



1



2

Multiple Myeloma

- Multiple myeloma is a cancer that effects the white blood cells of your bone marrow (plasma cells) that is associated with bone destruction
- Cause- Idiopathic- it starts with one abnormal cell that multiples
 - Genetic abnormalities
 - Defect related to chromosome 14
 - Extra copies of certain chromosomes
 - Abnormality of chromosome 13
- Complications- complications include impaired immune system, bone erosion, impaired kidney function, and anemia
- Radiographic appearance- Usually seen on the vertebrae, ribs, skull, shoulder, pelvis, and long bones. The lesions appear as destructive lytic lesions, sharply defined and appear "punched out"
- Technical considerations- not necessary unless there are many lesions or the lesion is large (subtractive)
- Prognosis- This varies by the severity and progression of the disease.

3

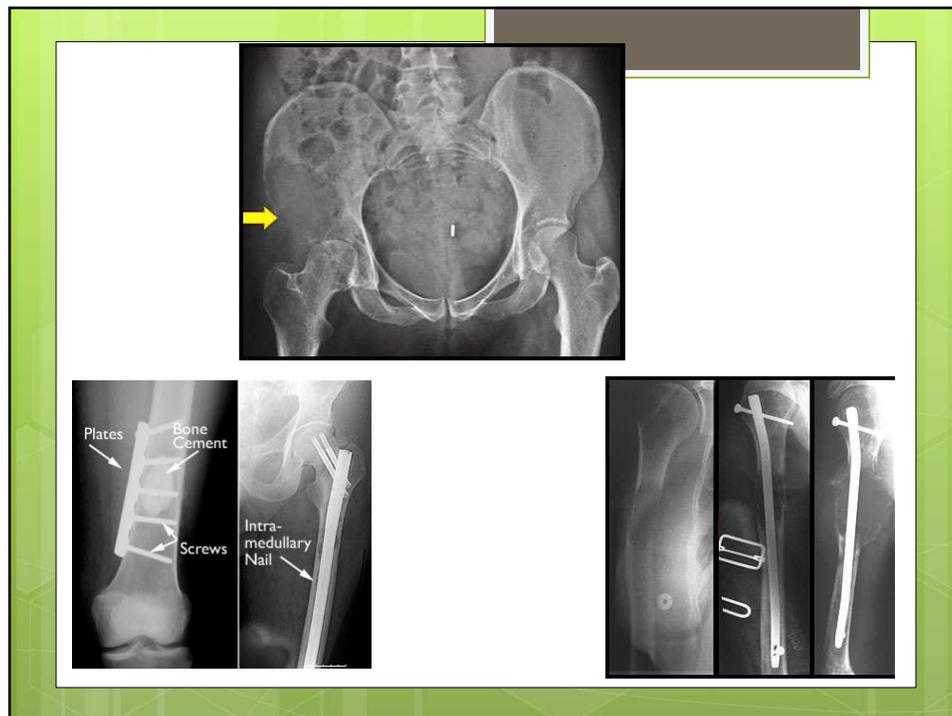


4

Bone Metastatic Disease

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5



6

Depressed Fracture

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7

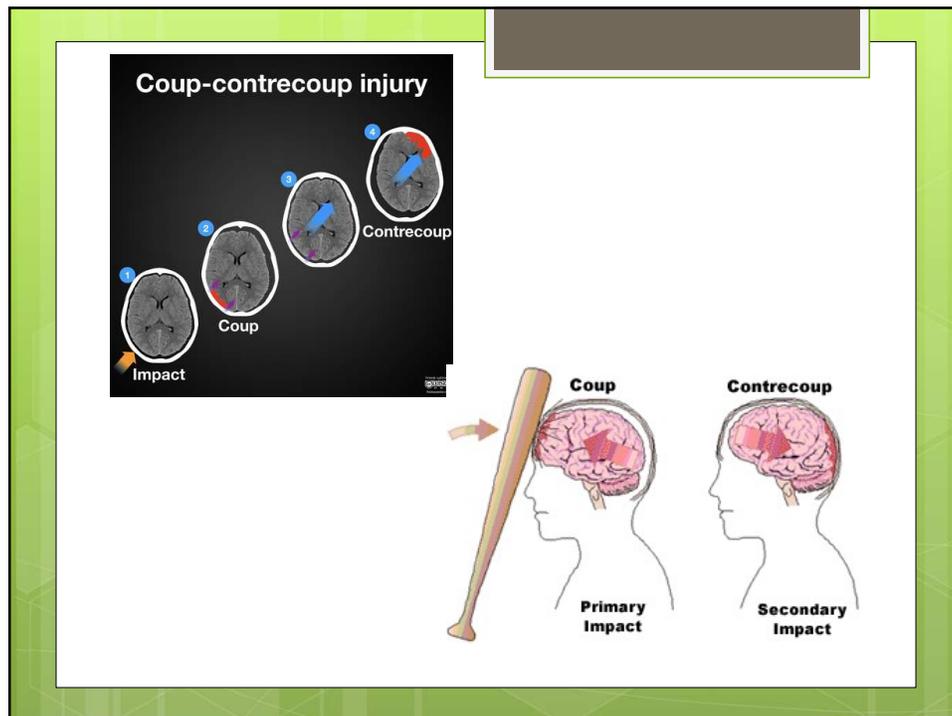


8

Contre- coup Fracture

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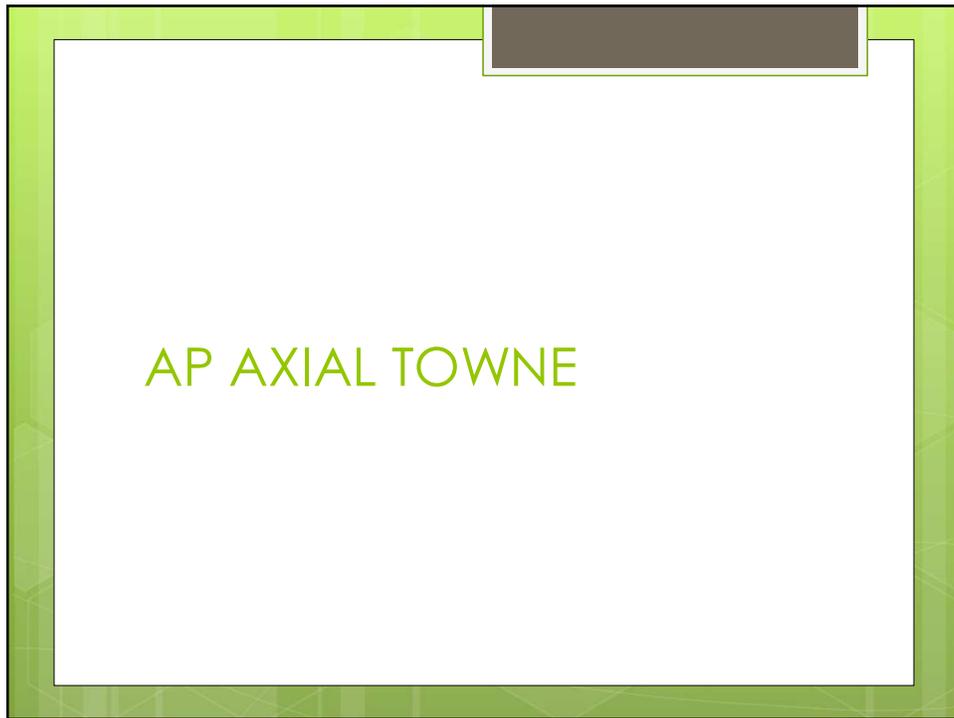
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12

AP Axial Critique

A



AP axial radiograph A showing a clear view of the skull base and facial bones.

B



AP axial radiograph B showing a clear view of the skull base and facial bones.

- Which demonstrates a repeatable error?
- What is the repeatable error?

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13

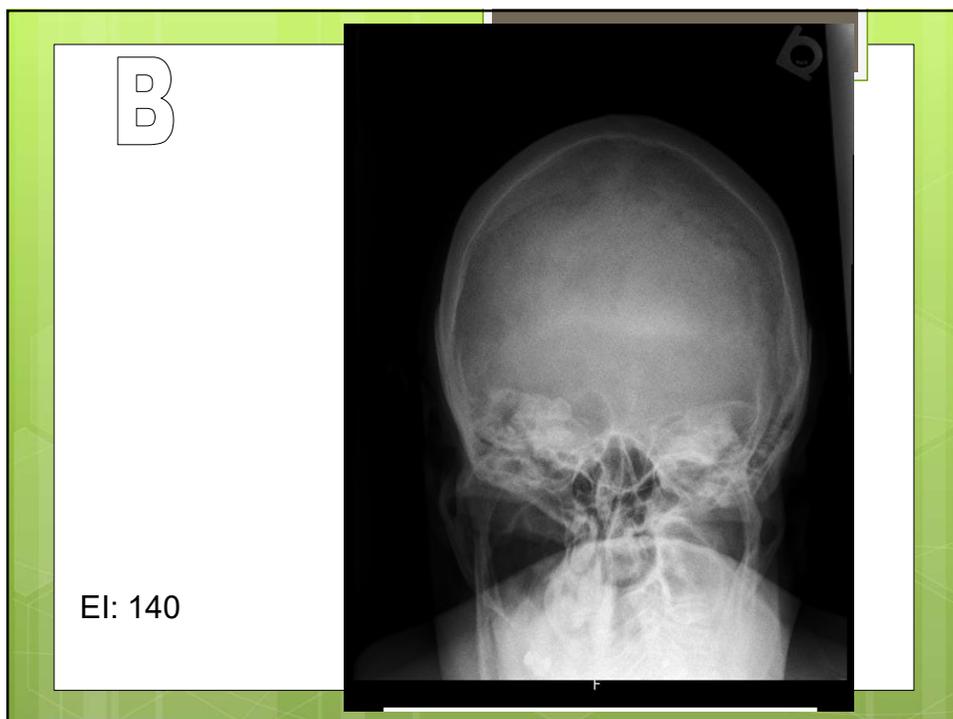
A

EI: 200



AP axial radiograph with a white 'A' marker on the left side of the image.

14



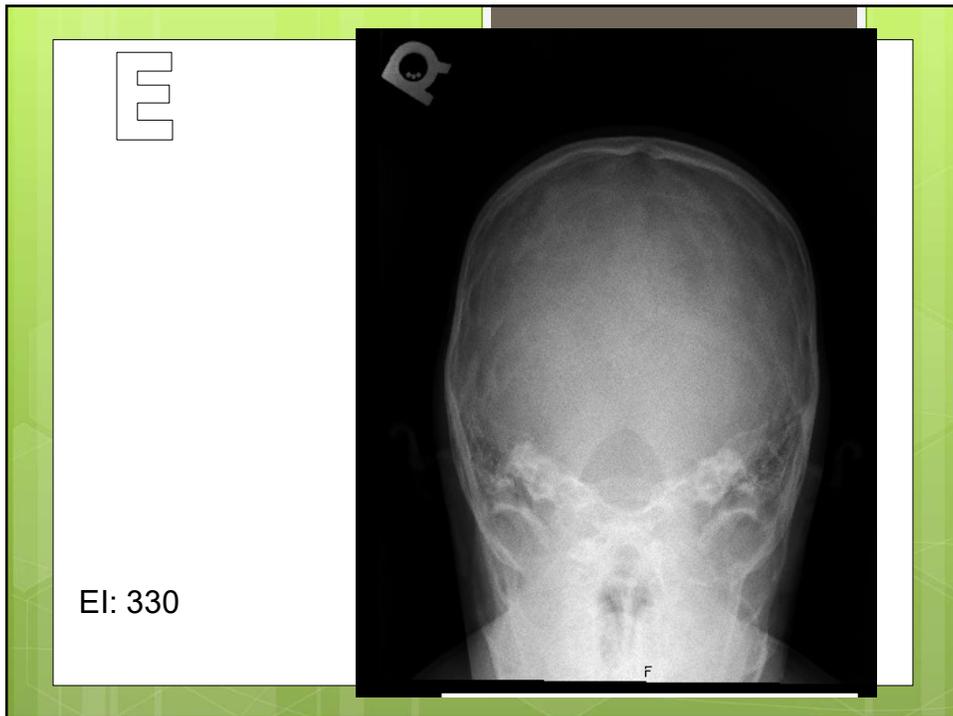
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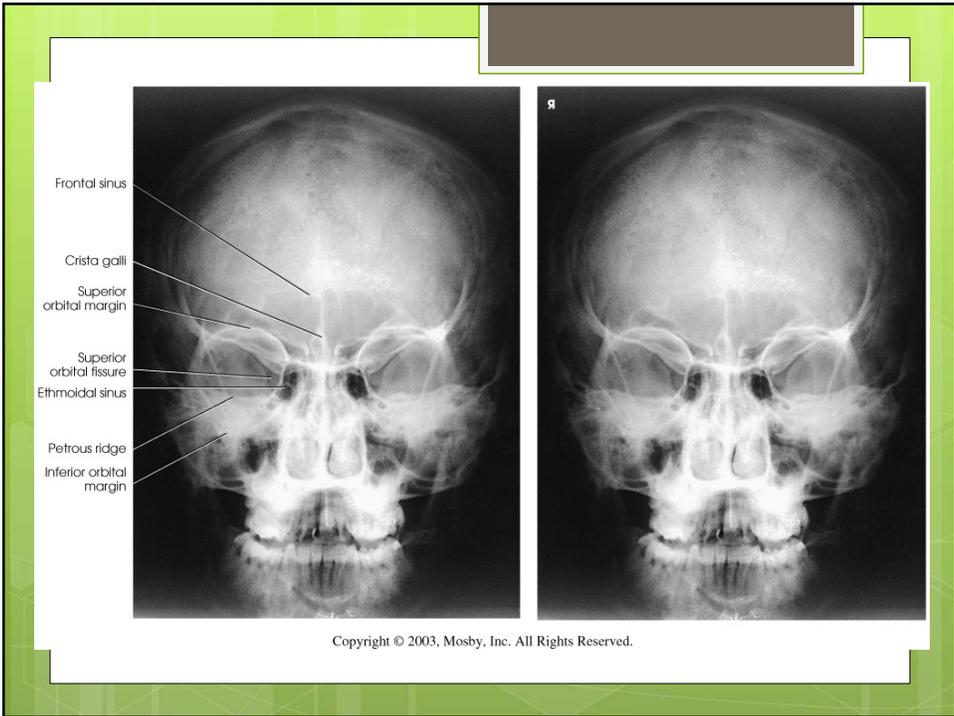
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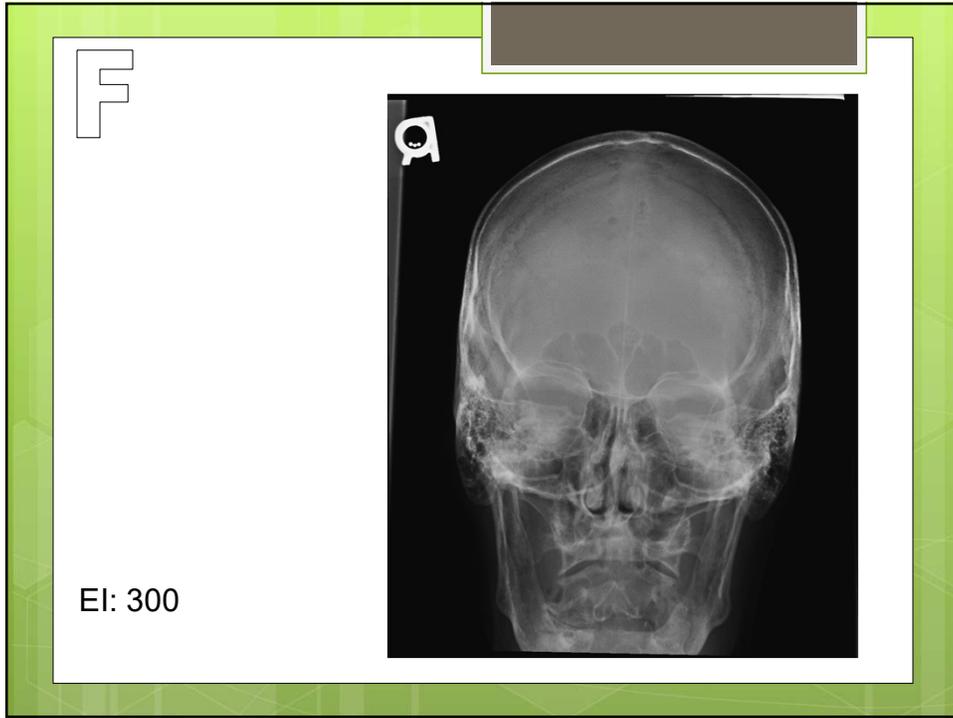
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PA AXIAL CALDWELL

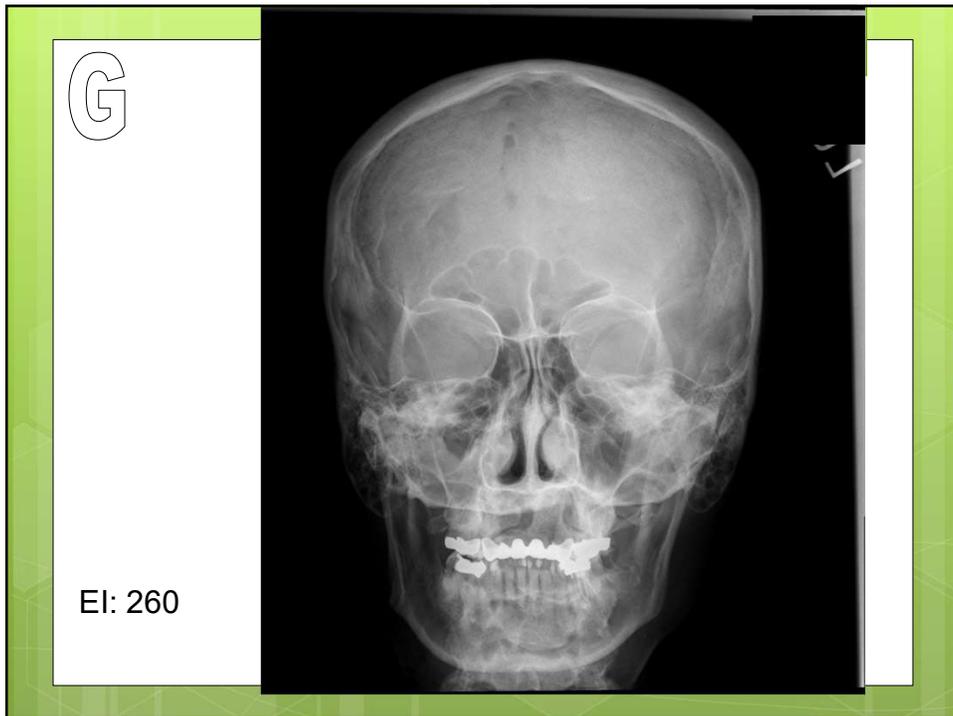
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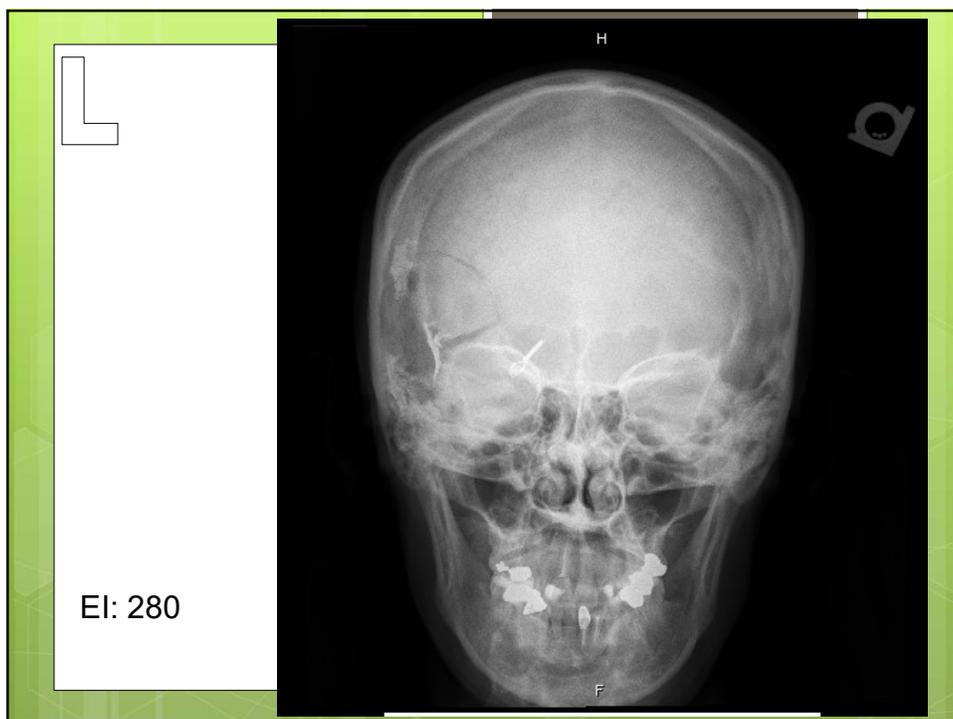
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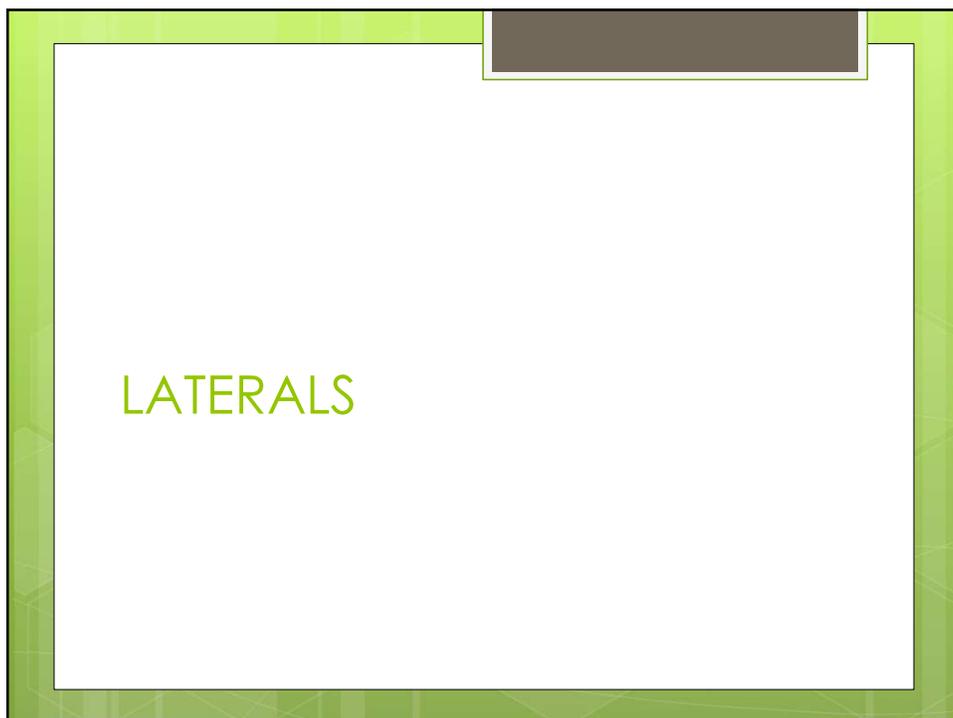
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M

Lateral Skull Critique



- What are the repeatable errors?

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N



EI: 250

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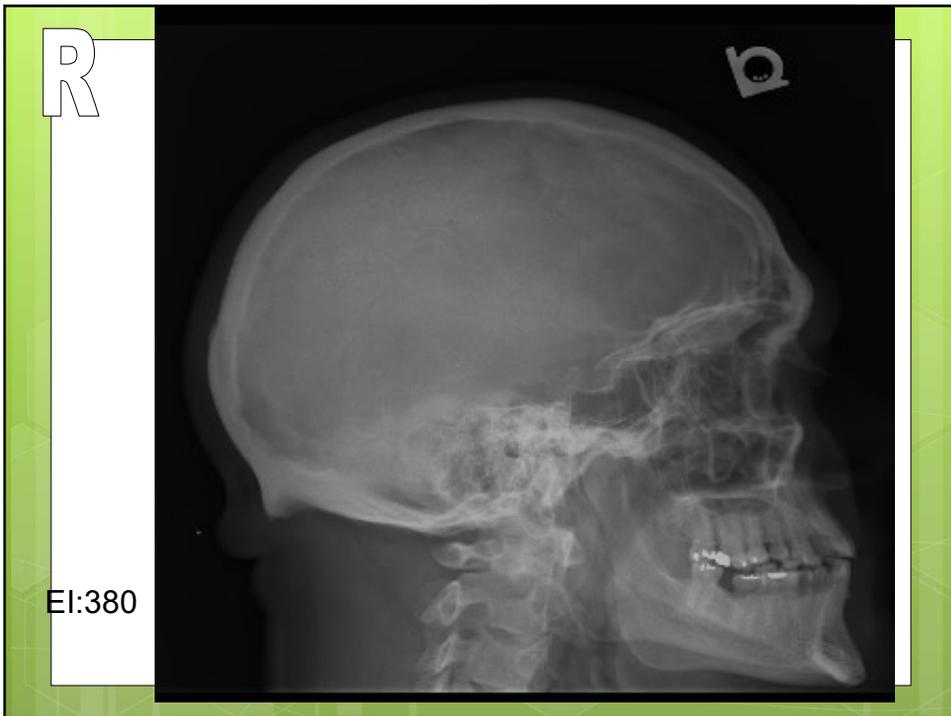
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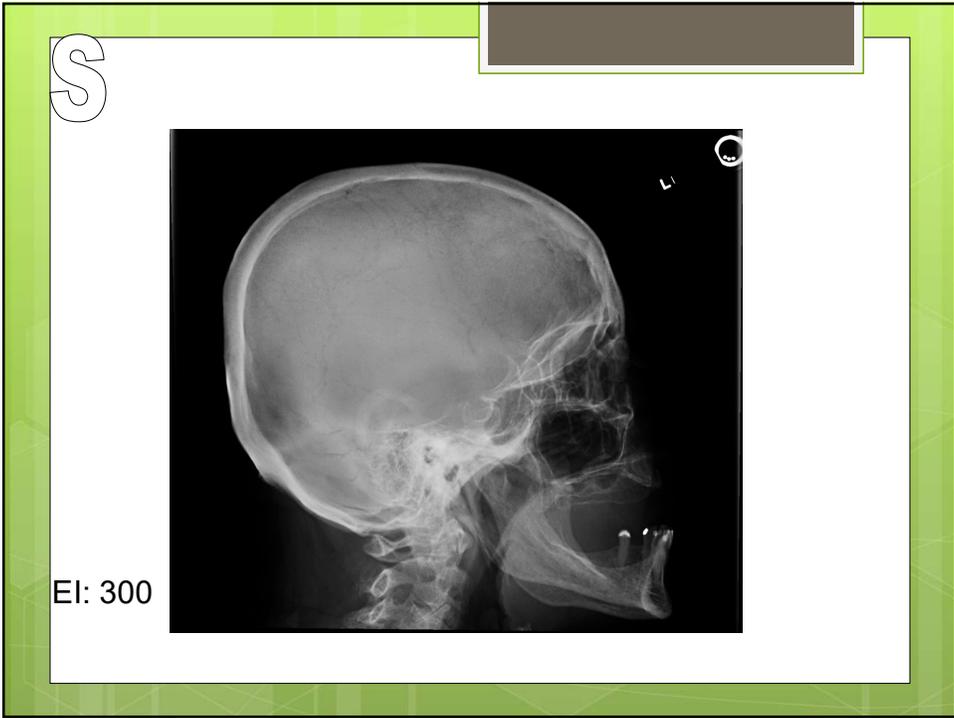
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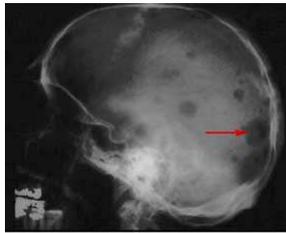


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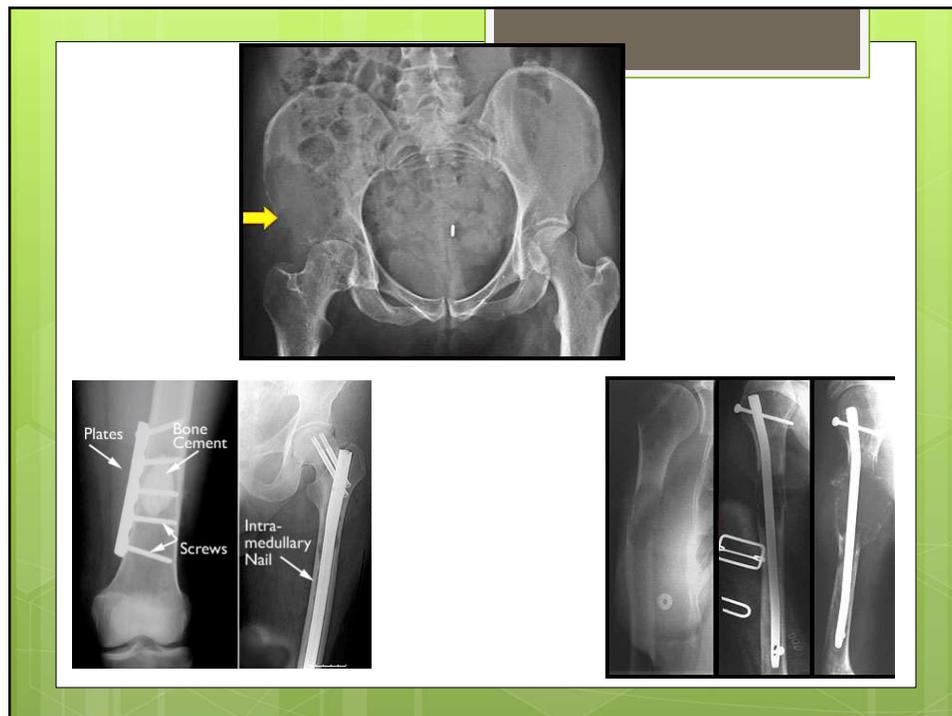


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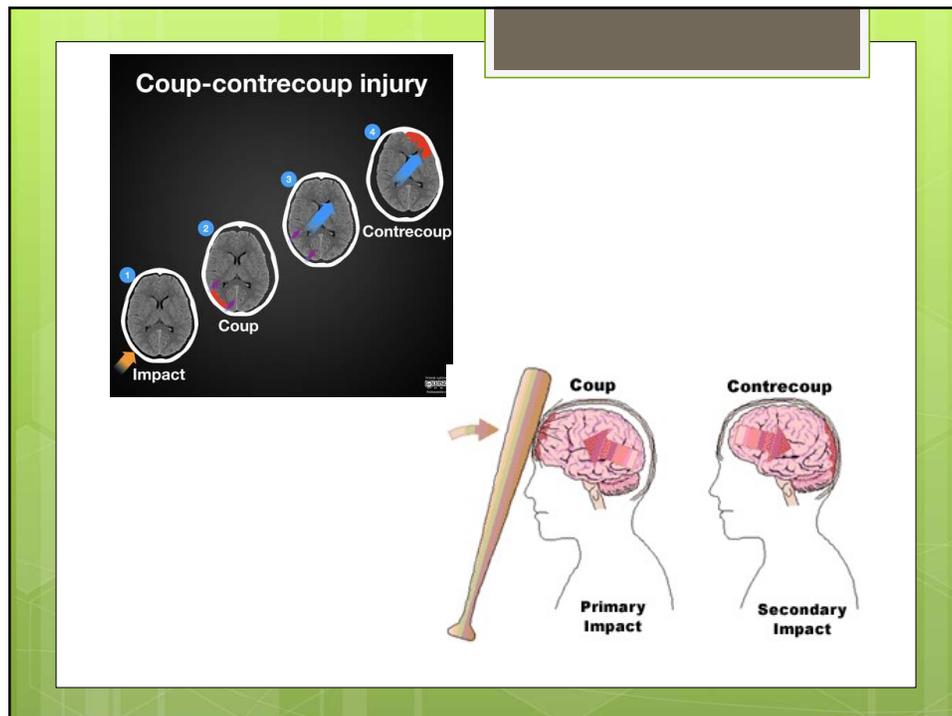


8

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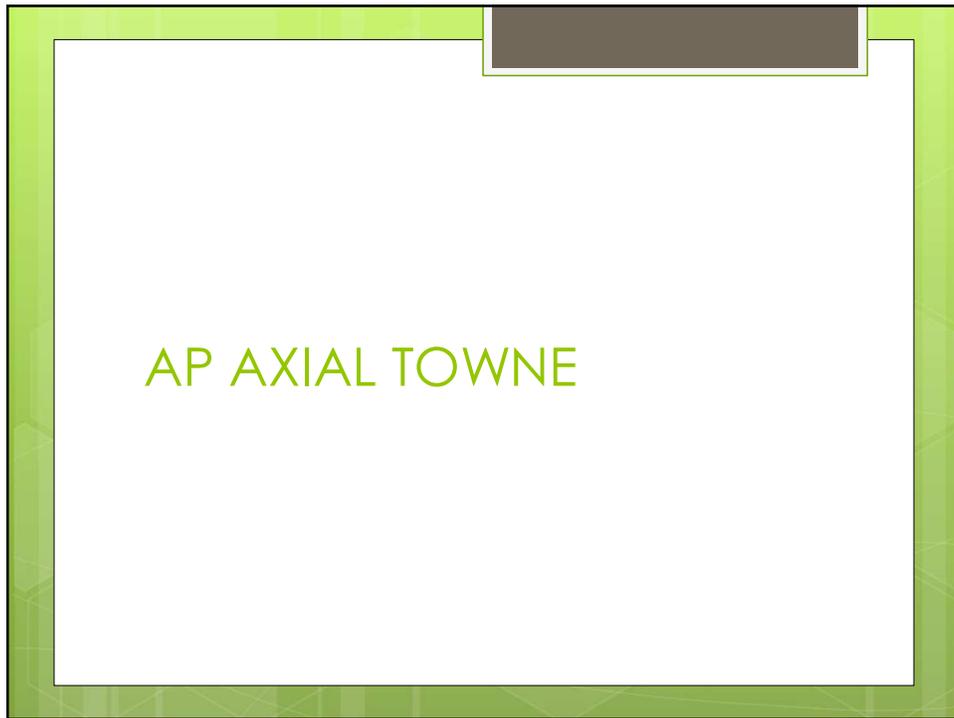
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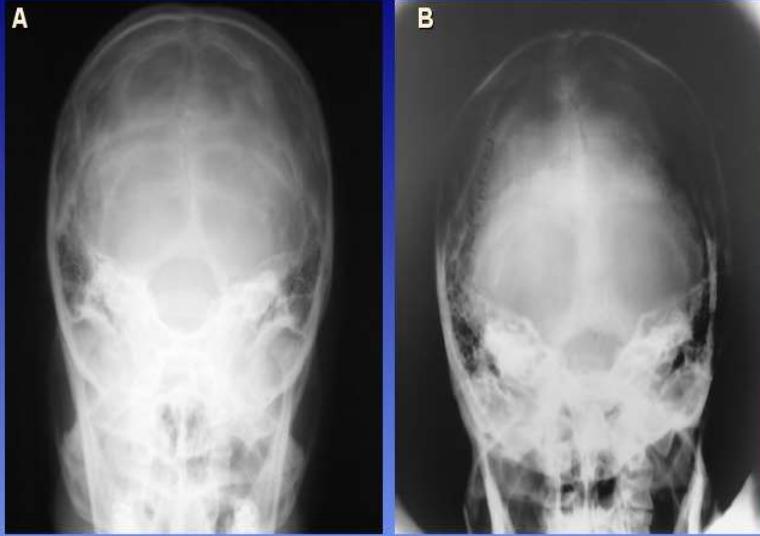


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AP Axial Critique



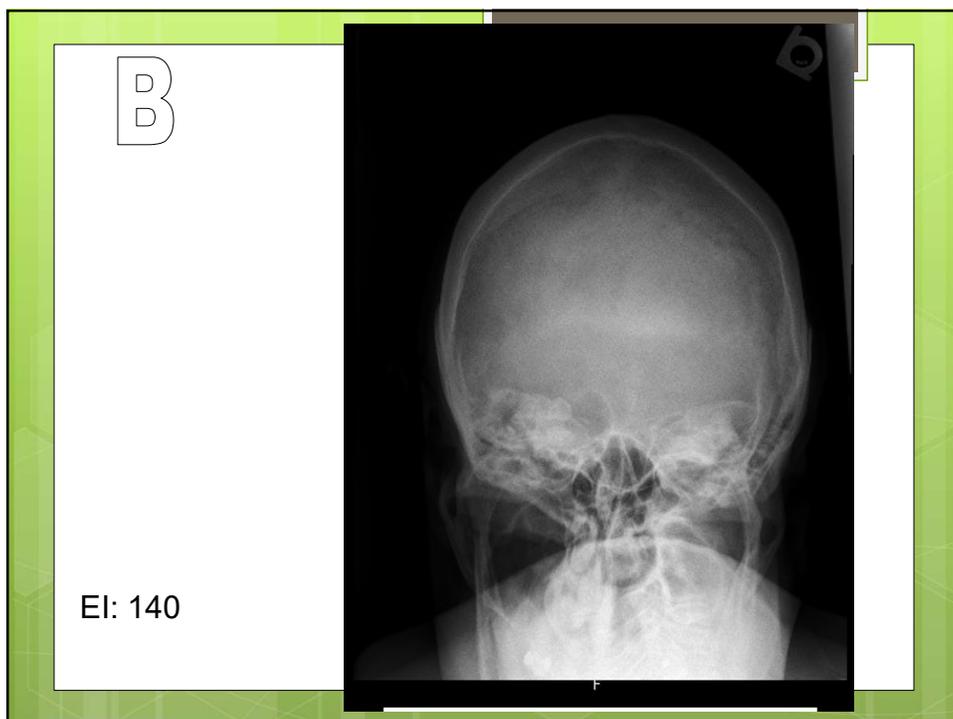
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14



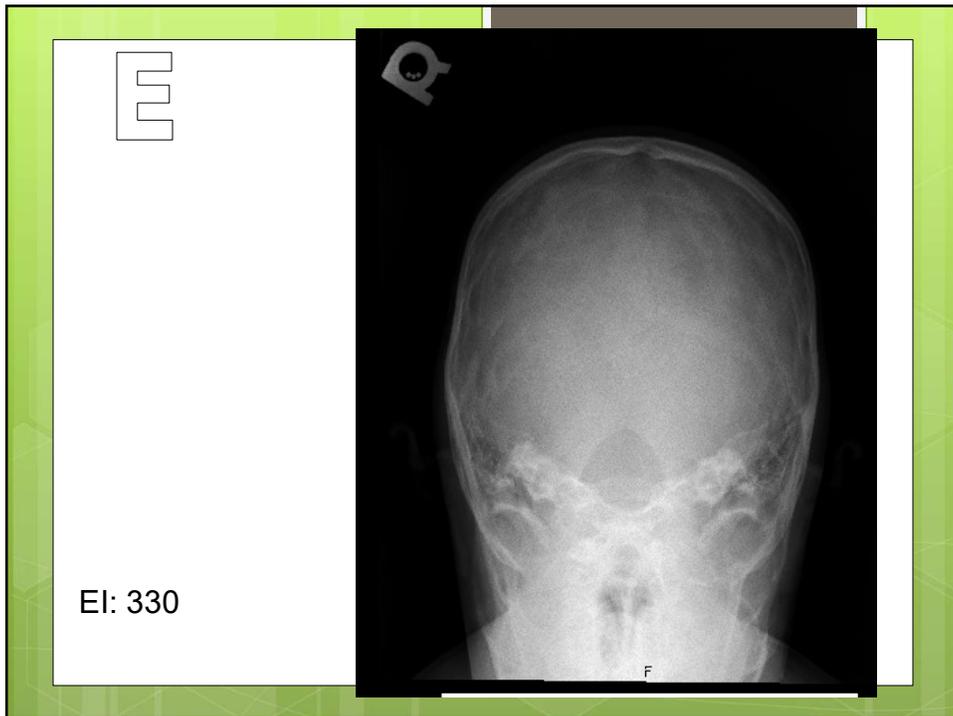
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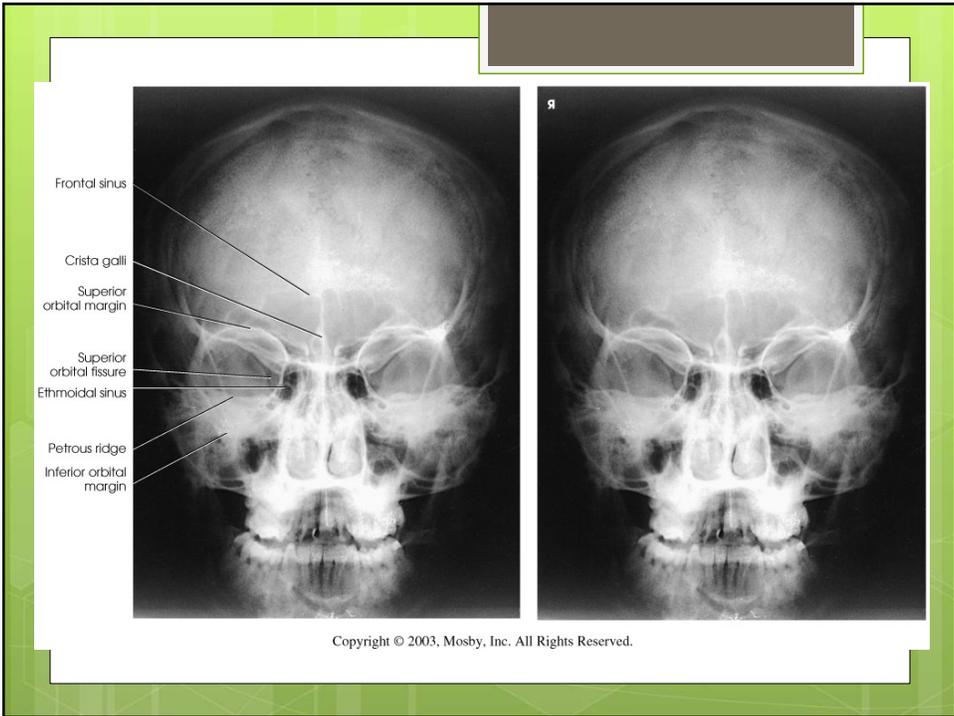
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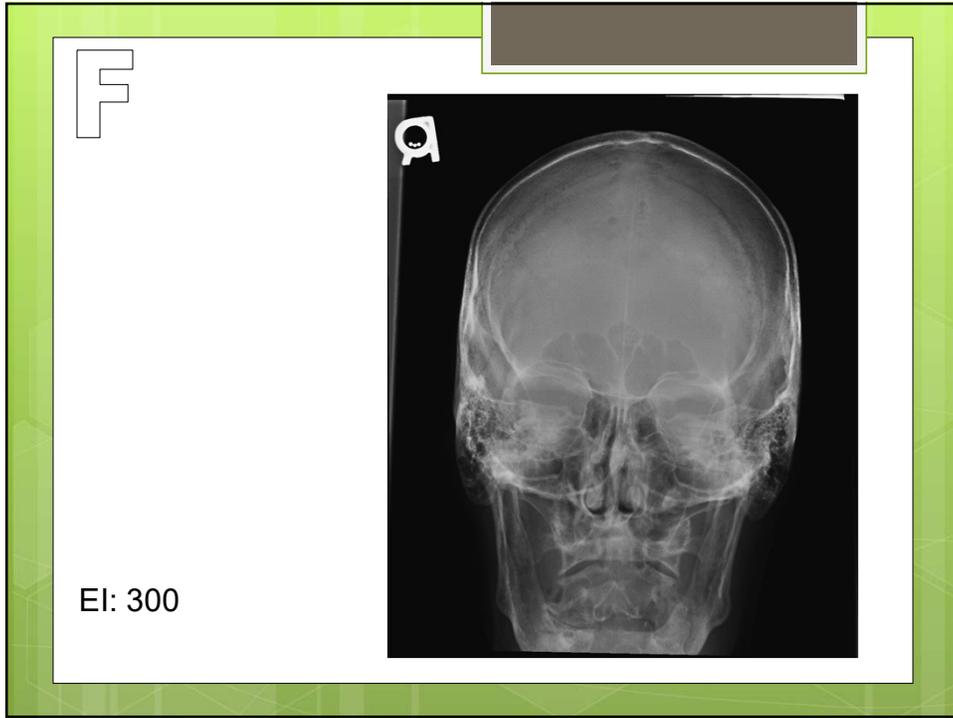
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PA AXIAL CALDWELL

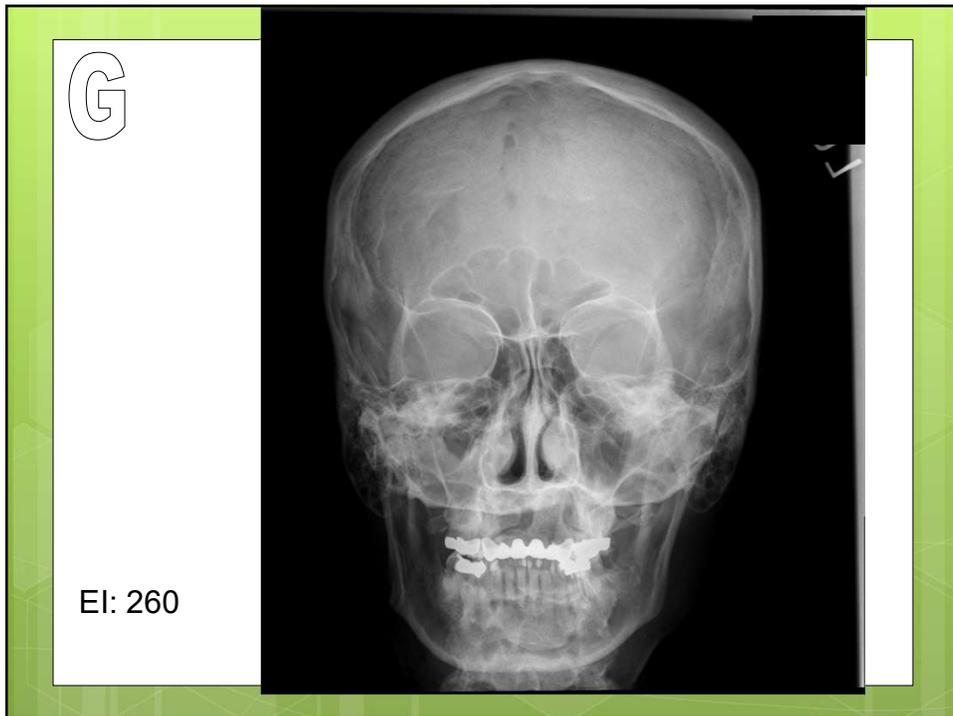
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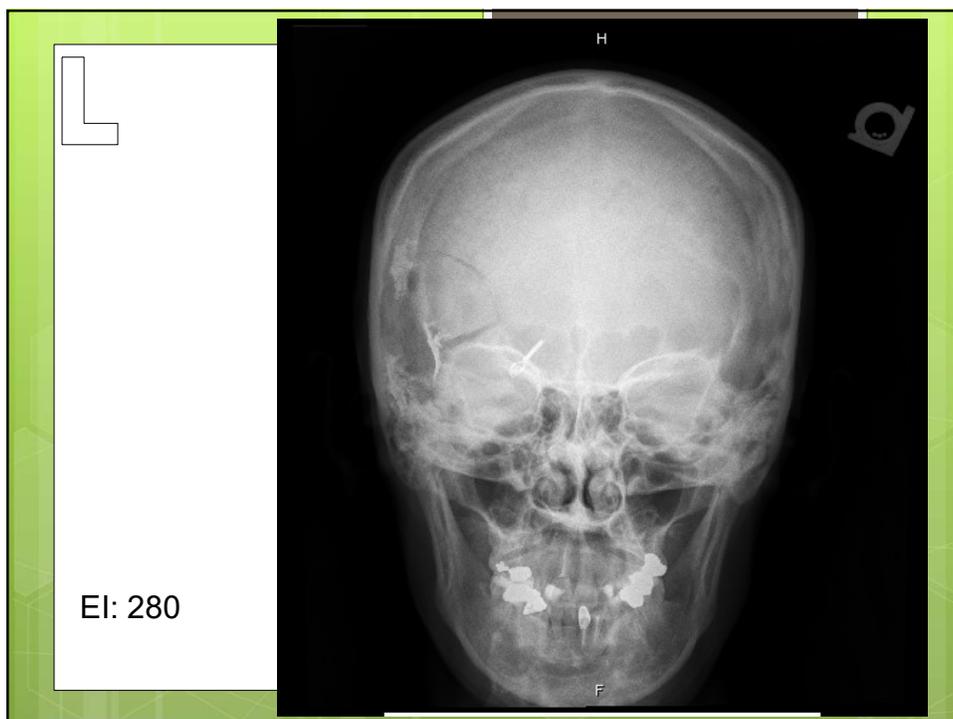
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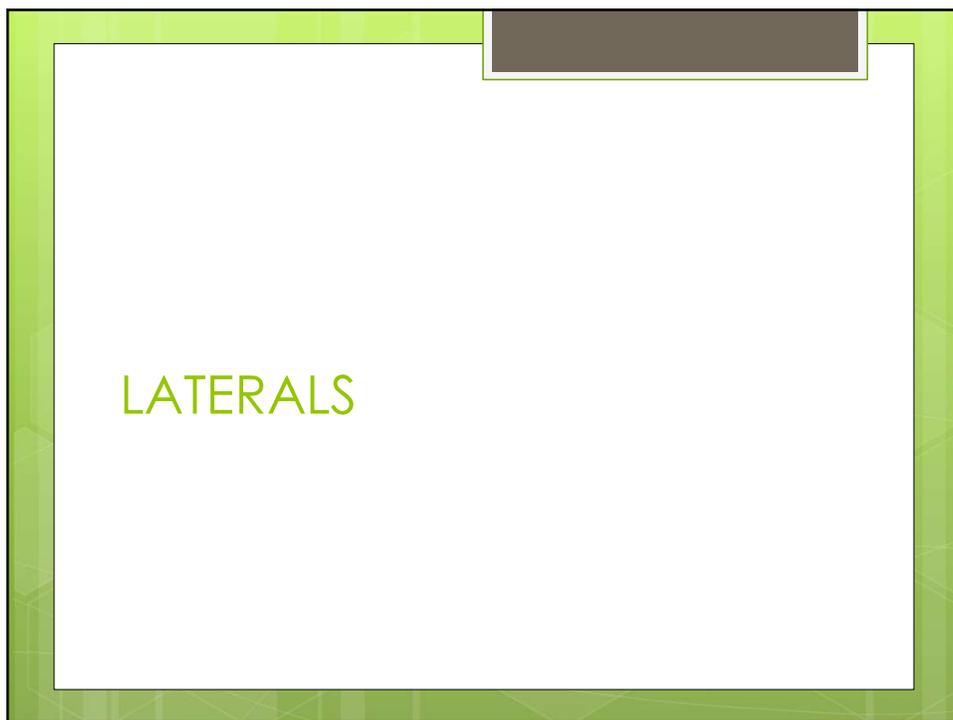
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M

Lateral Skull Critique



- What are the repeatable errors?

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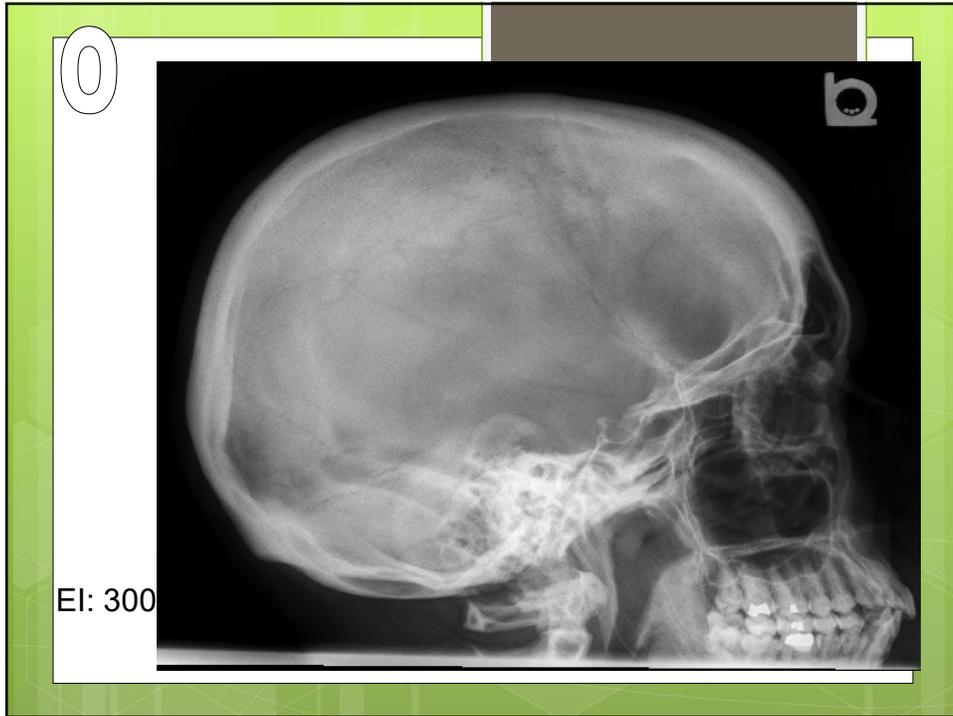
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N



EI: 250

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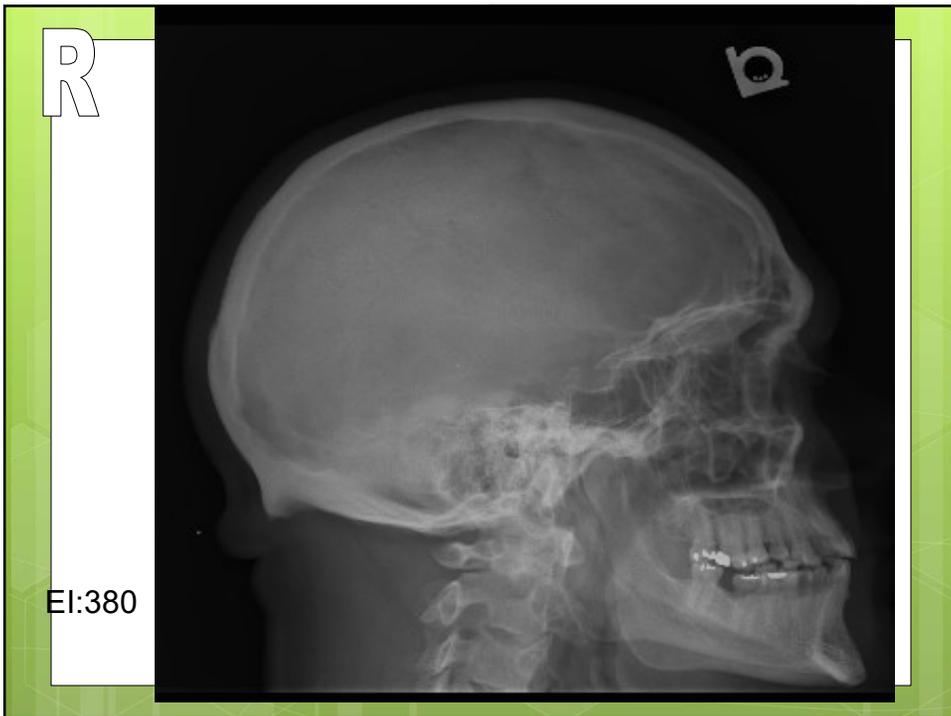
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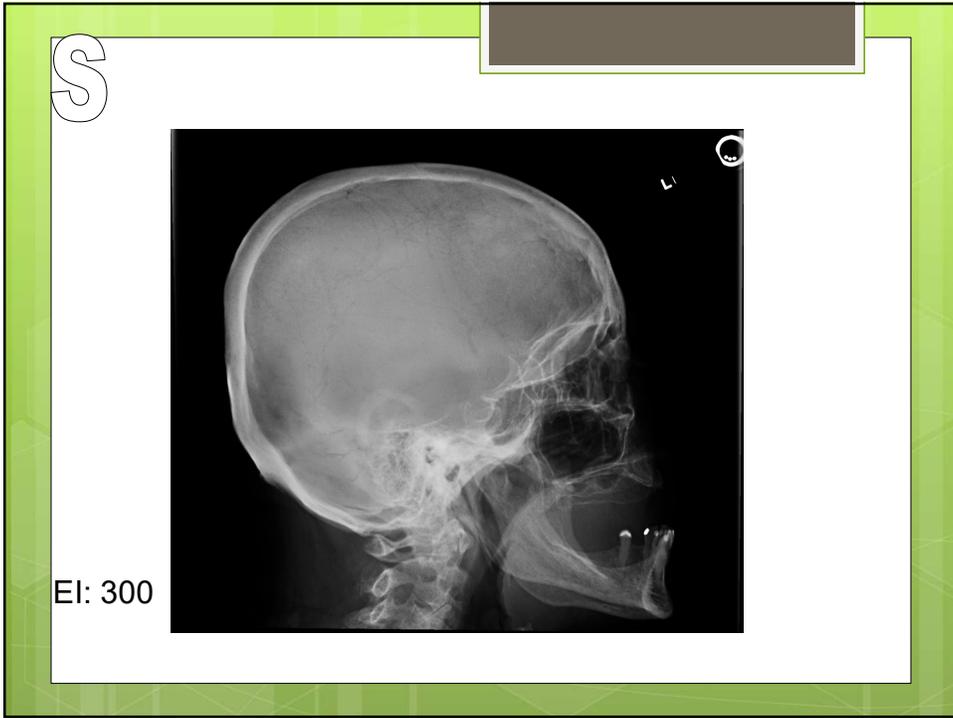
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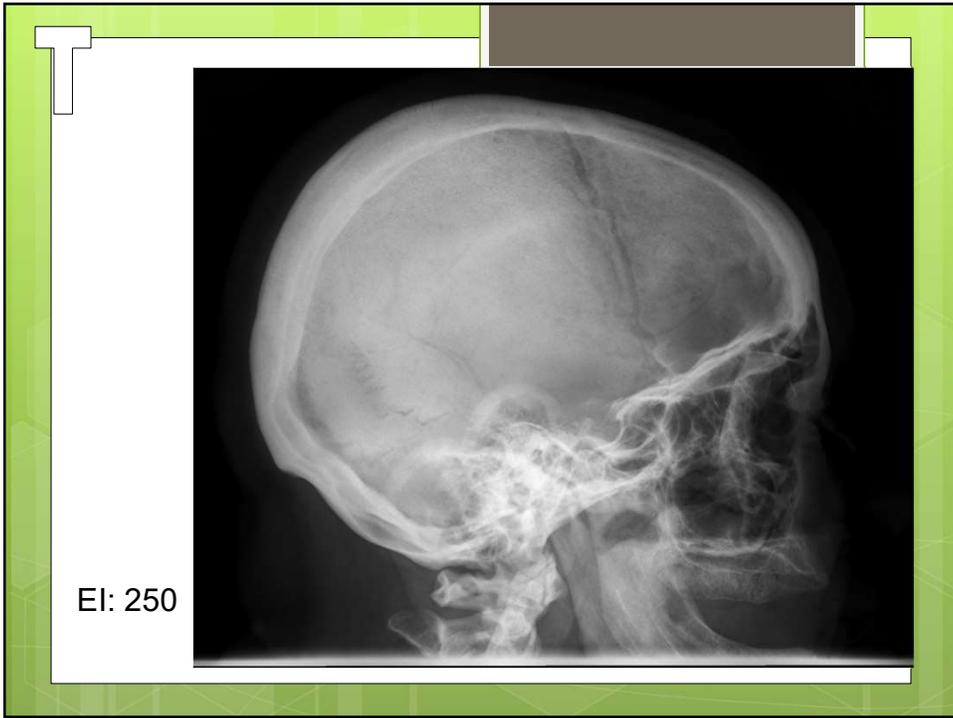
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1



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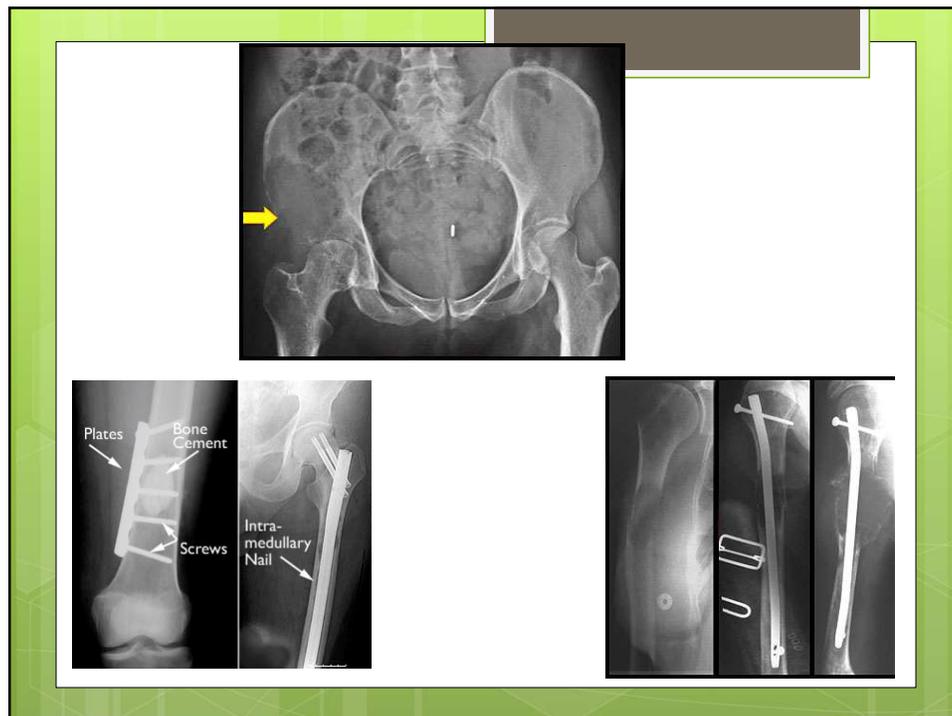


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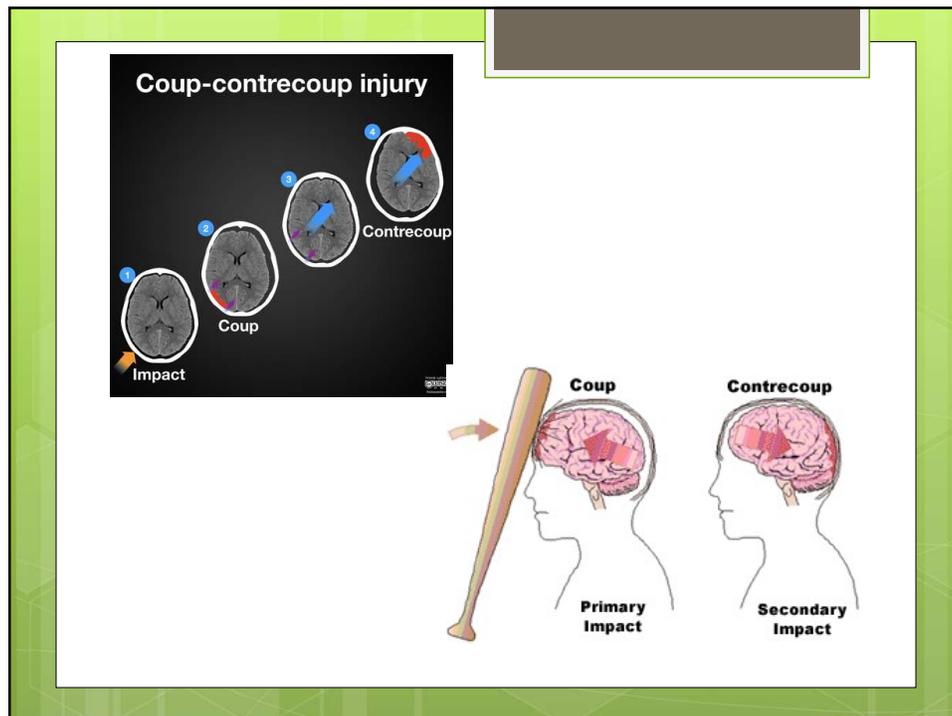


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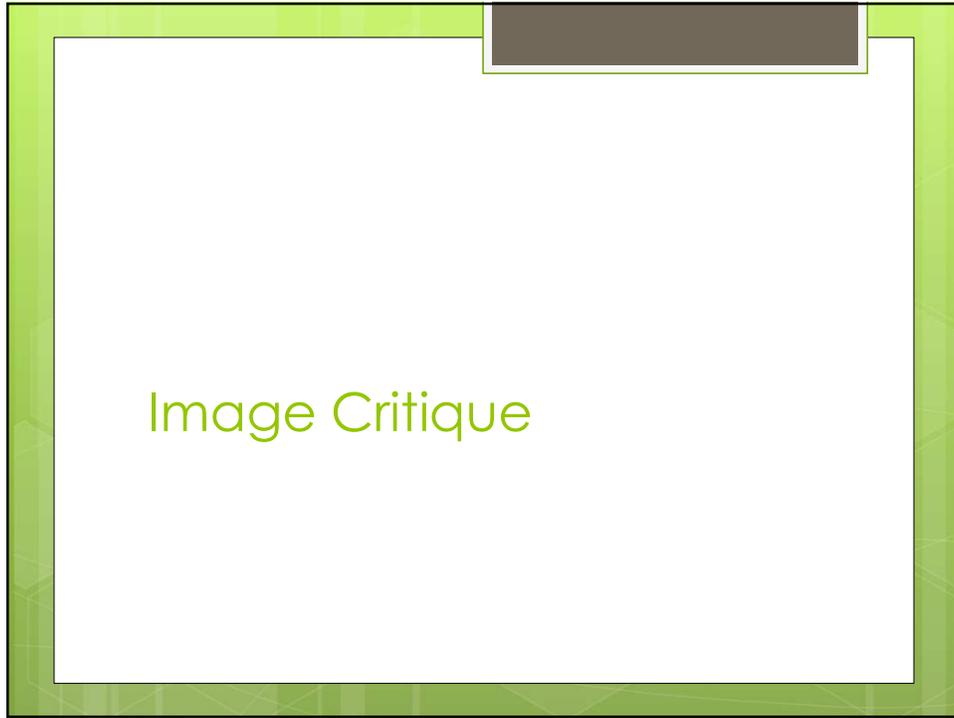
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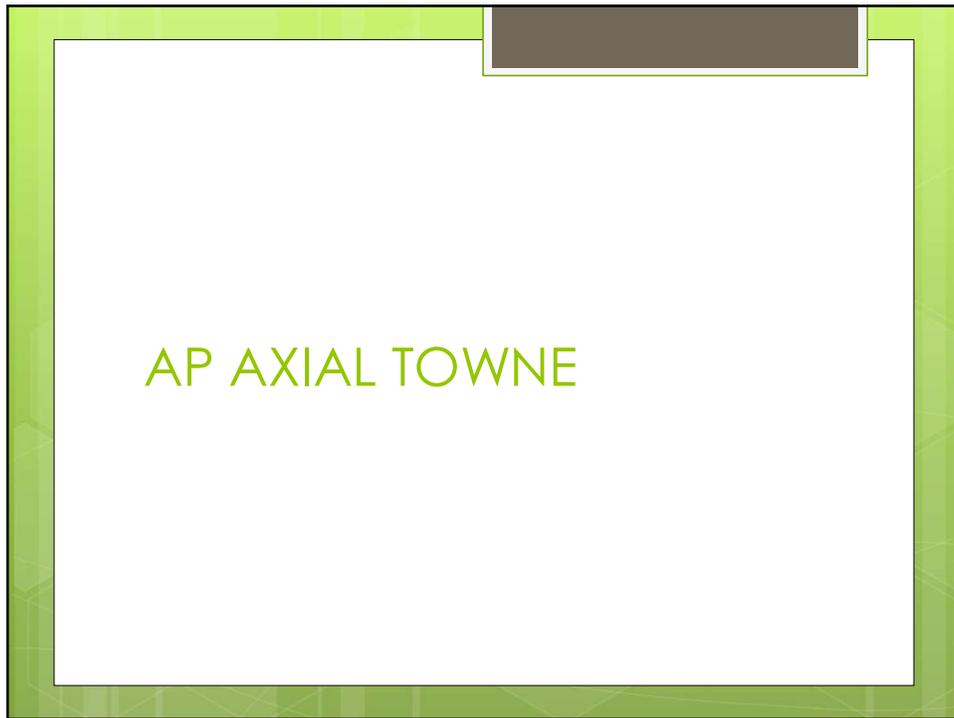
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12

AP Axial Critique

A



AP axial radiograph A shows a clear view of the skull base and facial bones. The zygomatic arches are well-defined, and the nasal cavity is visible. The image is sharp and well-contrasted.

B



AP axial radiograph B shows a similar view to A, but with significant overexposure and loss of detail. The zygomatic arches and nasal cavity are less distinct, and the overall image quality is poor.

- Which demonstrates a repeatable error?
- What is the repeatable error?

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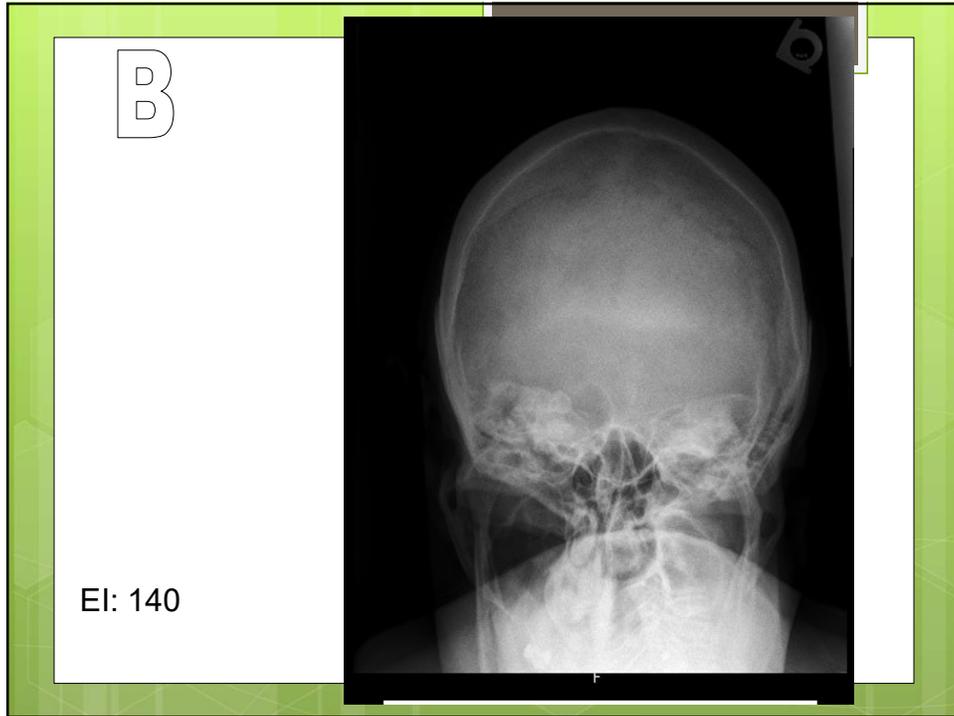
A

EI: 200

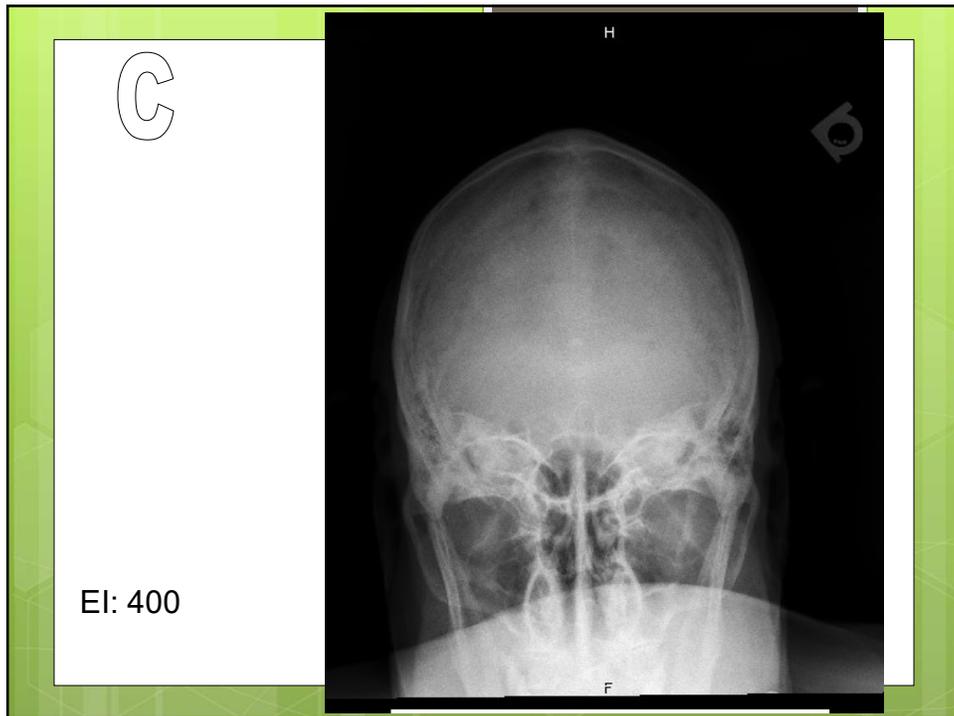


AP axial radiograph with a white 'A' marker on the left side of the image. The image shows the skull base and facial bones, similar to the previous slide. A small 'R' marker is visible on the left side of the skull.

14



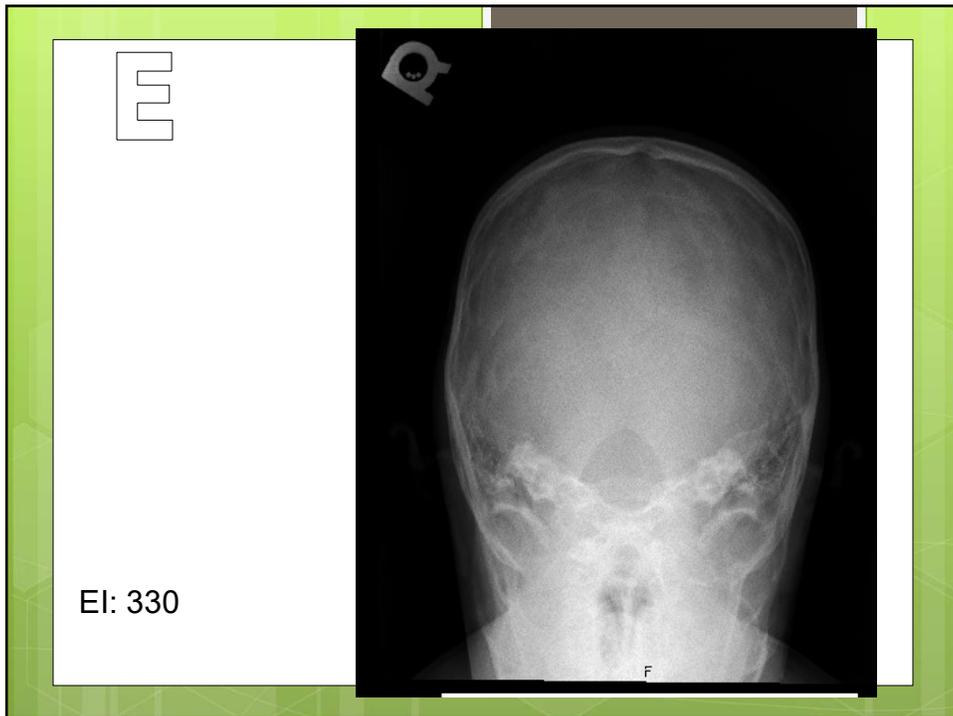
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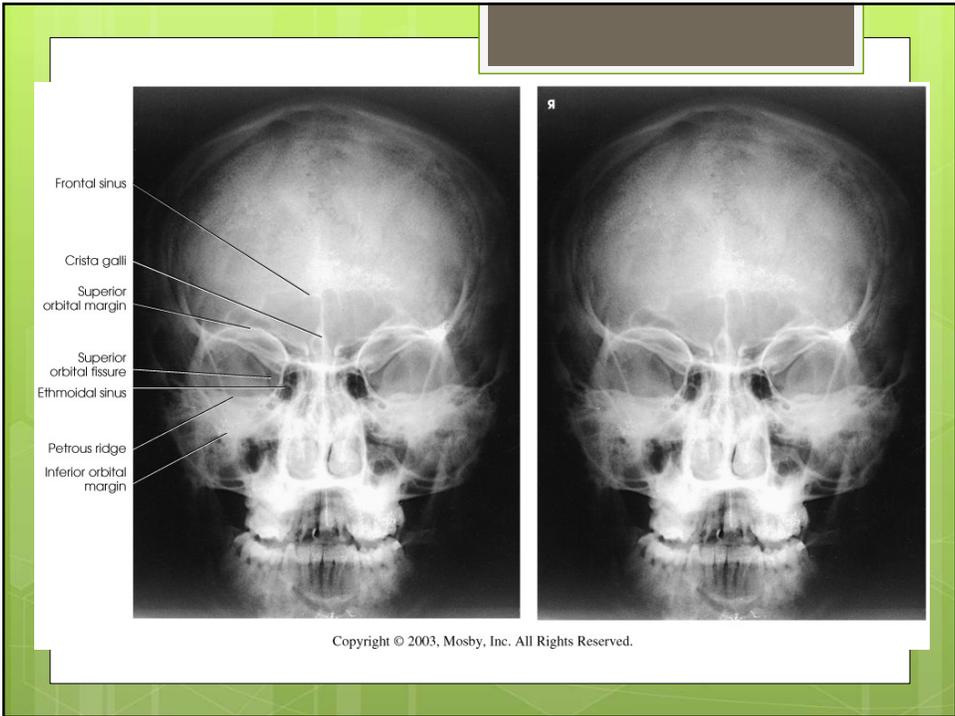
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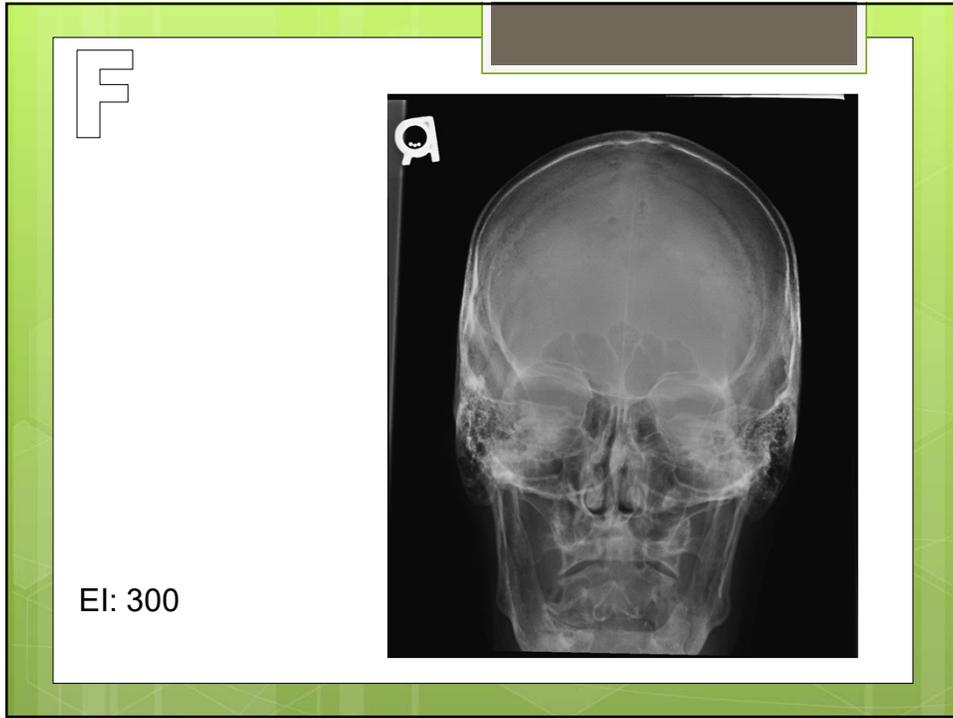
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PA AXIAL CALDWELL

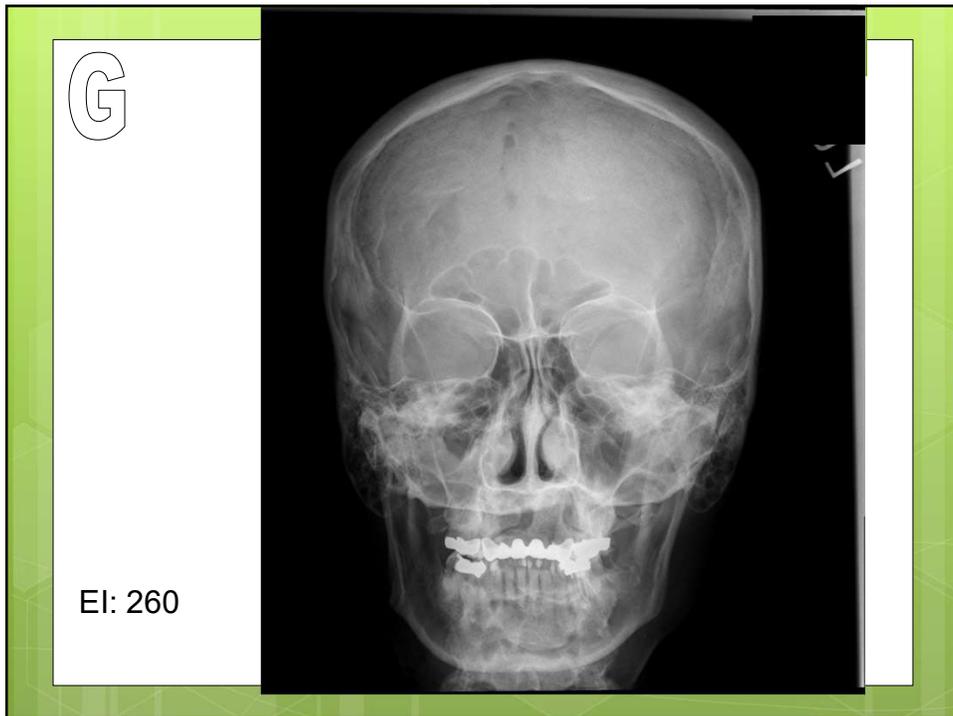
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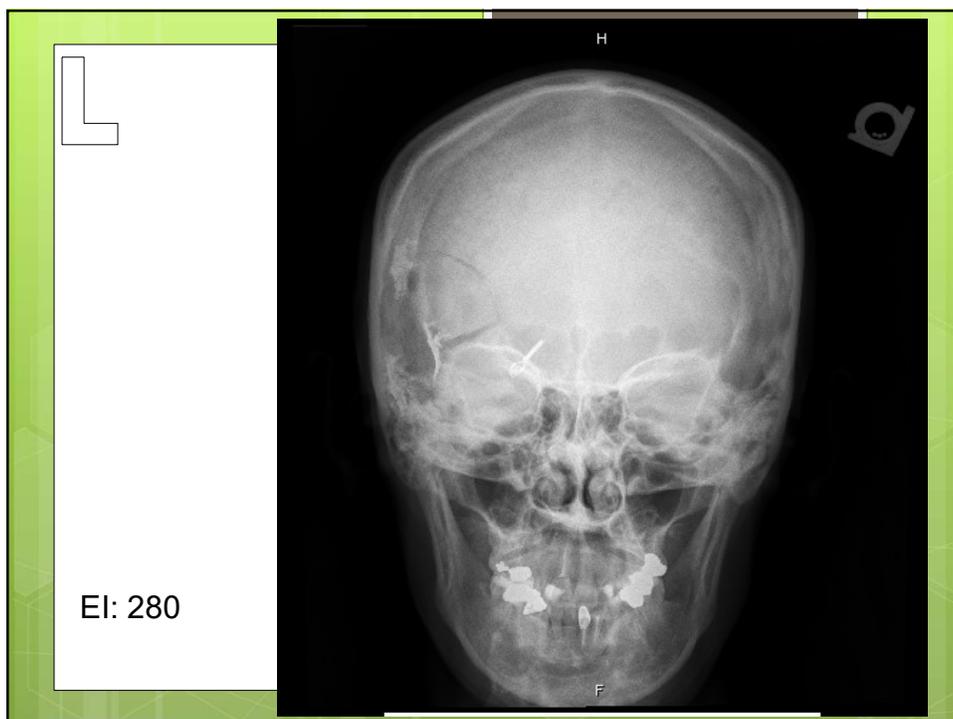
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M

Lateral Skull Critique



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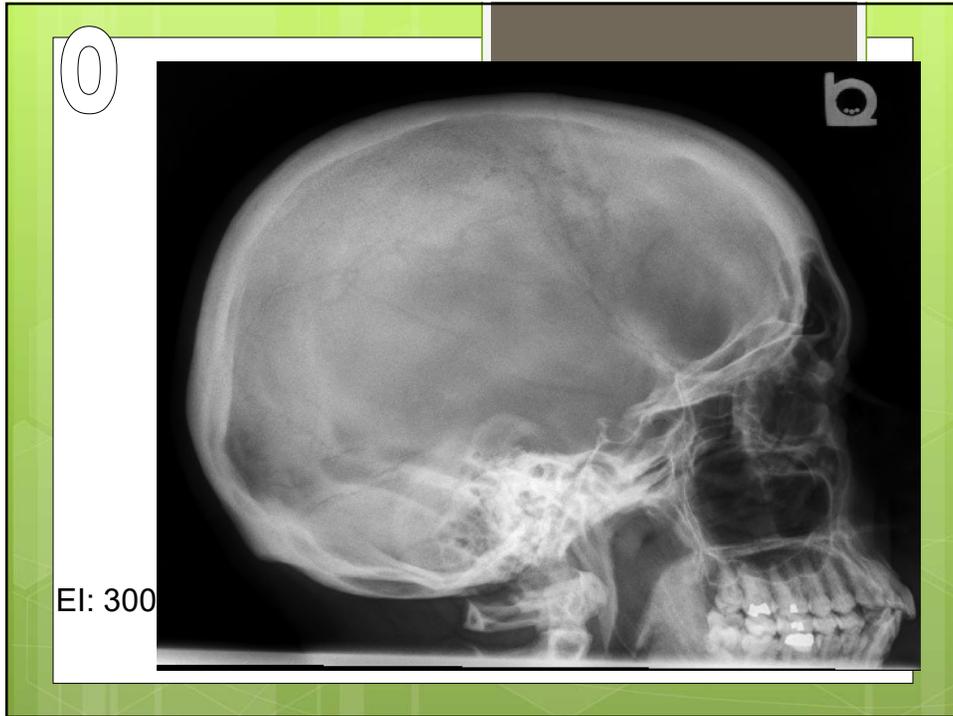
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N



EI: 250

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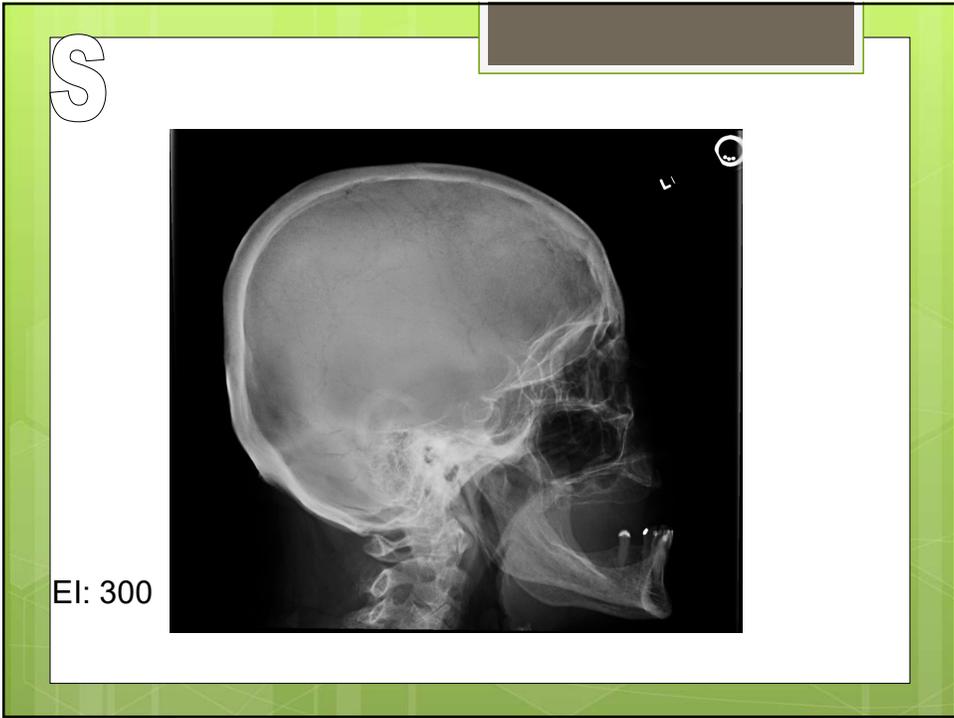
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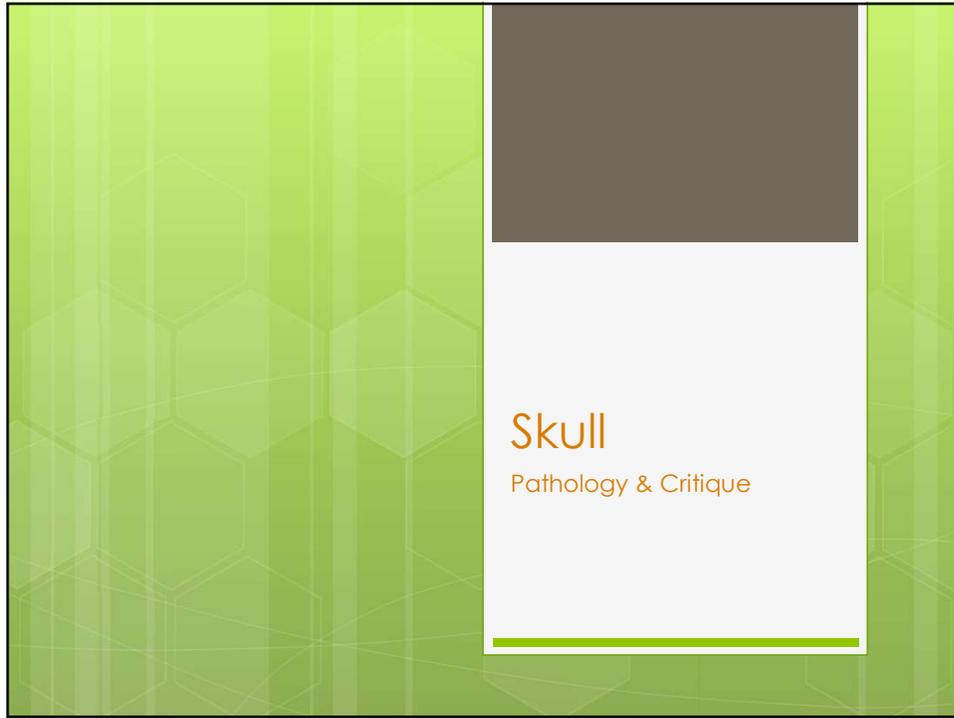
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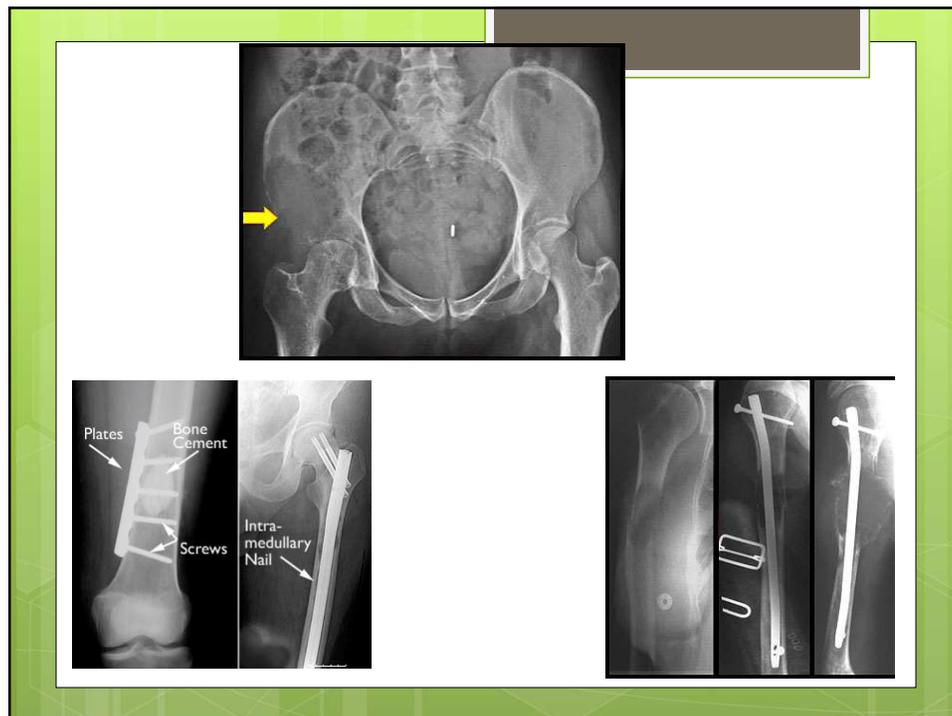


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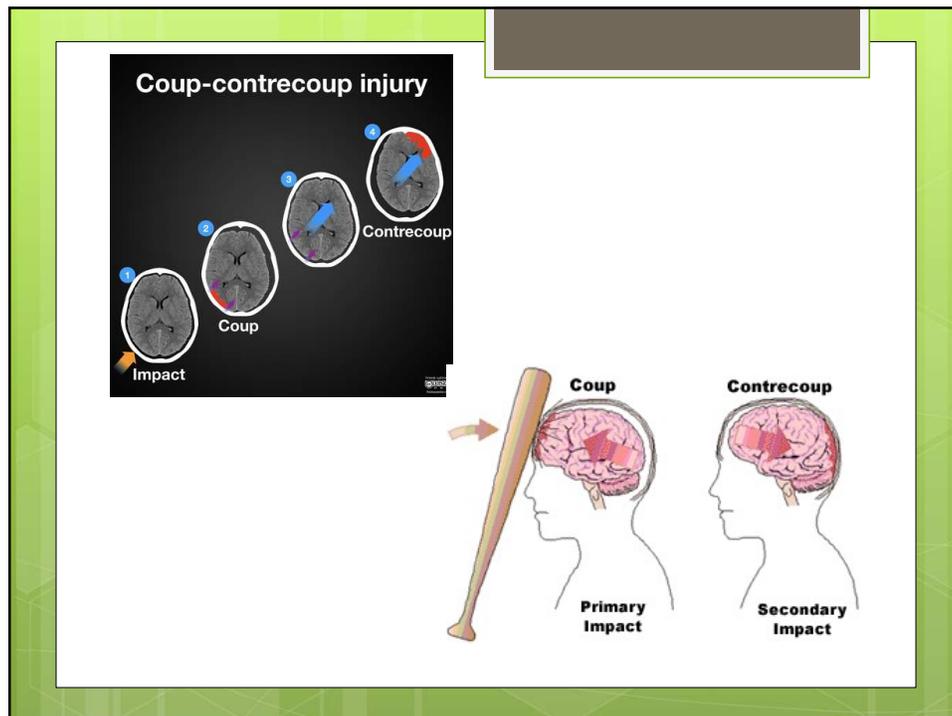


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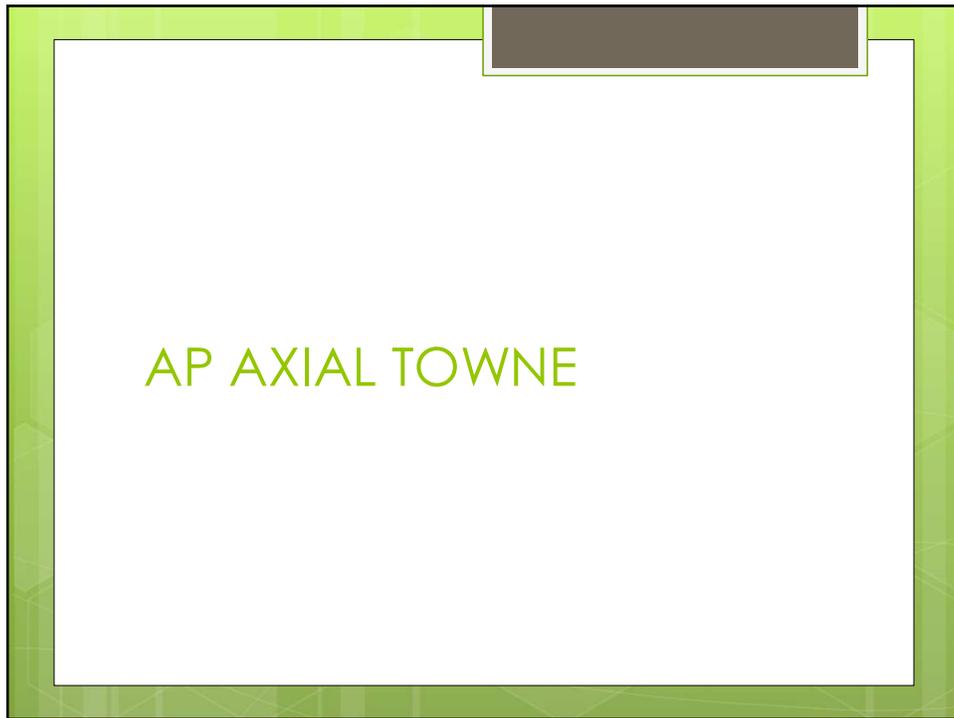
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AP Axial Critique

A



AP axial radiograph A shows a clear, well-defined skull base with distinct zygomatic arches and maxillary sinuses. The image is sharp and shows good contrast.

B



AP axial radiograph B shows a skull base that is significantly obscured by a large, diffuse, white, hazy area, likely representing a technical error such as overexposure or a positioning artifact.

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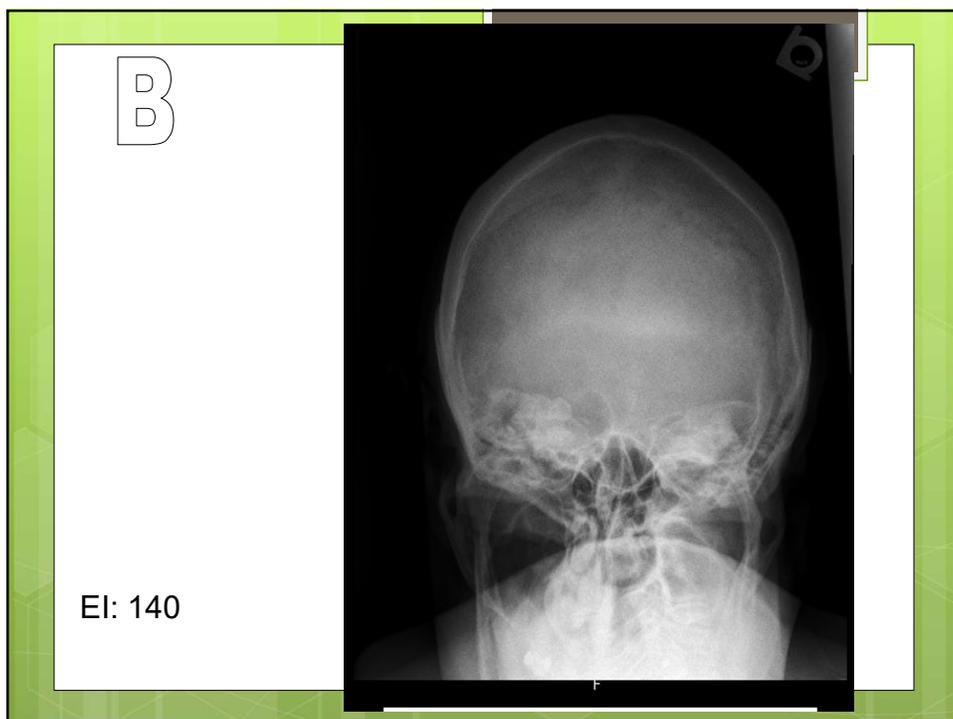
A

EI: 200



AP axial radiograph with a white 'A' marker on the left side of the skull. The image shows a skull base with some obscuration, similar to image B in slide 13.

14



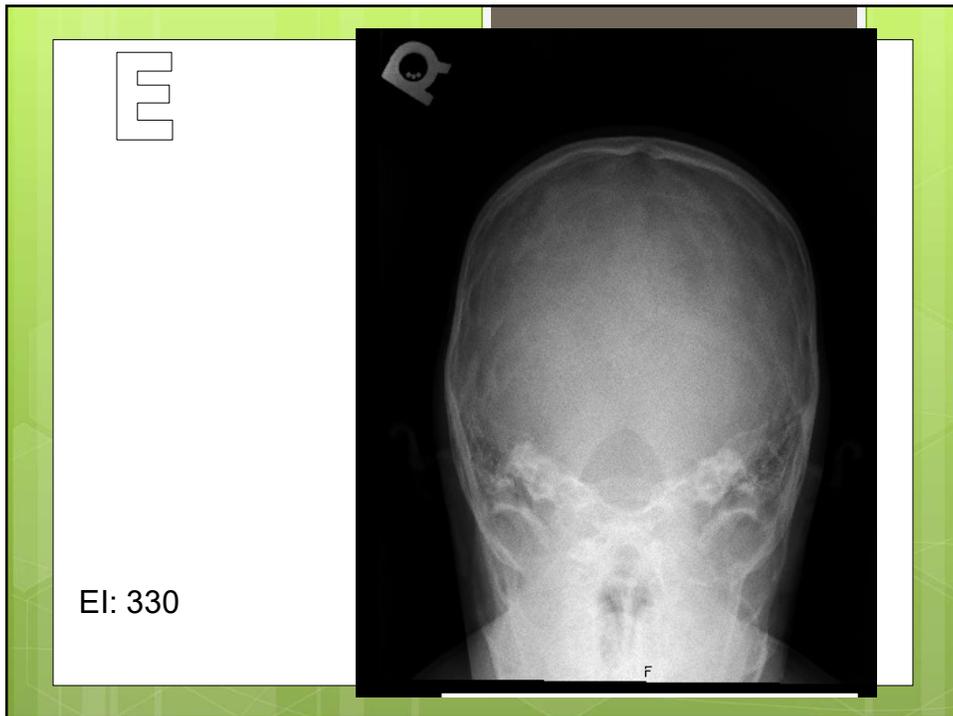
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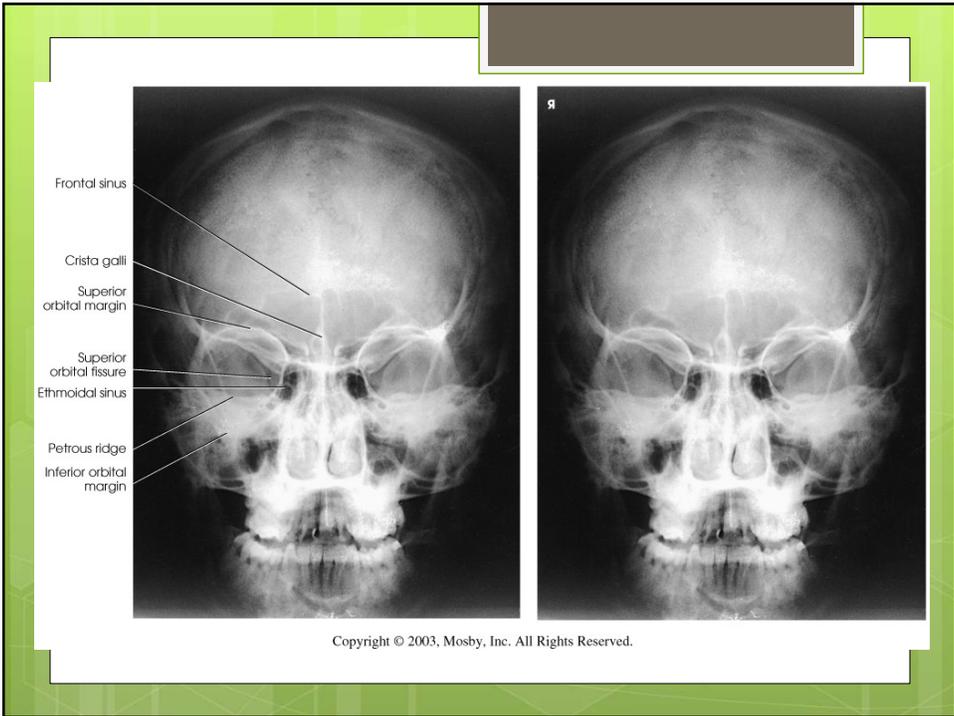
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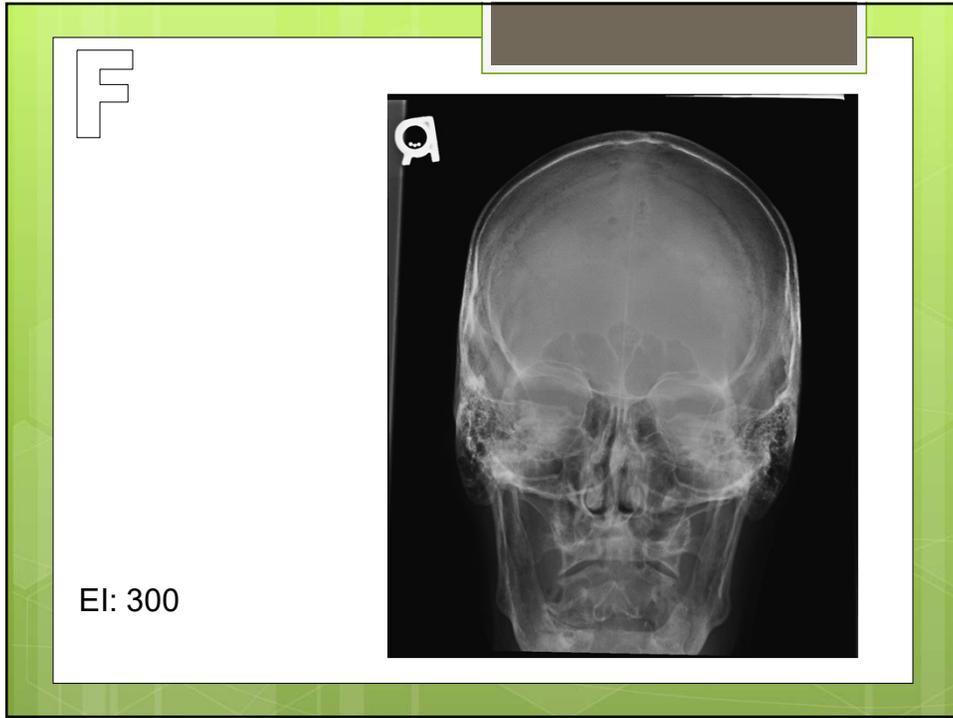
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PA AXIAL CALDWELL

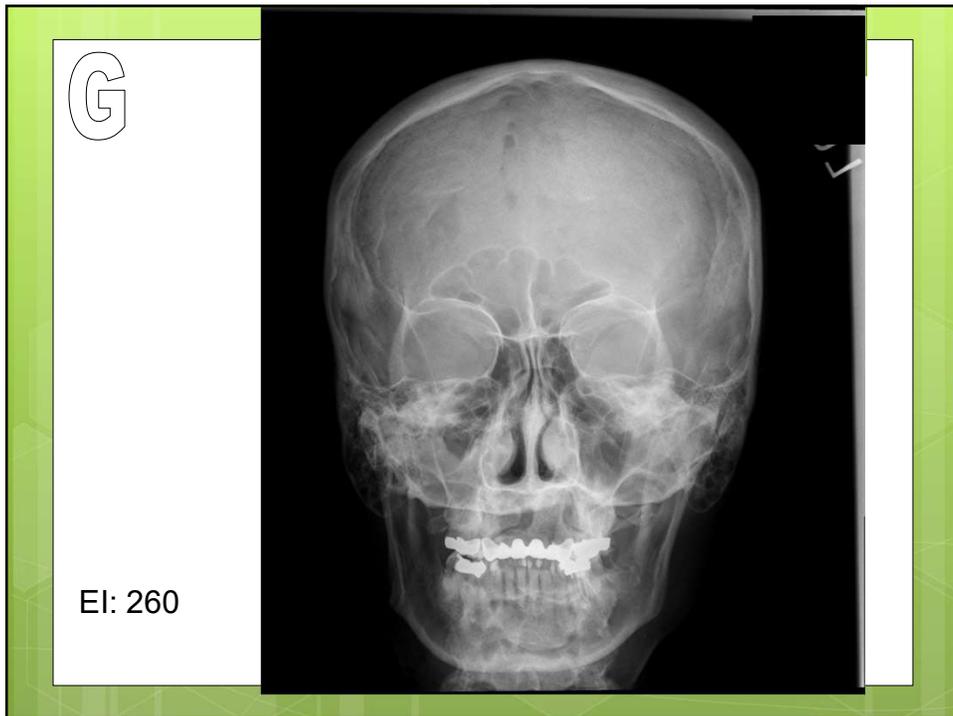
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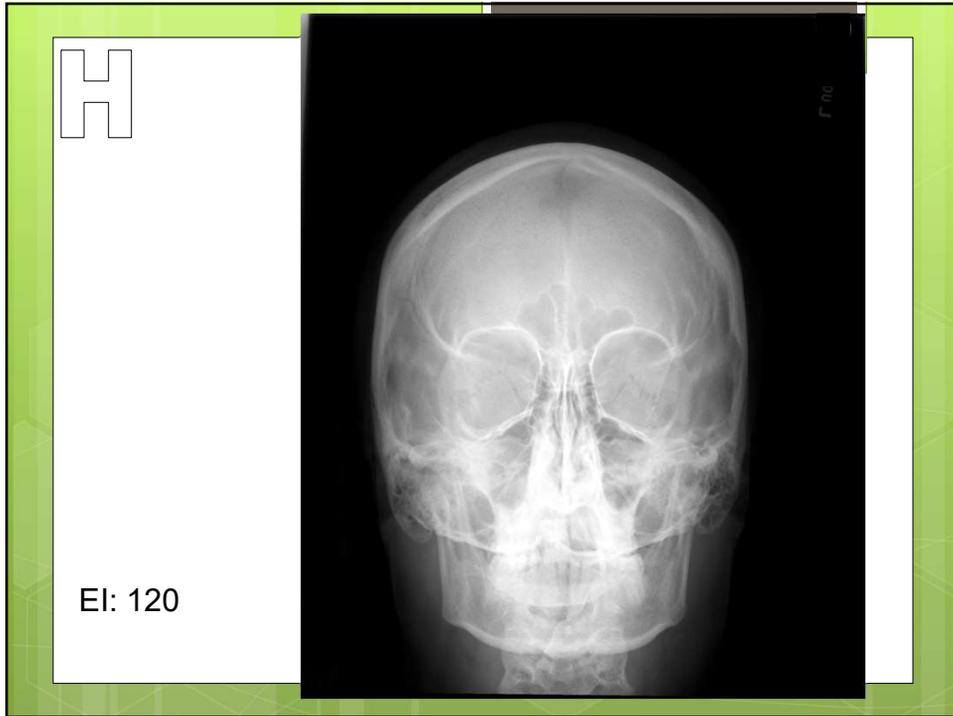
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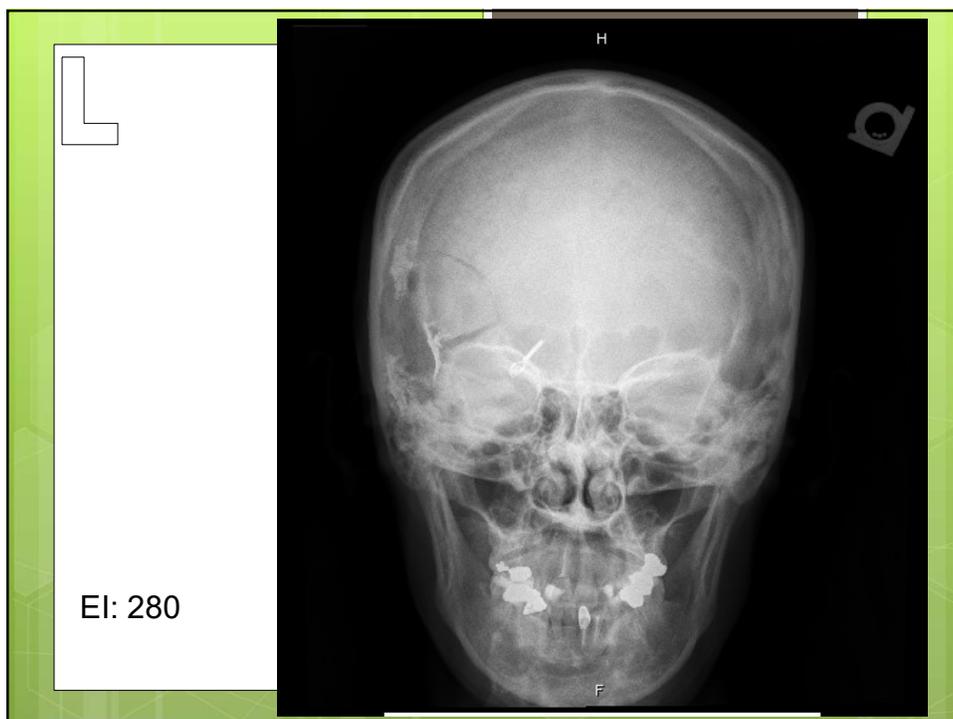
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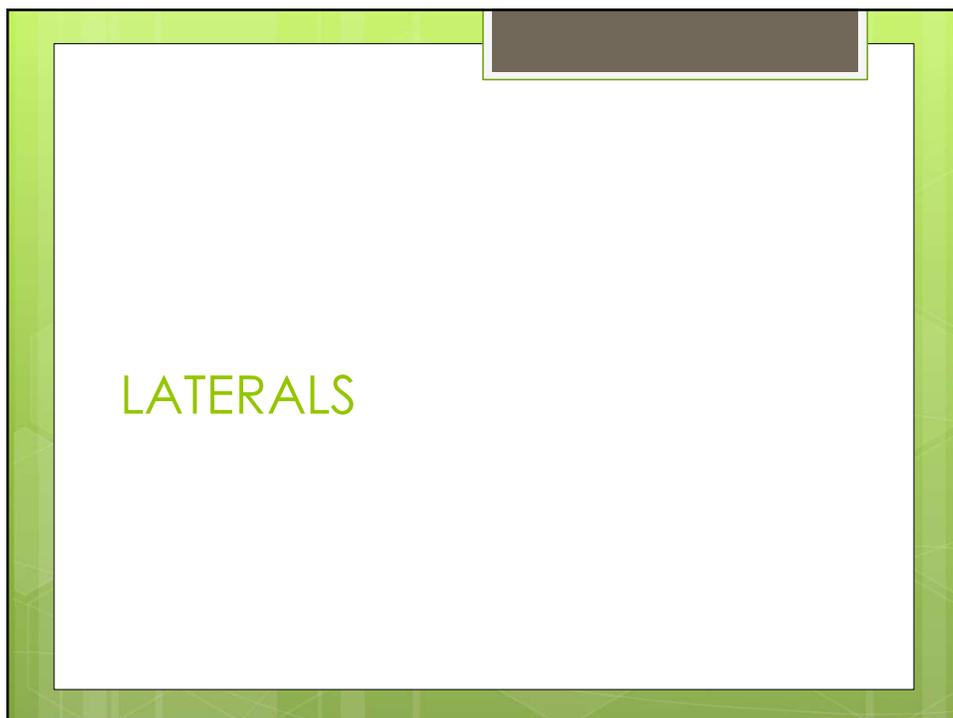
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28

M

Lateral Skull Critique

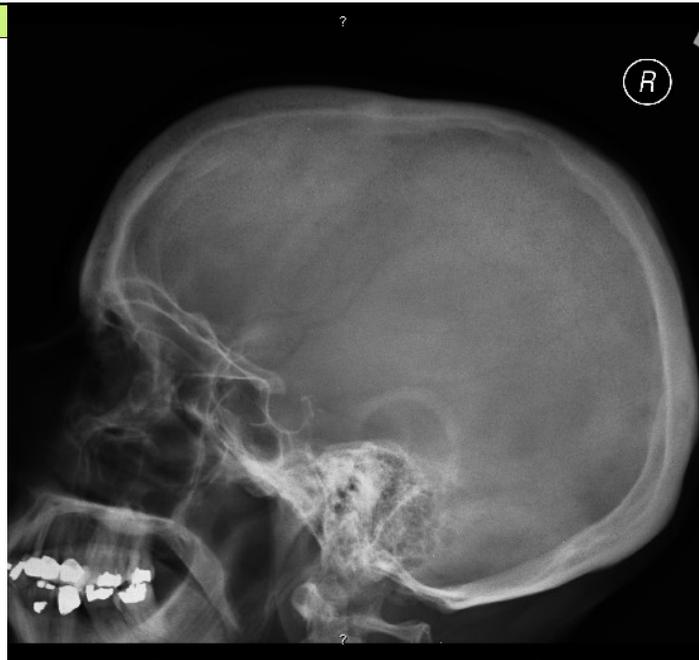


- What are the repeatable errors?

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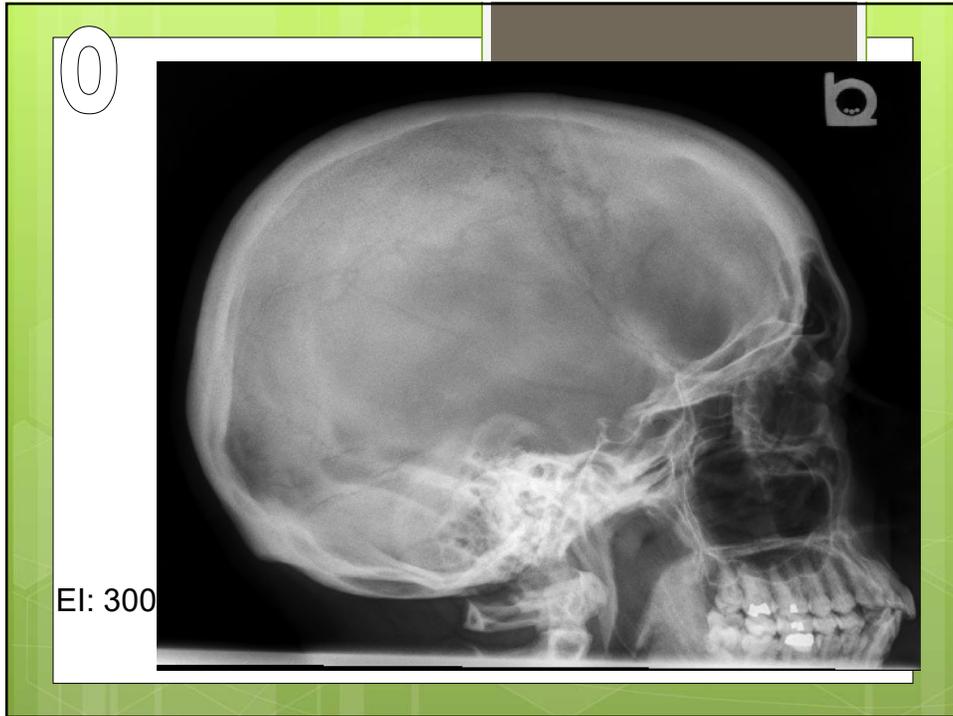
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N



EI: 250

30



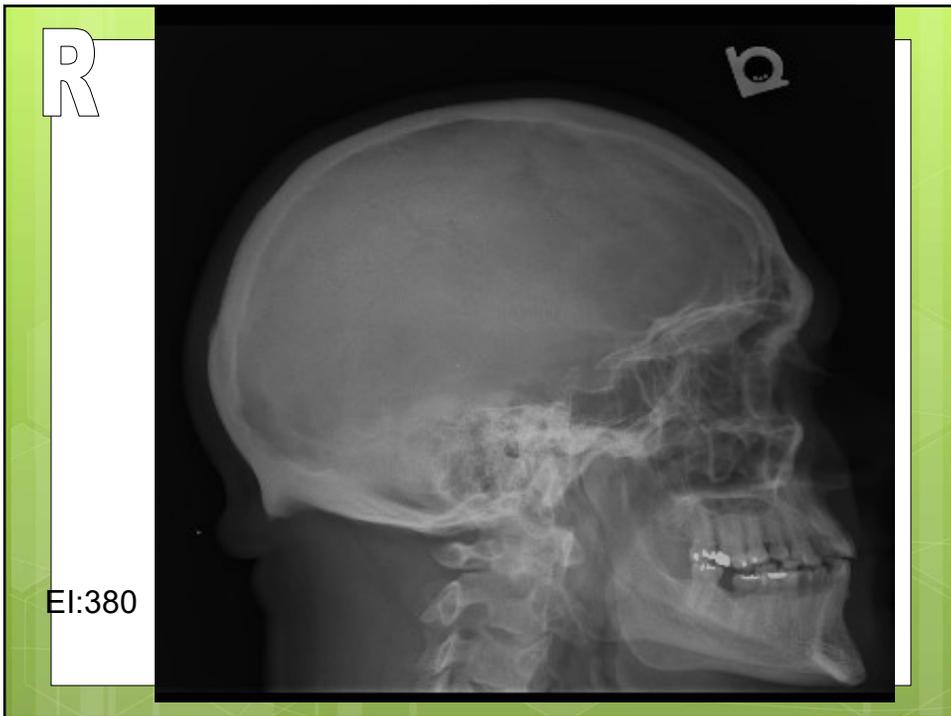
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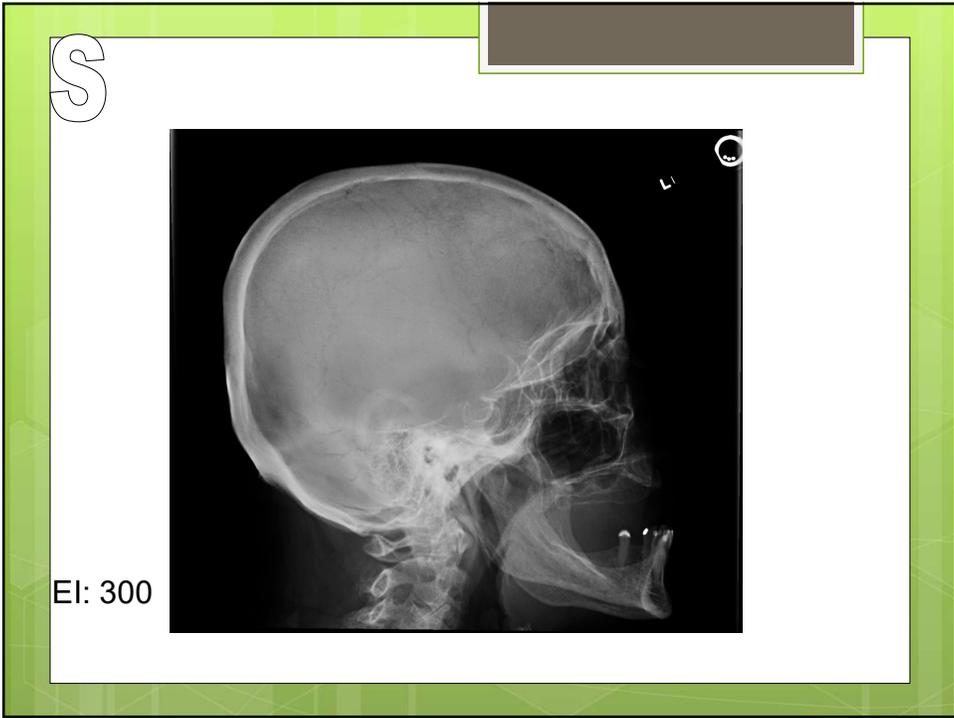
32



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1

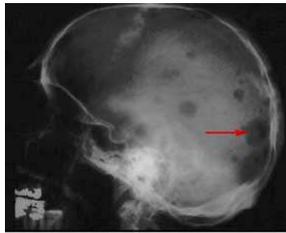


2

Multiple Myeloma

- Multiple myeloma is a cancer that effects the white blood cells of your bone marrow (plasma cells) that is associated with bone destruction
- Cause- Idiopathic- it starts with one abnormal cell that multiples
 - Genetic abnormalities
 - Defect related to chromosome 14
 - Extra copies of certain chromosomes
 - Abnormality of chromosome 13
- Complications- complications include impaired immune system, bone erosion, impaired kidney function, and anemia
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- Technical considerations- not necessary unless there are many lesions or the lesion is large (subtractive)
- Prognosis- This varies by the severity and progression of the disease.

3

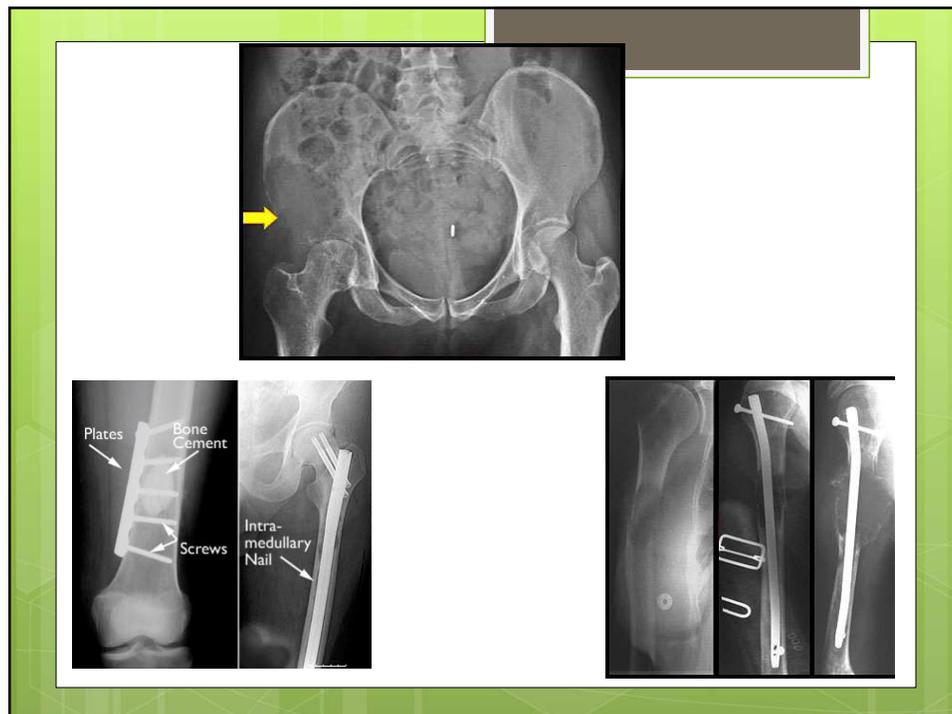


4

Bone Metastatic Disease

- Bone metastatic disease is when a cancer spreads from its primary location to the bone (most commonly from the breast, prostate, lung, kidney and thyroid)
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5



6

Depressed Fracture

- When a fragment of the skull is depressed
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- Prognosis- depending on the depression, it may require surgery. Sometimes it spontaneously elevates on its own

7

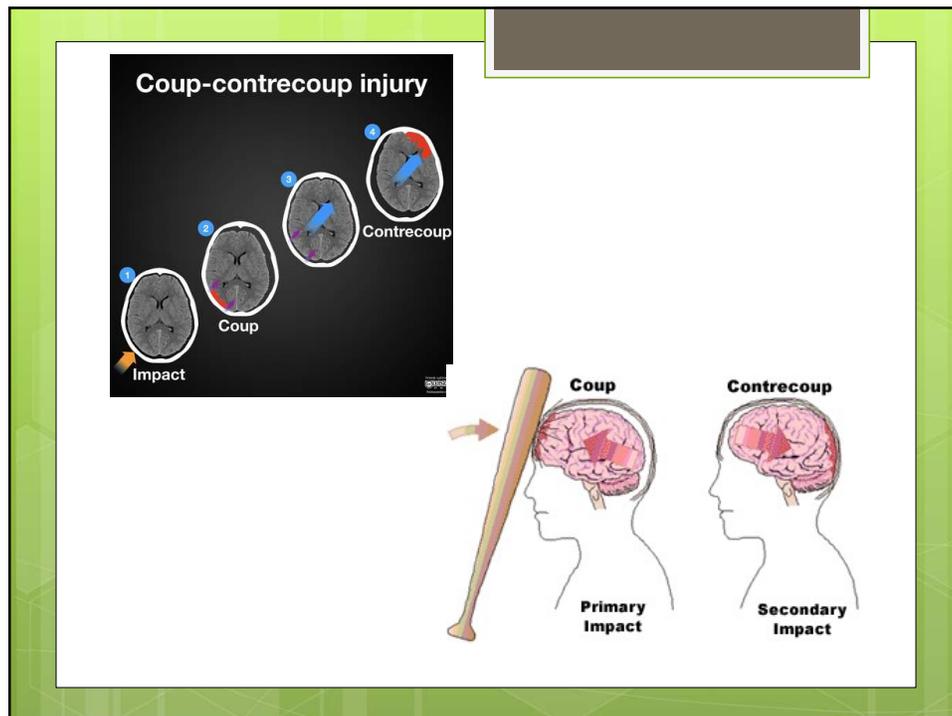


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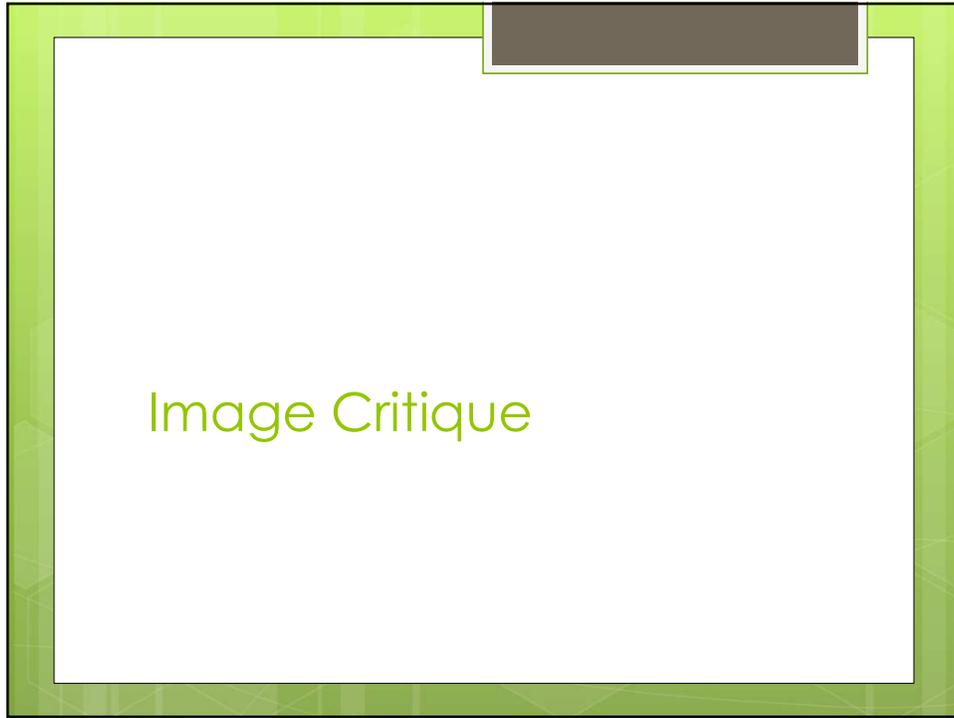
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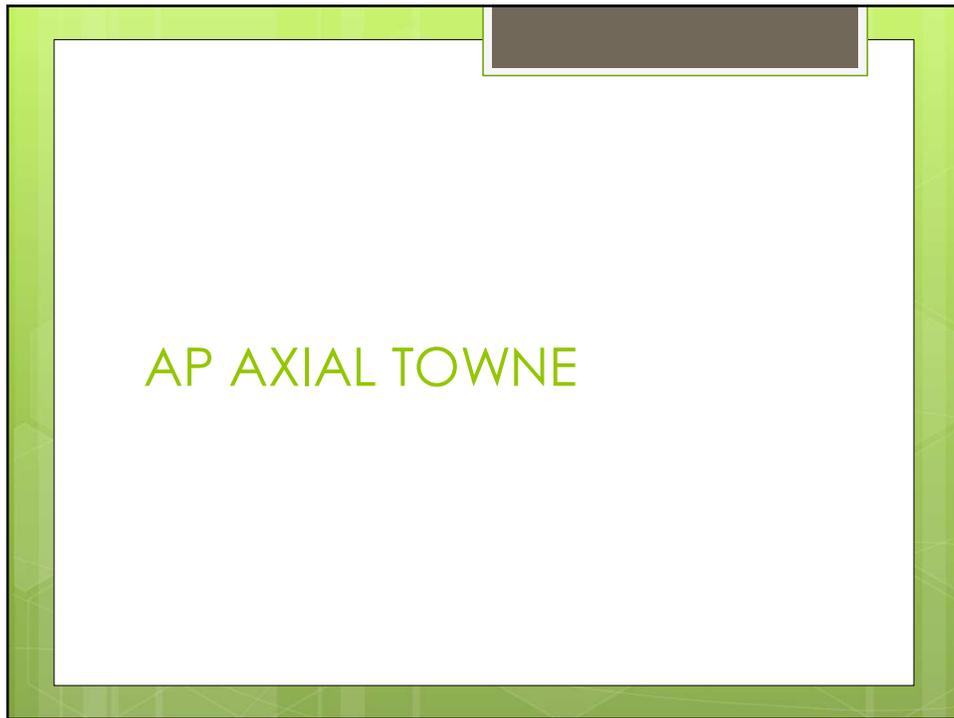
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12

AP Axial Critique

A



AP axial radiograph A shows a clear view of the skull base and facial bones. The zygomatic arches are well-defined, and the nasal cavity is visible. The image is sharp and shows good contrast.

B



AP axial radiograph B shows a similar view to A, but with significant overexposure and loss of detail. The zygomatic arches and nasal cavity are less distinct, and the overall image quality is poor.

- Which demonstrates a repeatable error?
- What is the repeatable error?

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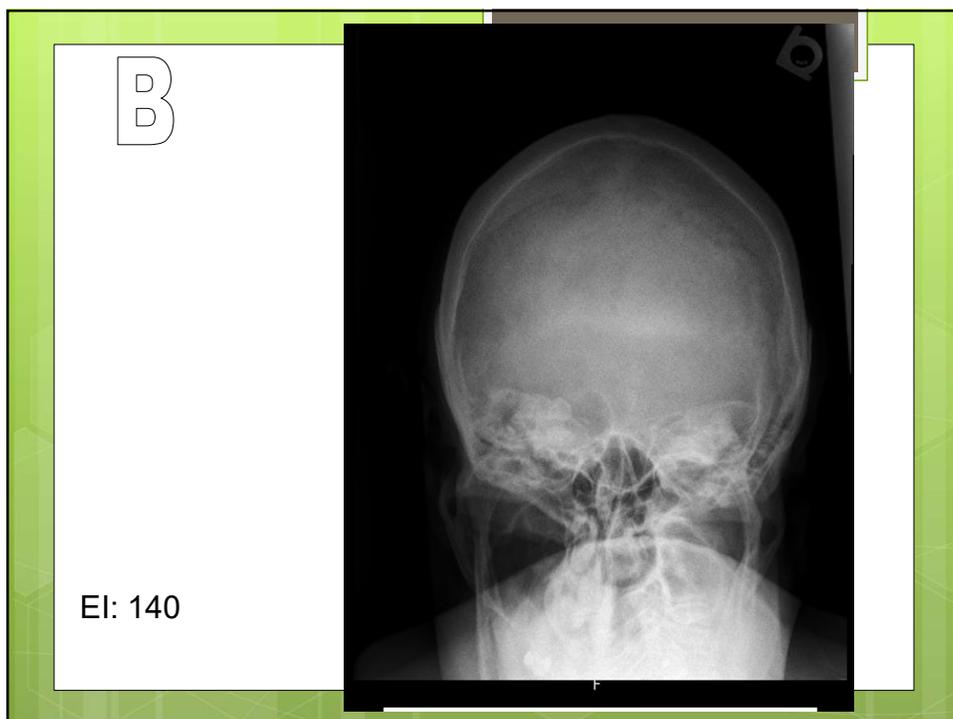
A

EI: 200



AP axial radiograph with a white 'A' marker on the left side of the image. The image shows the skull base and facial bones, similar to the previous slide. There is a small 'R' marker on the left side of the image.

14



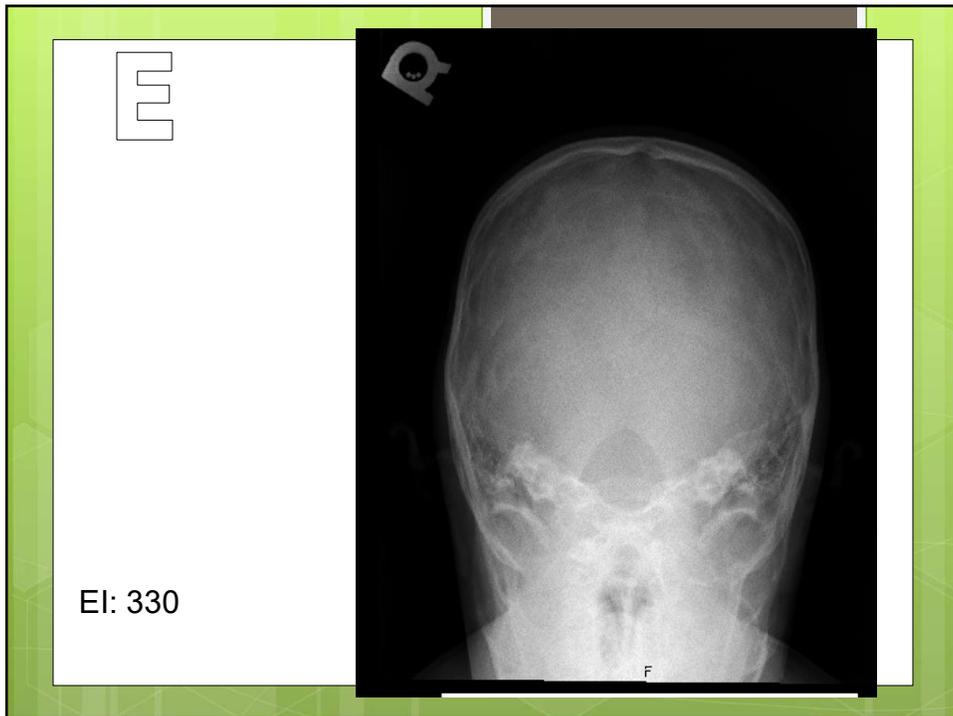
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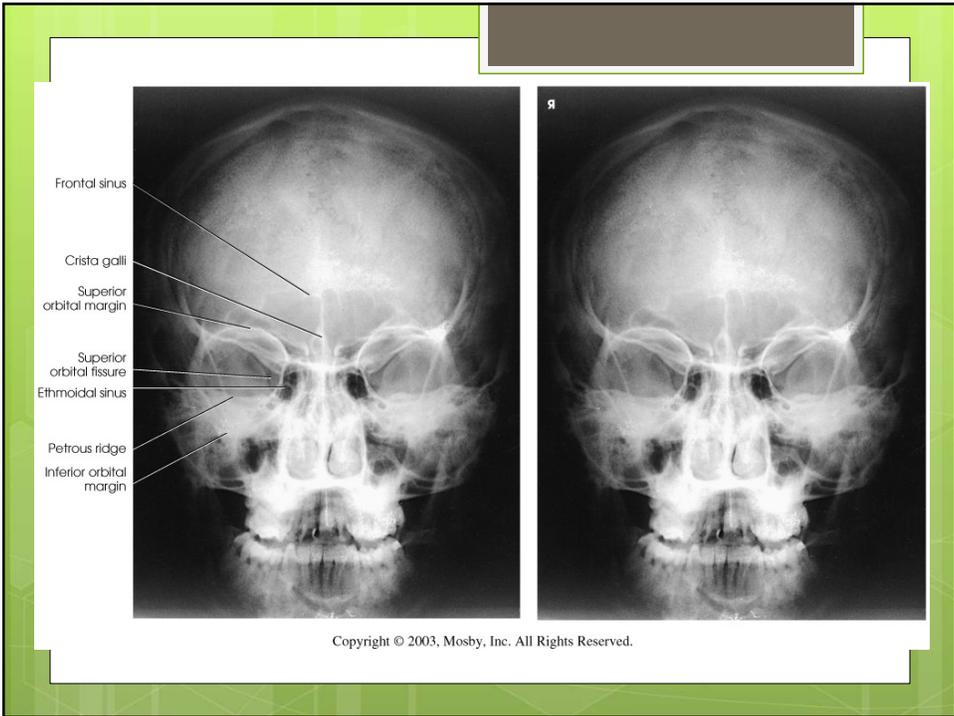
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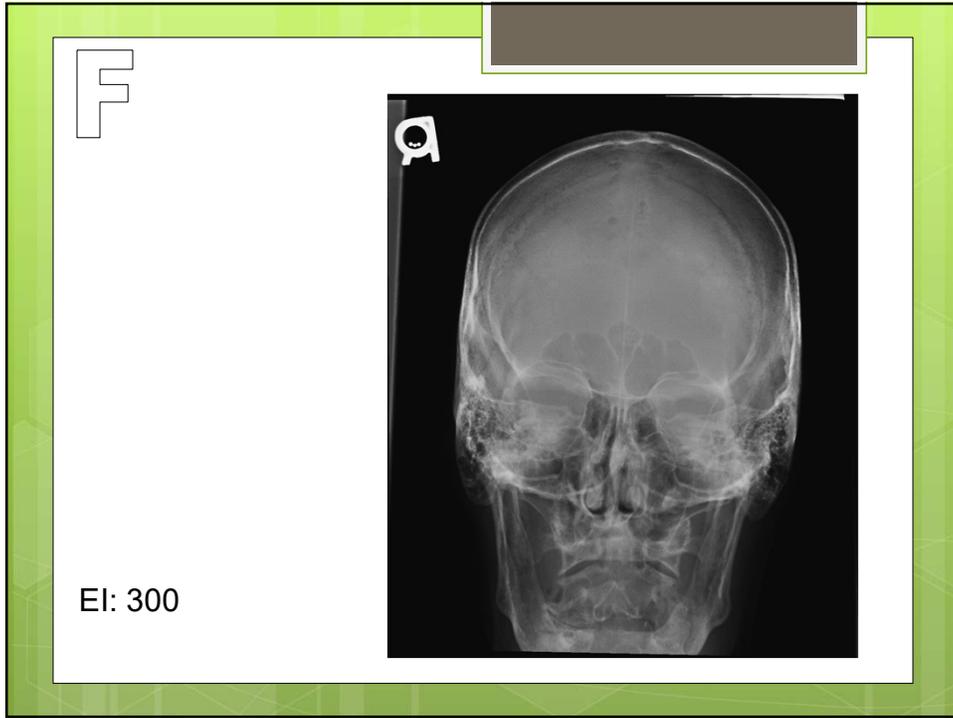
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PA AXIAL CALDWELL

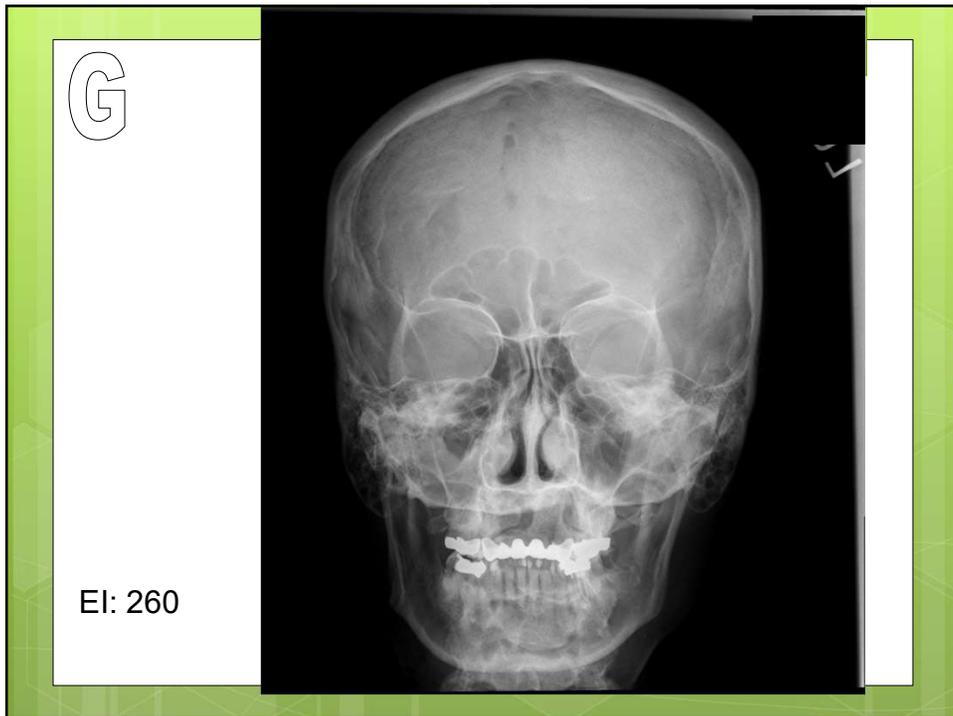
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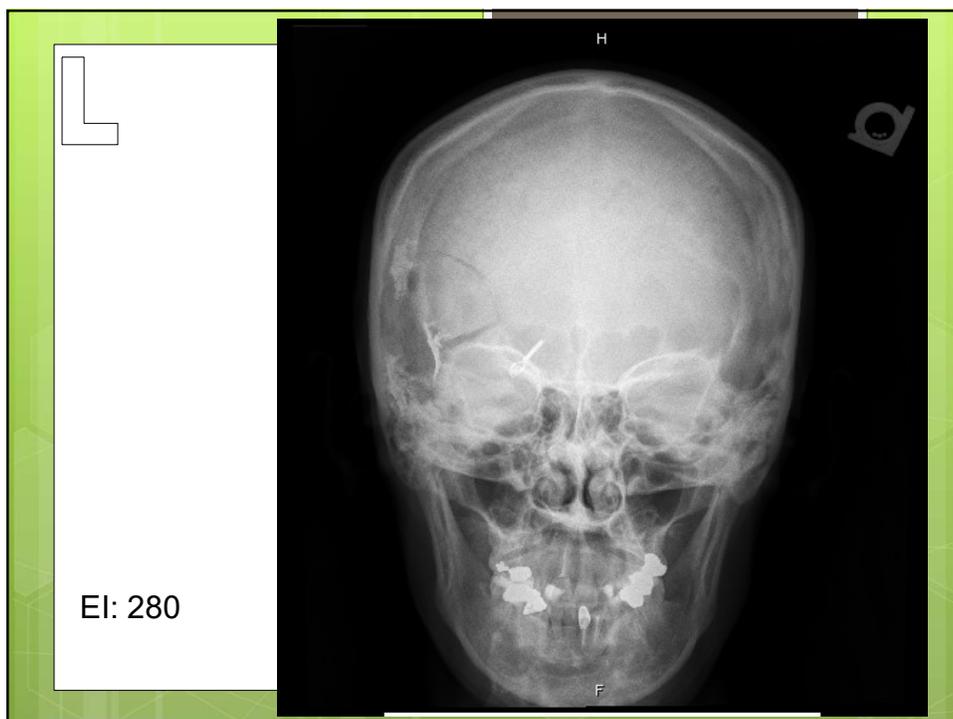
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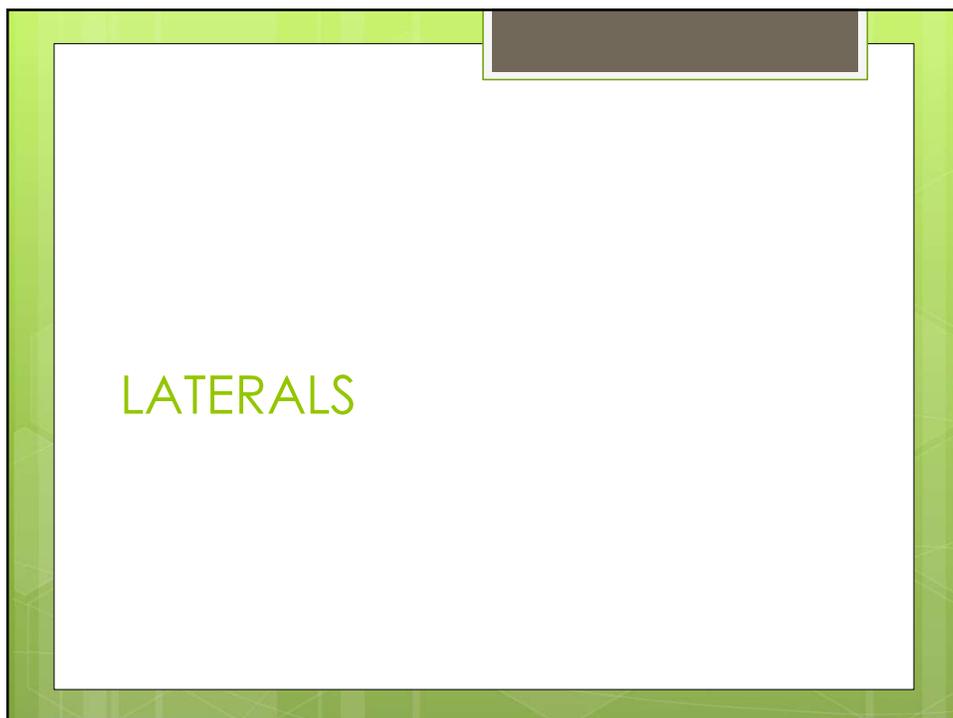
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M

Lateral Skull Critique

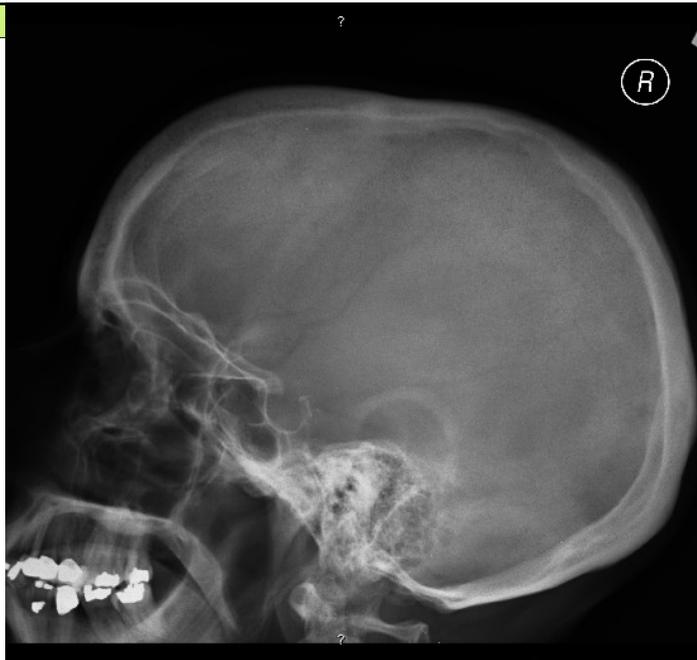


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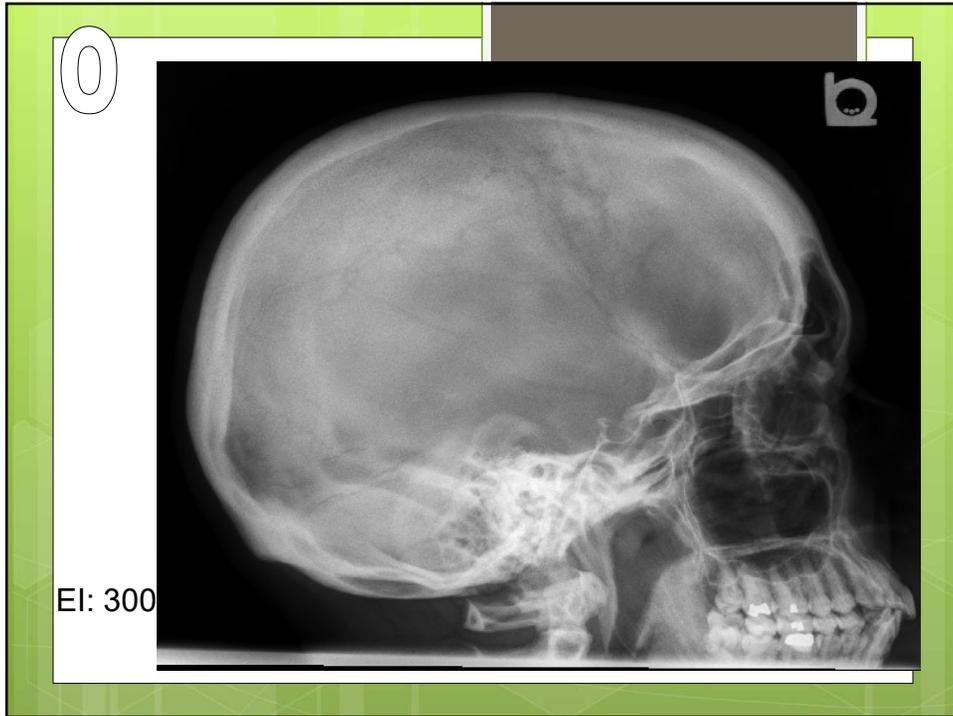
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N



EI: 250

30



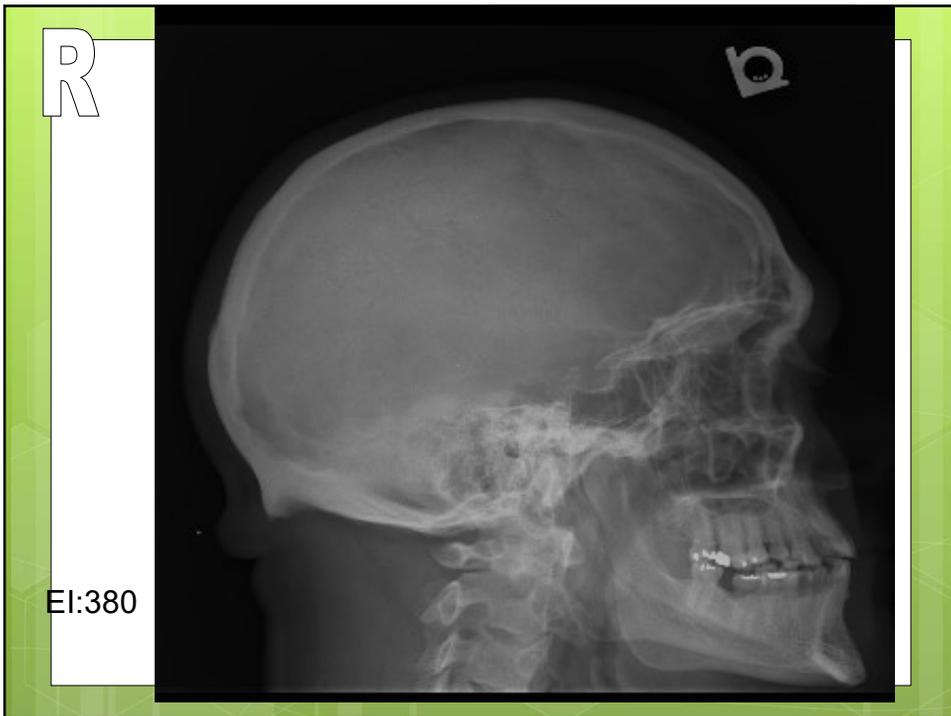
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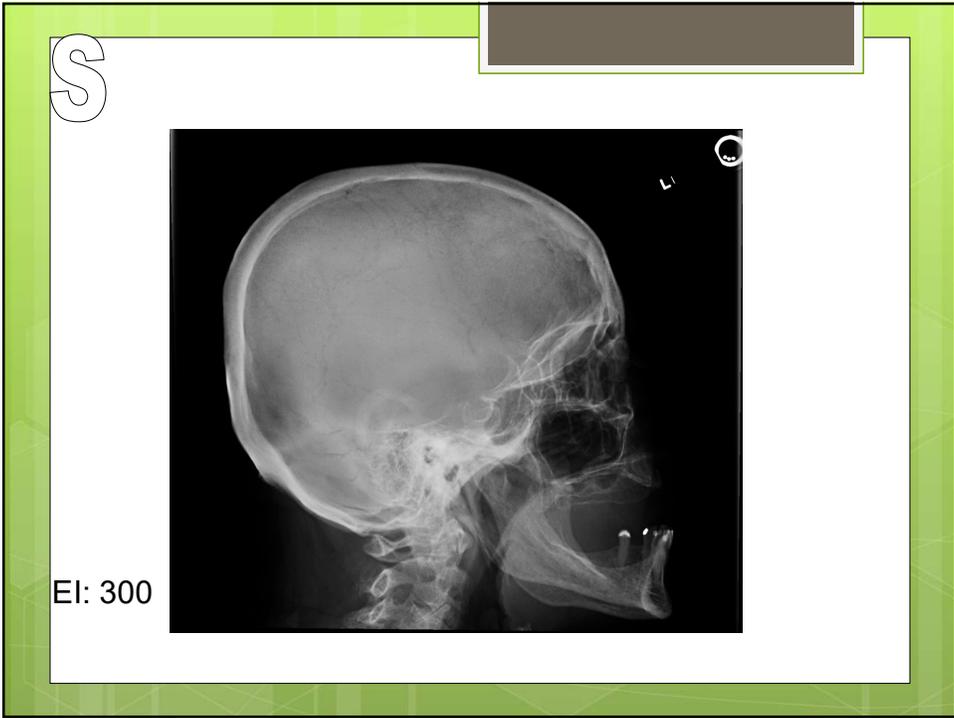
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1



2

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3

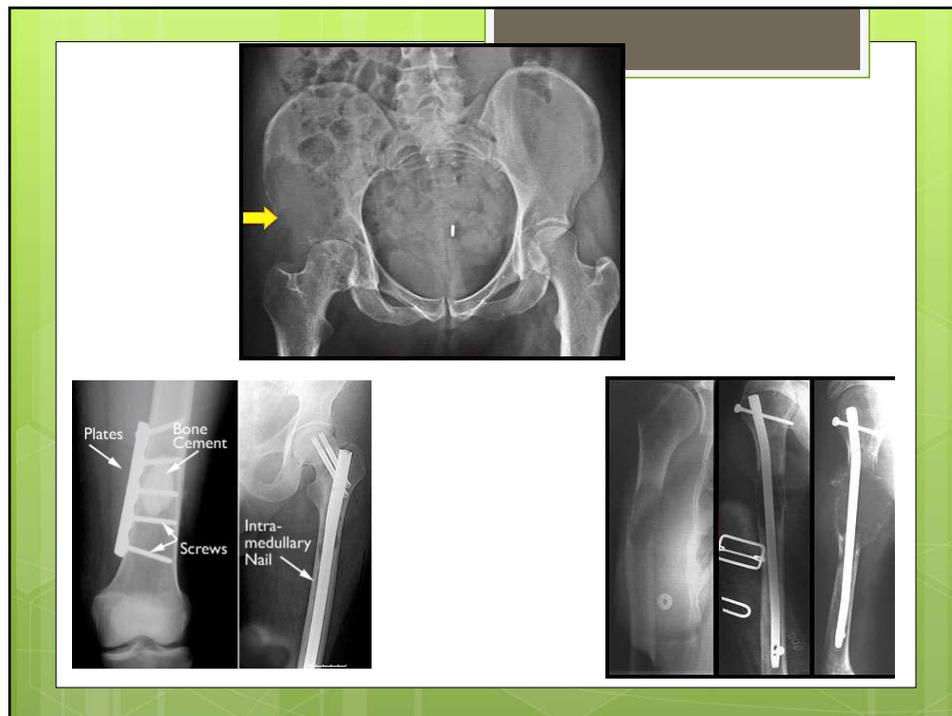


4

Bone Metastatic Disease

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5



6

Depressed Fracture

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 - Called a Ping Pong fracture
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- Prognosis- depending on the depression, it may require surgery. Sometimes it spontaneously elevates on its own

7

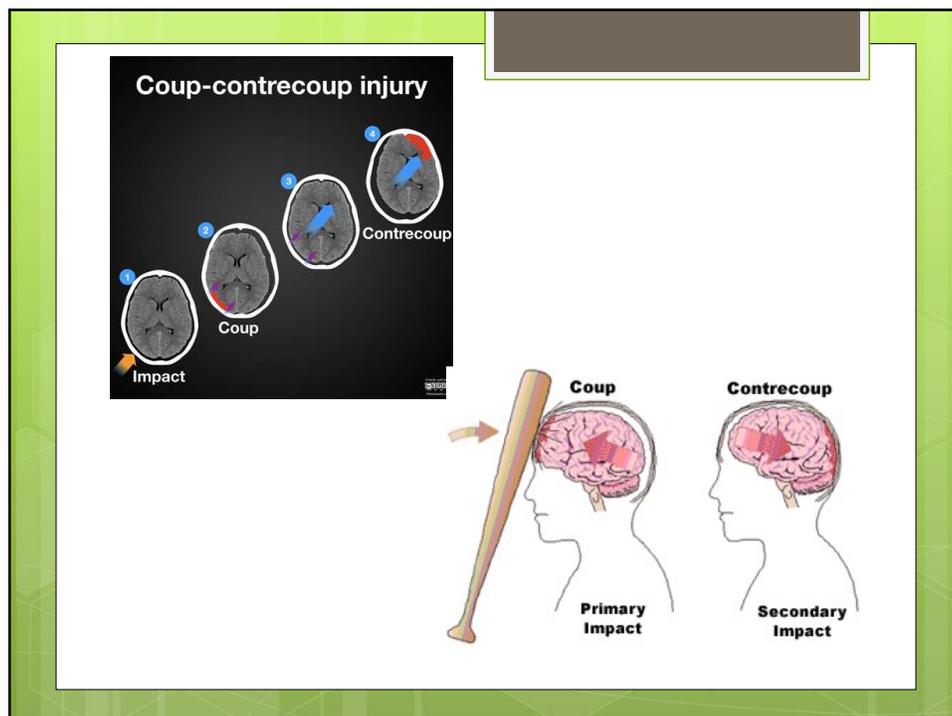


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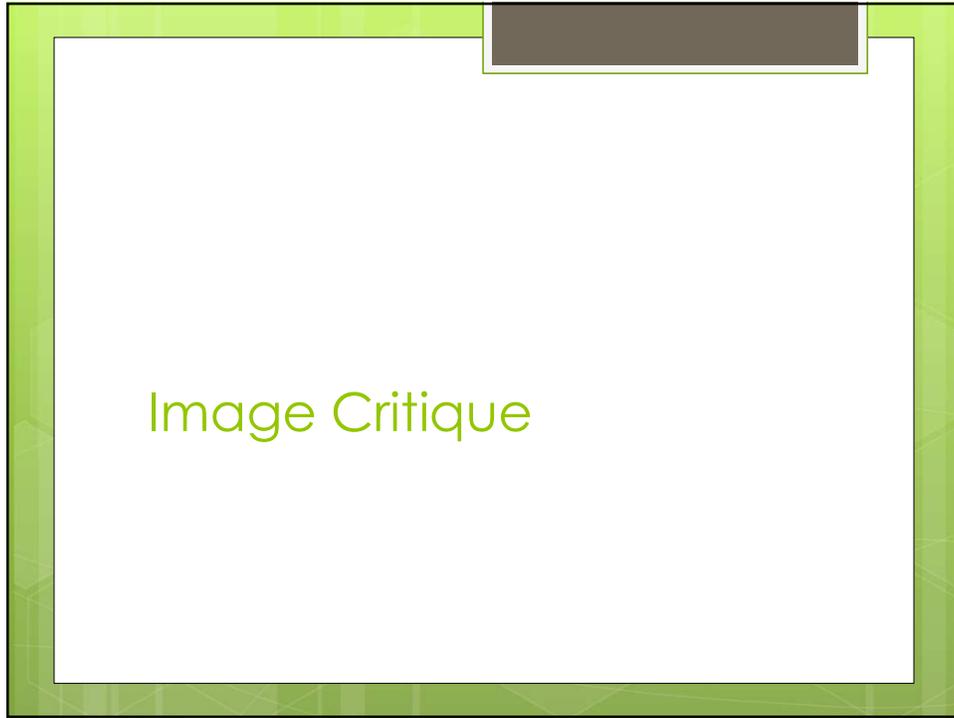
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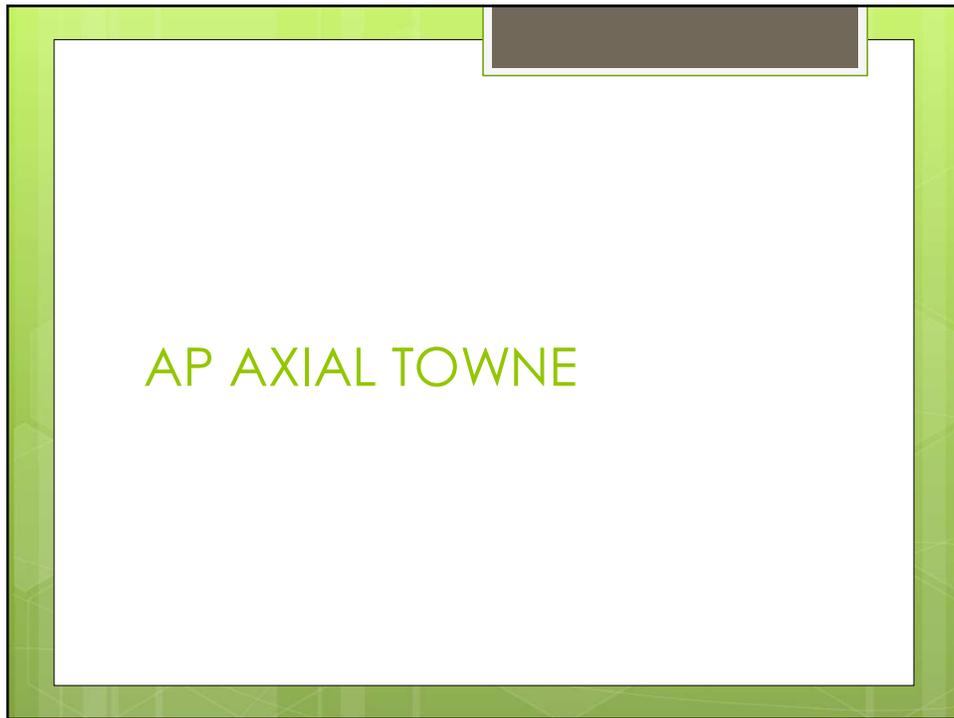
9



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11



12

AP Axial Critique

A



AP axial radiograph A showing a clear view of the skull base and facial bones.

B



AP axial radiograph B showing a clear view of the skull base and facial bones.

- Which demonstrates a repeatable error?
- What is the repeatable error?

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13

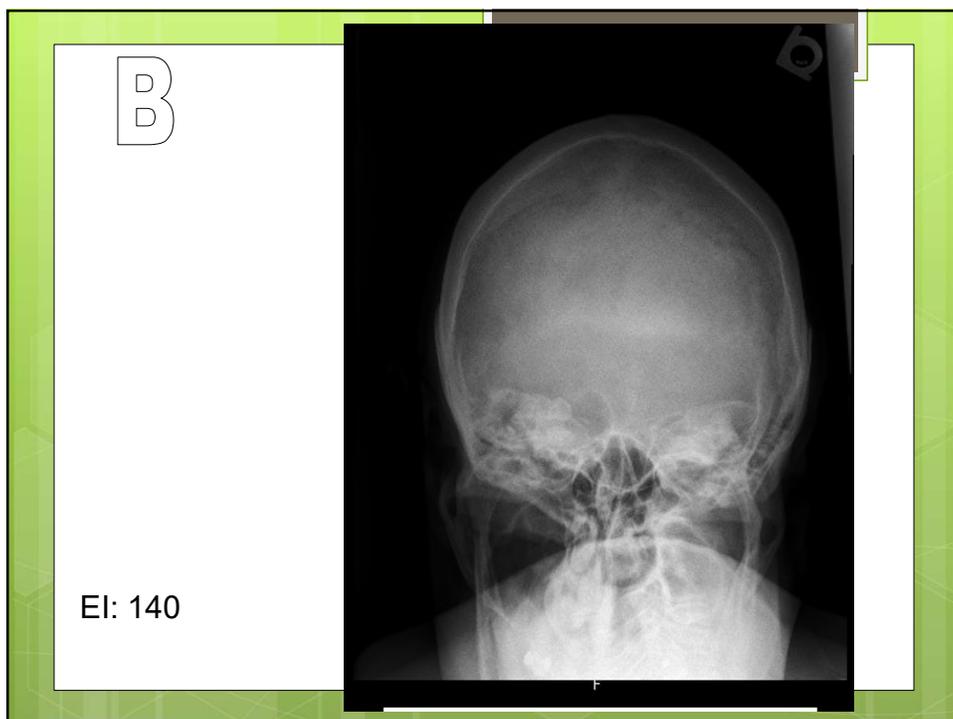
A

EI: 200



AP axial radiograph with a white 'A' marker on the left side of the image.

14



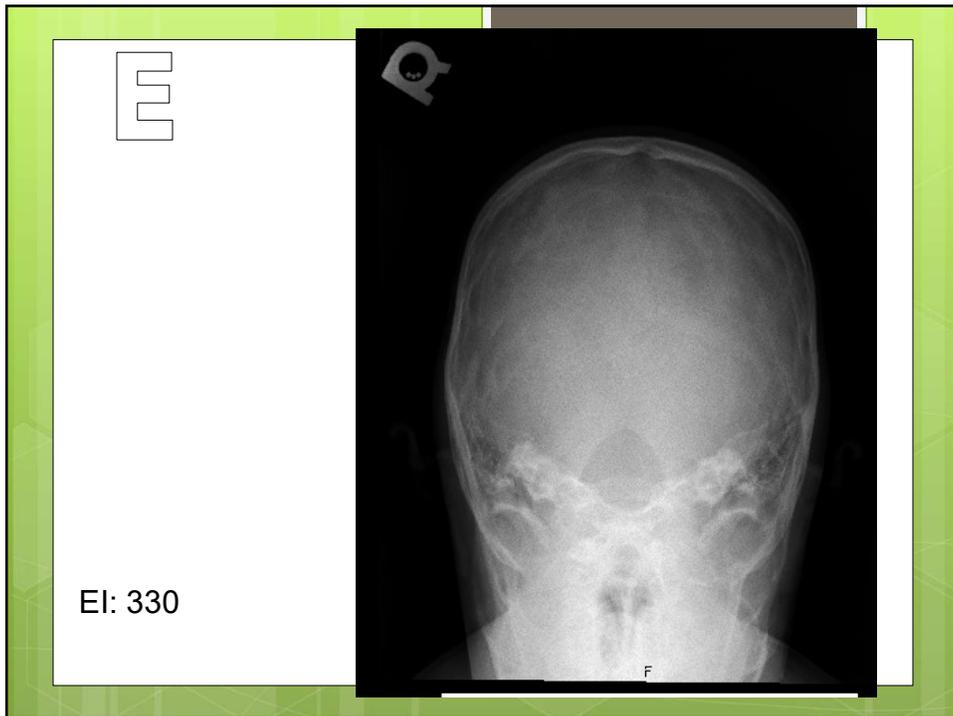
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16



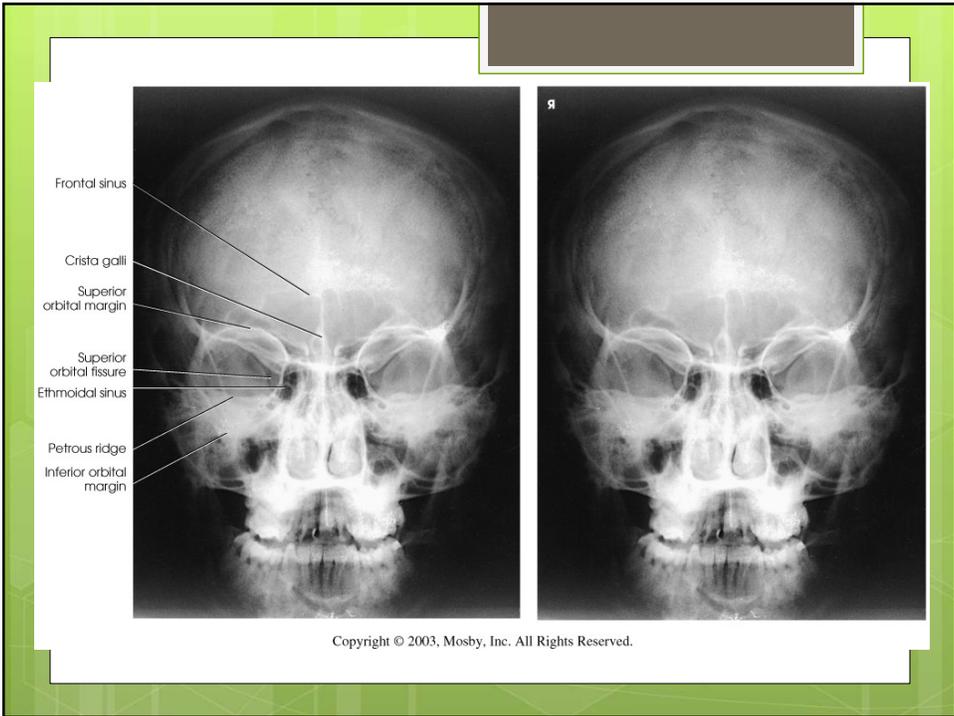
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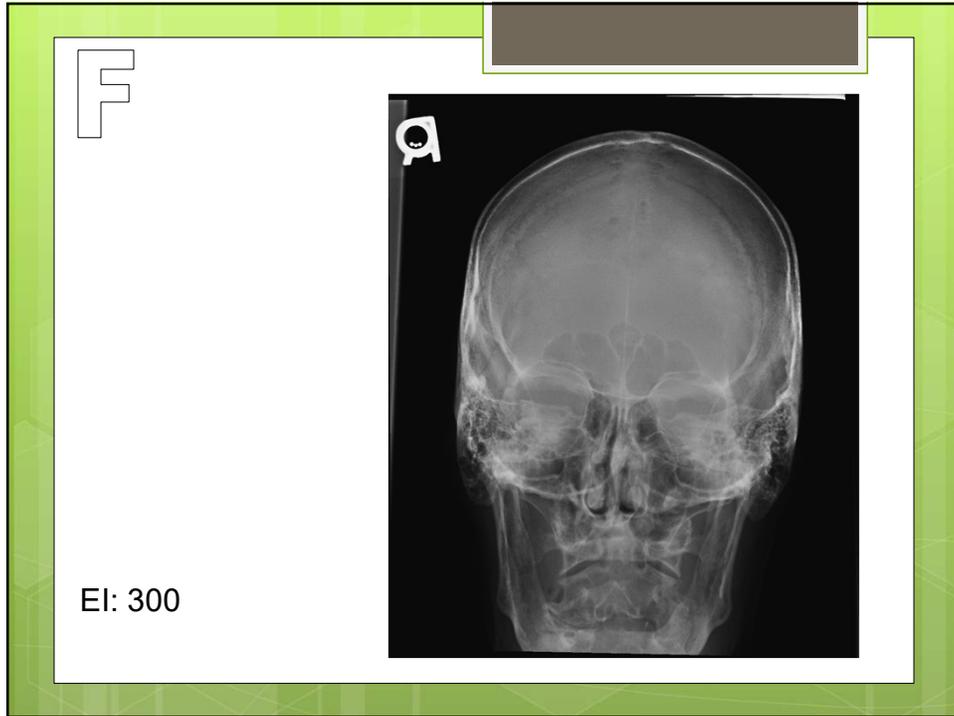
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PA AXIAL CALDWELL

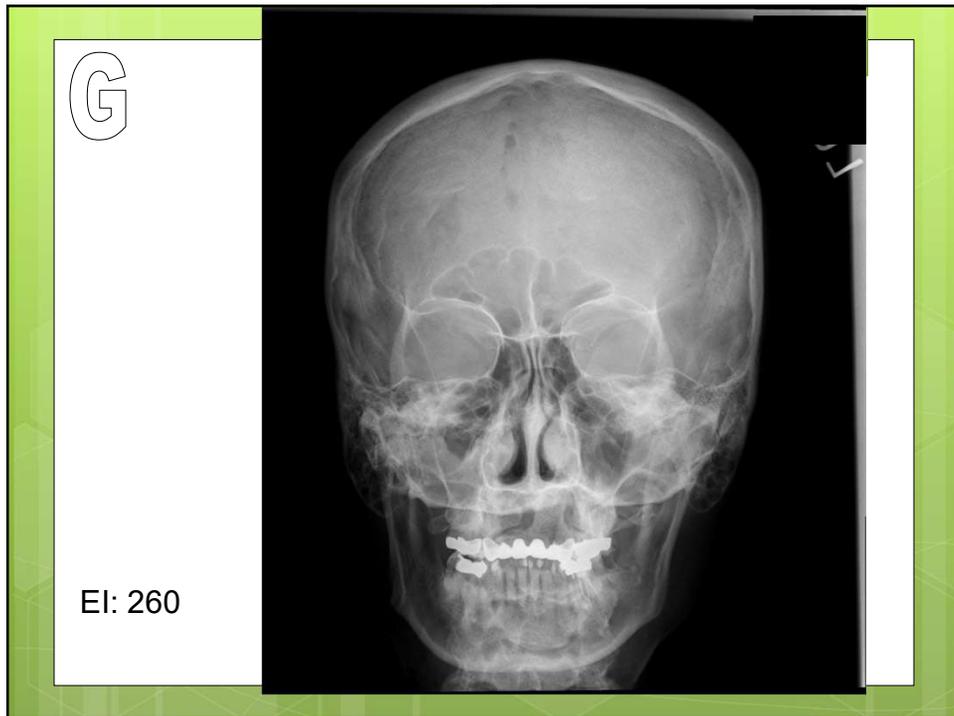
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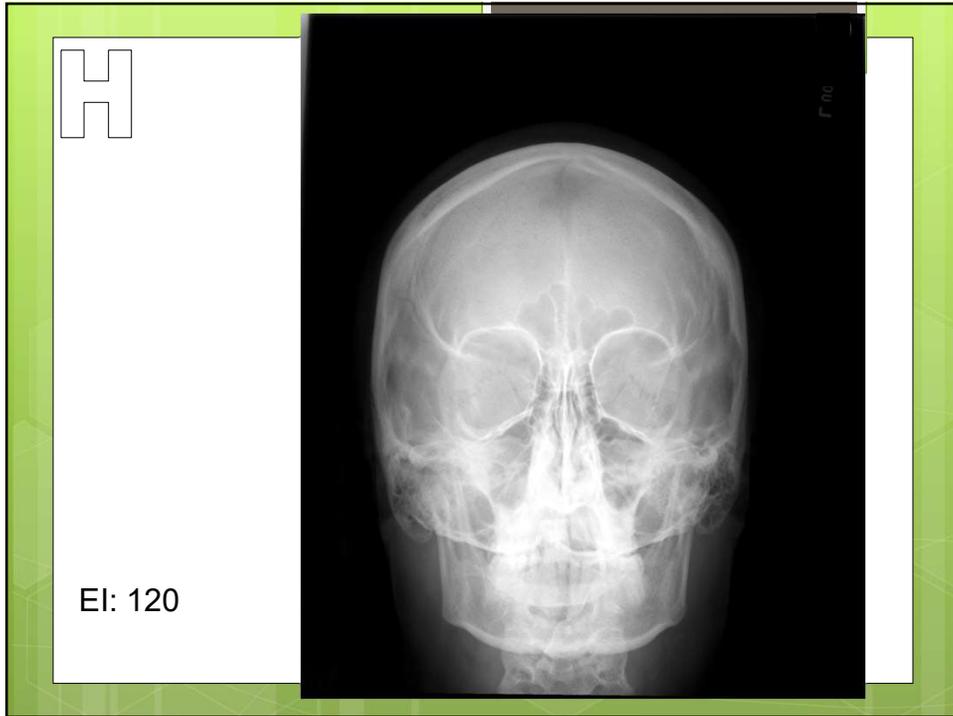
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M

Lateral Skull Critique

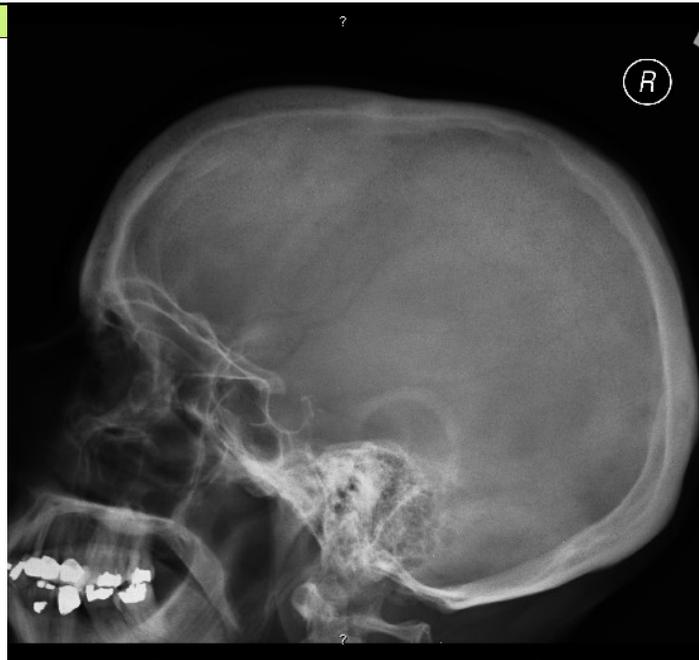


- What are the repeatable errors?

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29

N



EI: 250

30



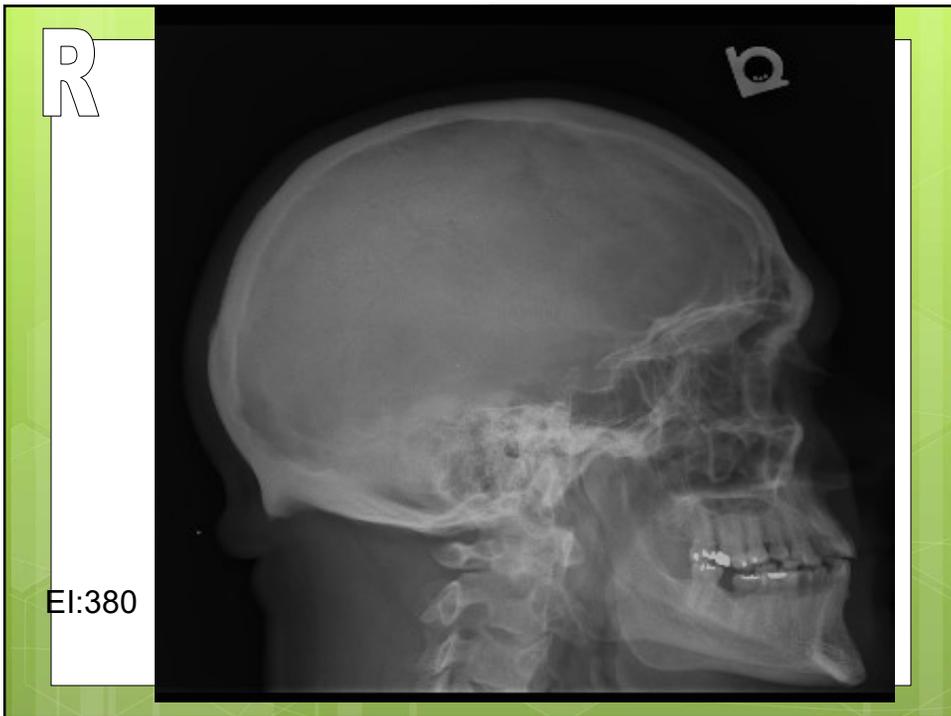
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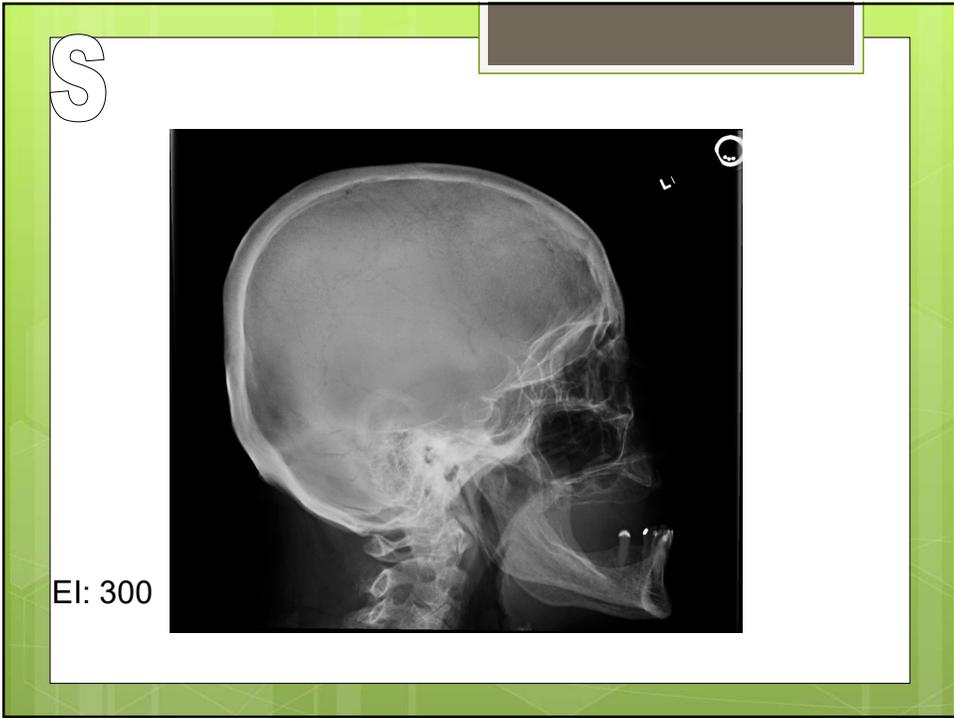
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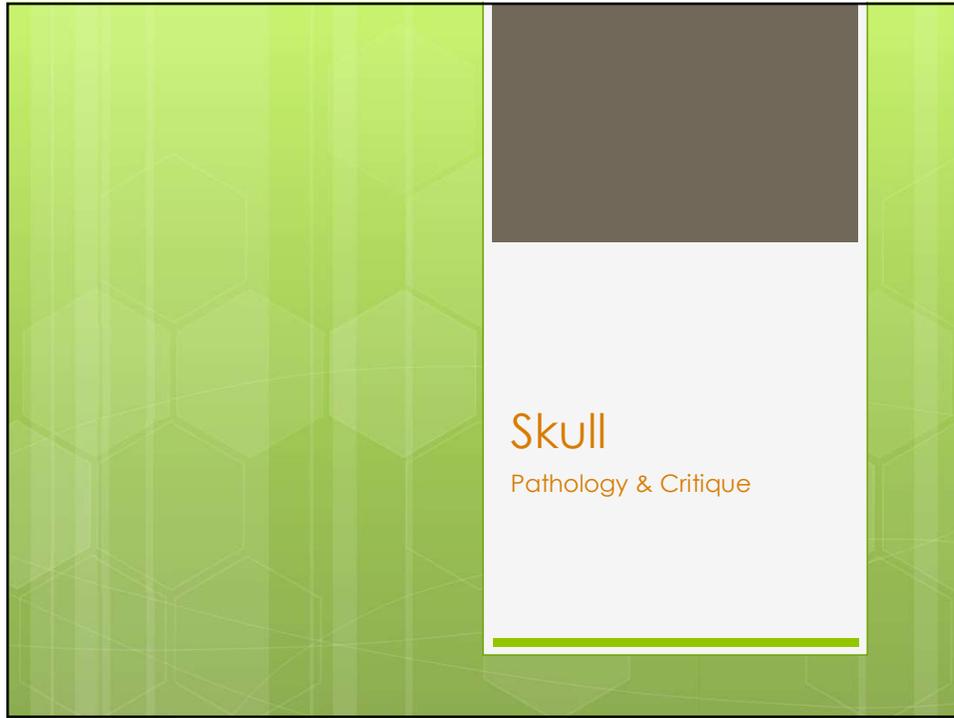
36



37



38



1



2

Multiple Myeloma

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3

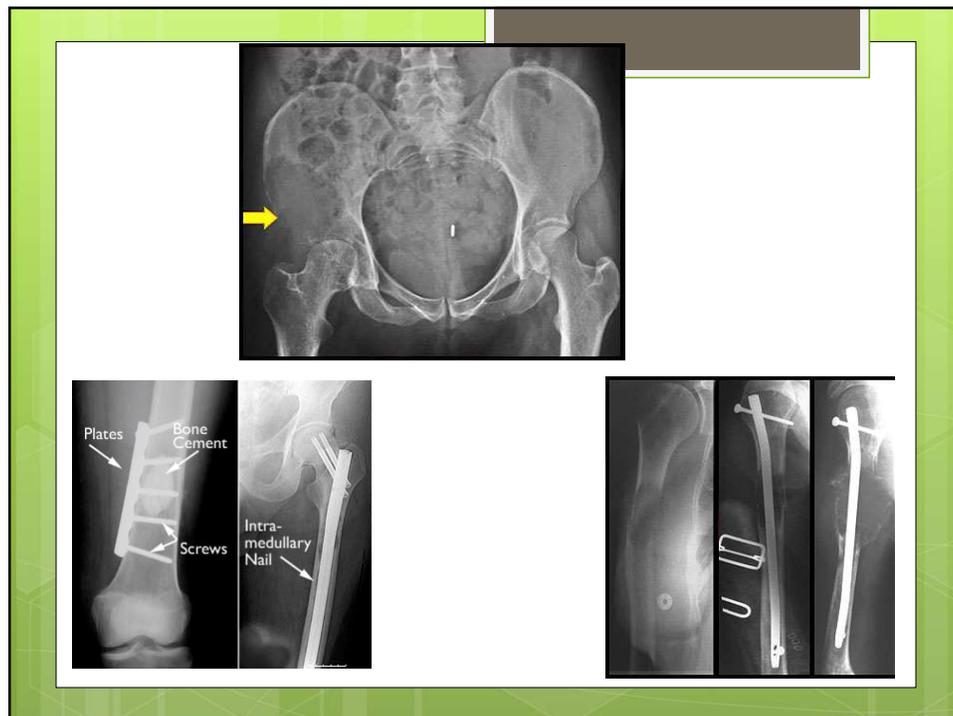


4

Bone Metastatic Disease

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5



6

Depressed Fracture

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7

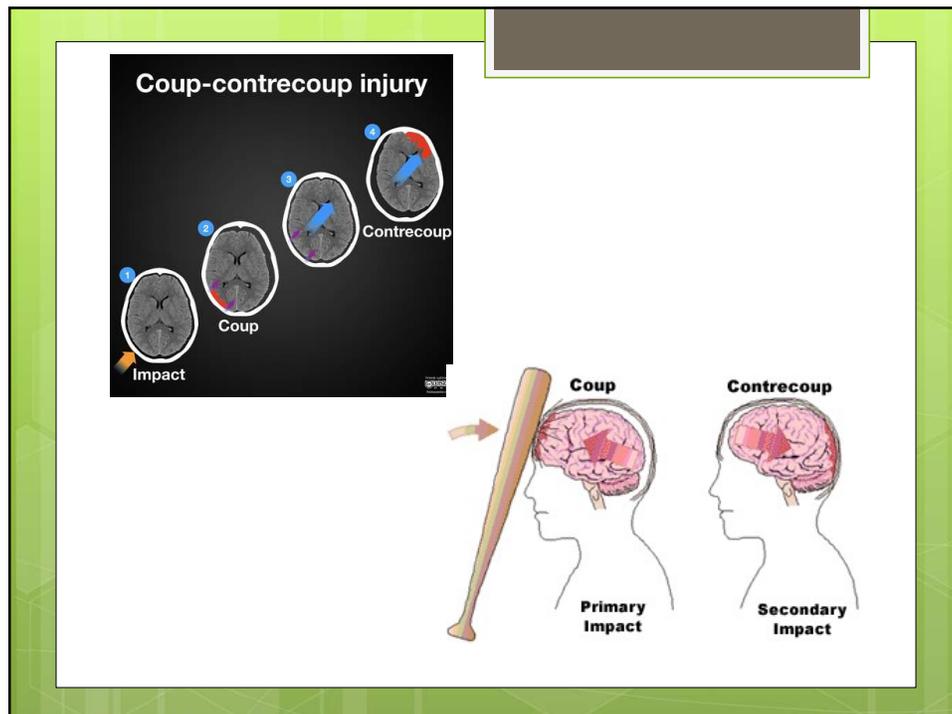


8

Contre- coup Fracture

- Cause- fracture to one side of the skull caused by a trauma to the other side
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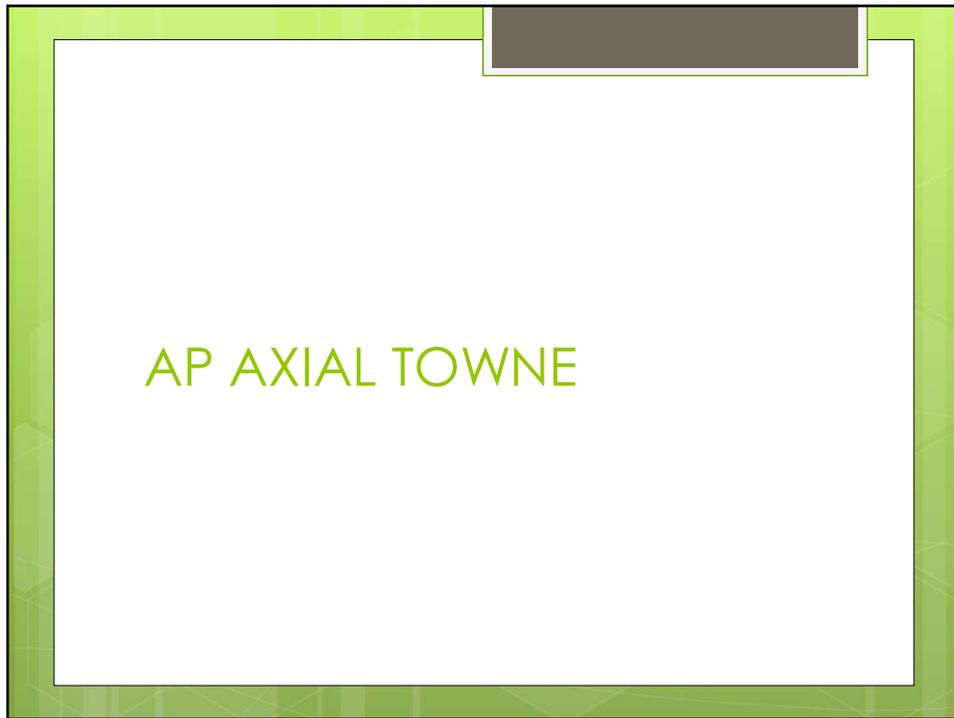
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12

AP Axial Critique

A



AP axial radiograph A shows a clear, well-defined skull base with distinct zygomatic arches and a visible sphenoid sinus.

B



AP axial radiograph B shows a skull base that is significantly obscured by a large, dense, and irregularly shaped artifact, likely a dental filling or a foreign body, which is not clearly visible in image A.

- Which demonstrates a repeatable error?
- What is the repeatable error?

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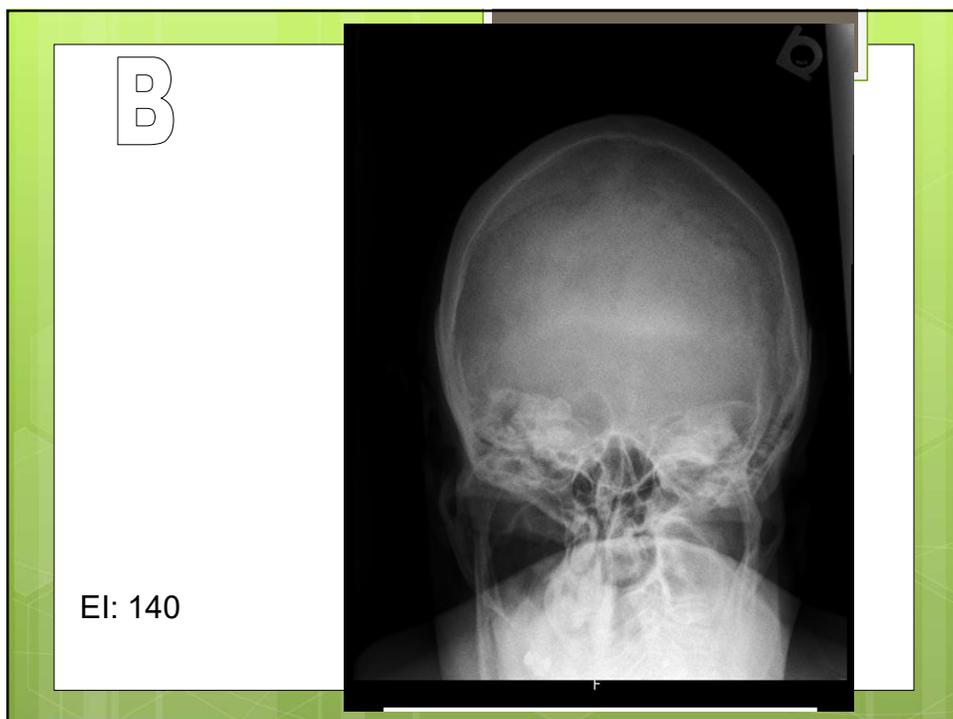
A

EI: 200

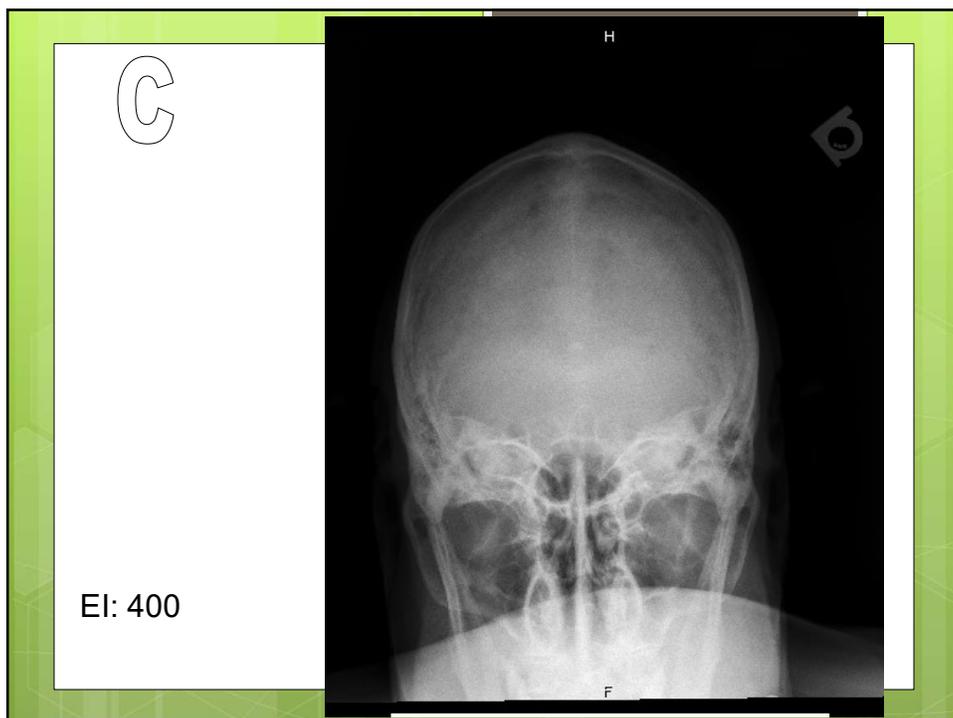


AP axial radiograph showing a skull base obscured by a large, dense, irregular artifact. A small 'R' marker is visible on the left side of the image.

14



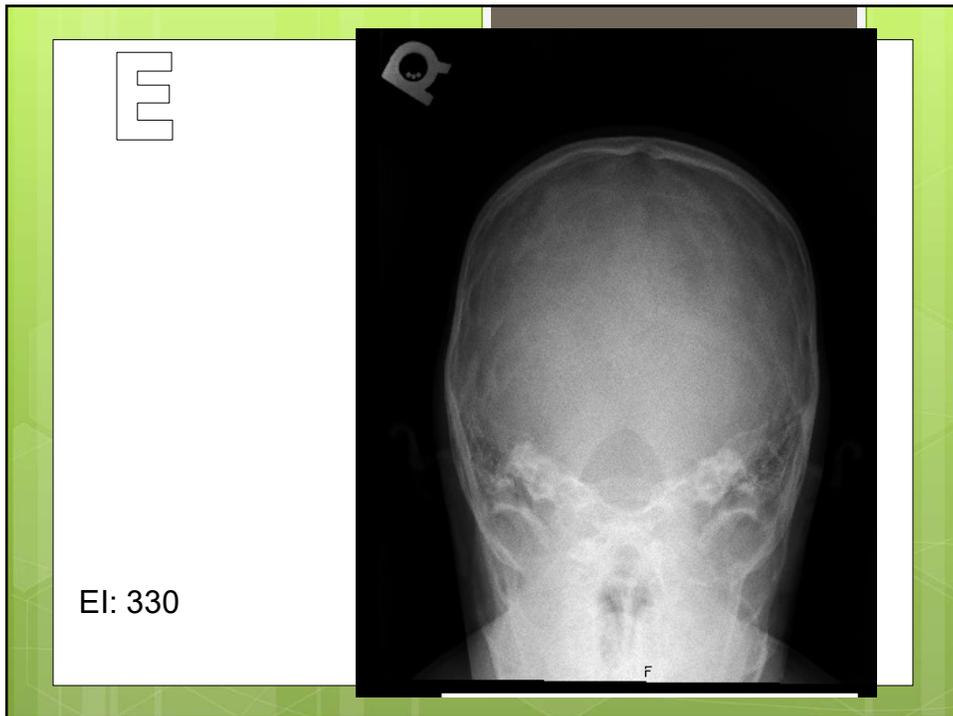
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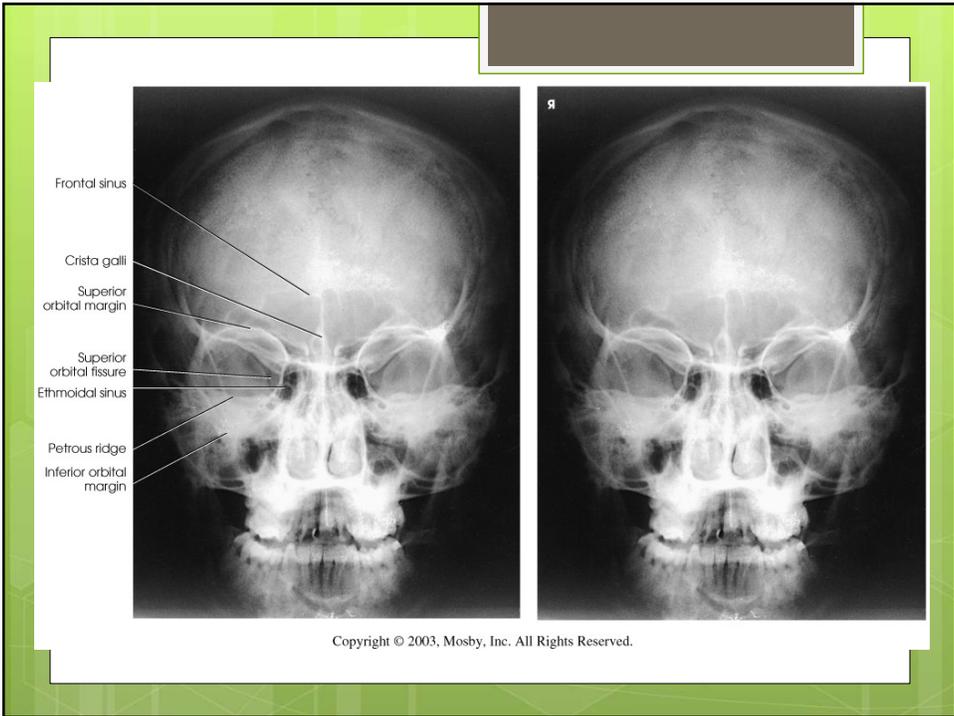
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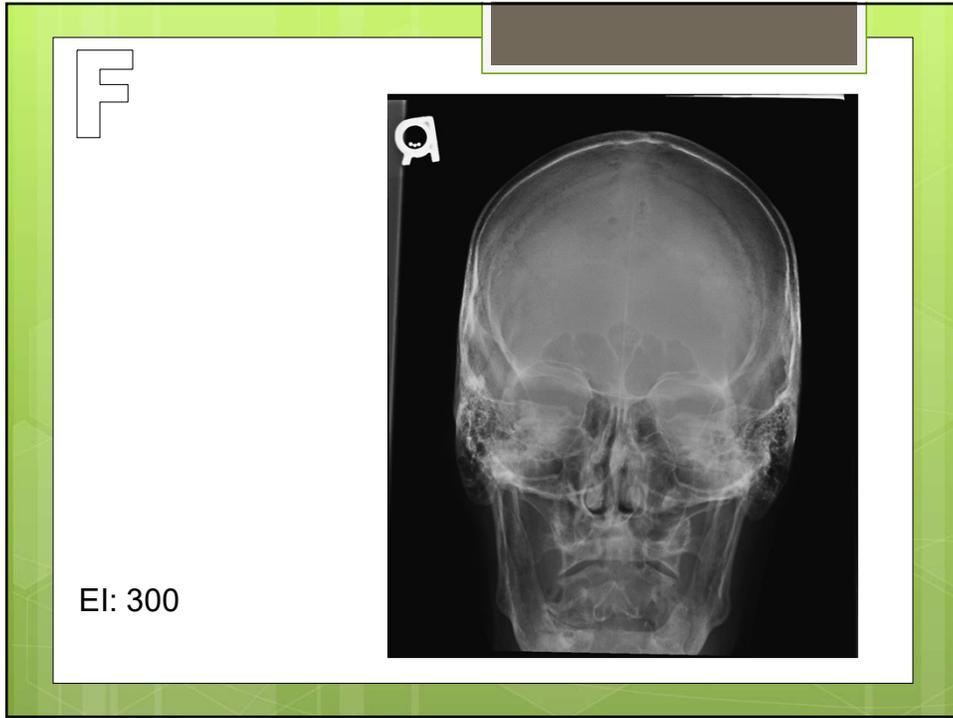
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PA AXIAL CALDWELL

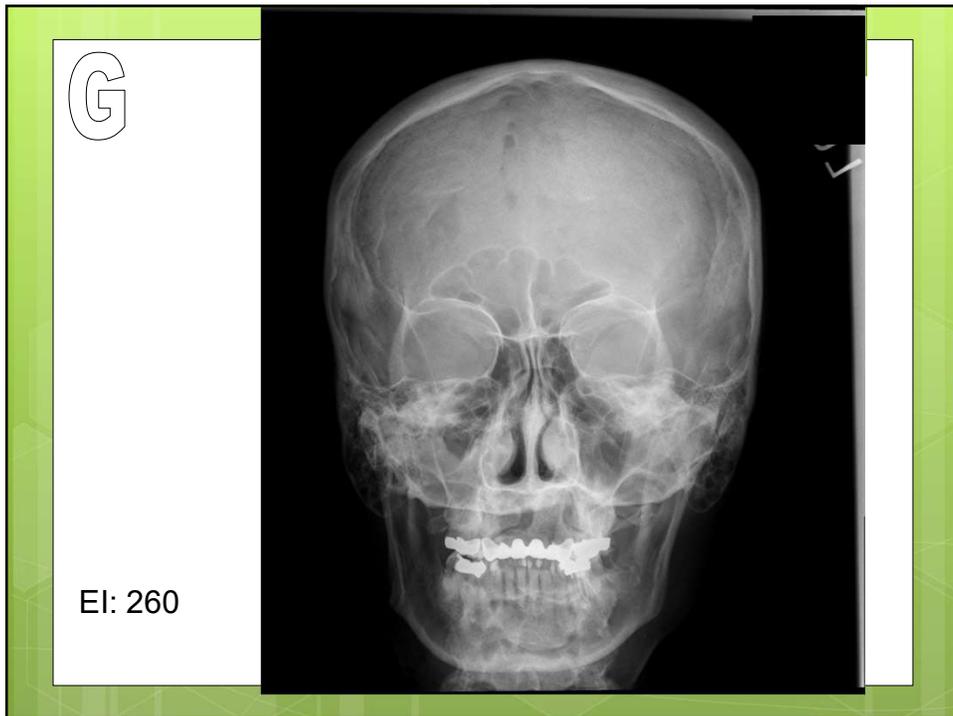
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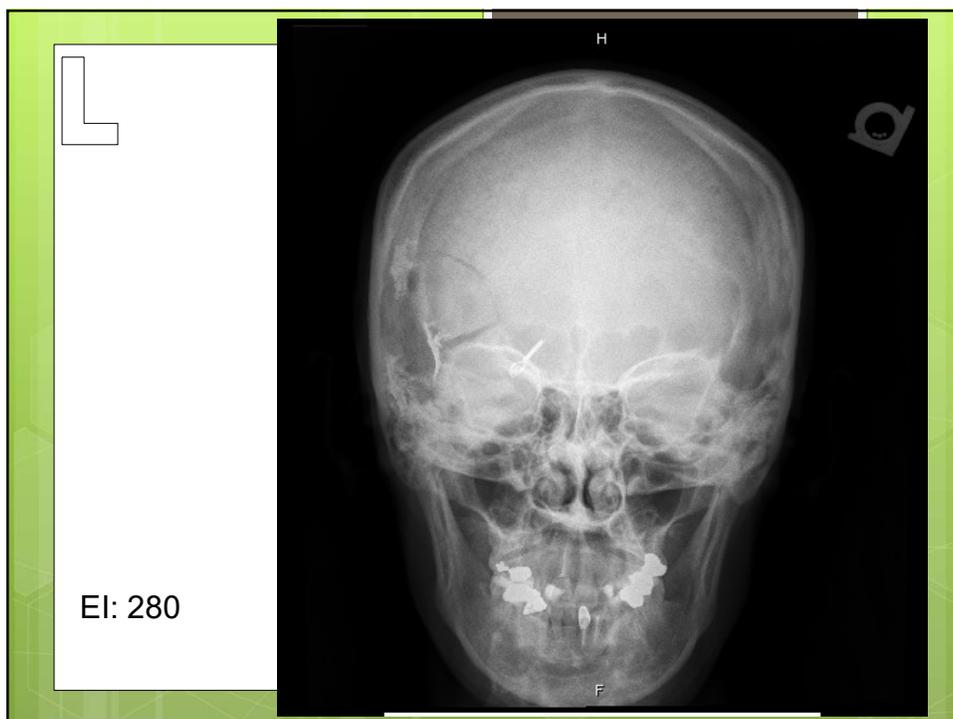
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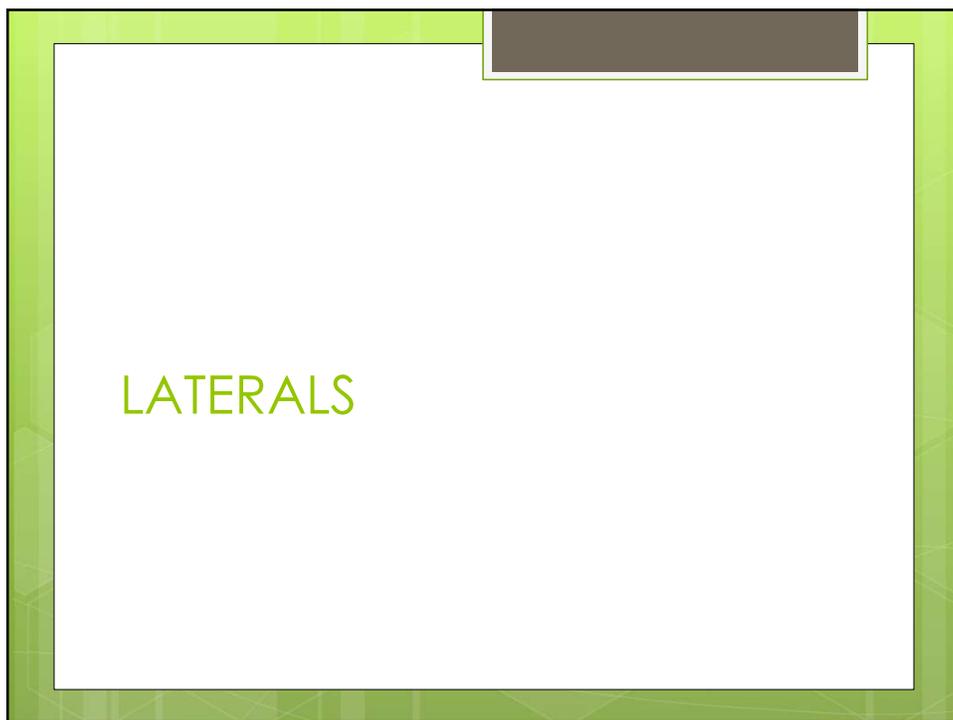
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M

Lateral Skull Critique



- What are the repeatable errors?

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29

N



EI: 250

30



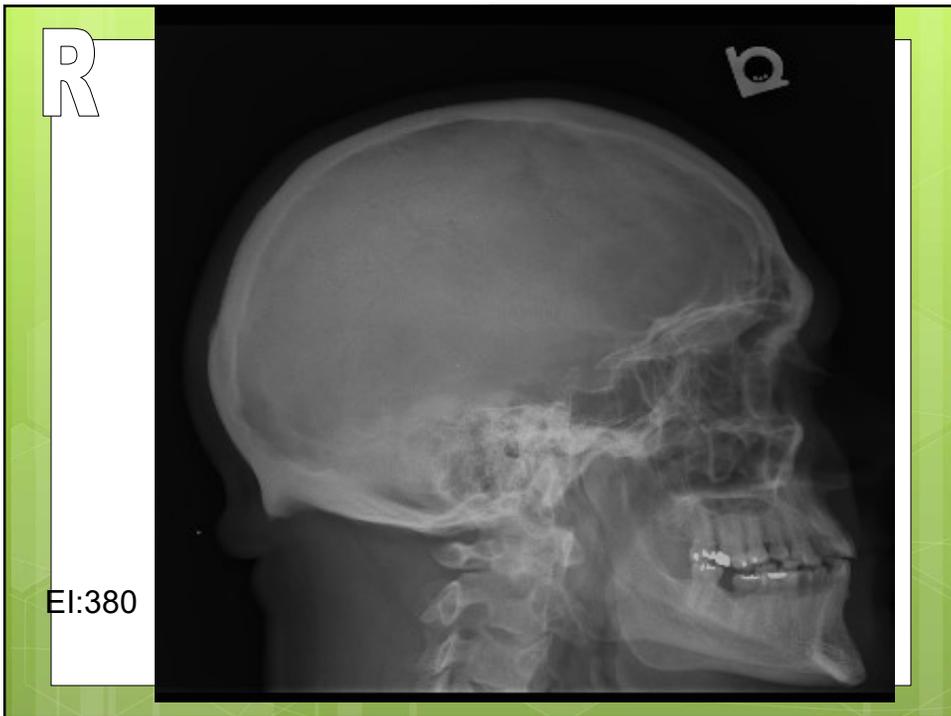
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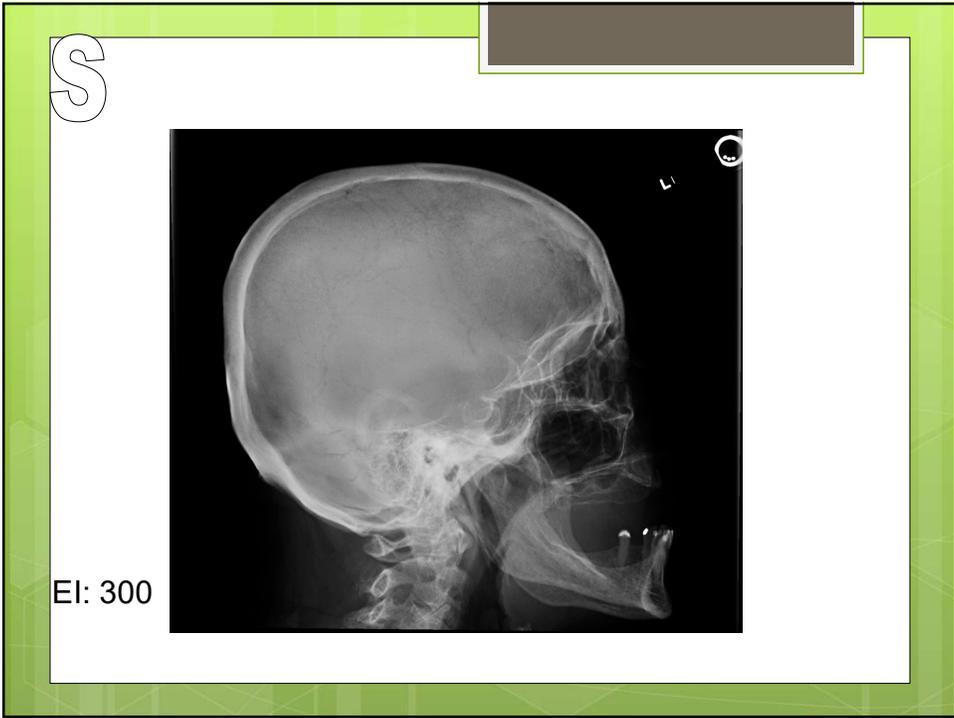
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1



2

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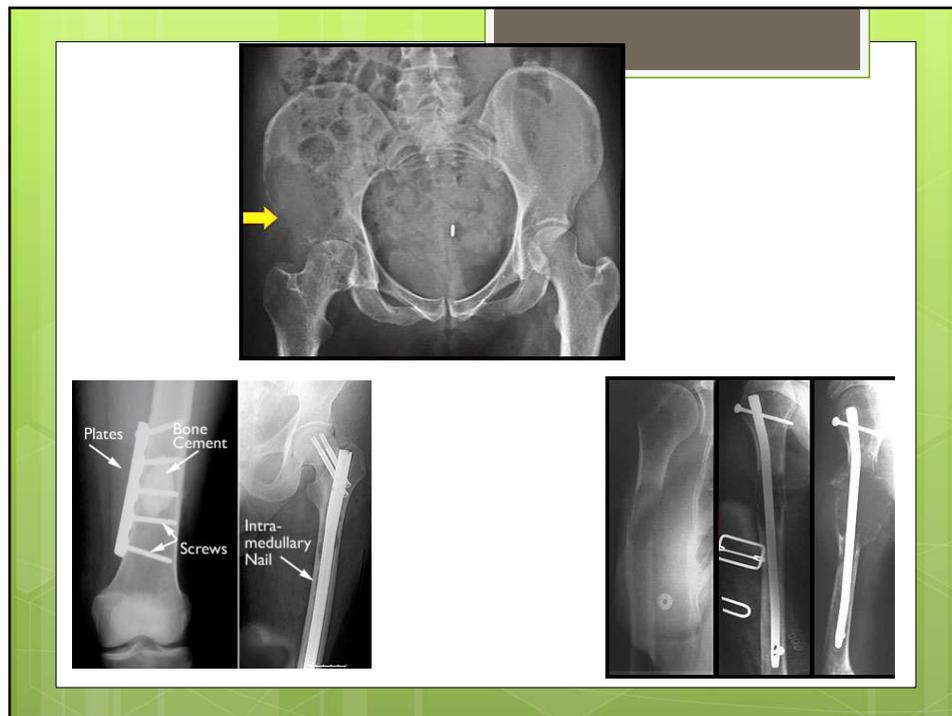


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7

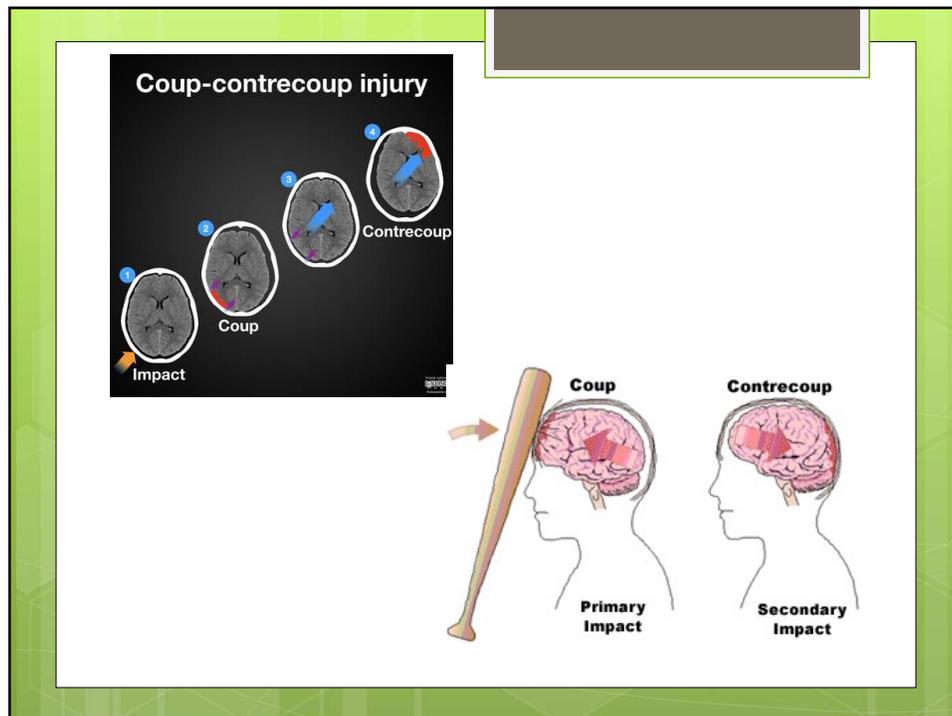


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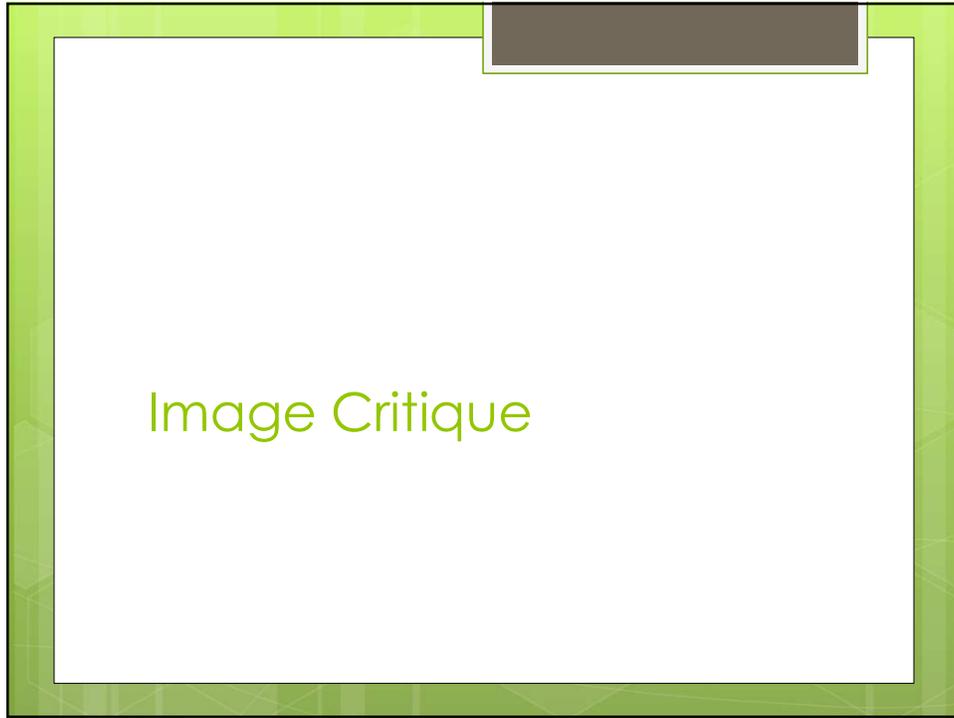
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- Technical considerations- none
- Prognosis- varies depending on the extent of the injury

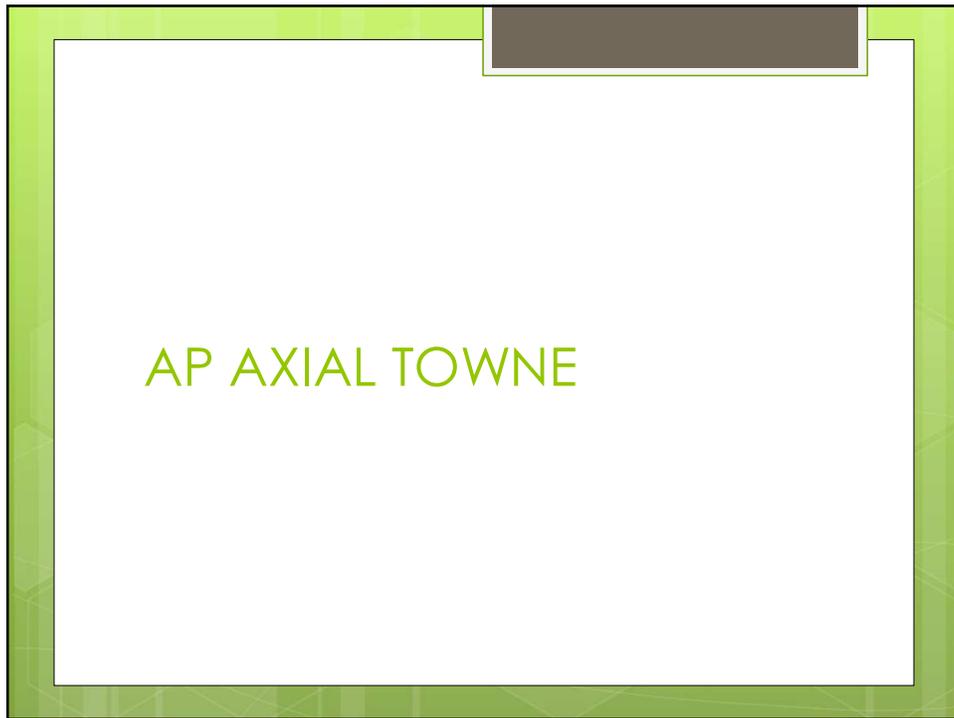
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12

AP Axial Critique

A



AP axial radiograph A showing a clear view of the skull base and facial bones.

B



AP axial radiograph B showing a clear view of the skull base and facial bones.

- Which demonstrates a repeatable error?
- What is the repeatable error?

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13

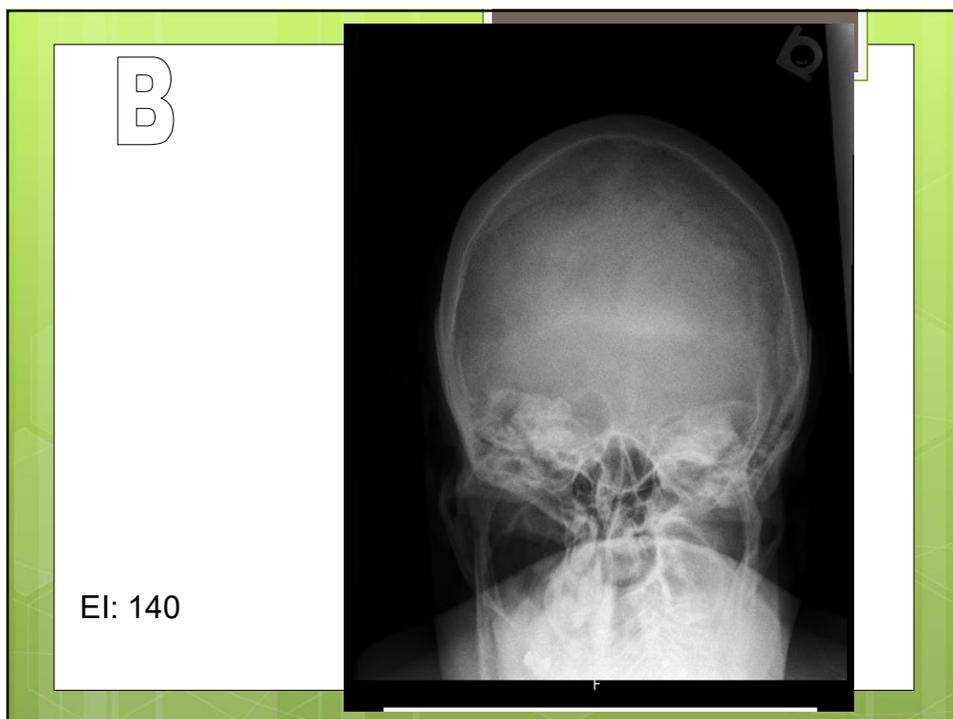
A

EI: 200



AP axial radiograph showing the skull base and facial bones. A small 'R' marker is visible on the left side of the image.

14



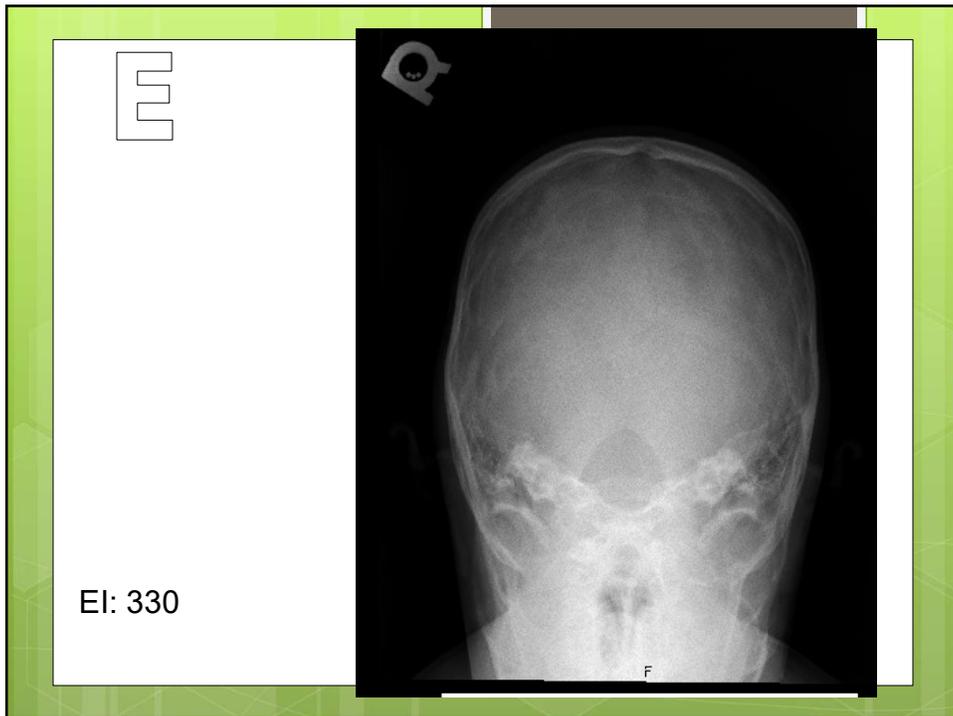
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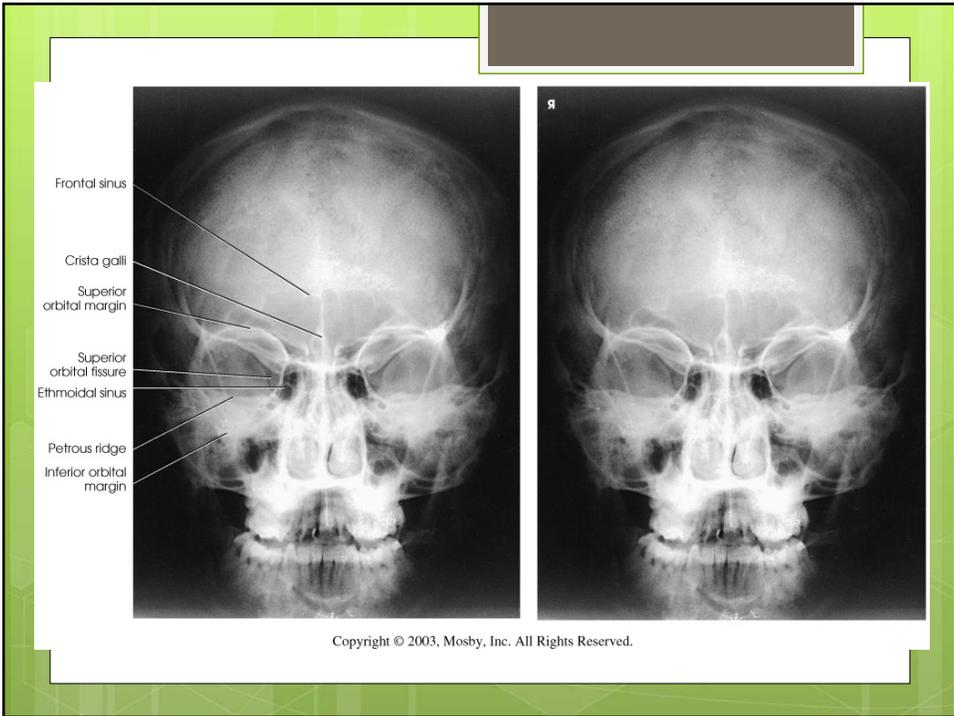
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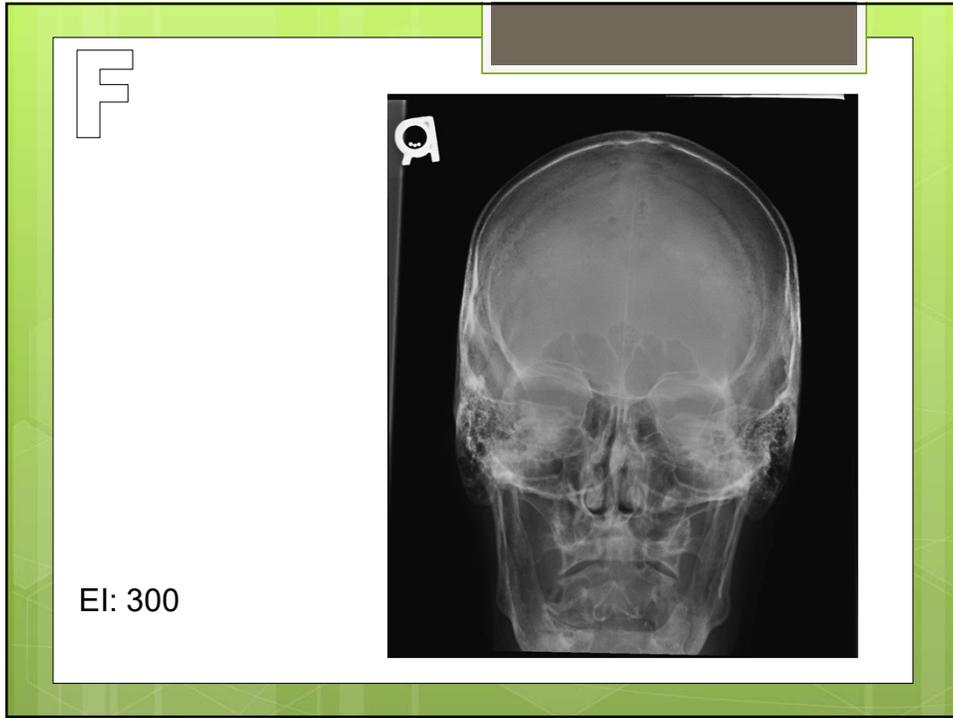
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PA AXIAL CALDWELL

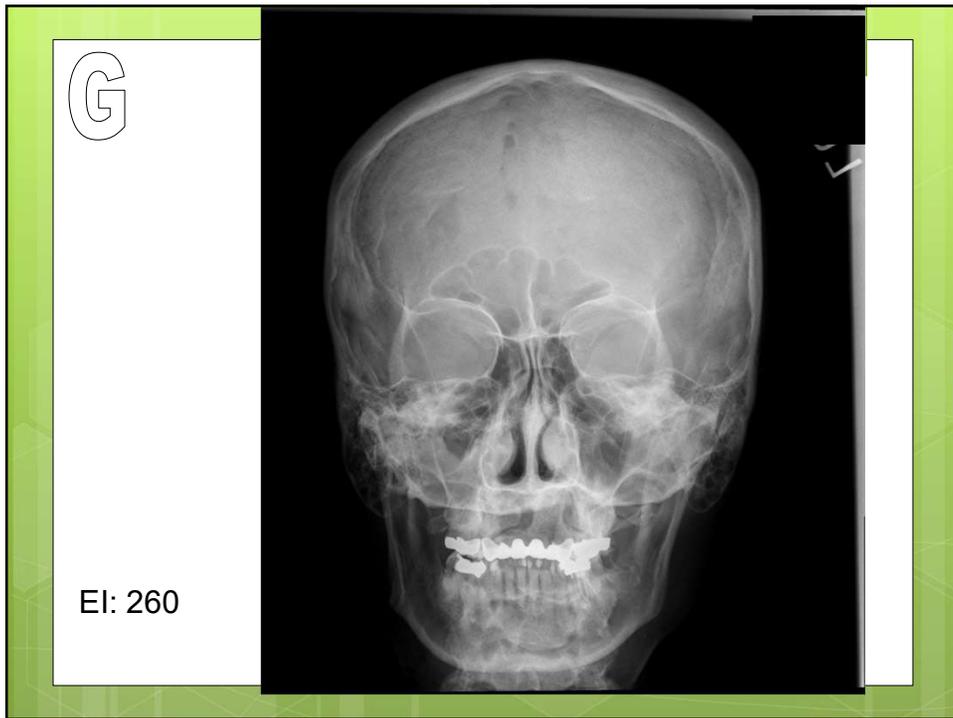
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M

Lateral Skull Critique

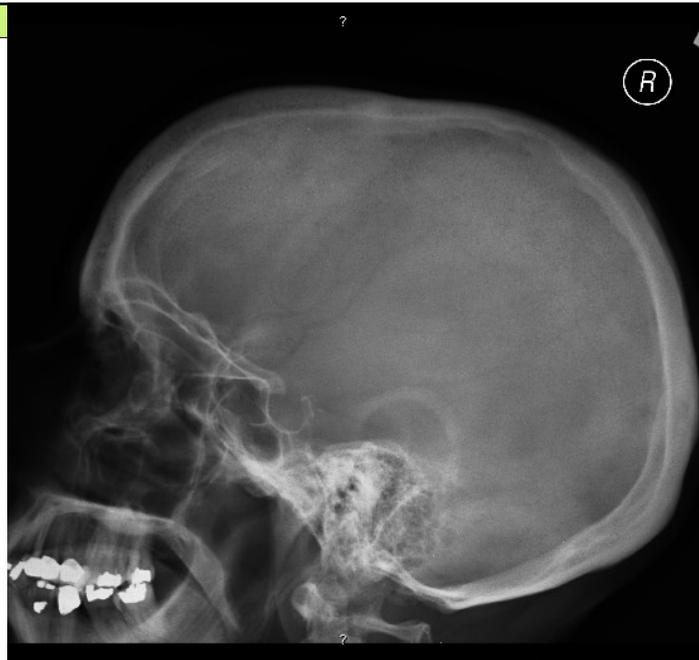


- What are the repeatable errors?

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29

N



EI: 250

30



31



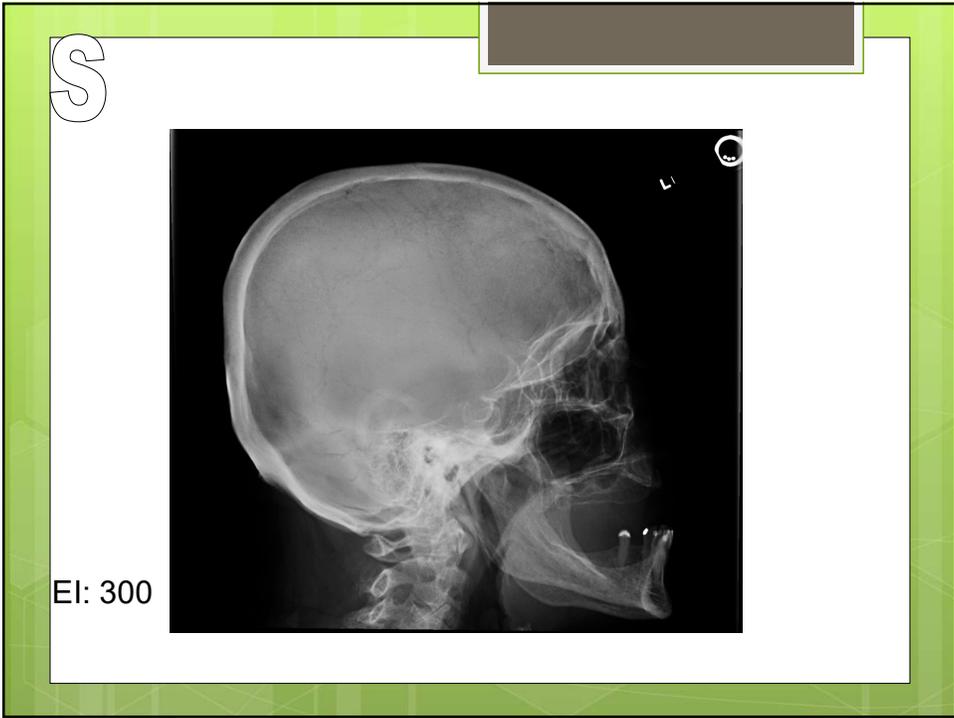
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1



2

Multiple Myeloma

- Multiple myeloma is a cancer that effects the white blood cells of your bone marrow (plasma cells) that is associated with bone destruction
- Cause- Idiopathic- it starts with one abnormal cell that multiples
 - Genetic abnormalities
 - Defect related to chromosome 14
 - Extra copies of certain chromosomes
 - Abnormality of chromosome 13
- Complications- complications include impaired immune system, bone erosion, impaired kidney function, and anemia
- Radiographic appearance- Usually seen on the vertebrae, ribs, skull, shoulder, pelvis, and long bones. The lesions appear as destructive lytic lesions, sharply defined and appear "punched out"
- Technical considerations- not necessary unless there are many lesions or the lesion is large (subtractive)
- Prognosis- This varies by the severity and progression of the disease.

3

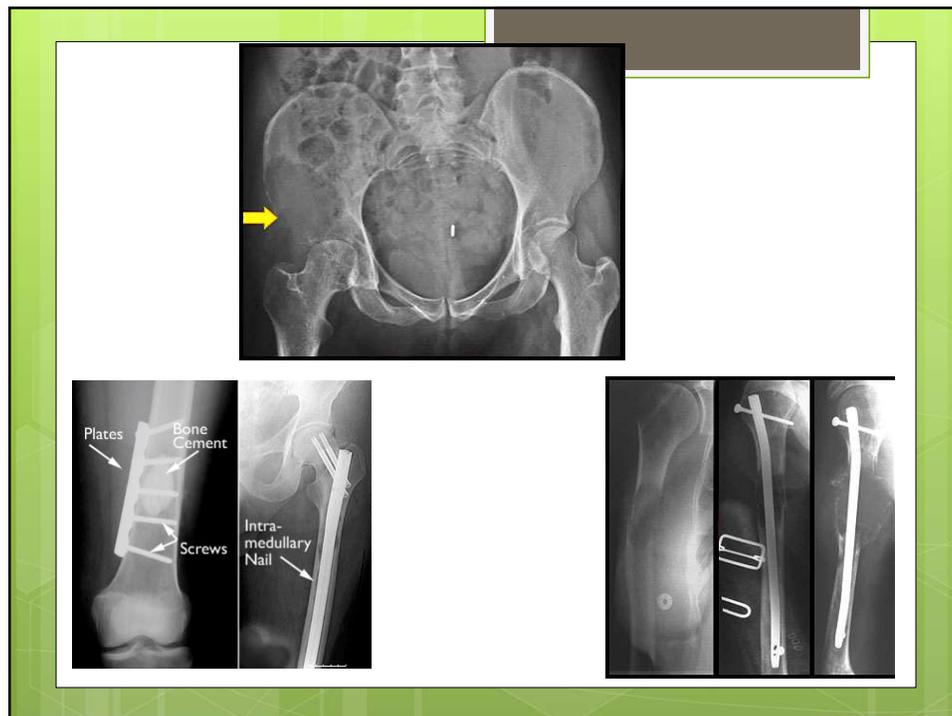


4

Bone Metastatic Disease

- Bone metastatic disease is when a cancer spreads from its primary location to the bone (most commonly from the breast, prostate, lung, kidney and thyroid)
 - Usually spreads to the pelvis, spine, proximal long bones, ribs and skull
- Cause- Idiopathic- Cancer cells break away from the original tumor and travel via the bloodstream or lymphatic vessels to the bone
- Complications- Causes bone pain, fractures, spinal compression, metastasis to other sites, and osteomyelitis
- Radiographic appearance- appears as osteolytic (lucent) or osteoblastic (dense) lesions depending on the type of tumor
- Technical considerations- dependent on stage or type of disease (additive or subtractive depending on disease)
- Prognosis- It is a chronic condition that is dependent on the tumor type, but can have a poor prognosis

5



6

Depressed Fracture

- When a fragment of the skull is depressed
 - Called a Ping Pong fracture
- Cause- usually caused by inner buckling of the calvarium in infants from trauma (could be child birth)
- Complications- not usually associated with neurological damage
- Radiographic appearance- appears like a ping pong size indent in the skull
- Technical considerations- no technical change is necessary
- Prognosis- depending on the depression, it may require surgery. Sometimes it spontaneously elevates on its own

7

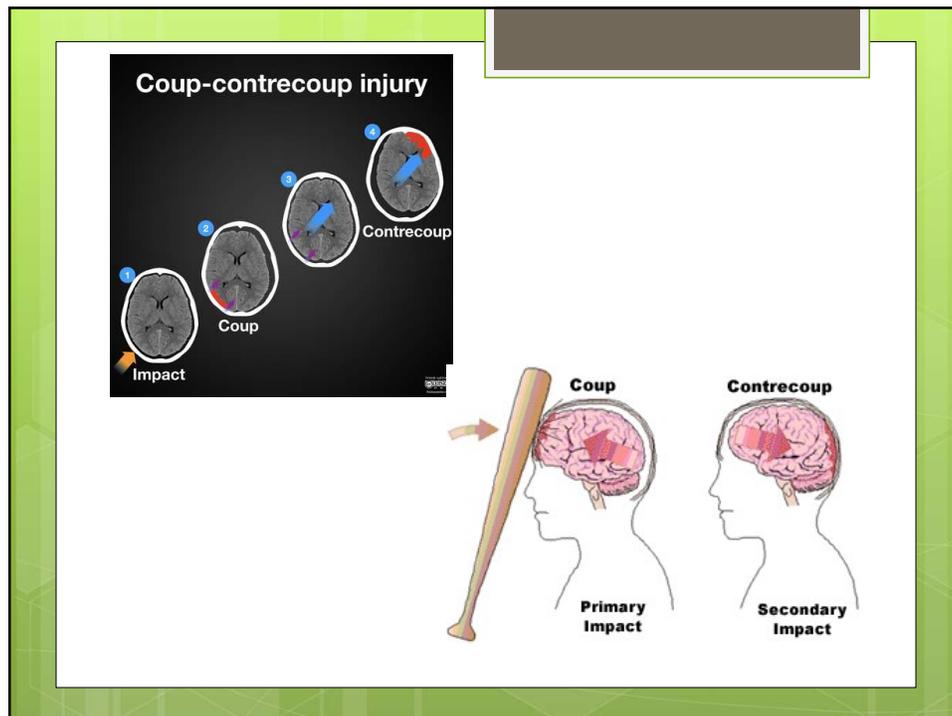


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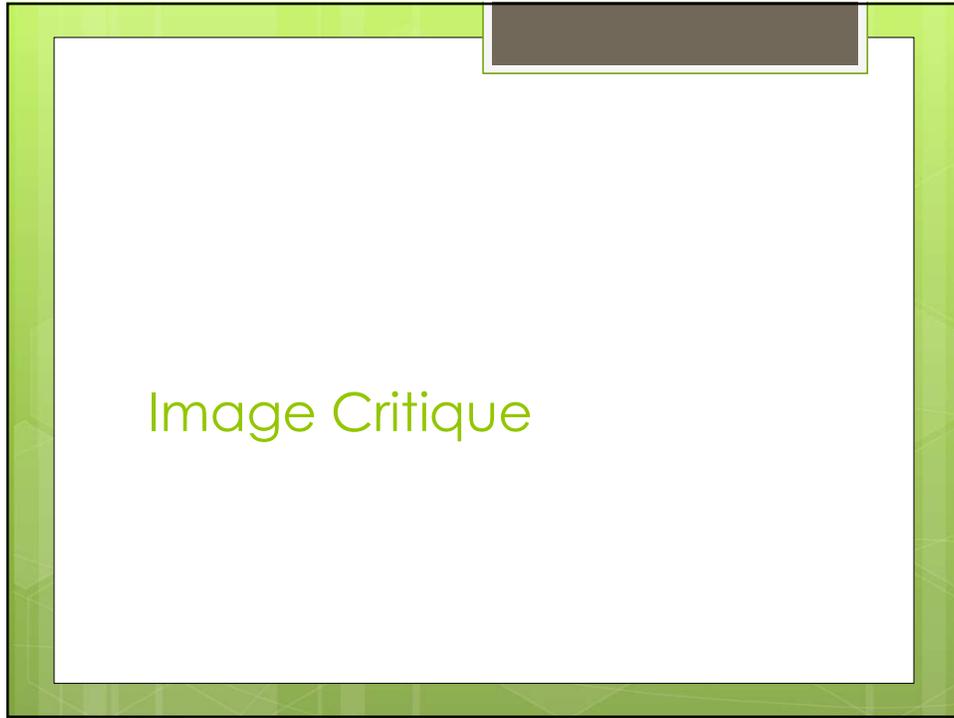
Contre- coup Fracture

- Cause- fracture to one side of the skull caused by a trauma to the other side
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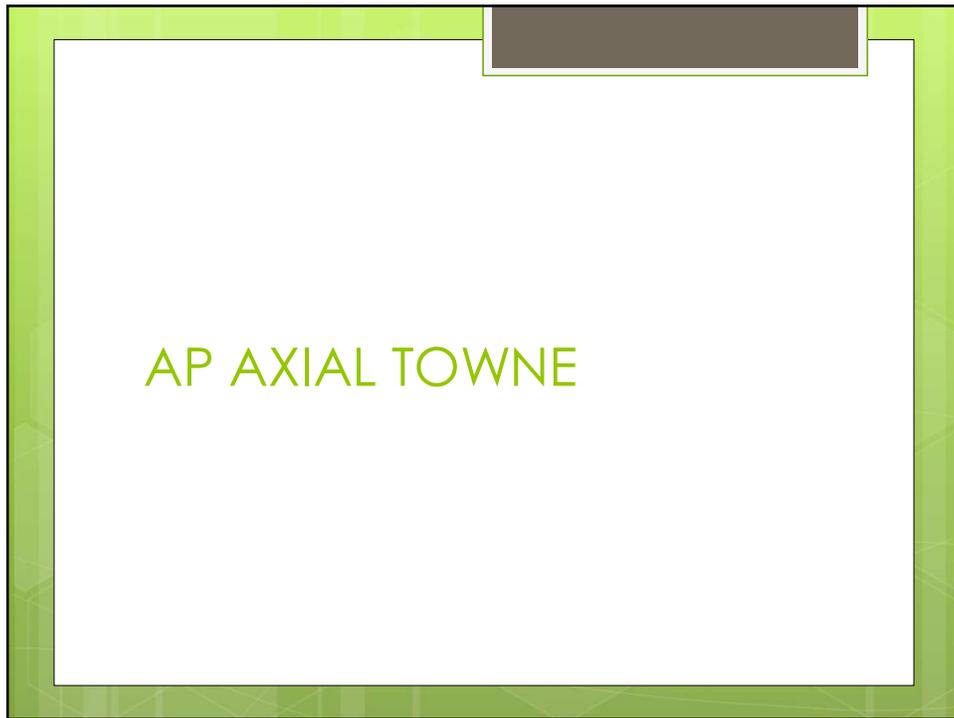
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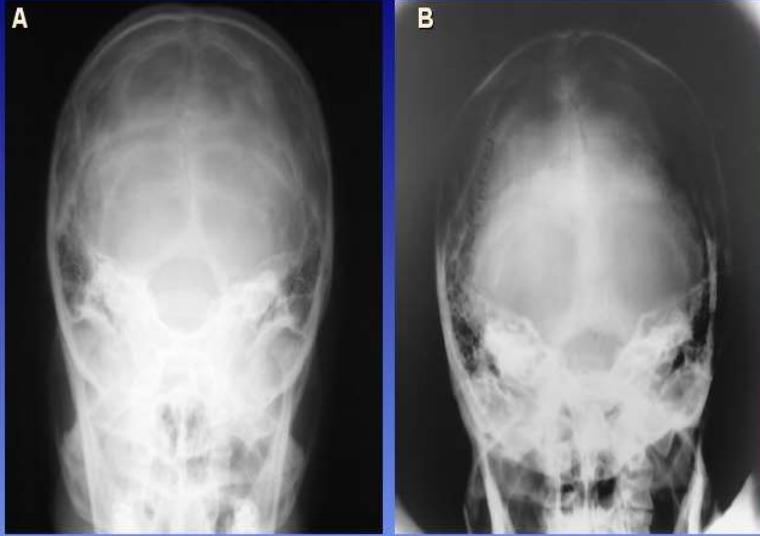


11



12

AP Axial Critique



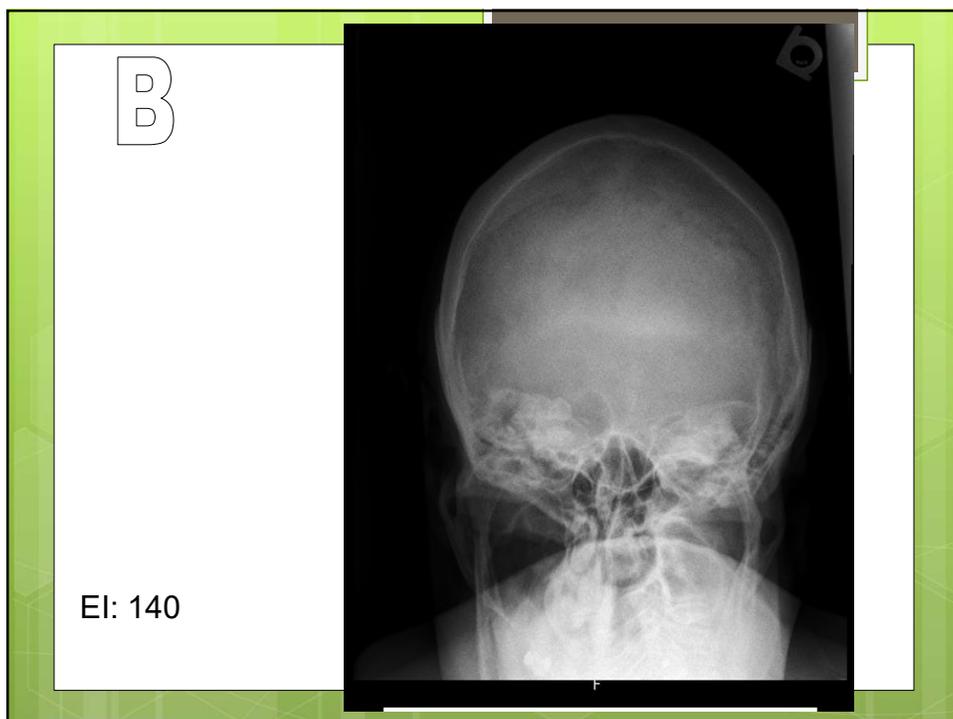
- Which demonstrates a repeatable error?
- What is the repeatable error?

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13



14



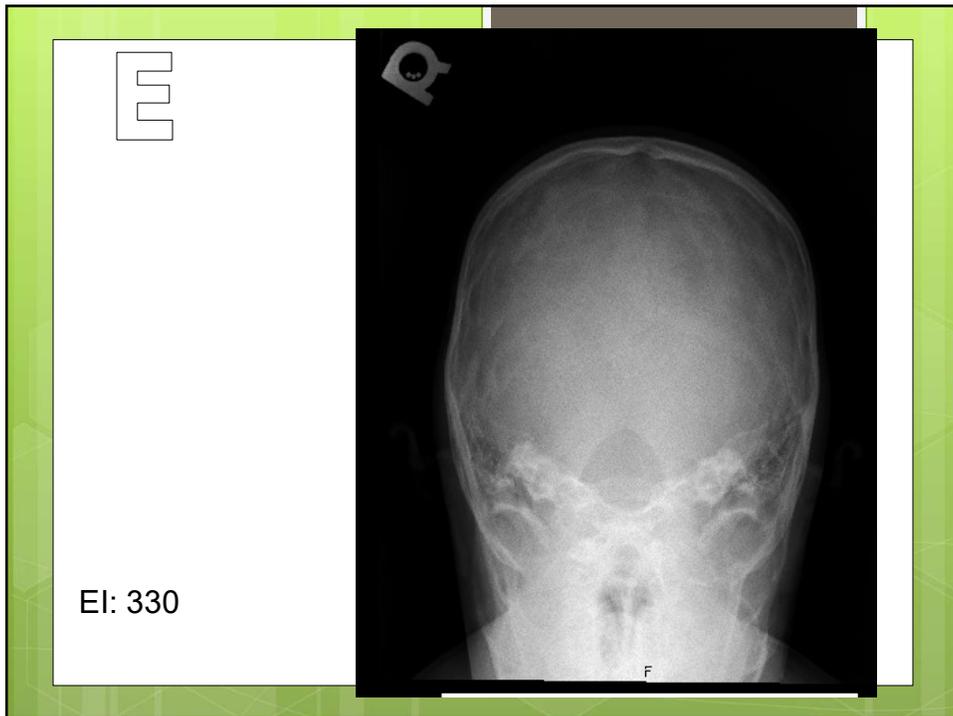
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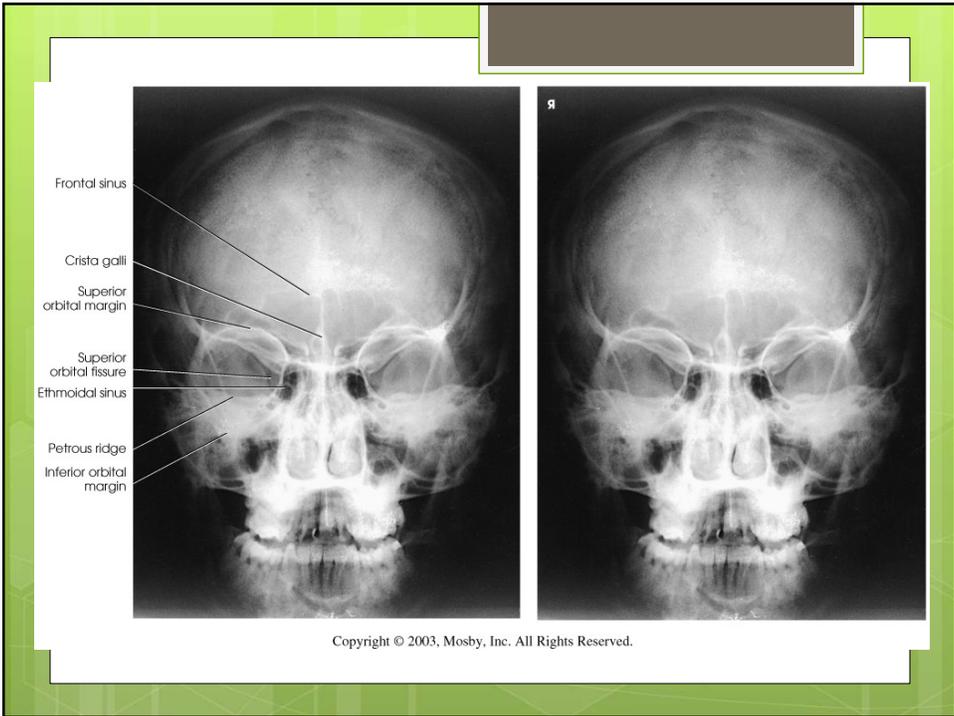
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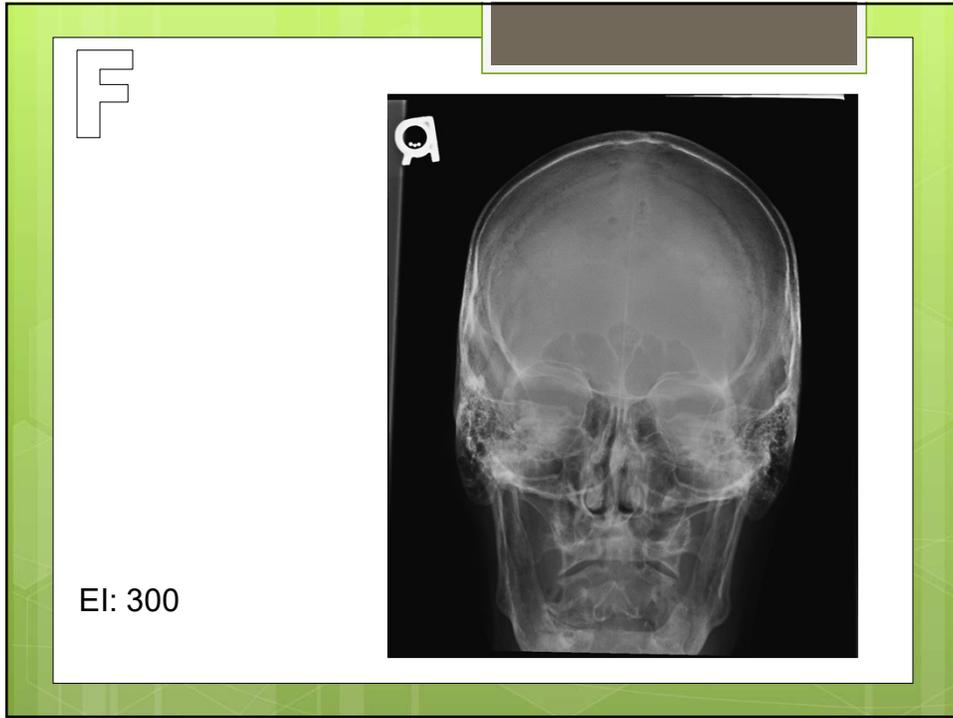
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PA AXIAL CALDWELL

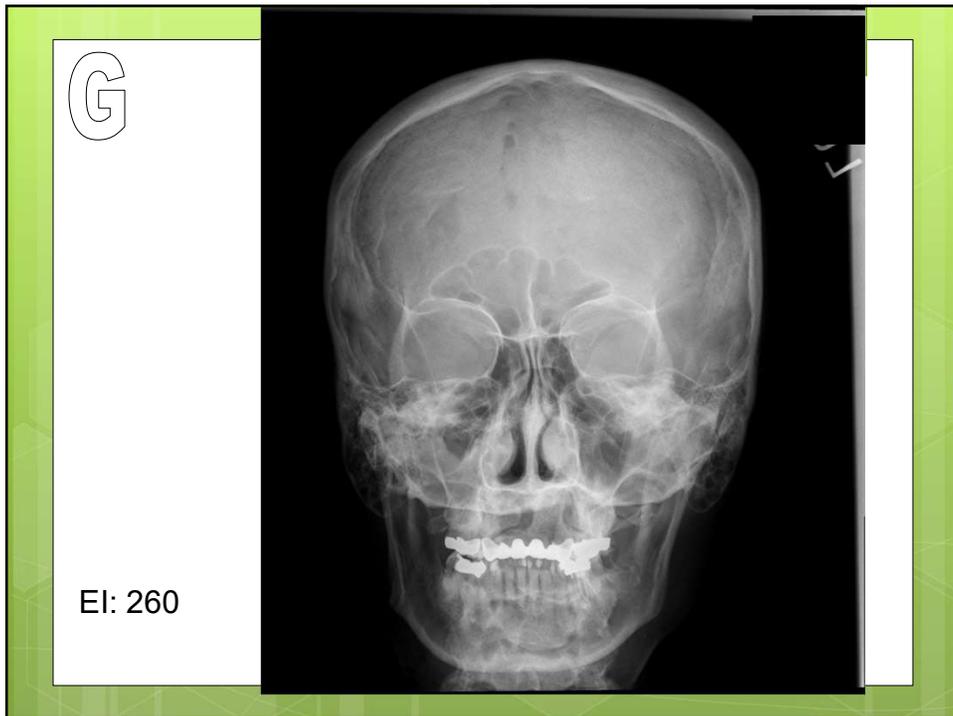
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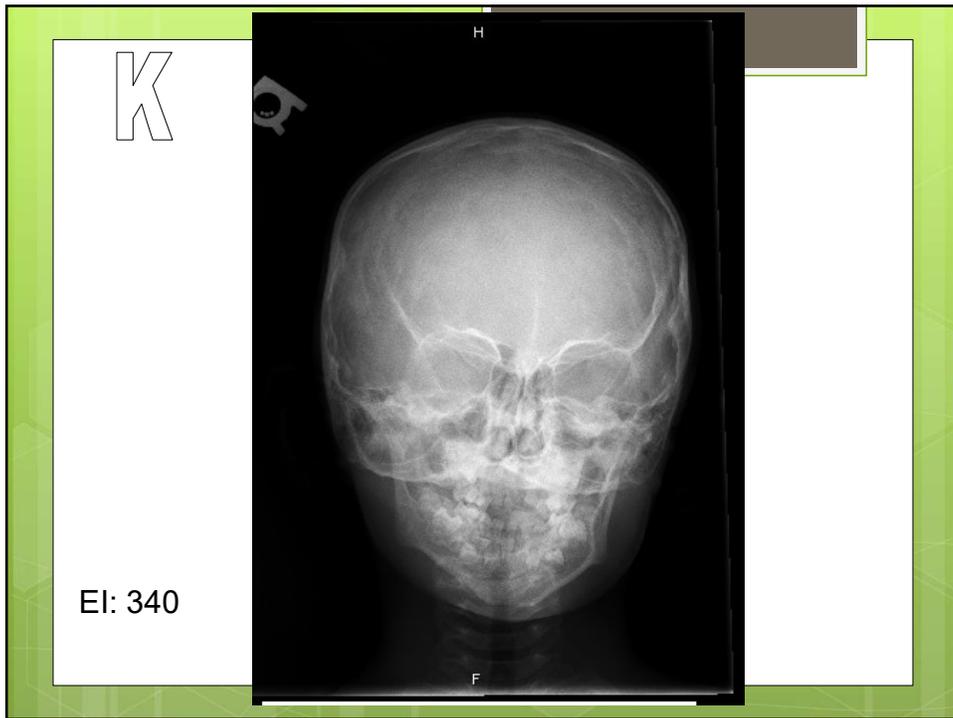
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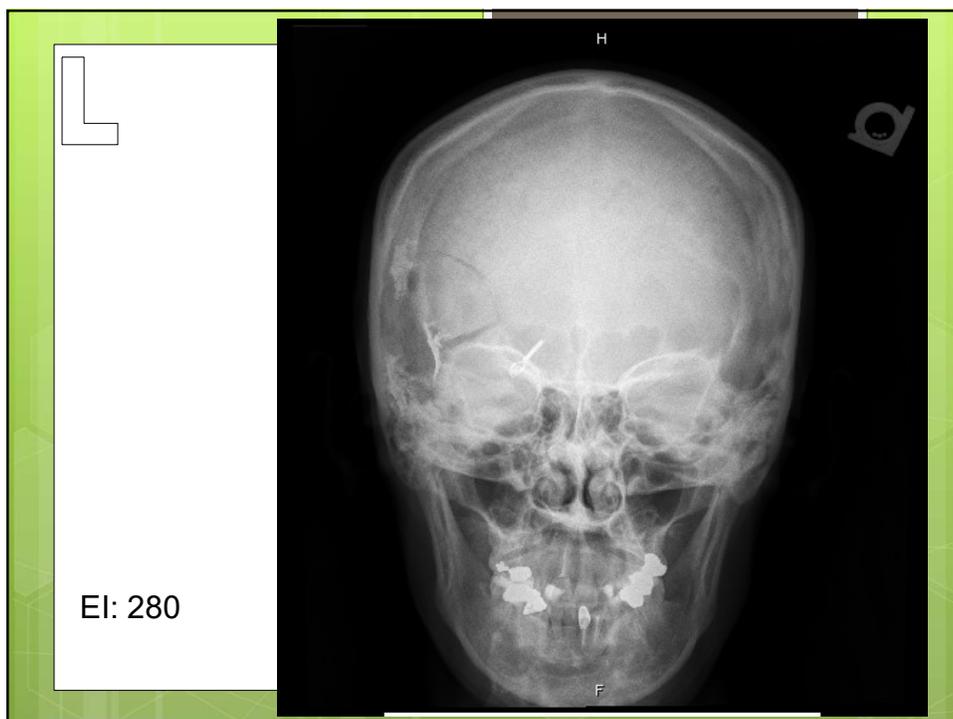
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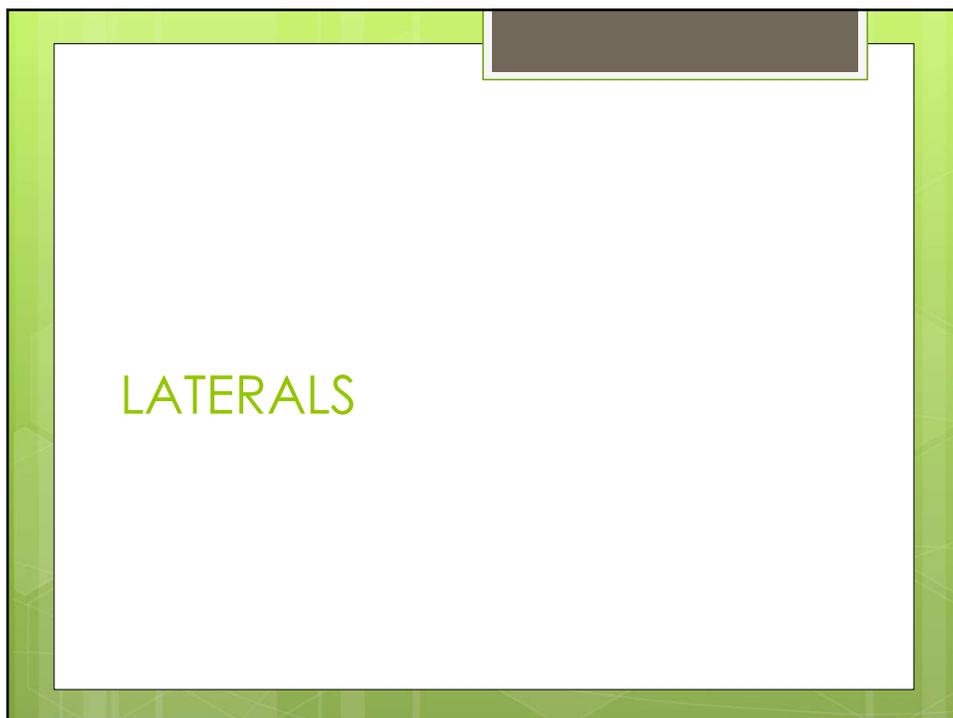
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M

Lateral Skull Critique



- What are the repeatable errors?

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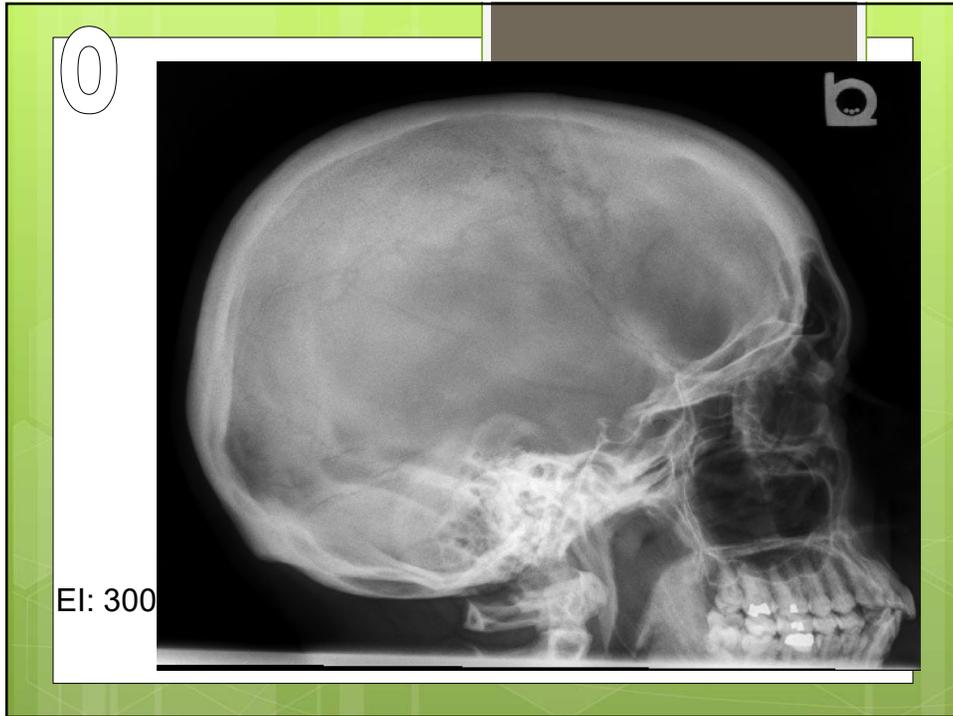
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N



EI: 250

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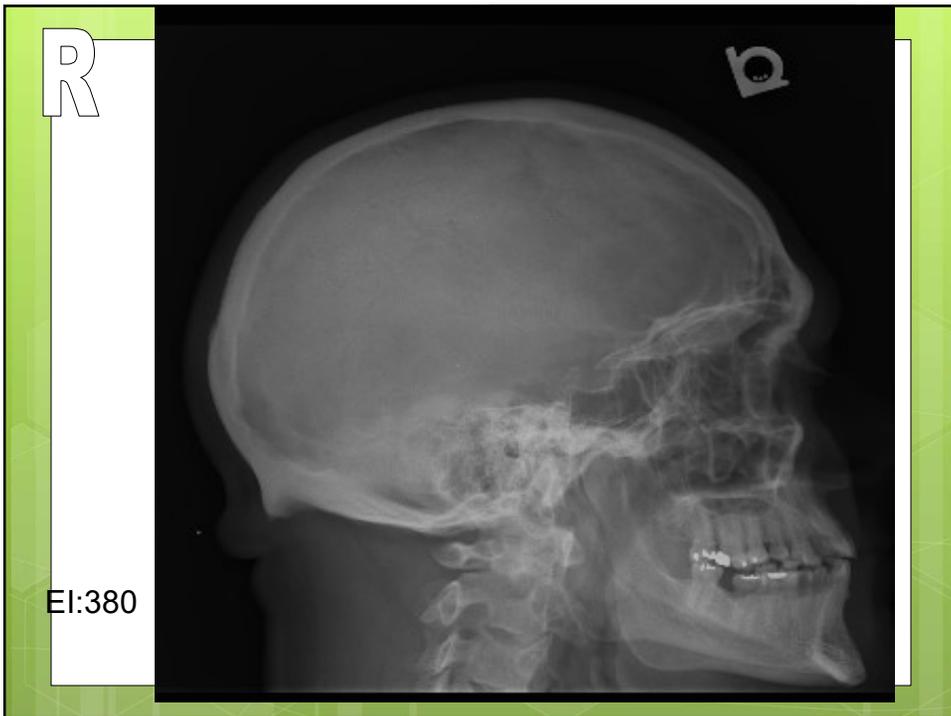
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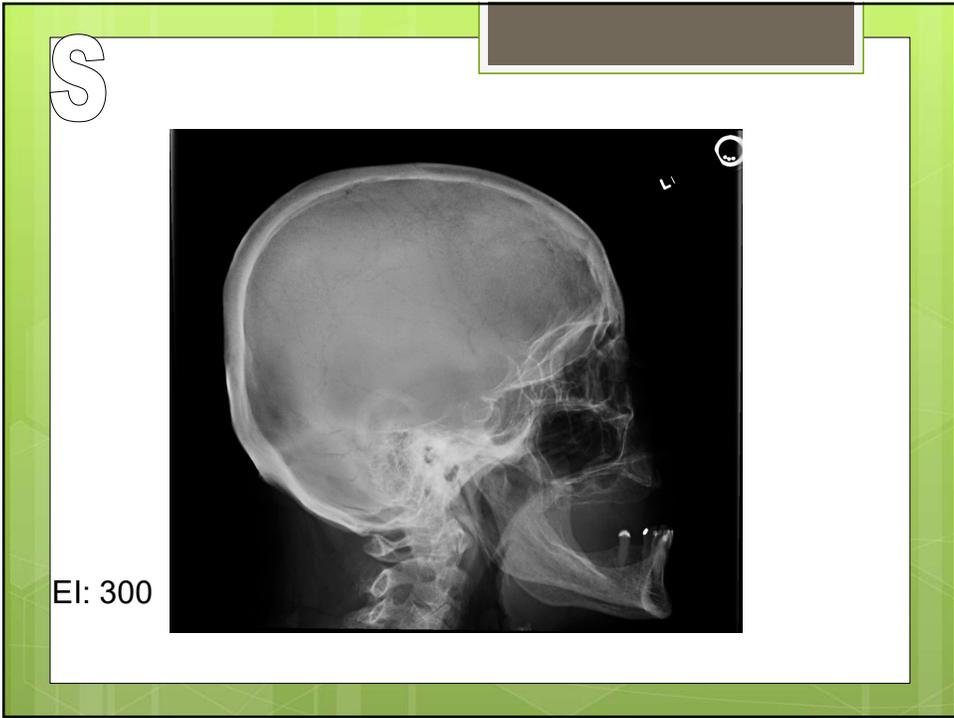
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1

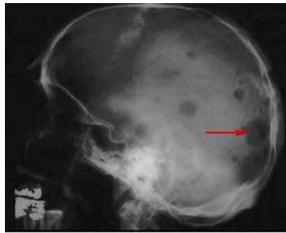


2

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3

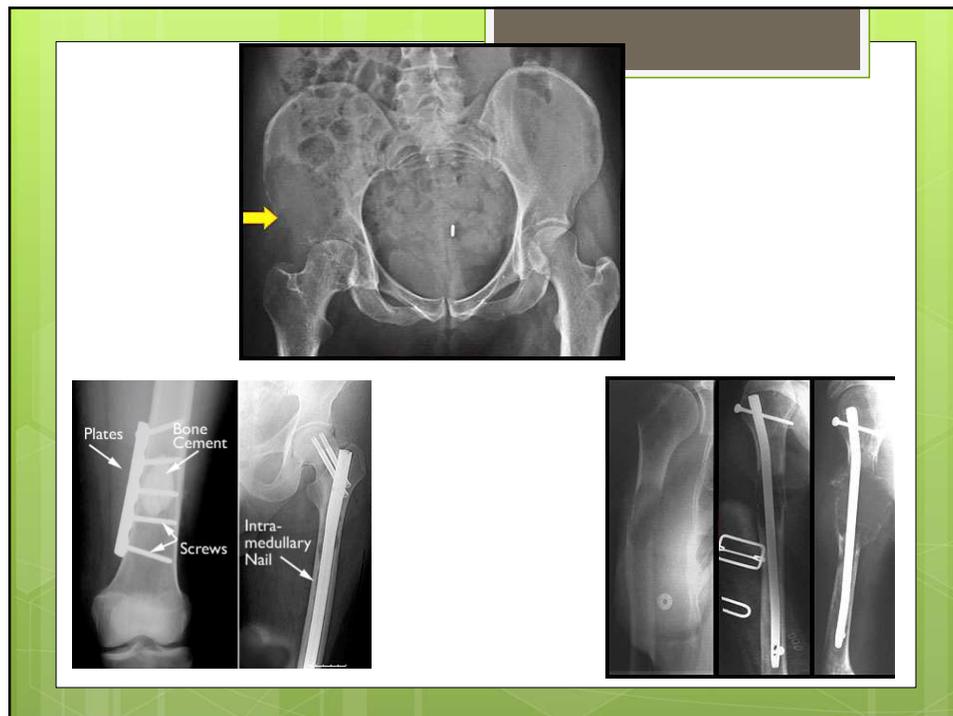


4

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7

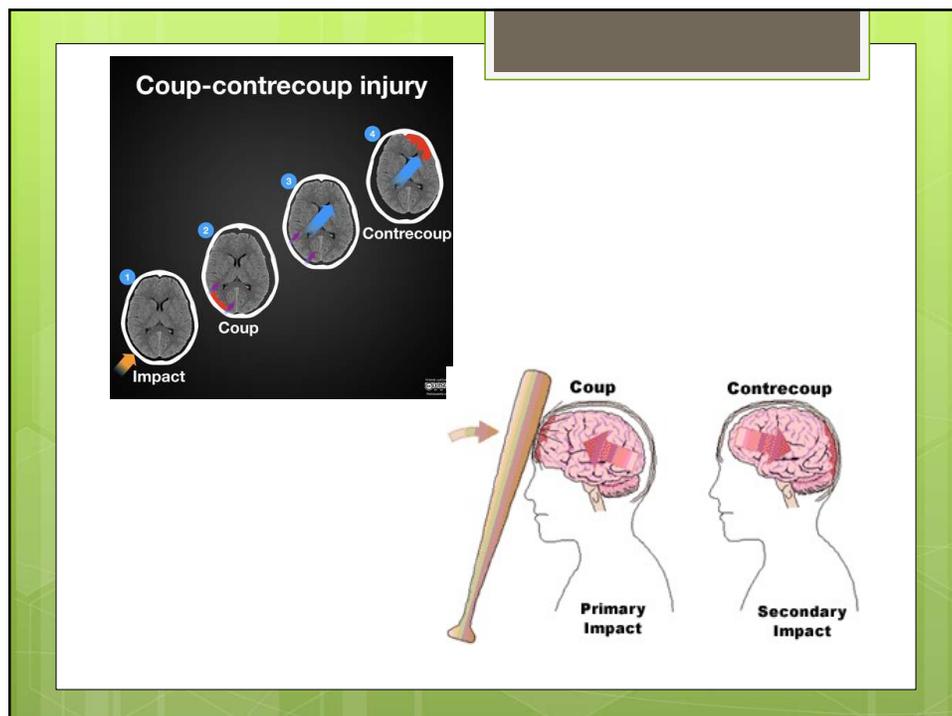


8

Contre- coup Fracture

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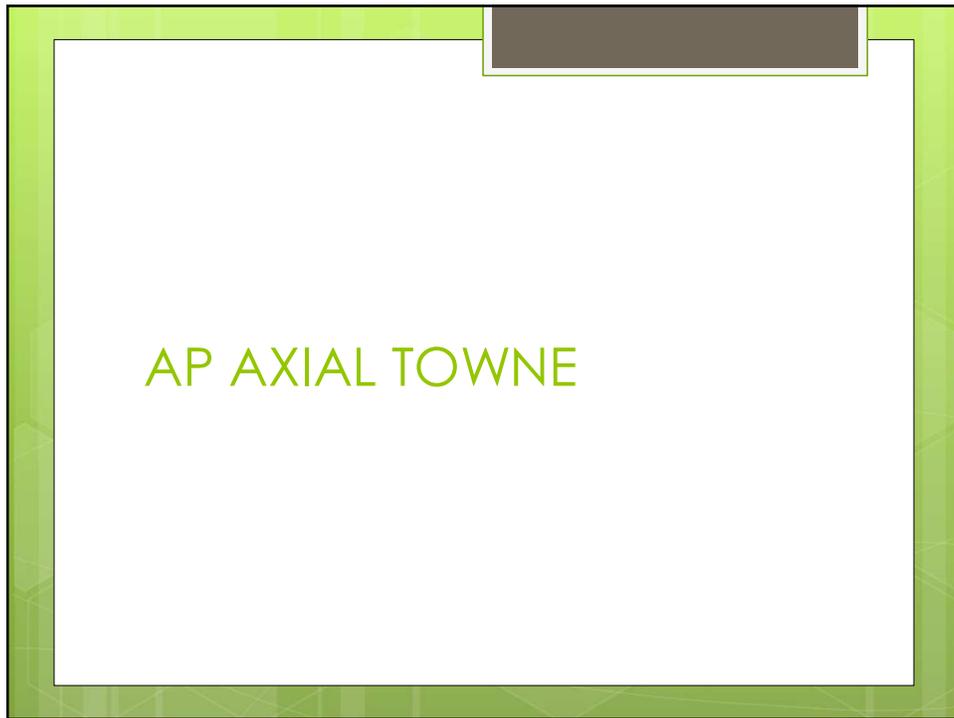
9



10



11



12

AP Axial Critique

A



AP axial radiograph A showing a clear view of the skull base and facial bones.

B



AP axial radiograph B showing a clear view of the skull base and facial bones.

- Which demonstrates a repeatable error?
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13

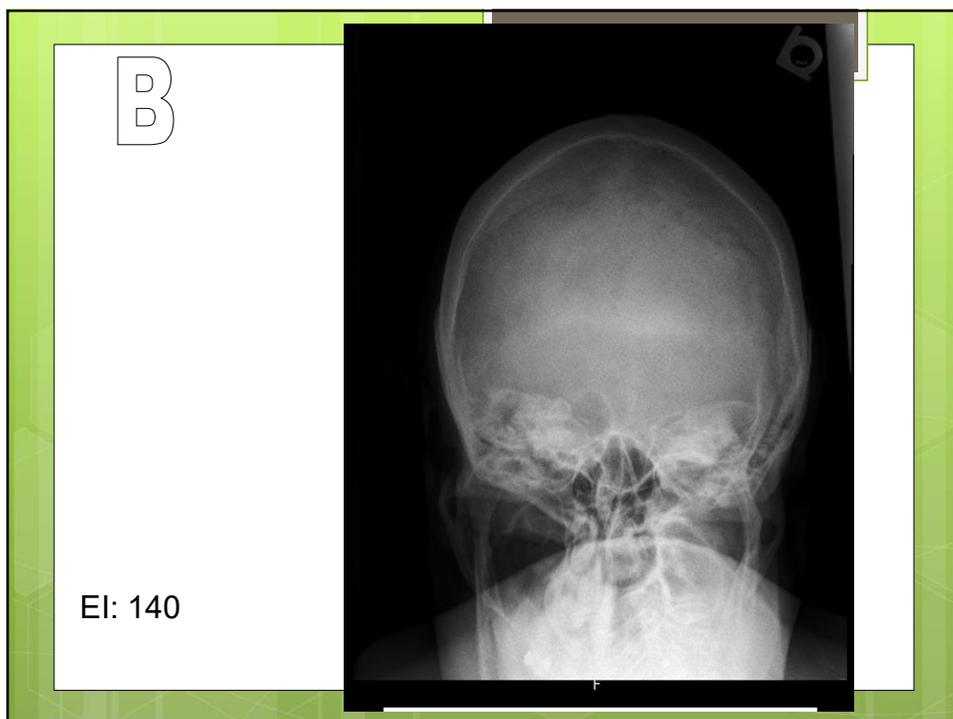
A

EI: 200



AP axial radiograph with a white 'A' marker in the upper left corner and a white 'EI: 200' label in the lower left corner. A small 'R' marker is visible on the left side of the skull.

14



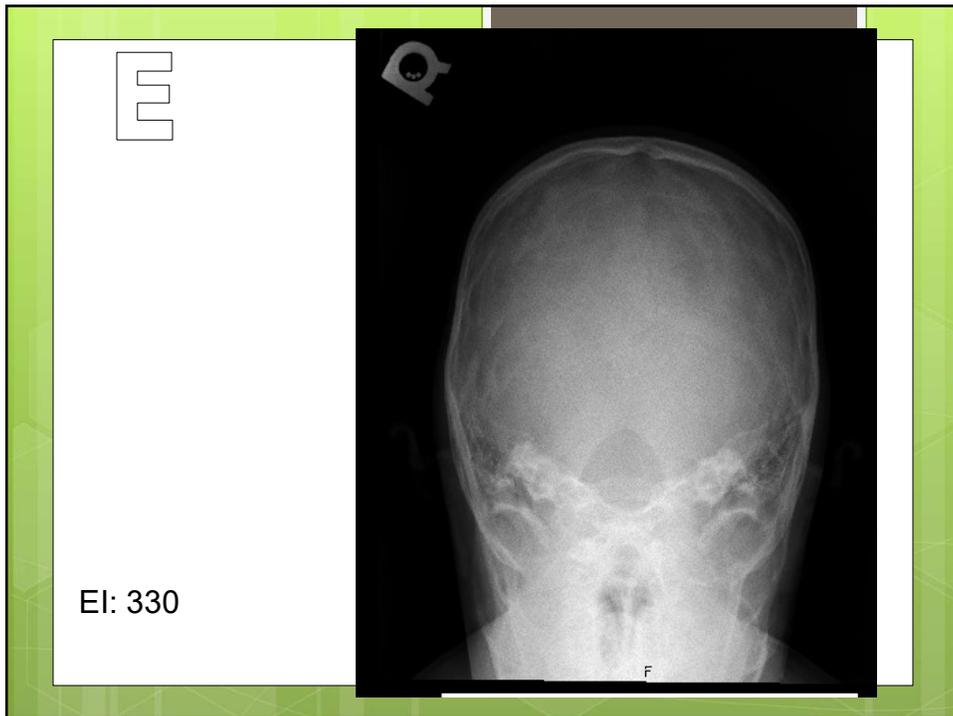
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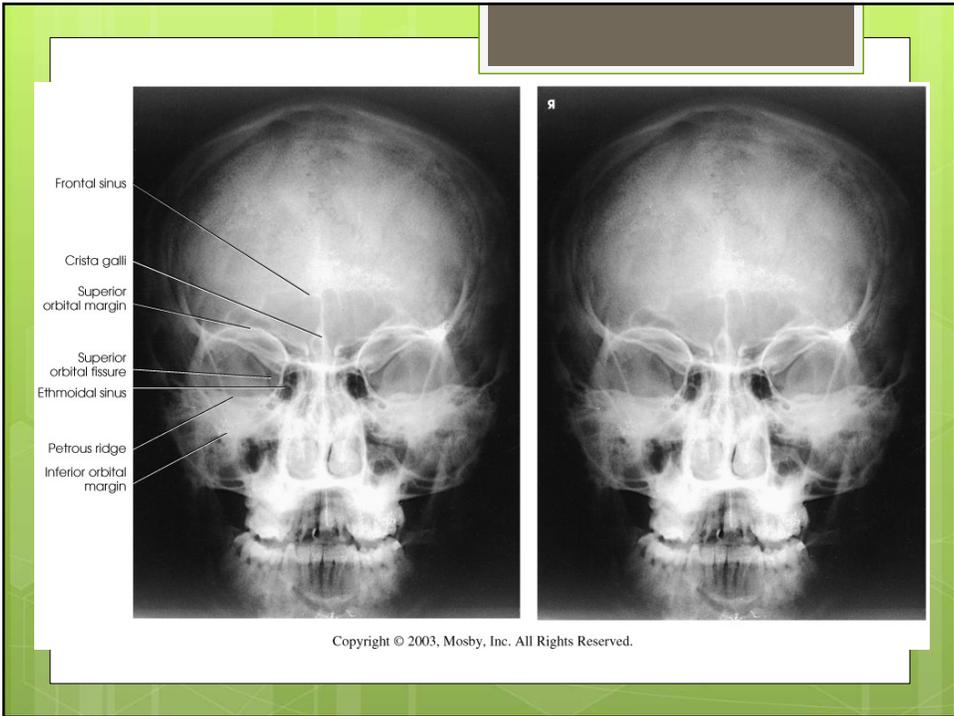
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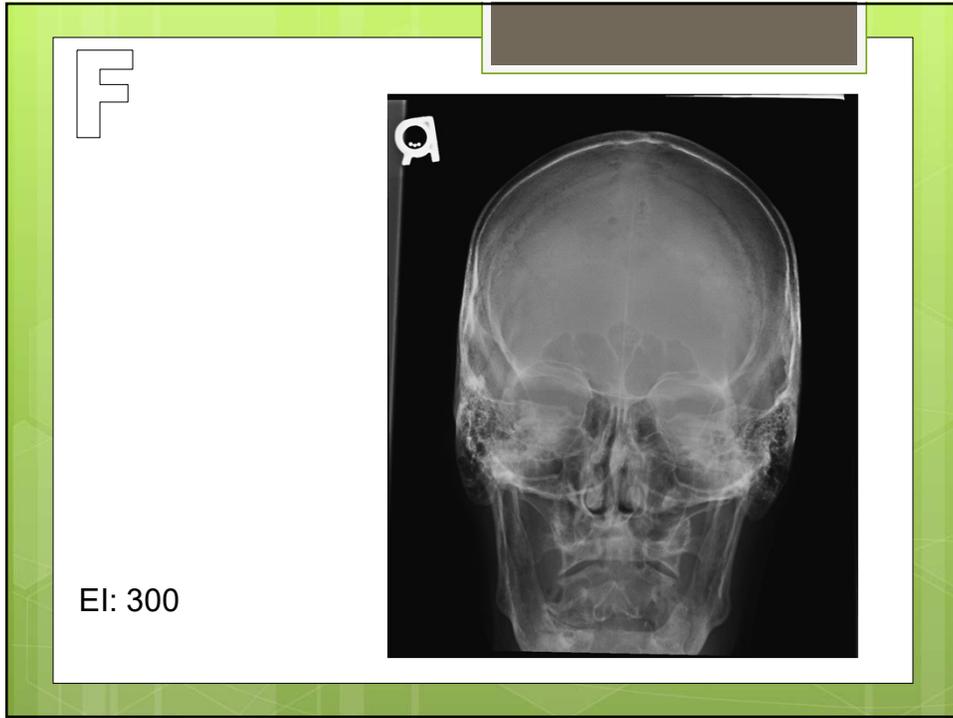
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PA AXIAL CALDWELL

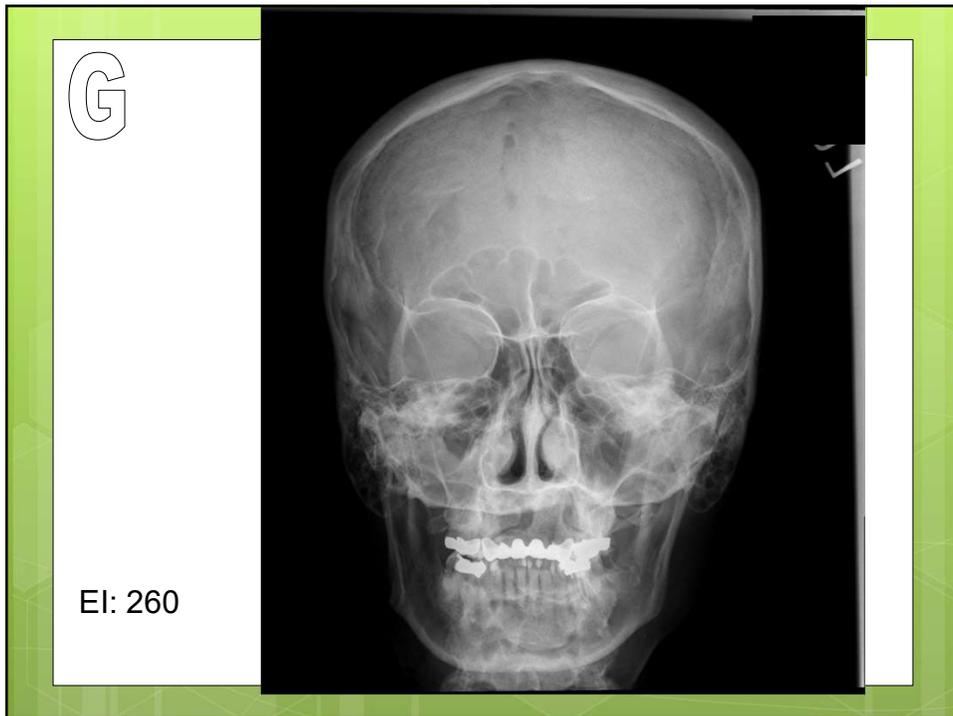
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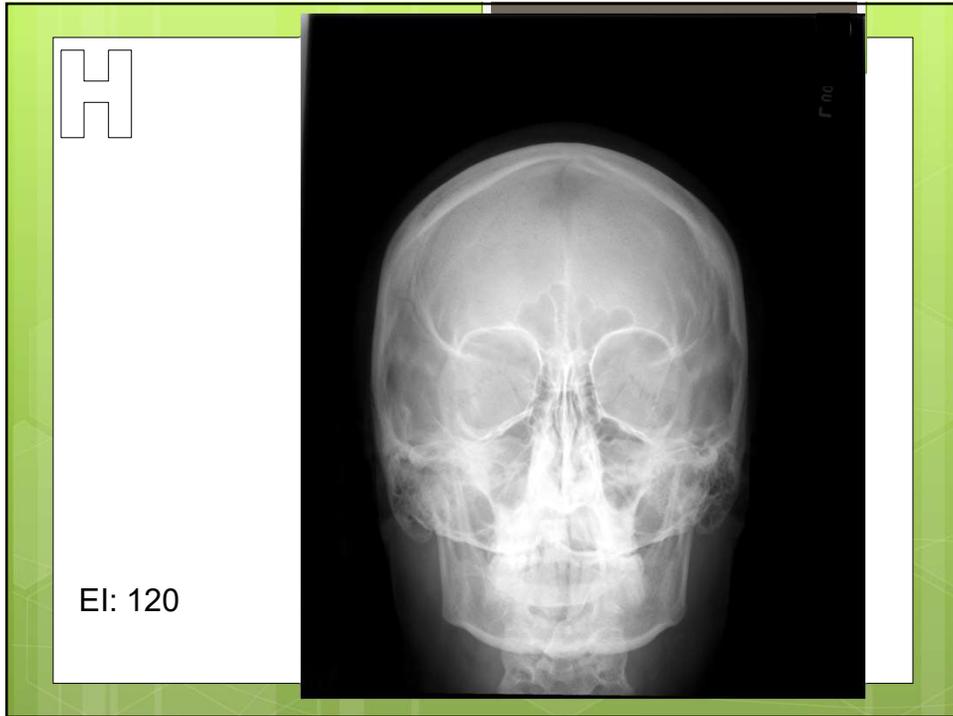
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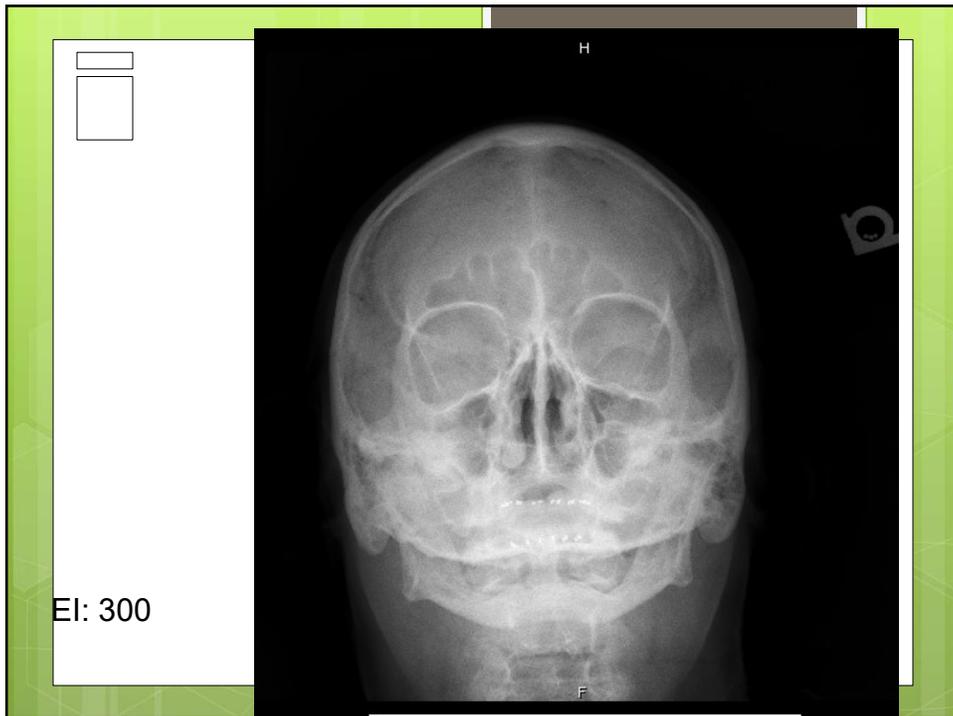
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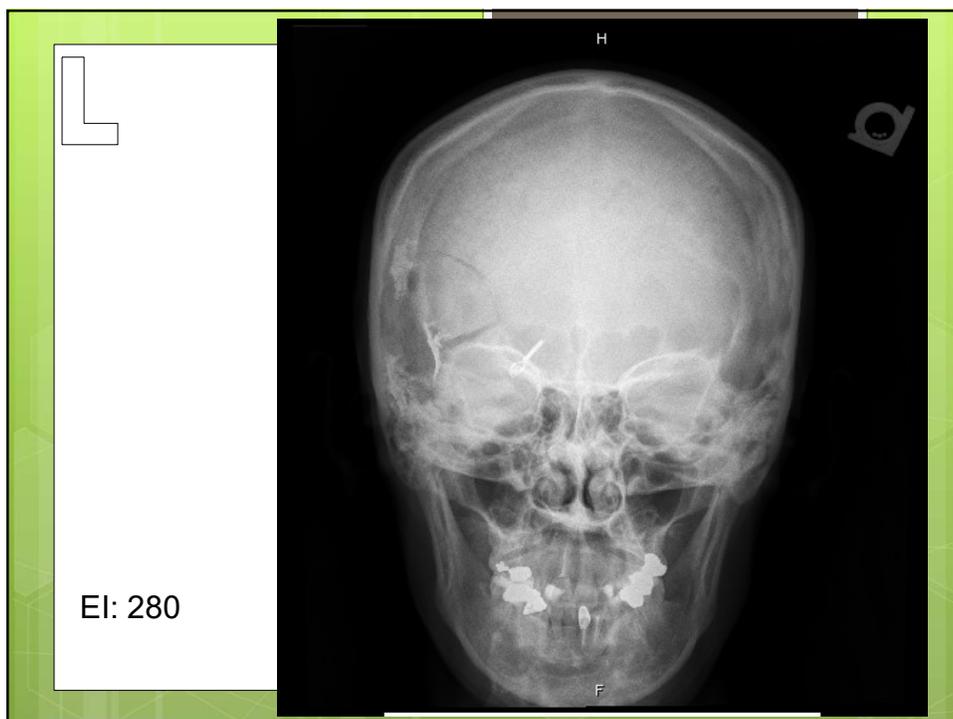
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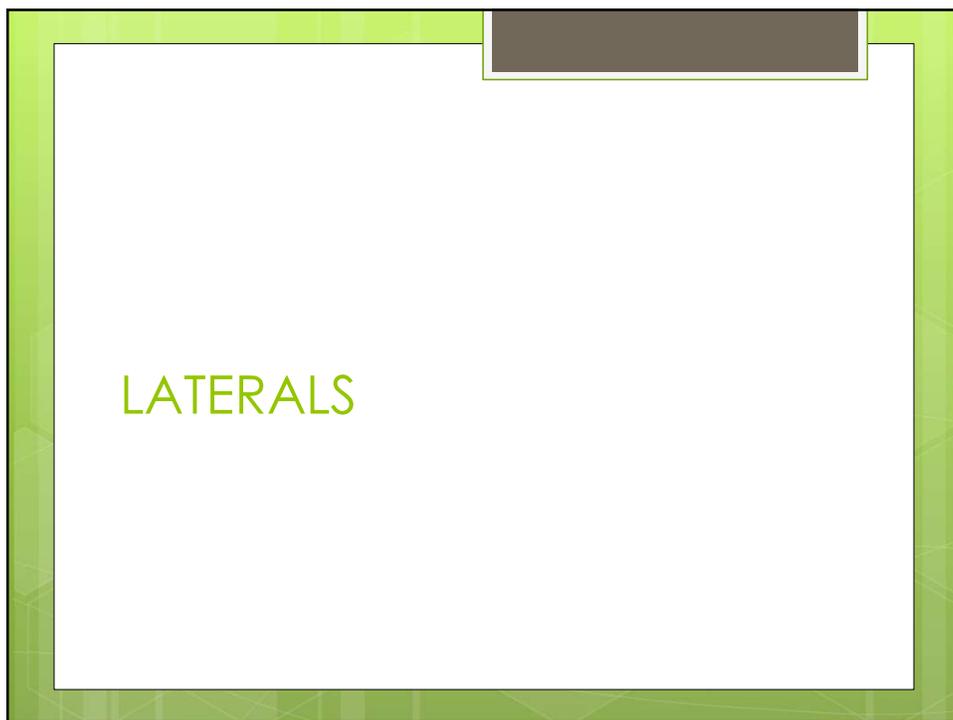
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M

Lateral Skull Critique

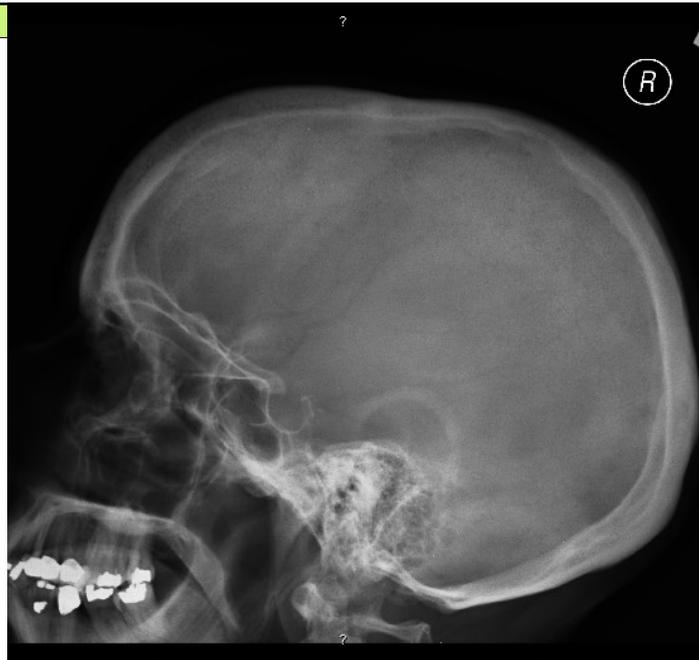


- What are the repeatable errors?

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29

N



EI: 250

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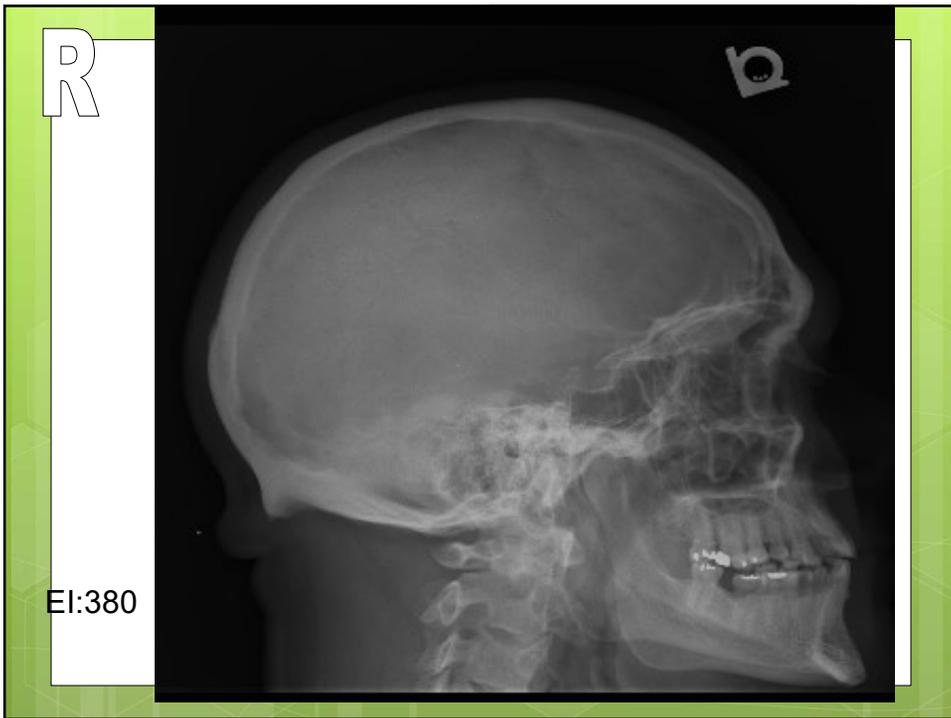
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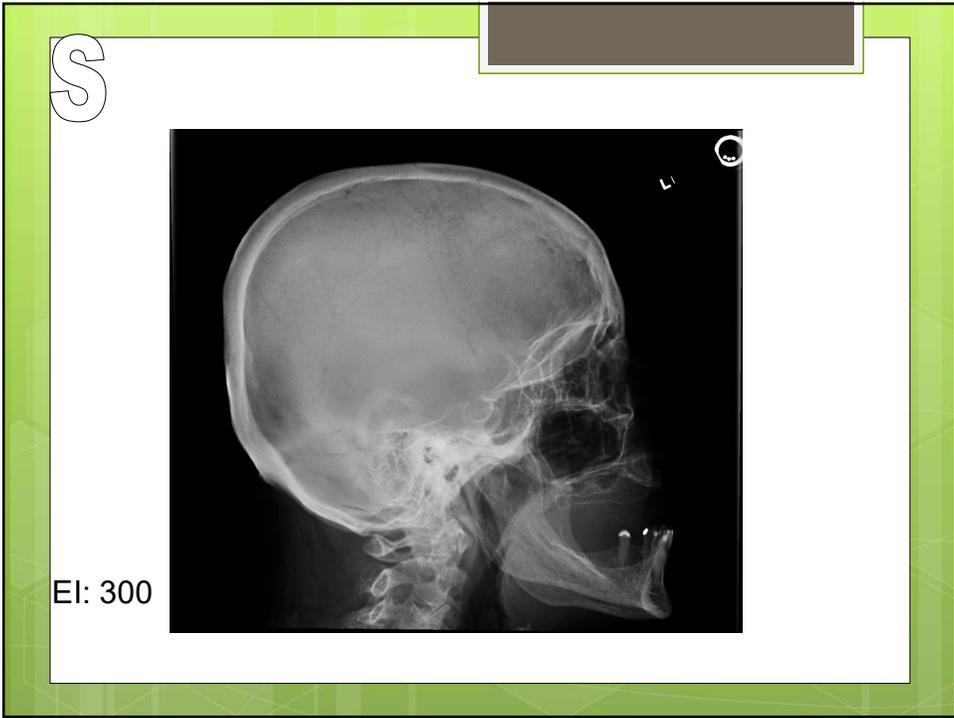
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