



Radiographic Techniques 2

lecture 3

Sinuses, and face projection, shown structure

By

Ali Hani Karim

Master of Radiography Techniques /2021

Facial bones: 1. Occipito-mental

Position of patient and image receptor

- The projection is best performed with the patient seated facing the Bucky/receptor.
- The patient's nose and chin are placed in contact with the midline of the Bucky/receptor and then the head is adjusted to bring the orbito-meatal baseline to a 45° angle to the Bucky/receptor.
- Ensure the median sagittal plane is at right-angles to the Bucky/receptor by checking that the outer canthus of the eyes and the EAMs are equidistant.

Direction and location of the X-ray beam

- The collimated horizontal beam is centred to the Bucky/ receptor before positioning is undertaken.
- The horizontal central line of the Bucky/receptor should be at the level of **the lower orbital margins**.

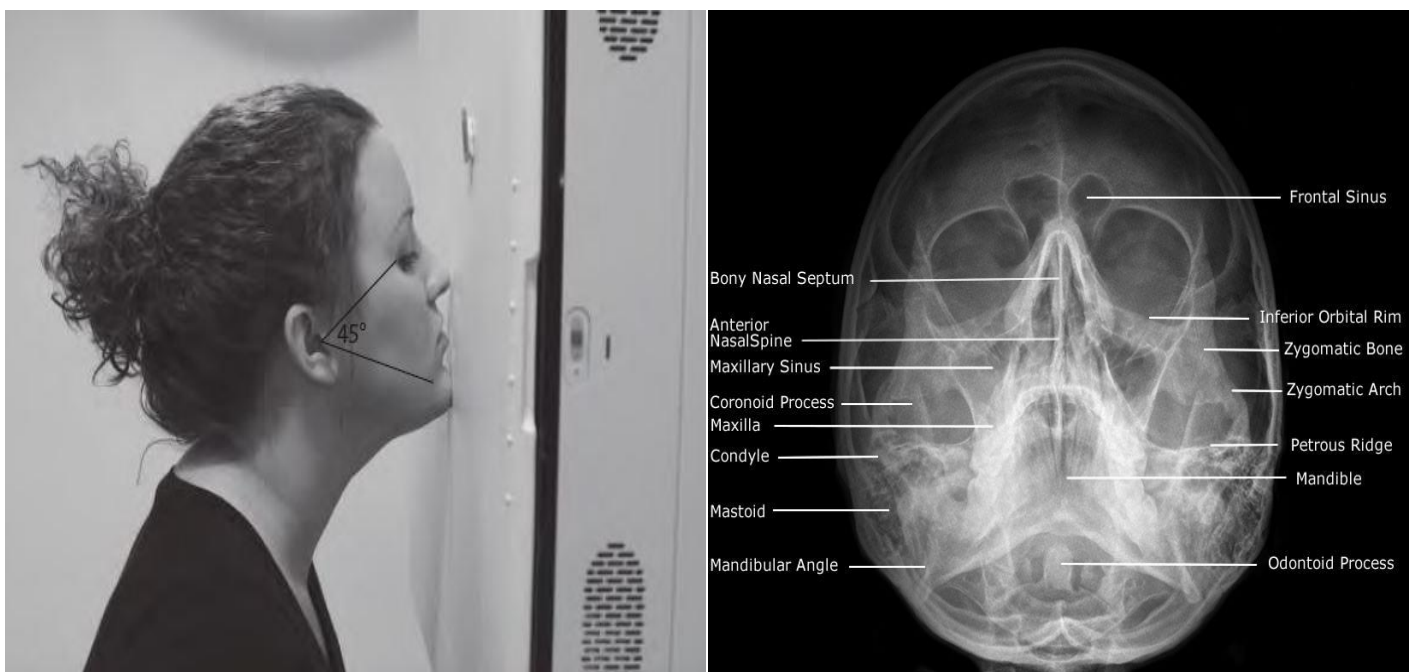


Figure (1) Occipito-mental projection of facial bones

Essential image characteristics

- **The petrous ridges** should be demonstrated inferior to the floors of the maxillary sinuses.
- There should be no rotation. This can be checked by ensuring the distance from the lateral orbital wall to the outer skull margins is equidistant on both sides.

Common faults and solutions

- Petrous ridges superimposed over the inferior part of the maxillary sinuses. In this case several faults may have occurred. The orbito-meatal baseline may not have been positioned at 45° to the cassette/receptor; a $5\text{--}10^\circ$ caudal angulation could be applied to the tube to compensate for this.
- As this is an uncomfortable position to maintain, always check the baseline angle immediately before exposure

2. Occipito-mental 30° caudal

Position of patient and image receptor

- The projection is best performed with the patient seated facing the vertical Bucky/receptor.
- The patient's nose and chin are placed in contact with the midline of the Bucky/receptor and then the head is adjusted to bring the orbito-meatal base line to a 45° angle to the Bucky/receptor.
- Ensure the median sagittal plane is at right-angles to the Bucky/receptor by checking that the outer canthus of the eyes and the EAMs are equidistant.

Direction and location of the X-ray beam

- The tube is **angled 30° caudally** from the horizontal and centred along the midline such that the central ray exits at the level of **the lower orbital margins**.
- The horizontal central line of the Bucky/receptor should be at the level of **the symphysis menti**.

Essential image characteristics

- **The orbital floors** will be clearly visible through the maxillary sinuses and the lower orbital margin should be clearly demonstrated.
- There should be no rotation. This can be checked by ensuring the distance from the lateral orbital wall to the outer skull margins is equidistant on both sides.

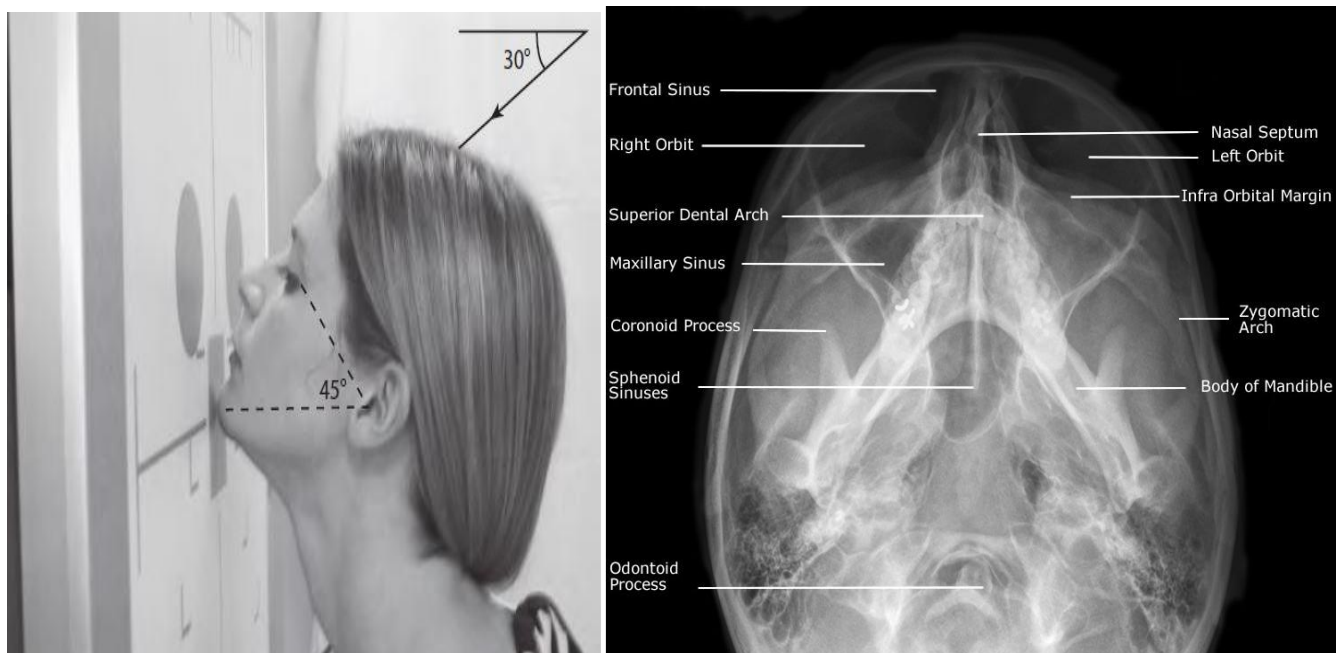


Figure (2) Occipito-mental 30° caudal projection of facial bones

Common faults and solutions

- Failure to demonstrate the whole of the orbital floor due to under angulation and failure to maintain the orbito-meatal baseline at 45°. This may be compensated by increasing the caudal tube angle.

3. Modified mento-occipital

Position of patient and image receptor

- The patient will be supine on the trolley and should not be moved. The gridded CR cassette/receptor is placed either in the cassette tray in the trolley or under the patient.
- The top of the CR cassette/receptor should be at least 5 cm above the top of the head to allow for any cranial beam angulation.

Direction and location of the X-ray beam

- The patient should be assessed for position (angle) of the orbito-meatal line in relation to the receptor and obviously any modifications must be made to the tube angulation and the patient not moved.
- If the baseline makes an angle of 45° back from vertical (chin raised), then a perpendicular beam can be employed centred to the midline at the level of the lower orbital margins.
- If the orbito-meatal baseline makes an angle of less than 45° with the cassette/receptor because of the cervical hard collar then the difference between the measured angle and 45° should be added to the beam in the form of a cranial angulation. The centring point remains the same.
- The beam is collimated to the area of interest.

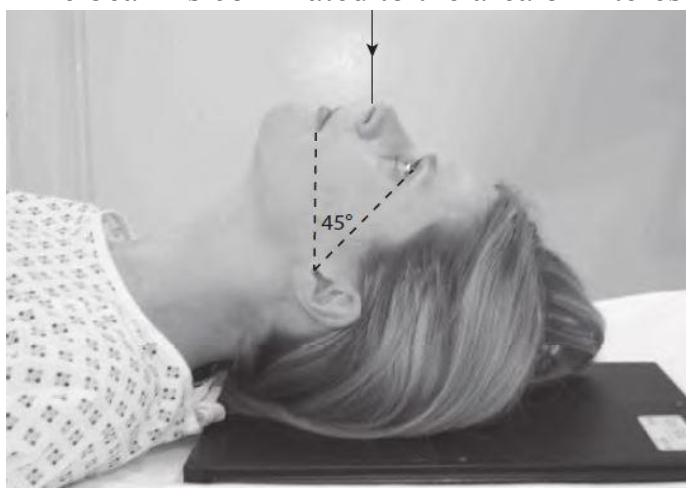


Figure (3) Modified mento-occipital projection of facial bones

4. Modified reverse occipito-mental 30° for the severely injured patient

Position of patient and image receptor

- The patient is supine on the trolley with head adjusted such that the median sagittal plane and orbito-meatal baseline are perpendicular to the trolley top.
- A gridded CR cassette is positioned vertically against the vertex of the skull and supported with foam pads and sandbags such that it is perpendicular to the median sagittal plane.

Direction and location of the X-ray beam

- The tube is angled 20° cranially and centred to the symphysis menti in the midline.
- A 100 cm FRD is used but it may be necessary to increase this for obese or large patients, as the tube will be positioned close to the chest. Remember to increase the exposure if the FRD is increased.



Figure (4) Modified reverse occipito-mental 30 caudal projection of facial bones

Essential image characteristics

- The floors of the orbits will be clearly visible through the maxillary sinuses and the lower orbital margin should be clearly demonstrated.
- There should be no rotation. This can be checked by ensuring the distance from the lateral orbital wall to the outer skull margins is equidistant on both sides.

5. Lateral

Position of patient and image receptor

Erect

- The patient sits facing the vertical Bucky/receptor. The head is rotated such that the side under examination is in contact with the Bucky/receptor.
- The arm on the same side is extended comfortably by the trunk whilst the other arm may be used to grip the Bucky/receptor for stability. The Bucky/receptor height is altered such that its centre is **2.5 cm** inferior to the outer canthus of the eye.

Supine

- The patient lies on the trolley with their arms extended by the sides and the median sagittal plane vertical to the trolley top.
- A gridded cassette is supported vertically against the side under examination so that the centre of the receptor is **2.5 cm** inferior to the outer canthus of the eye.
 - In either case the median sagittal plane is brought parallel to the Bucky/receptor by ensuring that the interorbital line is at right-angles to the Bucky/receptor and the nasion and external occipital protuberance are equidistant from it.

Direction and location of the X-ray beam

- The collimated horizontal beam is centred to a point **2.5 cm** inferior to the outer canthus of the eye.

Essential image characteristics

- The image should contain all of the facial bones sinuses, including the frontal sinus.
- A true lateral will have been obtained if the lateral portions of the floor of the anterior cranial fossa are superimposed.

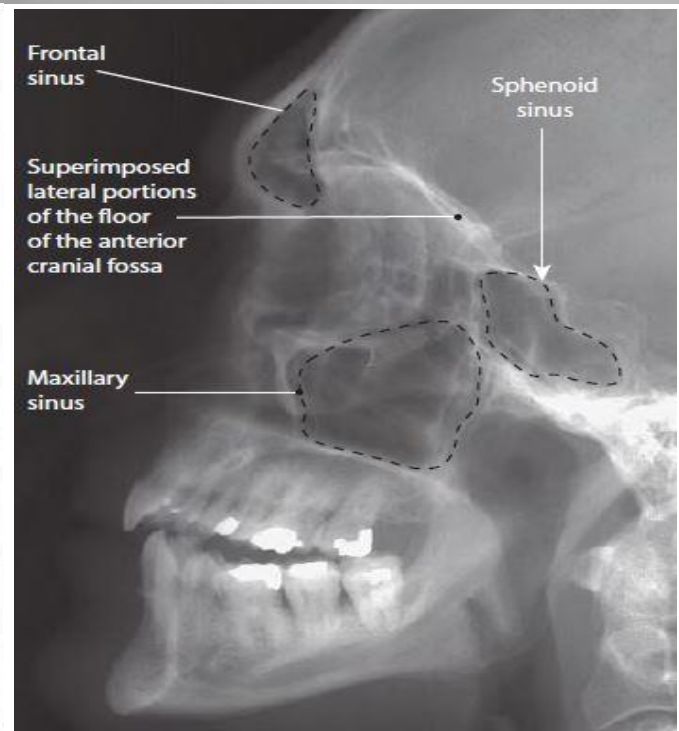
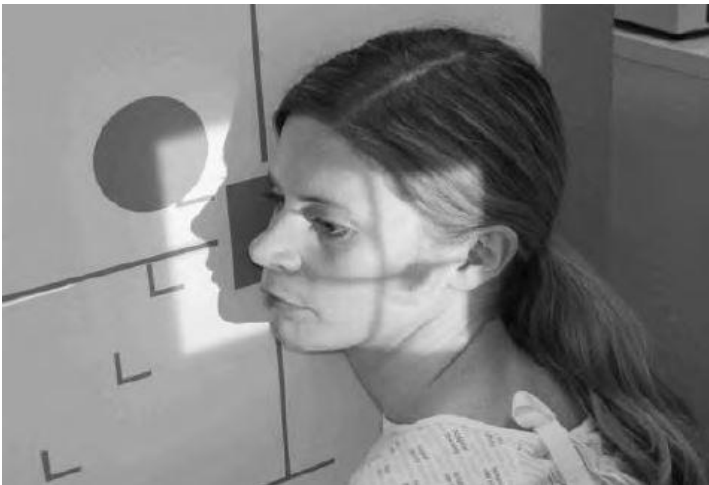


Figure (5) Lateral.proj of facial bones