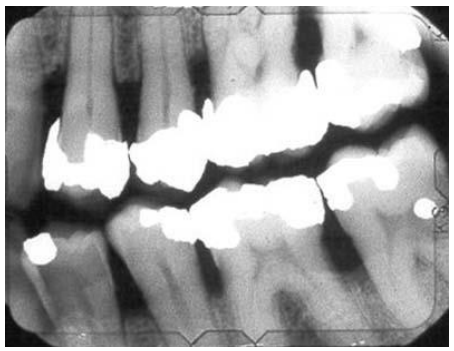
Interdental bone involvement

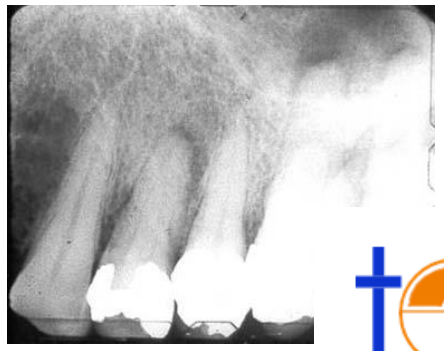
Height of pulp horns

Pulp stones

Overhanging restorations



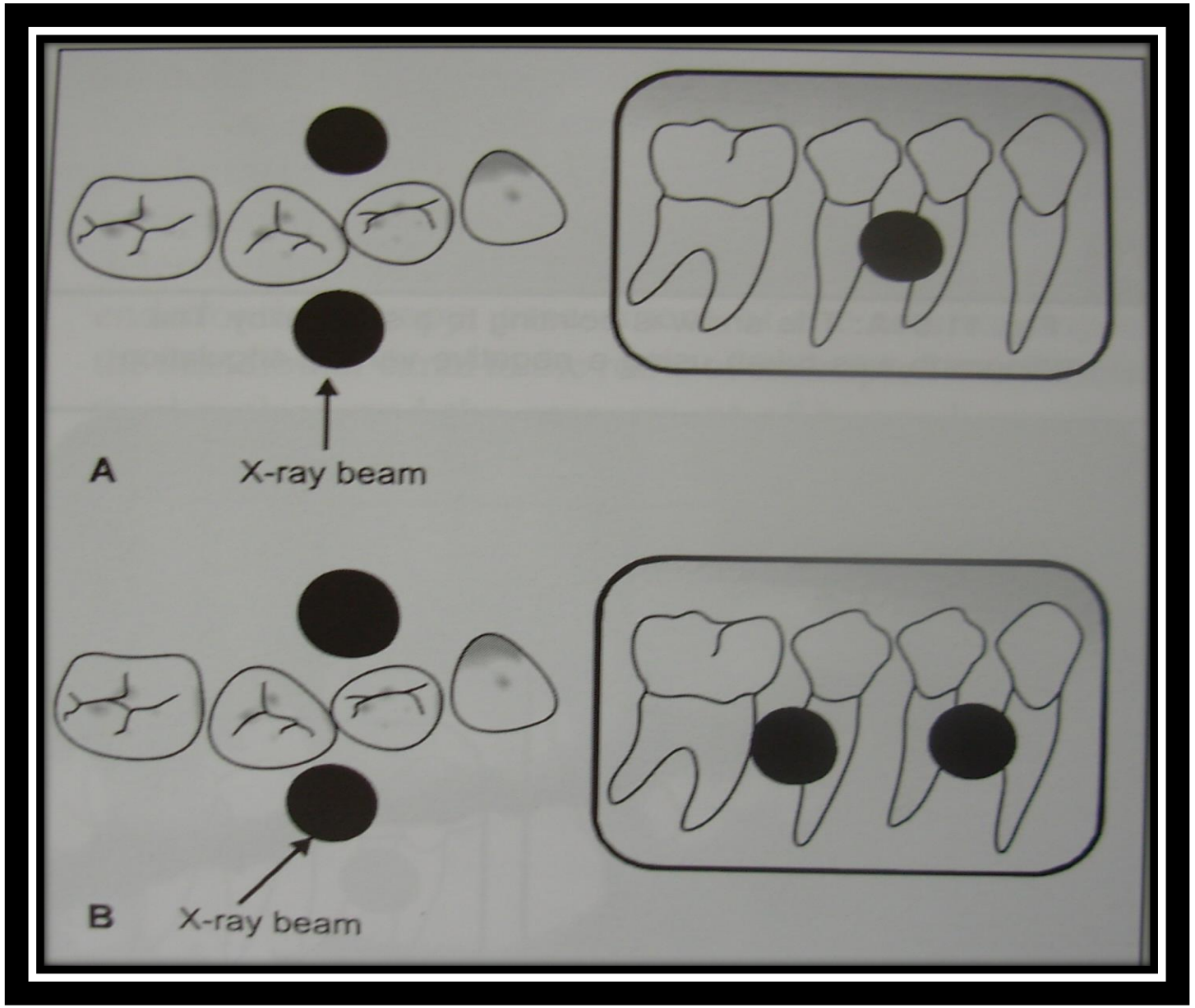




OBJECT LOCALIZATION TECHNIQUES

- SLOB Technique
  - Buccal object rule
  - Clark's principle
  - Tube shift technique
  - Parallax technique
- Right angle technique
  - Two radiographs at right angle to each other

SLOB TECHNIQUE



RIGHT ANGLE TECHNIQUE

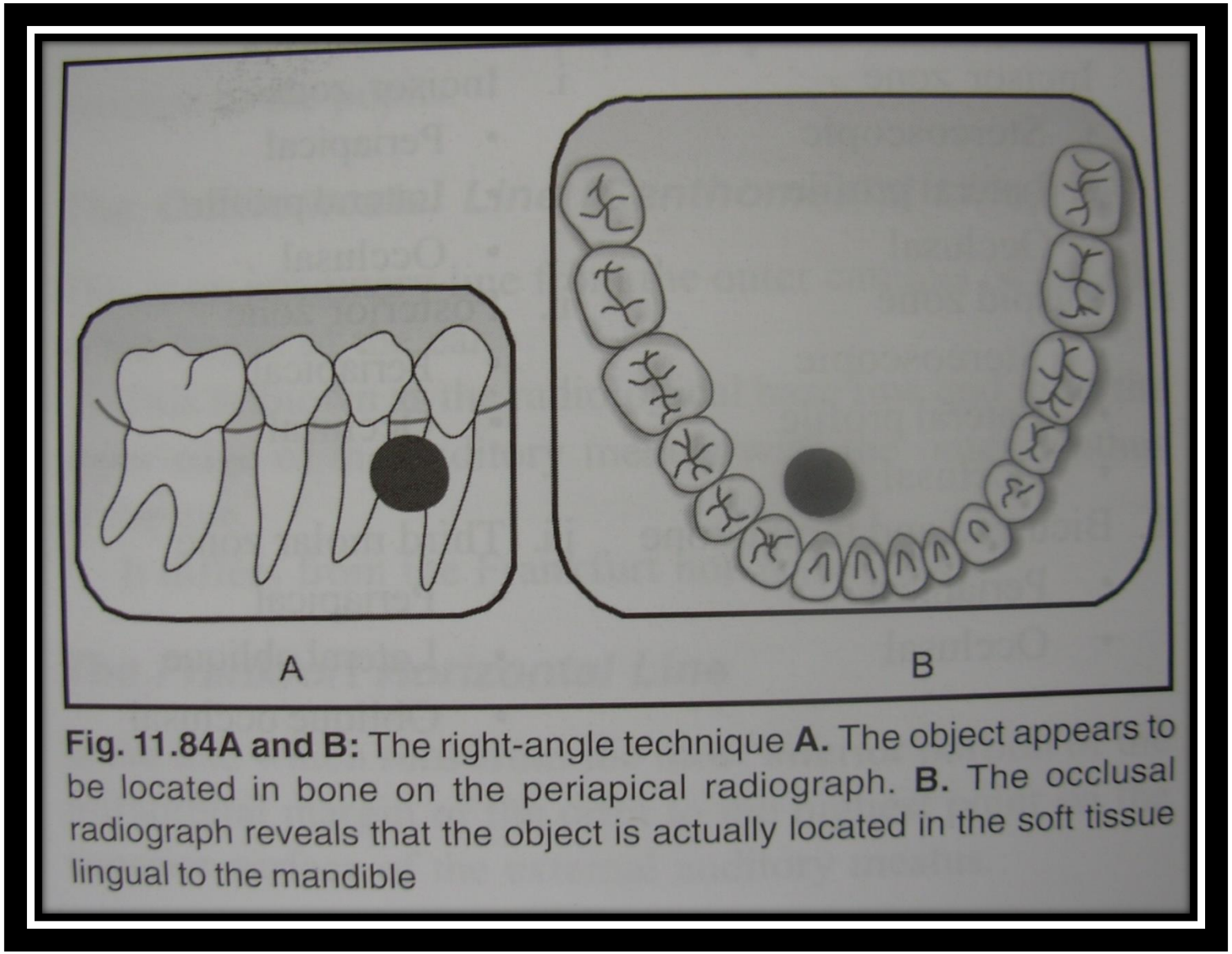
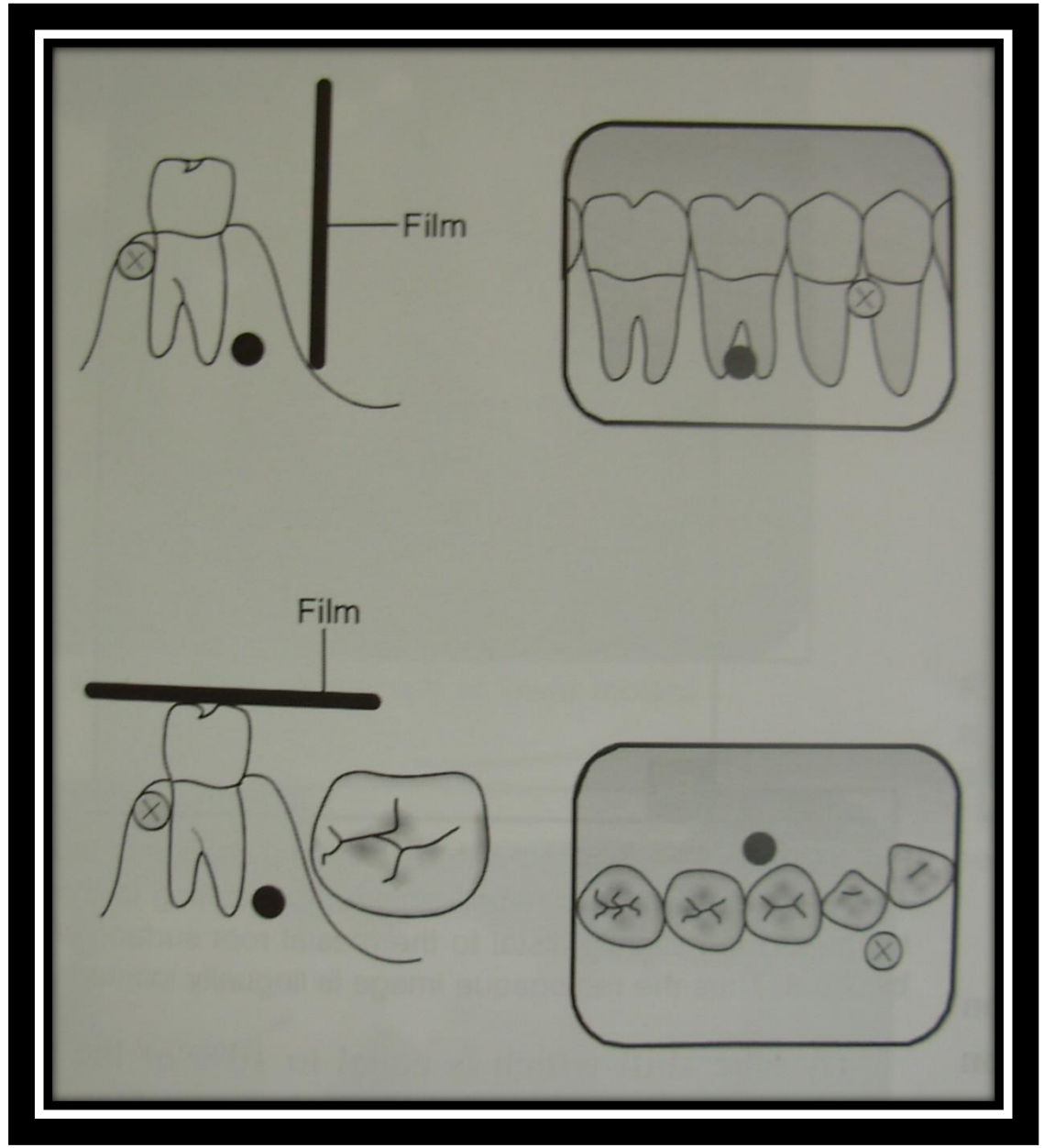


Fig. 11.84A and B: The right-angle technique **A.** The object appears to be located in bone on the periapical radiograph. **B.** The occlusal radiograph reveals that the object is actually located in the soft tissue lingual to the mandible

RIGHT ANGLE TECHNIQUE



REFERENCES

- Oral radiology – principles and interpretation – south east asia edition. – white and pharaoh.
- Essentials of oral and maxillofacial radiology- Freny karjodkar.
- Textbook of dental radiology 3rd edition – pramod john R.
- Essentials of dental radiography and radiology – eric whites.

Conclusion

- Understanding of intraoral techniques is very important in understanding how the images are produced.
- With this knowledge we can produce the best of images.

Take home message

- Learning of the various techniques helps in better understanding of the indications of each in various pathologies and diagnosis of lesions.

PROBABLE SAQs AND LAQs:

SAQs:

- Enumerate the various methods of intraoral radiography
- Discuss bisecting angle technique
- Discuss paralleling technique
- Enumerate the indications of IOPA
- Compare bisecting angle and paralleling techniques

LAQ:

- Describe the bisecting angle in detail with diagrams. Compare bisecting and paralleling techniques.
- Describe the PARALLELING angle AND bite wing technique in detail with diagrams. Describe object localization technique.