Syrian Private University
Faculty of Dentistry
Department of Oral Medicine

Panoramic Radiography

II. Errors seen in Radiographs

Lecture 3

1

Errors in panoramic radiographs

- In techniques
- Film processing/ PSPP errors
- Related to patient

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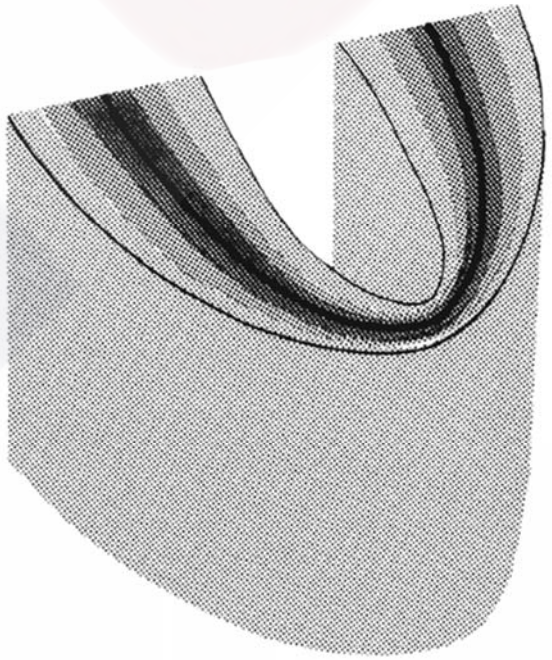
I. Technical errors in panoramic radiographs

Tomography is sensitive to the object's position (Why?).

When teeth are not position within the image layer (focal trough)

Technical errors

The technician holds the responsibilities



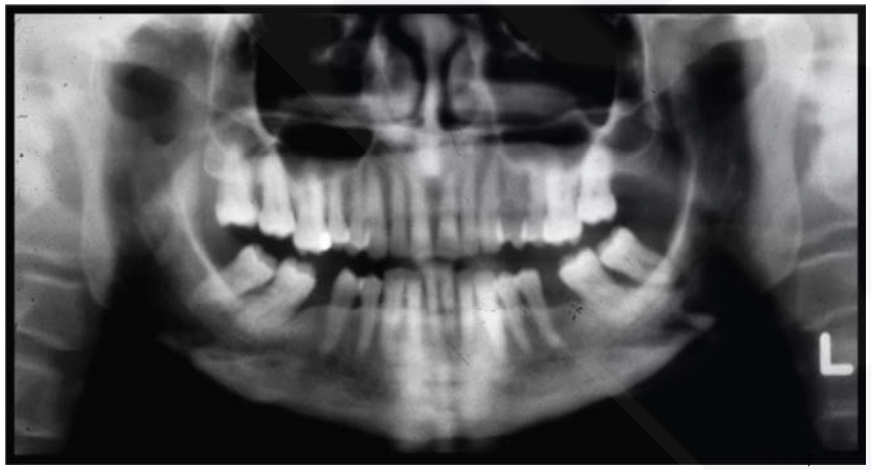
4

Should panoramic radiography be retaken in all types of errors in the radiograph

?

- Features of the error.
- Cause of the error.
- Correction.
- Digital enhancement improve the image or not.

I. Teeth Too Anterior

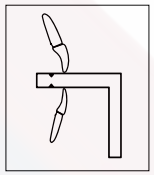


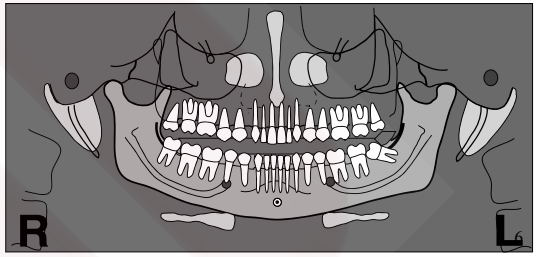
I. Teeth Too Anterior

Narrowed and blurred anterior teeth.

Spine superimposed on ramus on both sides.

Closer to the receptor (out of the focal trough)





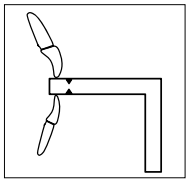
I. Teeth Too Anterior

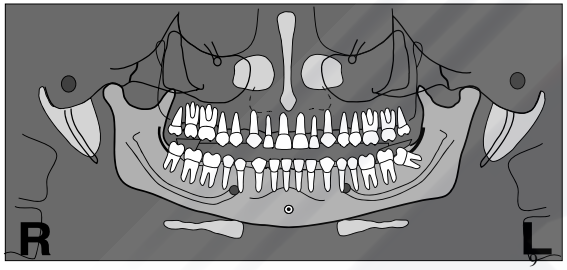
Make sure patient is biting in groove of bite-block.
Check the canine light

II. Teeth Too Posterior

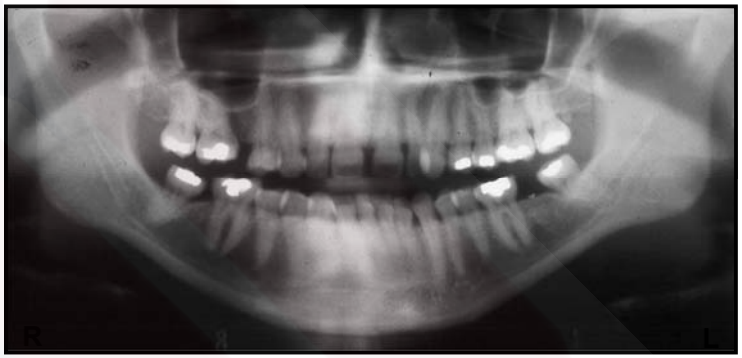
The anterior teeth wider & blurred.

Ghost of the contralateral ramus.

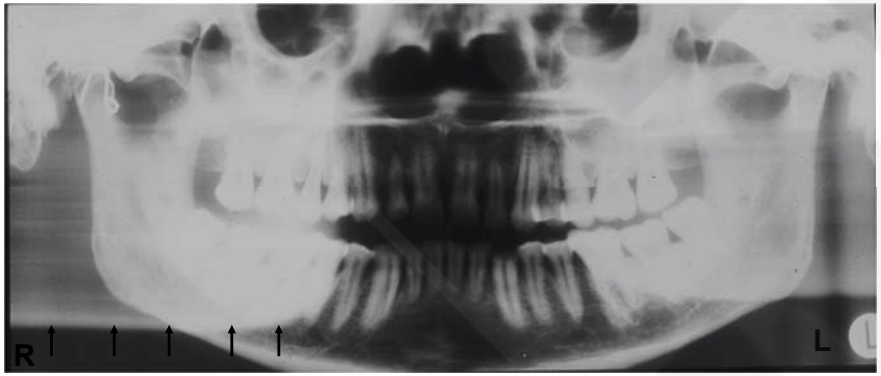




II. Teeth Too Posterior



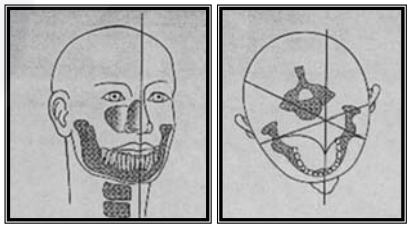
II. Teeth Too Posterior

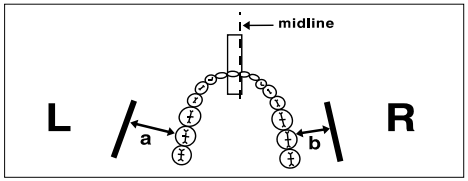


Make sure patient is biting in groove of bite-block.
Check canine light.

III. Head Turned (twisted)

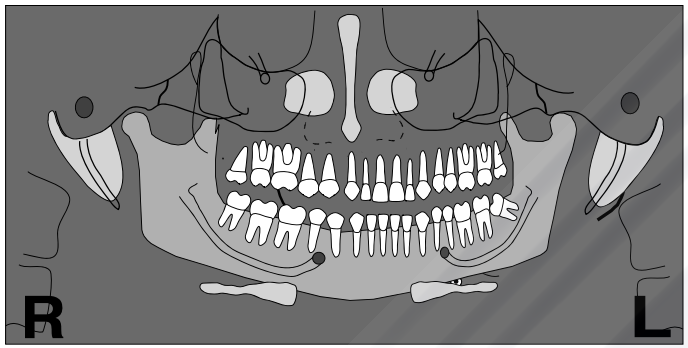
The structures on one side will be closer to the film and the structures on the other side will be farther from the film.





III. Head Turned (twisted)

The teeth (and the ramus) are smaller on the side to which the head is turned.



Overlap of contact points and blurring of the magnified side.

III. Head Turned (twisted)

The head was turned (twisted) to the

left.

III. Head Turned (twisted)

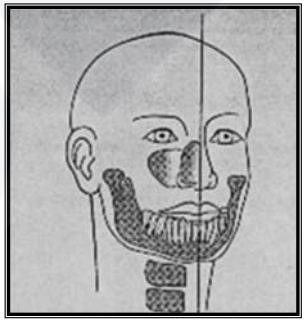
Which side was farther from the film?

The patient's right side; farther from the film.

III. Head Turned (twisted)

Line up patient's midline with middle of incisal bite guide (midline light).

Close side guides.



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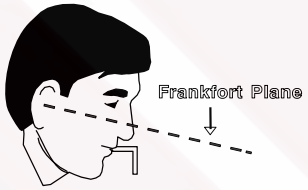
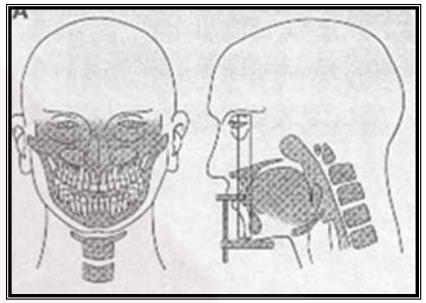
IV. Patient's head shifted to one side of midline

Close side guides
Check anterior vertical midline light

V. Head Tipped Down

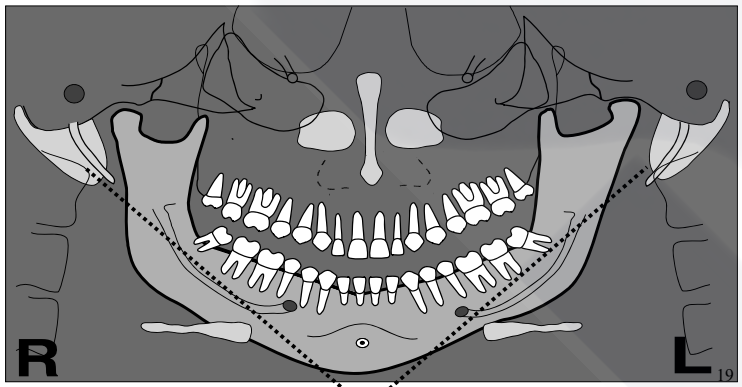
The mandibular incisors shortened and the mandible will be V-shaped (Exaggerated smile).
Hyoid bone superimposed on mandible.
Frankfort Plane is inclined downward.



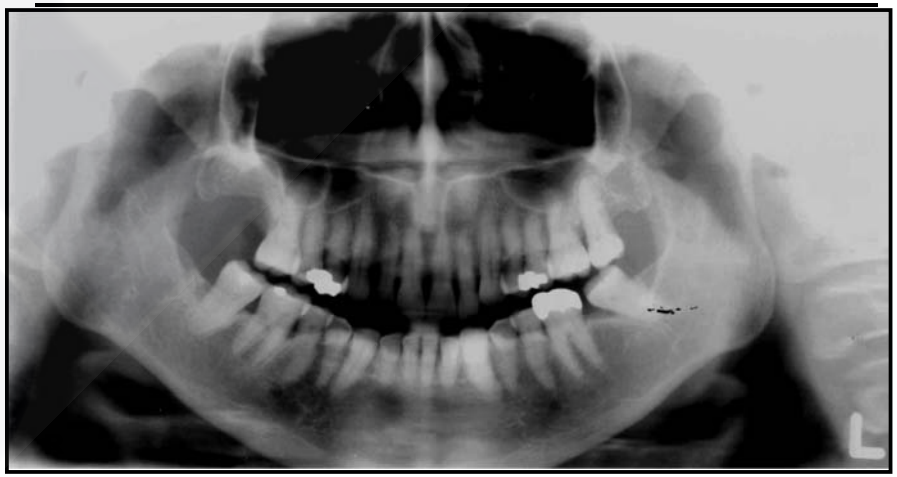


V. Head Tipped Down

The occlusal plane has a "smile" shape.
The rest of the teeth are relatively normal.



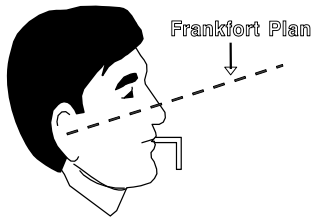
V. Head Tipped Down



Check FP.
Why depending on the bite-block doesn't work?

VI. Head Tipped Up

Frankfort Plane angled upward
"squared-off" "box-like" mandible.
The hard palate superimposed over the maxillary teeth roots/ lengthening of intercondylar area/
May have the appearance of a "reverse" smile.



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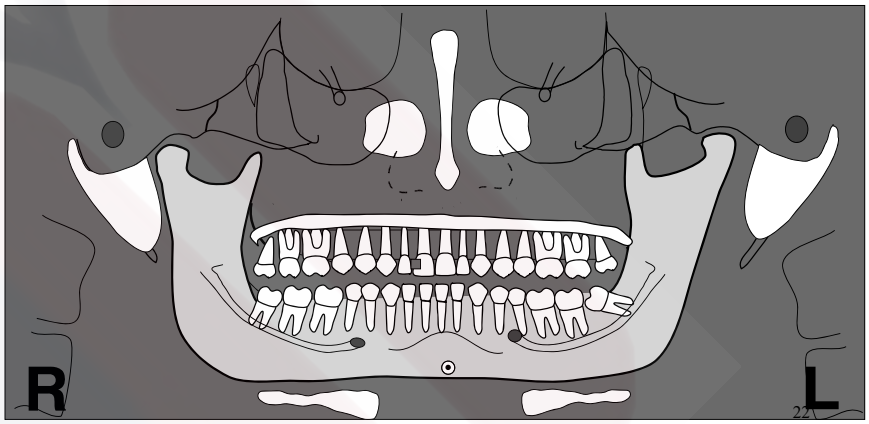
VI. Head Tipped Up



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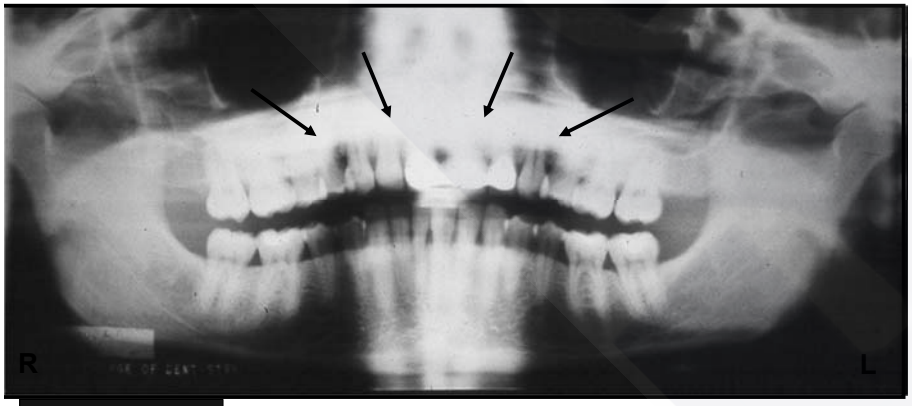
VI. Head Tipped Up



Check FP.

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VII. Head tilted

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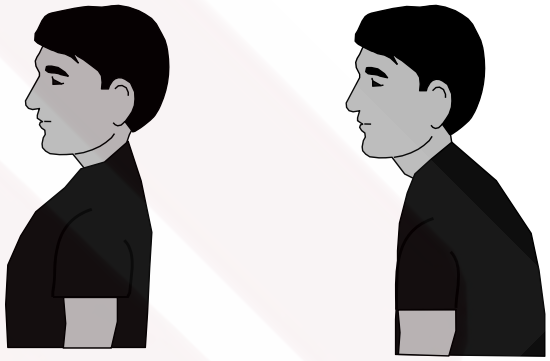
VII. Head tilted

Close side guides.

VIII. Cervical Vertebrae (Spine)

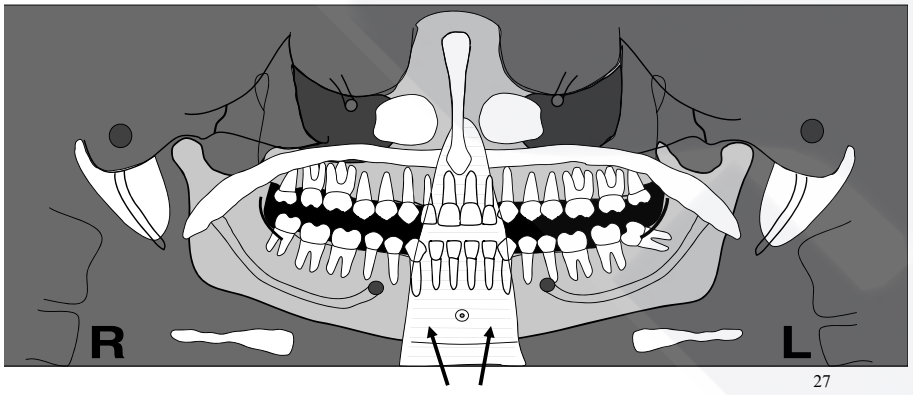
Not standing (slumped/stooped), the cervical vertebrae may block the x-ray beam as the tubehead travels behind the patient.

Correct **Incorrect**



VIII. Cervical Vertebrae (Spine)

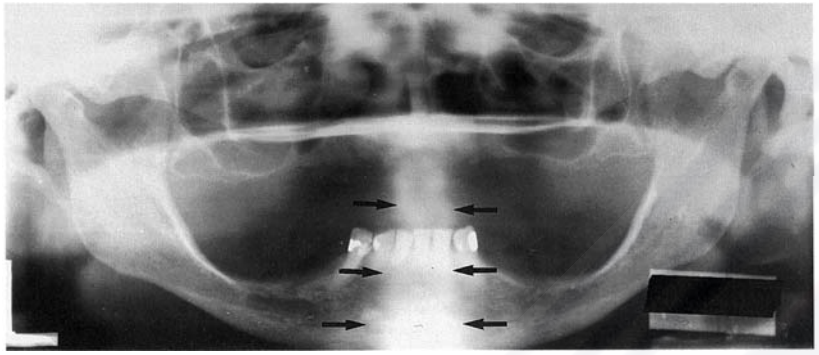
This film shows the radiopaque "shadow" caused by the cervical vertebrae in a patient that is not standing straight.



VIII. Cervical Vertebrae (Spine)

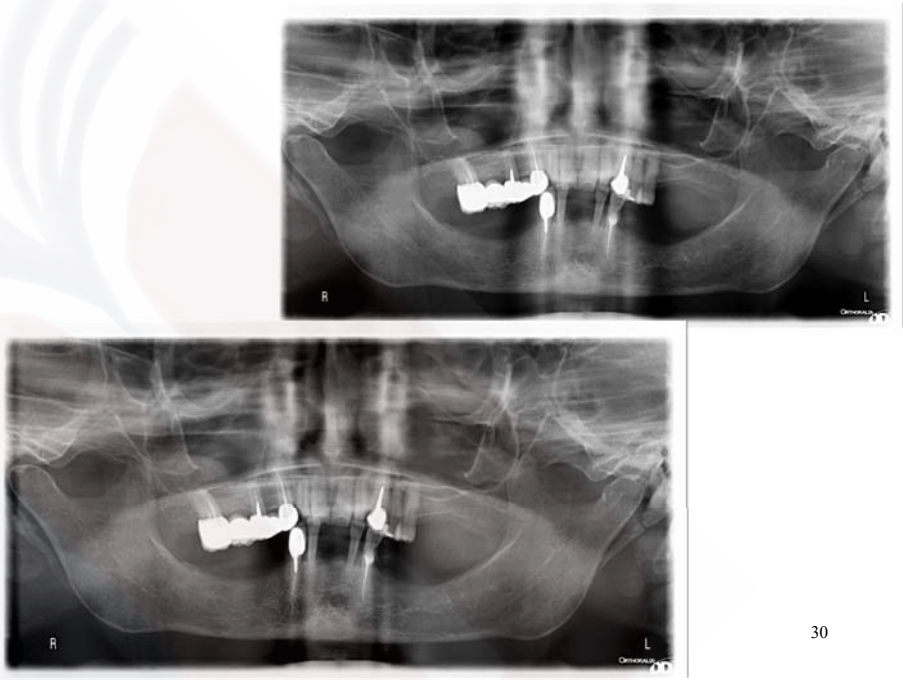
VIII. Cervical Vertebrae (Spine)

Patient is not erect



Make sure the patient is standing upright with back and neck straight.

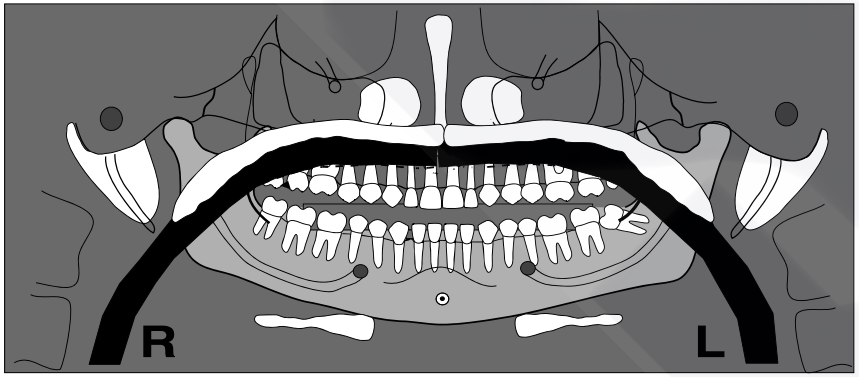
Let patient step forward.`



IX. Palatoglossal Air Space

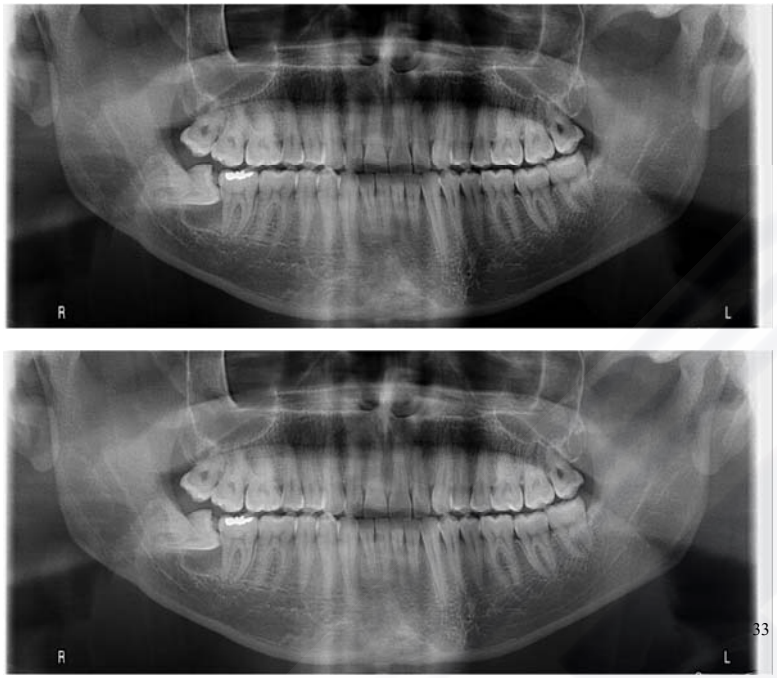
Failure to keep the tongue against the palate during exposure.

Difficult to diagnose periapical pathology.



IX. Palatoglossal Air Space

Ask patient to swallow or suck on tongue and cheeks during the exposure



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X. Lips open

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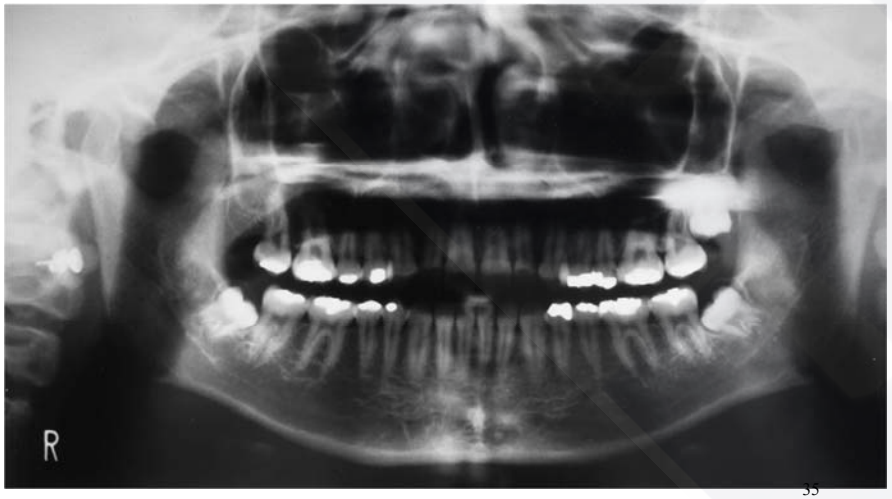
X. Lips open



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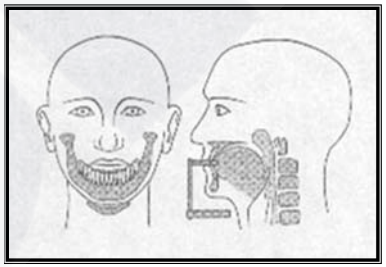
XI. Chin not on the chin rest



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XI. Chin not on the chin rest

- Sinus not visible on film.
- Top of condyle cut off.
- Excessive distance between inferior border of mandible and lower edge of film.

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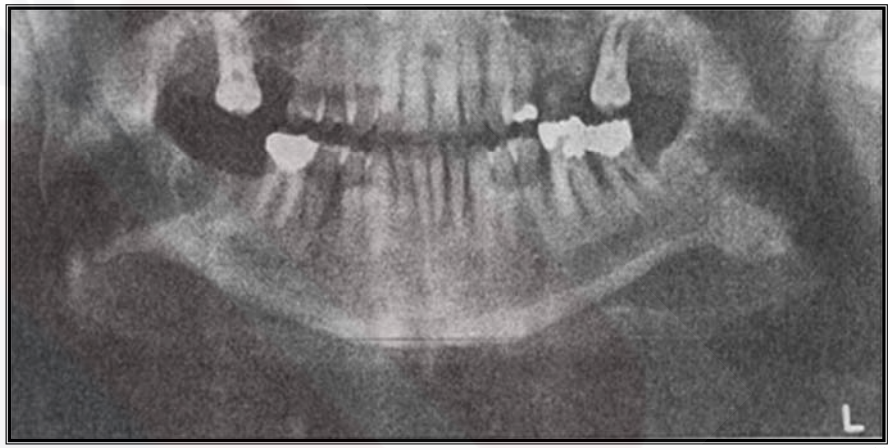
XI. Chin not on the chin rest



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XII. Foreign bodies

The complete upper denture was left in the mouth.

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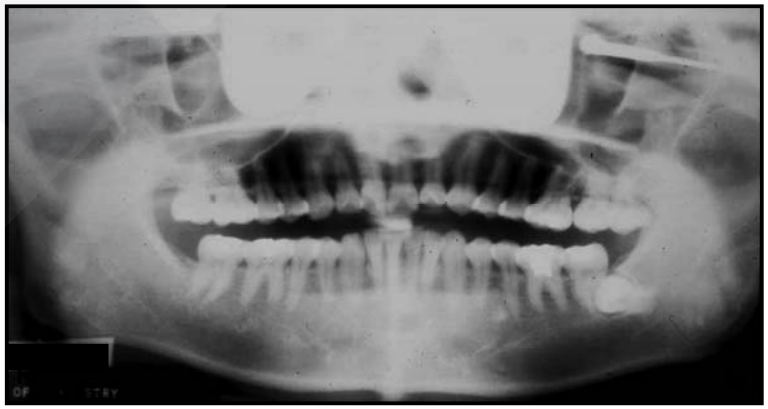
XII. Foreign bodies

Glasses should routinely be removed for panoramic exposures. The bottom part of the frame/lenses may obscure the periapical area of the maxillary anterior teeth.



XII. Foreign bodies

Ghost image

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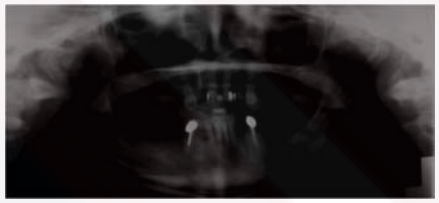
XIII. Incorrect Exposure Settings

If incorrect exposure factors are selected for a patient (kVp, mA), a film that is too light (underexposed) or too dark (over-exposed) may result.



overexposure

underexposure

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IVX. Other problems

Not starting at home base

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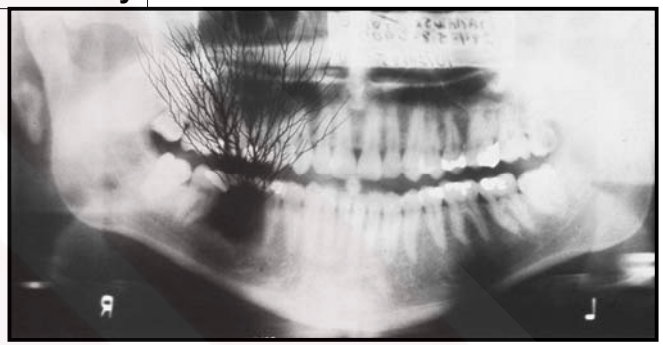
IVX. Other problems

Double Exposure

IVX. Other problems

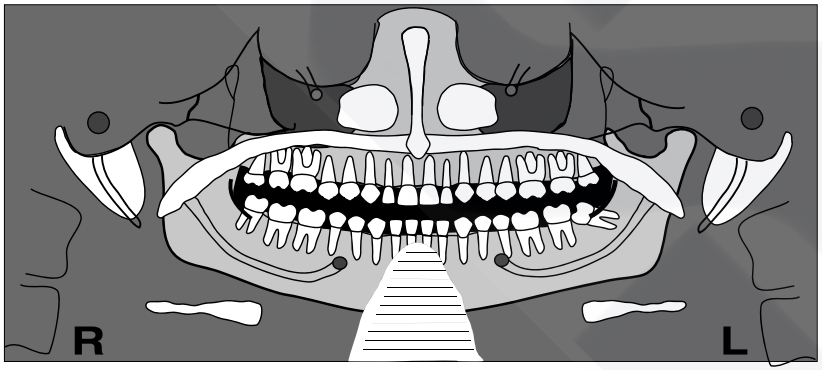
Static Electricity



The problem is from dry air or removing the film from the box or cassette too quickly.
Humidify the darkroom, especially in winter. Remove the film gently.

IVX. Other problems

Lead apron

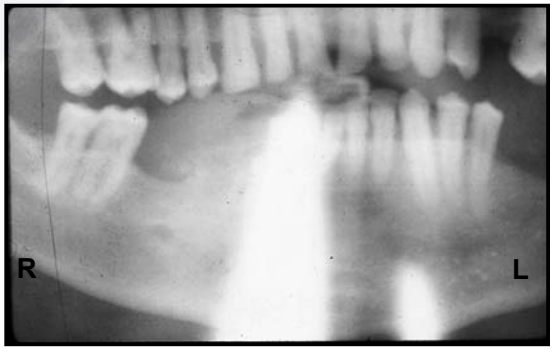


Lead apron shadow

IVX. Other problems

Lead apron

The two completely radiopaque areas on the film below were caused by the lead apron. You can't see any anatomy in these areas due to complete blockage of the x-ray beam by the apron.



IVX. Other problems

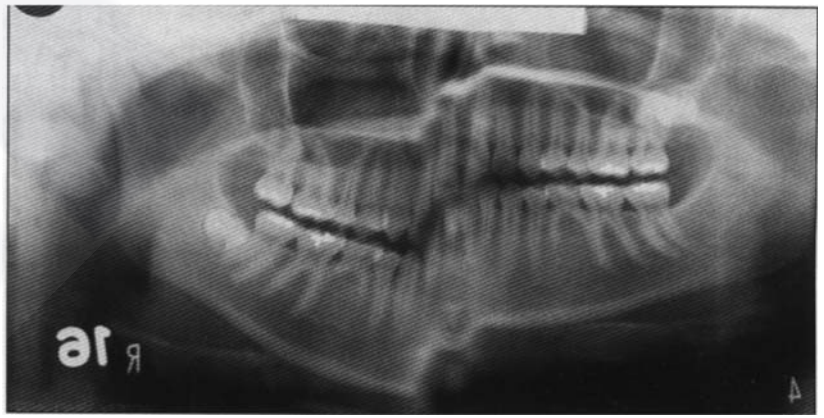
No L or R on the film

II. Errors in film processing

Those are similar to intraoral films previously studied.

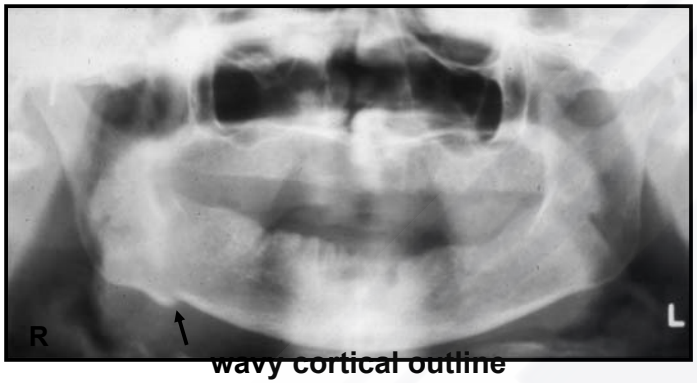
III. Errors related to patient

Patient Movement



Patient Movement

This film shows much more subtle movement (arrow), resulting in an uneven inferior border of the mandible. This might be misinterpreted as being the result of a fracture.



wavy cortical outline

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What are the errors in the following radiographs?

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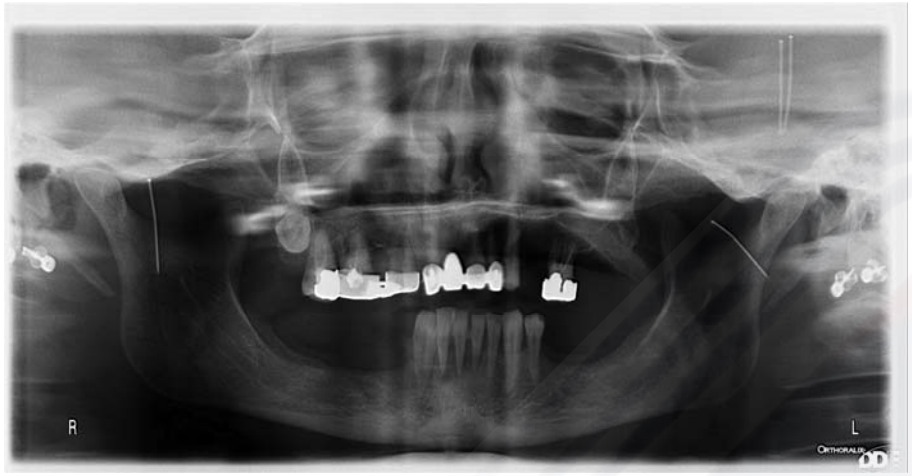

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The END