



INTRA ORAL RADIOGRAPHIC TECHNIQUES

PREPARED BY

ASS. PROF DR. ZAINAB H AL-GHURABI

Types of Intraoral Radiography


Periapical Radiography

Bitewing Radiography

Occlusal Radiography

Radiographic image:-

Is a kind of shadow,, the source of radiation for this shadow is the focal spot..... while the film records this shadow.



*Periapical radiography shows the entire tooth and its surrounding bone. The purpose of such examination is to examine the entire tooth. As the name suggests, it shows the terminal end of the root of a tooth and the surrounding bone. (There are two methods for periapical radiography, paralleling angle technique and bisecting angle technique).

*Bitewing radiograph shows crowns of maxillary and mandibular teeth and adjacent crests. Its purpose is to examine the crowns of maxillary and mandibular teeth and caries in proximal surfaces.

*Occlusal radiography reveals larger area of the tooth and bone as compared to periapical film where we see the restricted area.

Periapical radiographs techniques

There are two types of periapical radiographs tech.

1- *Bisecting technique*:-

Is the older of the two procedures it consider to be the easier of the two.

2- *Parallel technique*:-

The result of this technique is superior to those of bisecting one.

Bisecting Line Angle Technique

Bisecting line angle technique is also called short cone technique which is based on the rule of isometry.

Isometry is defined as equality of measurement. It is most commonly used as it is easier to achieve.

Theory

The film is placed as close as possible to the tooth during investigation without bending the film. The angle formed between the long axis of the tooth and the long axis of the film packet is assessed.

Imaginary bisector should be drawn between the long axis of the tooth and the long axis of the film that results in two congruent right-angled triangles.

The X-ray tube head is positioned at right angle to imaginary bisector with the central ray of the X-ray beam aimed through the apex of the tooth.

Long axis of tooth

X-ray beam

Bisecting line

Long axis of film



Angulation of X-ray Beam (in Bisecting Angle Technique)

It is related to the position of patient's teeth when the occlusal plane of the patient is parallel with the floor.

Vertical Angulation: It is movement of X-ray tube head in the vertical direction, i.e. in up and down directions.

When the X-ray beam is directed at the occlusal plane, the vertical angulation **is said to be zero**.

Angulation in the downward direction is called **positive vertical angulation**.

Angulation in the upward direction is called **negative vertical angulation**.

Horizontal angulations

It is the angulation of the tube in horizontal plane, i.e. side-by-side direction. In the horizontal plane, central ray should be aimed through the interproximal contact areas to avoid overlapping of the teeth.

Tube Head Position

Maxillary Projection

Horizontal plane: Line drawn from the ala of the nose to the tragus of the ear is used as reference line

- **Incisor:** The point of entry is through the tip of the nose. •
- **Canine:** The point of entry is through the ala of the nose. •
- **Premolar:** The point of entry is through a point formed by intersection of midpupillary line with the ala–tragus line. •
- **Molar:** The point of entry is through a point of intersection of a line through the outer canthus of the eye with ala–tragus line.

Mandibular Projection Horizontal plane: Centre of X-ray cone should be 1 cm above the lower border of mandible. Vertical plane: It is same as that of maxillary projection

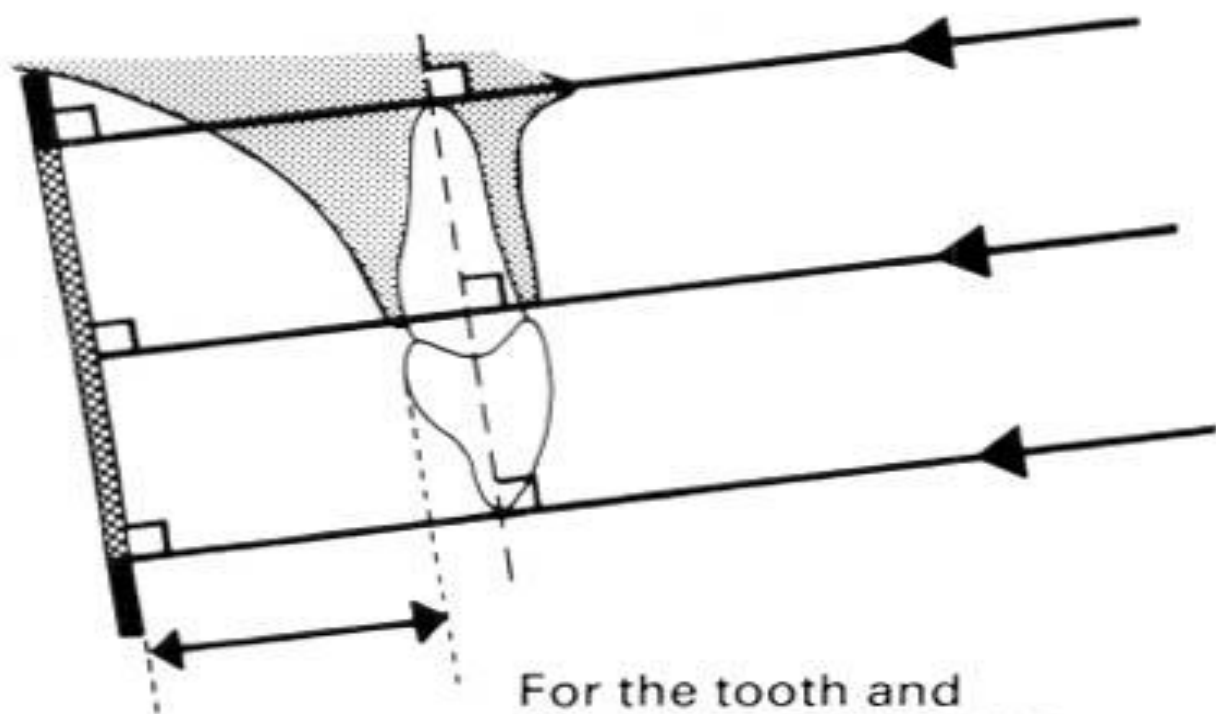
PRINCIPLE OF PARALLEL TECHNIQUE

The central ray of the X-ray beam should be perpendicular to the film and the long axis of the tooth.

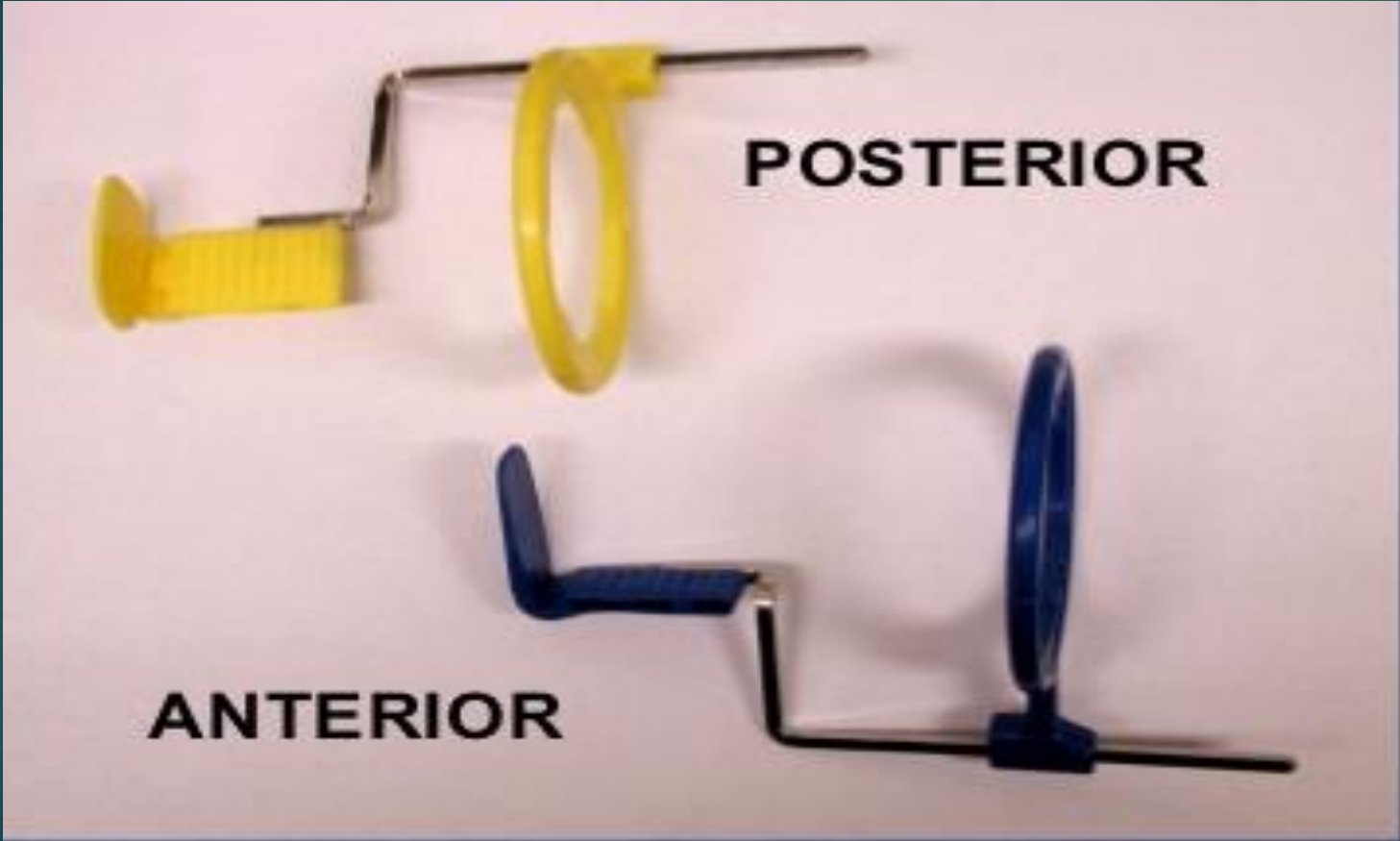
The film should be placed in the mouth parallel to the long axis of the tooth being exposed. (To attain parallelism the film should be placed away from the tooth).

Due to this, object to film distance is increased which results in image magnification.

To compensate image magnification, target to film distance should also be increased



For the tooth and the film to be parallel they have to be positioned some distance apart



Six basic rules for ideal parallel line angle technique

Rule I Film should be placed to cover whole teeth to be examined.

Rule II The vertical plane should be parallel to the long axes of teeth.

Rule III Horizontal plane of film must be parallel to horizontal plane of the teeth.

Rule IV Vertical angulation should be such that PID is positioned parallel to the film packet.

Rule V Horizontal angulation should be from contact area.

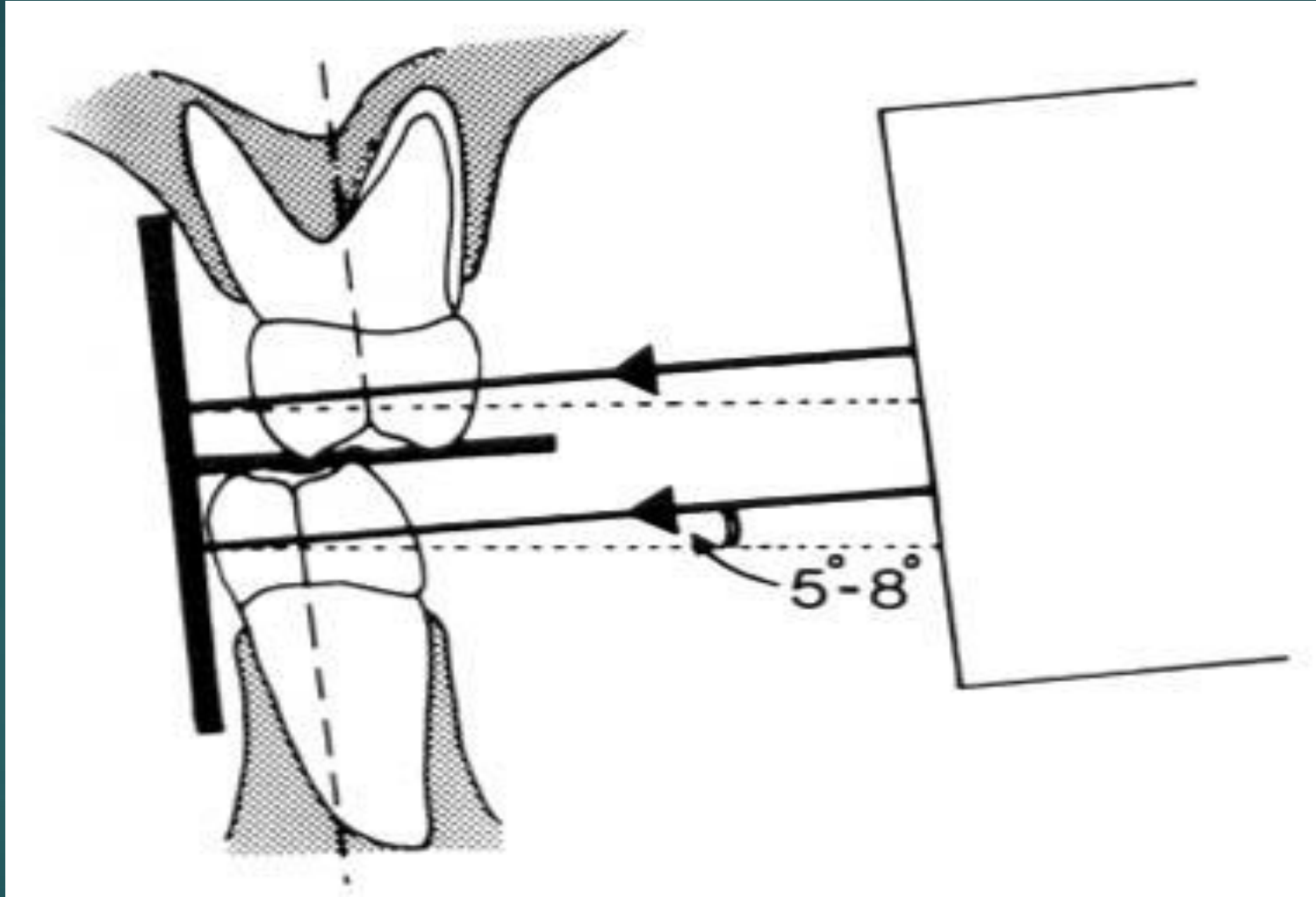
Rule VI Central ray should be directed to the centre of film.

PID, position indicating device.

Principle of bitewing radiograph

Position of bite: The tab or bite platform should be positioned in the middle of the film packet and parallel to the upper and lower edges of the film packet .

* Patient is positioned with the occlusal plane horizontal and the tab of the film placed on the occlusal surfaces of lower teeth ask the patient to close the teeth firmly together on the tab the beam is aimed directly through the contact areas at right angles to the teeth and film in horizontal plane and at approximate 5° - 8° downward in vertical plane.



Occlusal film projection

Maxillary occlusal projections include

- A- Upper standard occlusal
- B- Upper oblique occlusal
- C- Vertex occlusal

A- Upper standard occlusal:-

This projection shows the anterior part of maxilla and upper anterior teeth.

*** The technique involve:-**

1. Patient position where the occlusal plane horizontal and parallel to the floor.
2. Film placed on to the occlusal surfaces of lower teeth and patient asked to bite together gently the film place centrally in the mouth (the long axis crossways).
3. X-ray tube positioned above the patient in the midline directed downward through the bridge of the nose at 65° - 70° to the film packet.

B – *Upper oblique occlusal* :-

This projection shows the posterior part of maxilla and the upper posterior teeth.

*** The technique involve:-**

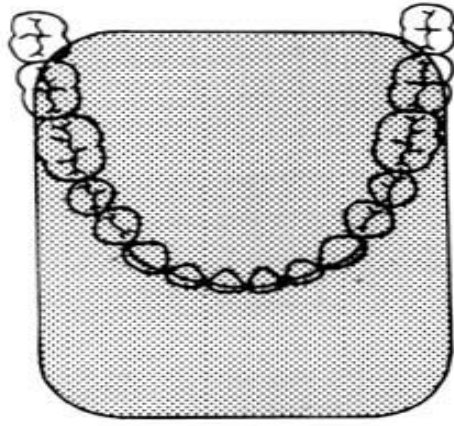
1. Patients position where the occlusal plane horizontal and parallel to the floor.
2. Film placed on the occlusal surfaces of lower teeth with long axis anteroposteriorly placed to the side of the mouth under examination and patient asked to bite gently.
3. X-ray tube positioned at the side of patients face directed downwards through the cheek at $65 - 70^\circ$ to the film.

C- *Vertex occlusal*:-

This projection shows a plan view of teeth bearing area of maxilla from above to assess the bucco - palatal position of un erupted canines.

* **The technique involve:-**

1. The patient is seated with occlusal plane horizontal and parallel to the floor.
2. The film placed on the occlusal surfaces of lower teeth with its long axis anteroposteriorly and patient asked to bite on to it.
3. X-ray tube is positioned above the patient in the midline directed downwards through the vertex of the skull.



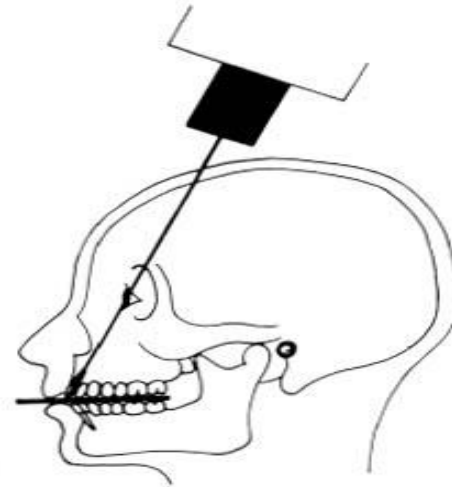
A



B



C



D

Mandibular occlusal projection:-

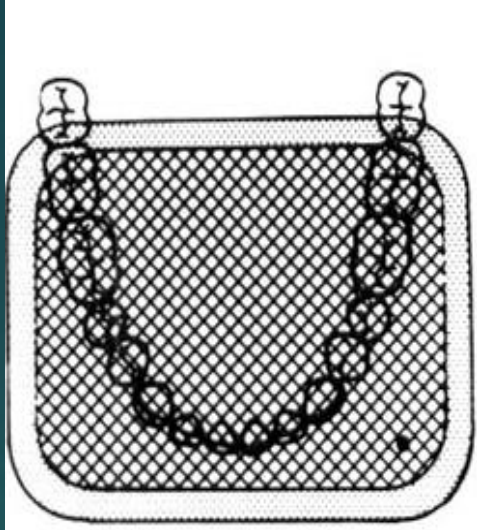
- A/ Lower 90° occlusal (true occlusal).
- B/ Lower standard occlusal.
- C/ Lower oblique occlusal.

A-Lower 90° occlusal (true occlusal):-

This projection used to show a plan view of the tooth bearing area of mandible and the floor of the mouth.

*** The technique:-**

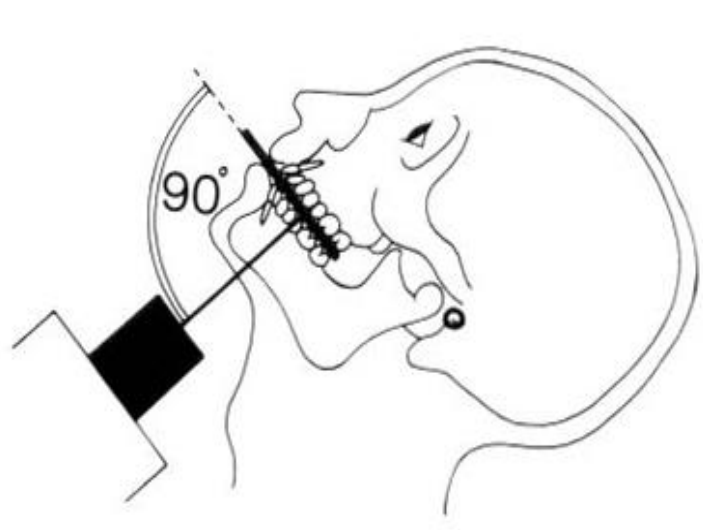
1. Patient tips his head backward as far as comfortable, where it is supported.
2. The film placed centrally into the mouth on the occlusal surfaces of lower teeth with long axis crossways and patient bite gently on the film.
3. X-ray tube placed below the patients chin in midline centering on imaginary line joining the first molar at 90° to the film.



A



B



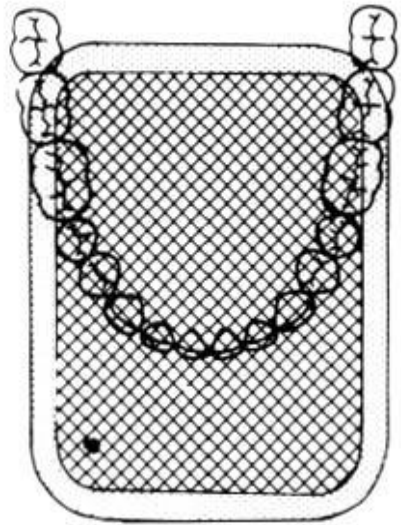
C

B-Lower standard occlusal :-

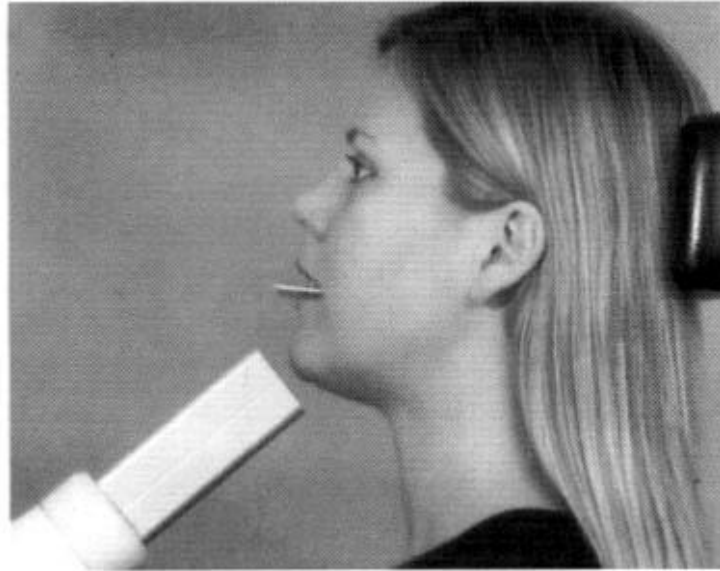
This projection is taken to show lower anterior teeth and anterior part of mandible.

* **Technique** :-

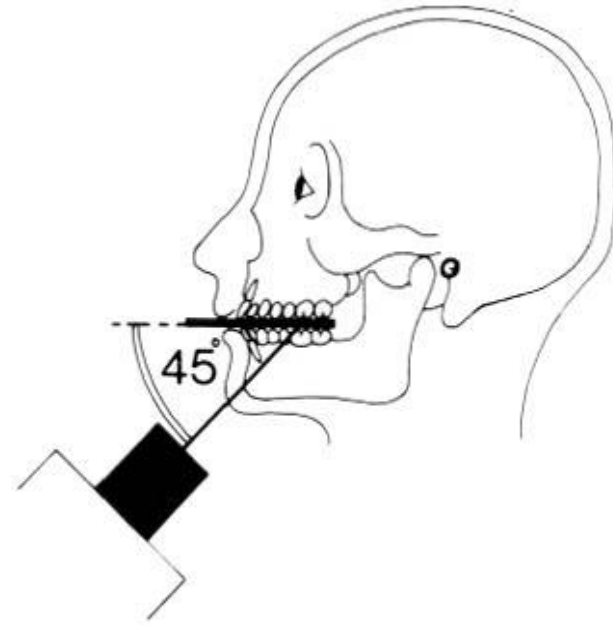
1. Patient is seated with the head supported and occlusal plane horizontal and parallel to the floor.
2. Film placed centrally into the mouth and the long axis anteroposterior then ask him to bite on the film gently.
3. X-ray tube positioned in midline centering through the chin point at 45° to the film.



A



B



C

C-Lower oblique occlusal:-

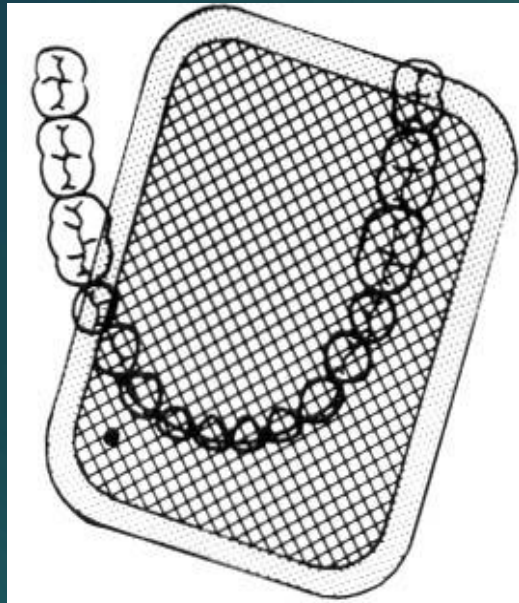
This projection shows the submandibular salivary gland on the side of interest.

* **The technique:-**

1. Patients head is supported and rotated away from the side under investigation and the is raised.

2. The film placed on occlusal surfaces of lower teeth over to the side under investigation with long axis anterior posteriorly then he bite on the film gently.

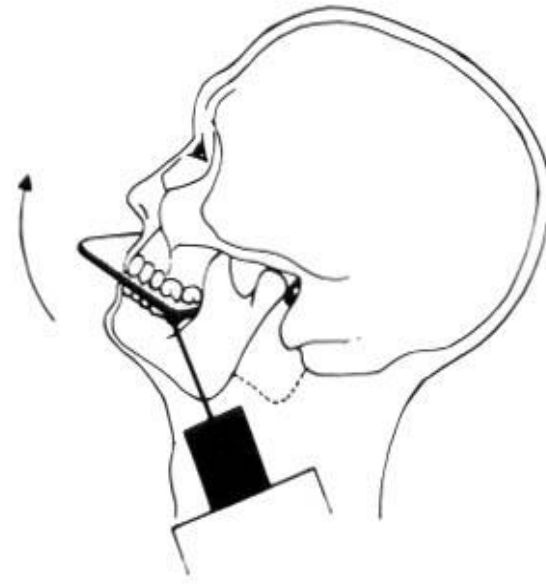
3. X-ray tube directed upwards and forwards toward the film from below and behind the angle of mandible and parallel to the lingual surface of the mandible.



A



B



C

THANK YOU

