

Unstable Pelvic Ring Injury

Matthew Hays

February 19, 2020

RAD 4014 MSK Radiology

Dr. Bawa

Patient NB

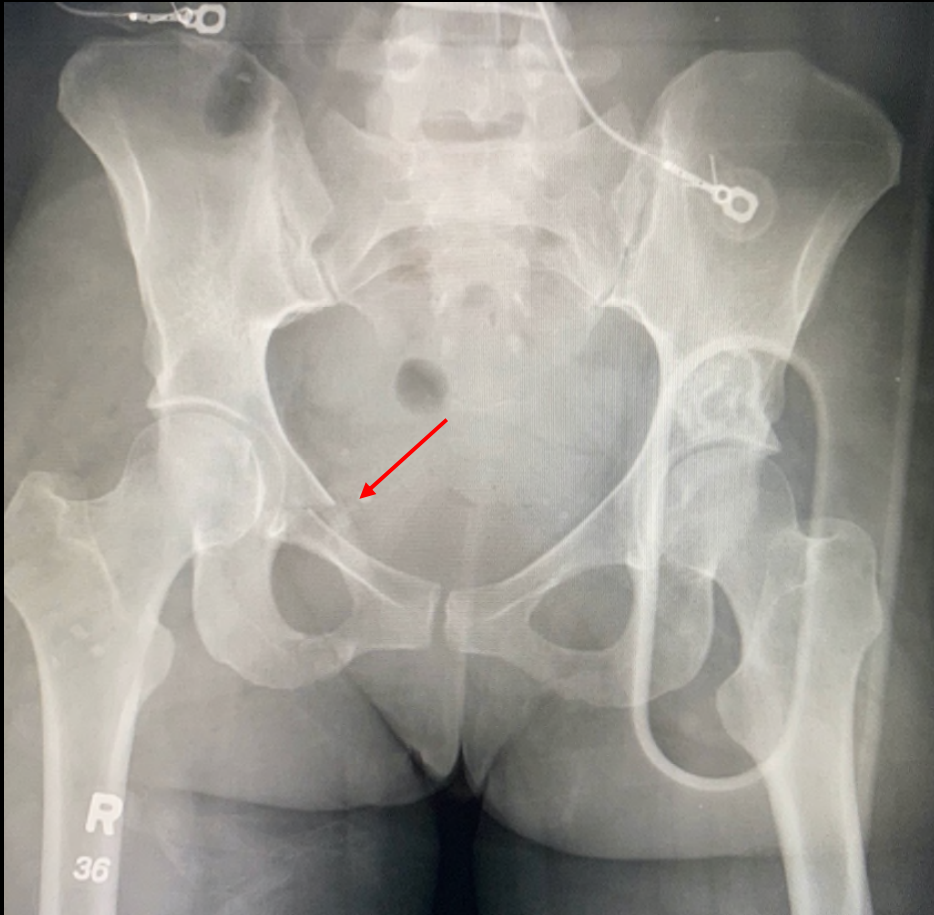
- 45 y/o F w/ R hemipelvis pain s/p MVC
 - PMH: Anxiety
 - PSH: None
 - Meds: Clonazepam
 - All: None
- PE:
 - Vitals: P: 124; BP: 110/70; RR: 18; SpO2: 100
 - Pelvis: R hemipelvis tender to lateral compression, no laxity noted
 - Extremities: NVI

ACR Appropriateness Criteria

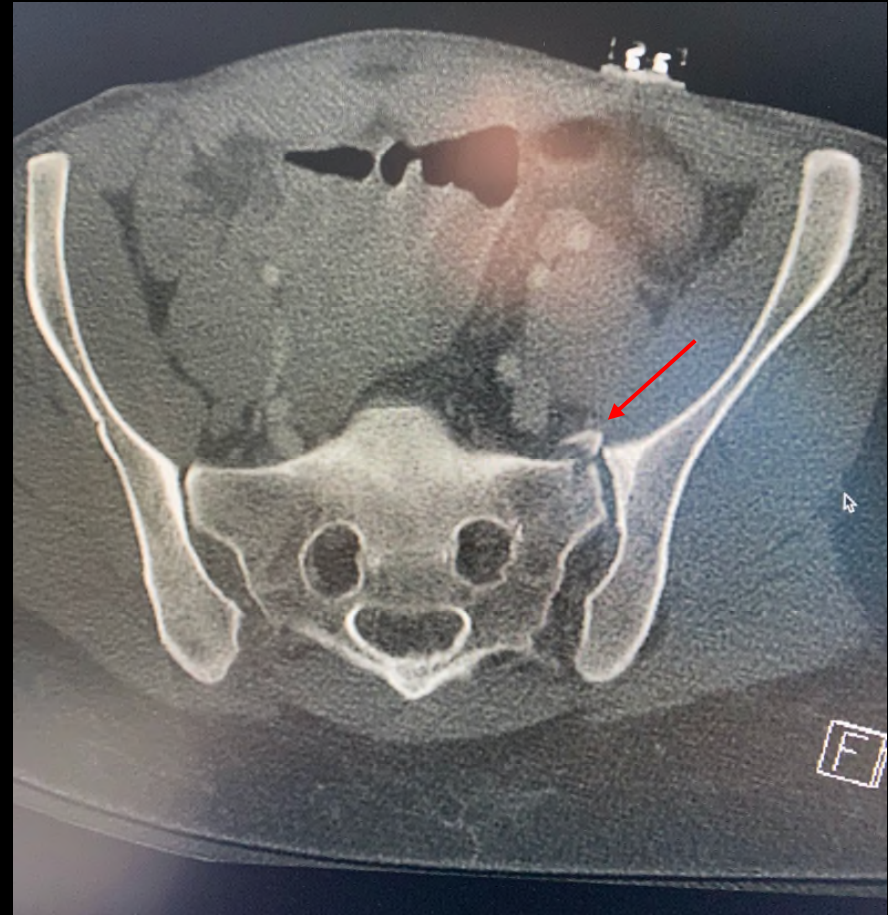
Variant 2: Major blunt trauma. Hemodynamically stable. Not otherwise specified. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT whole body with IV contrast	Usually Appropriate	⚠⚠⚠⚠
Radiography trauma series	Usually Appropriate	⚠⚠⚠
US FAST scan chest abdomen pelvis	Usually Appropriate	○
CT whole body without IV contrast	May Be Appropriate	⚠⚠⚠⚠
Fluoroscopy retrograde urethrography	Usually Not Appropriate	⚠⚠⚠
MRI abdomen and pelvis without and with IV contrast	Usually Not Appropriate	○
MRI abdomen and pelvis without IV contrast	Usually Not Appropriate	○

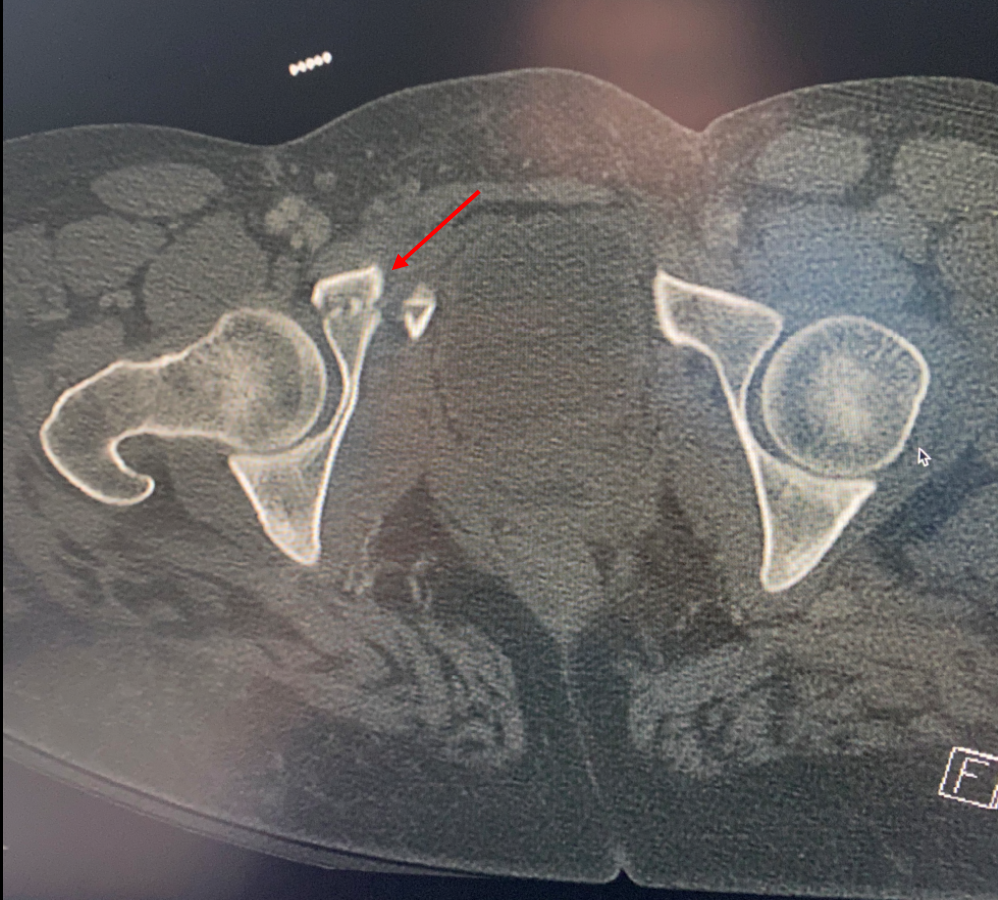
<https://acsearch.acr.org/docs/3102405/Narrative/>



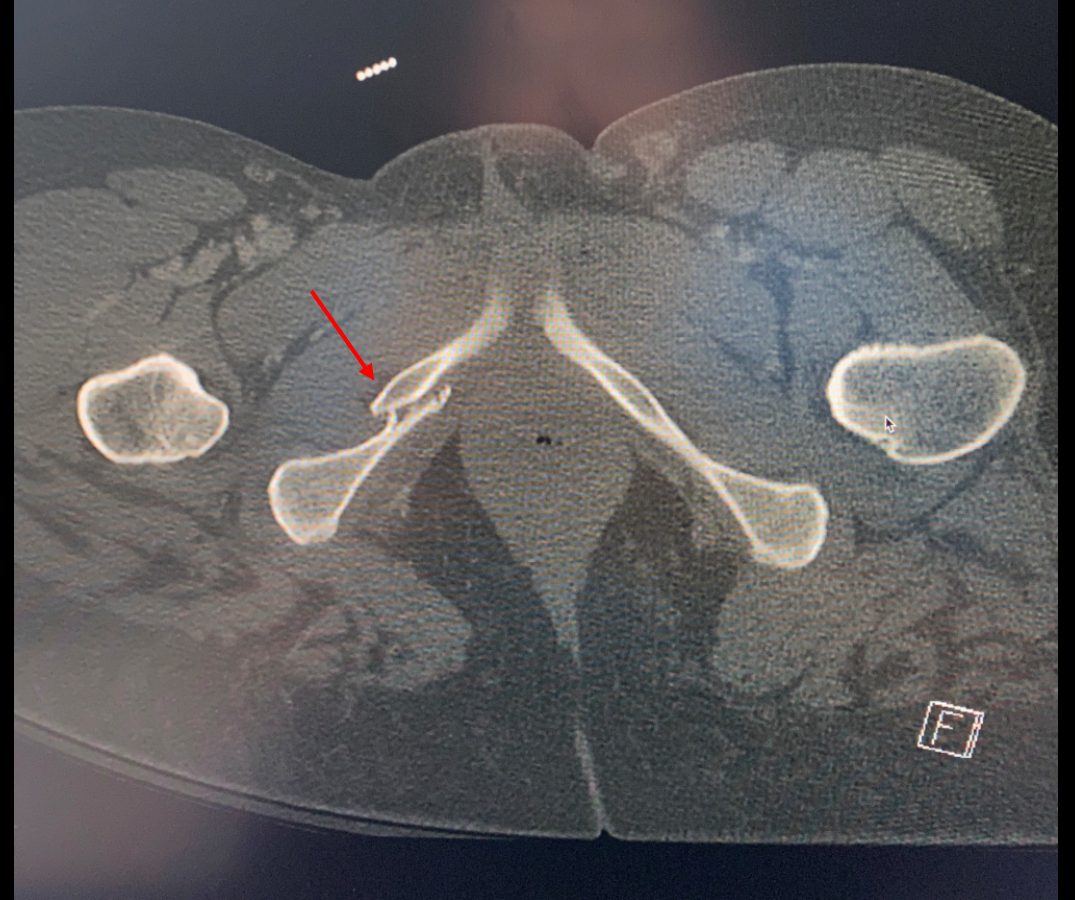
AP Pelvis



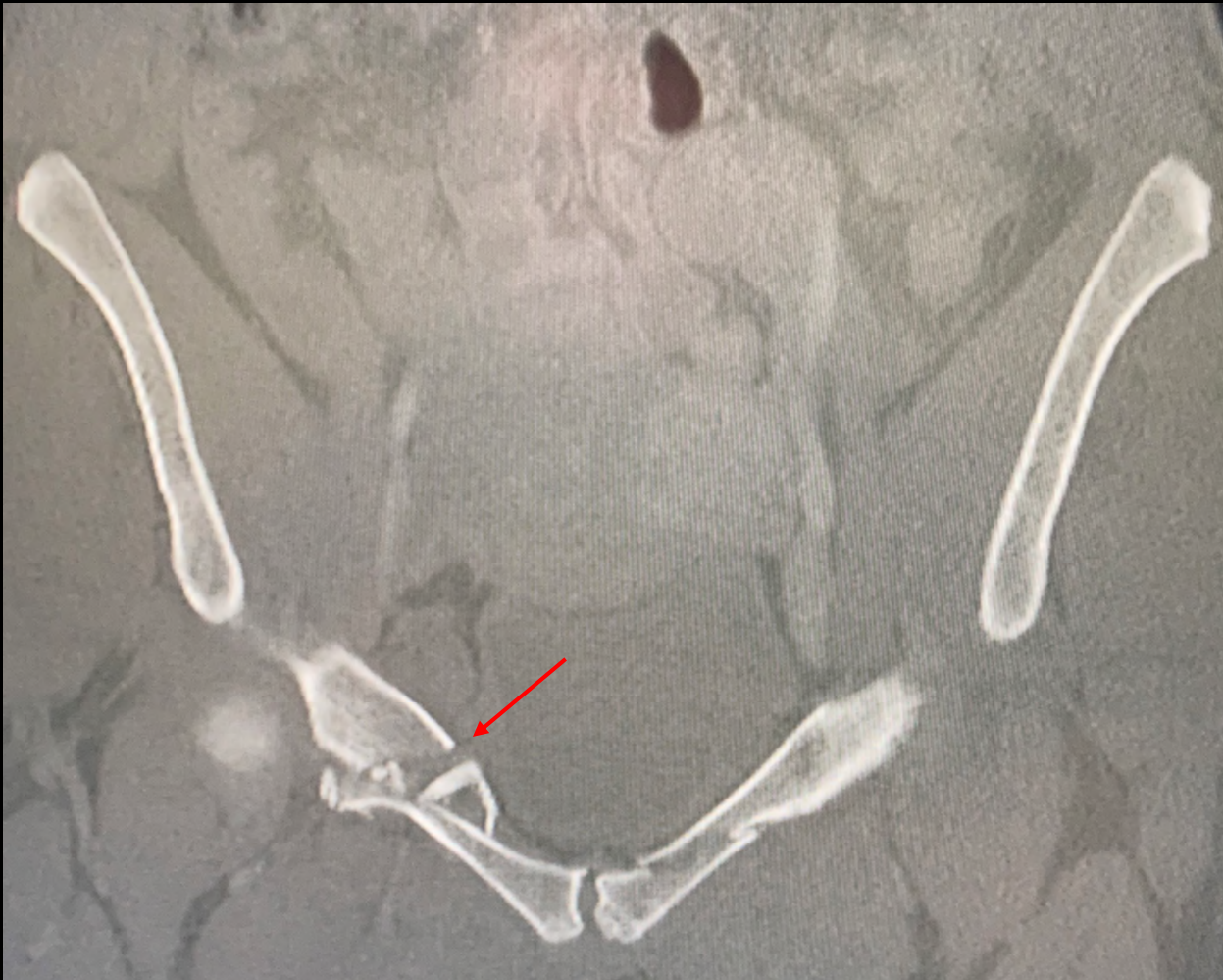
L zone 2 sacral fracture



R superior pubic ramus fx



R inferior pubic ramus fx

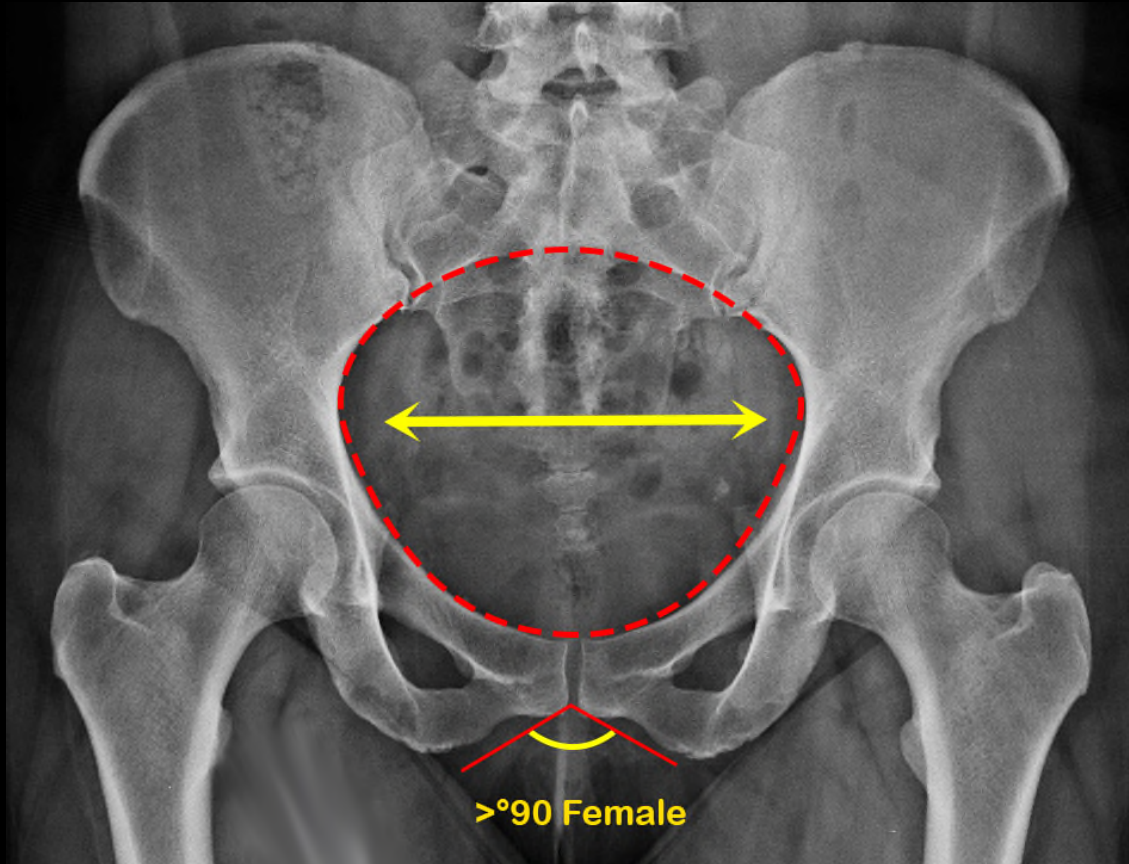


R superior ramus fx



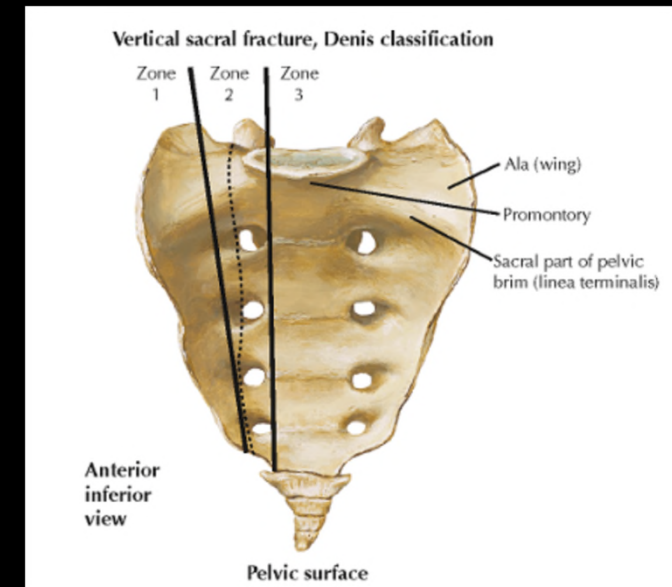
L zone 2 sacral fracture

Normal Anatomy



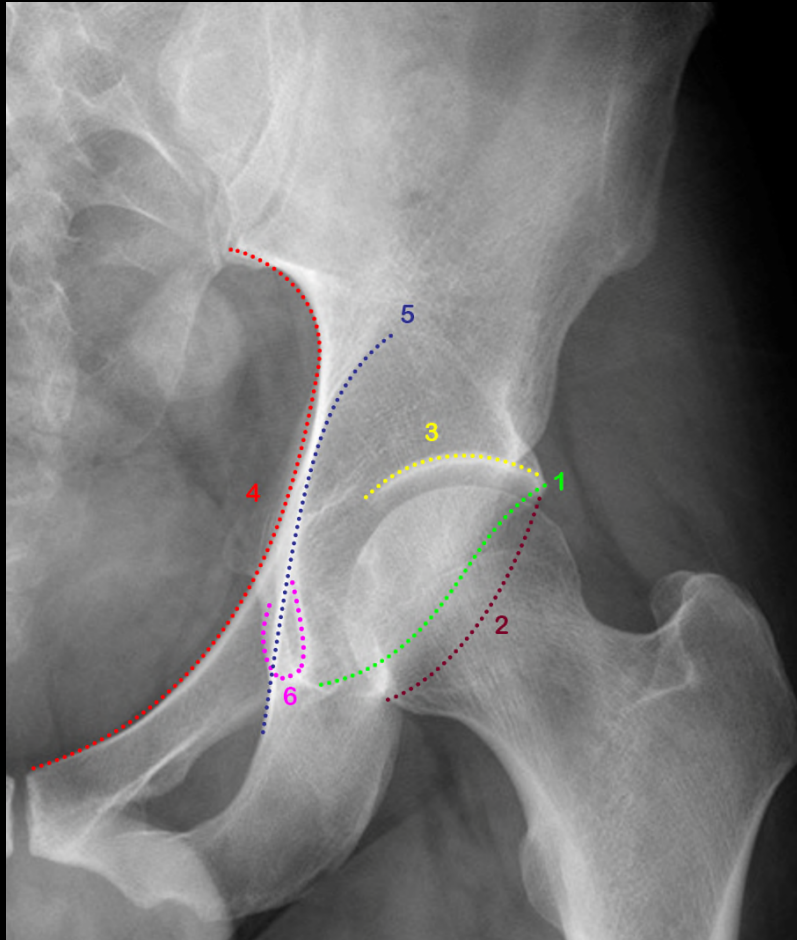
<https://radiopaedia.org/articles/pelvis-1?lang=us>

- Pelvic brim
 - Anterior – pubic crest
 - Lateral – arcuate line (of ilium)
 - Posterior – Sacral ala



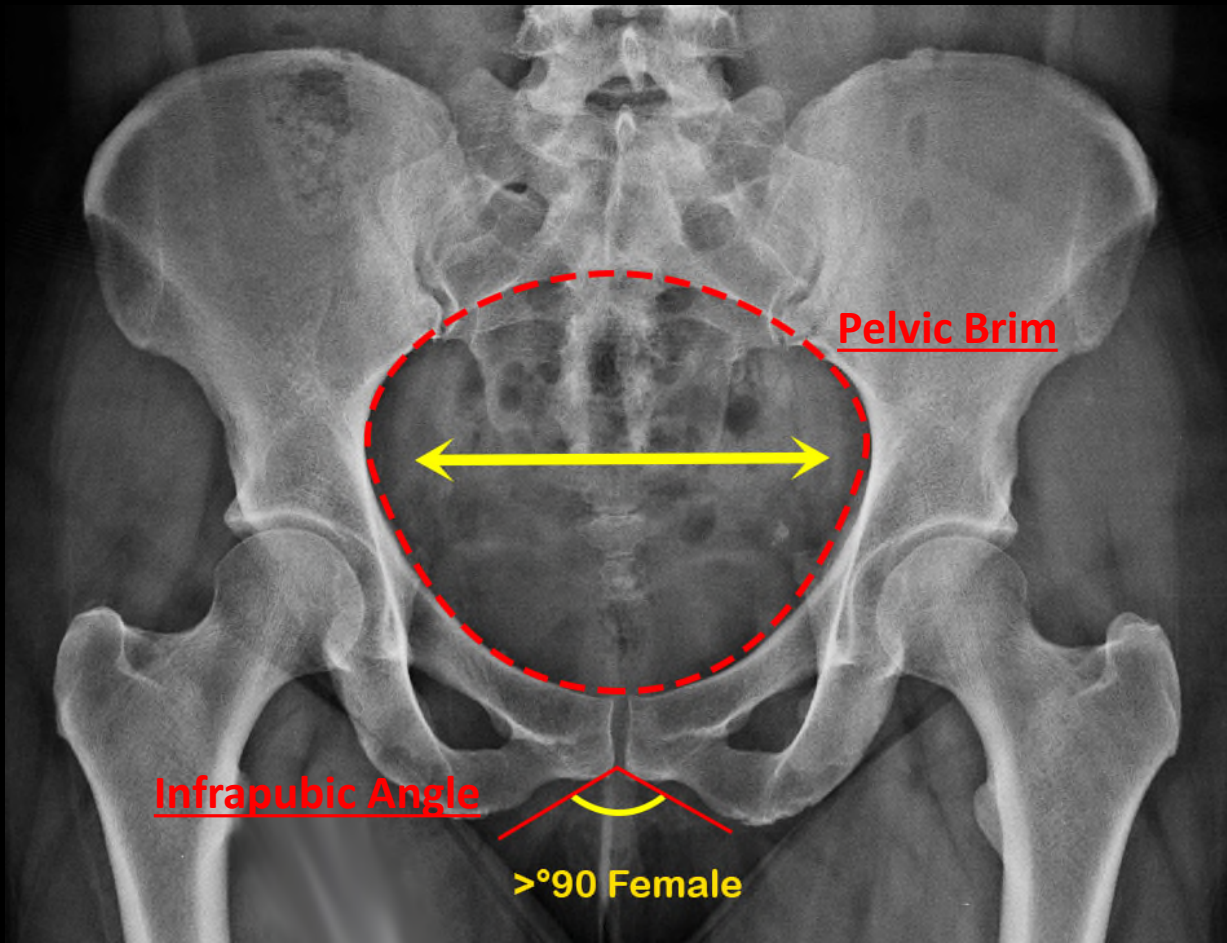
Netter's Concise Orthopaedic Anatomy

Normal Anatomy (continued)

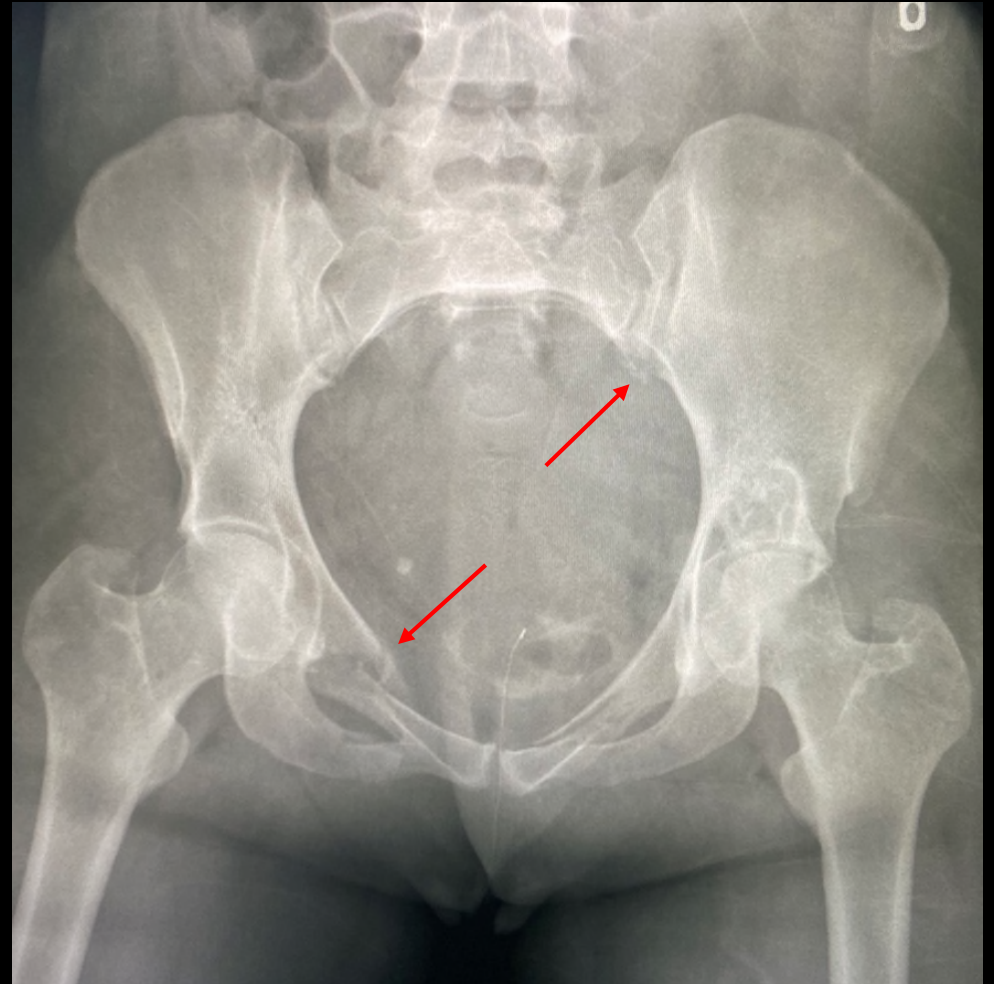


<https://radiopaedia.org/articles/acetabular-fracture?lang=us>

1. Anterior acetabular wall
2. Posterior acetabular wall
3. acetabular roof
4. iliopectineal line
 1. Anterior column fx
5. ilioischial line
 1. Posterior column fx
6. Radiographic U (teardrop)
 1. Bony ridge on floor of acetabulum



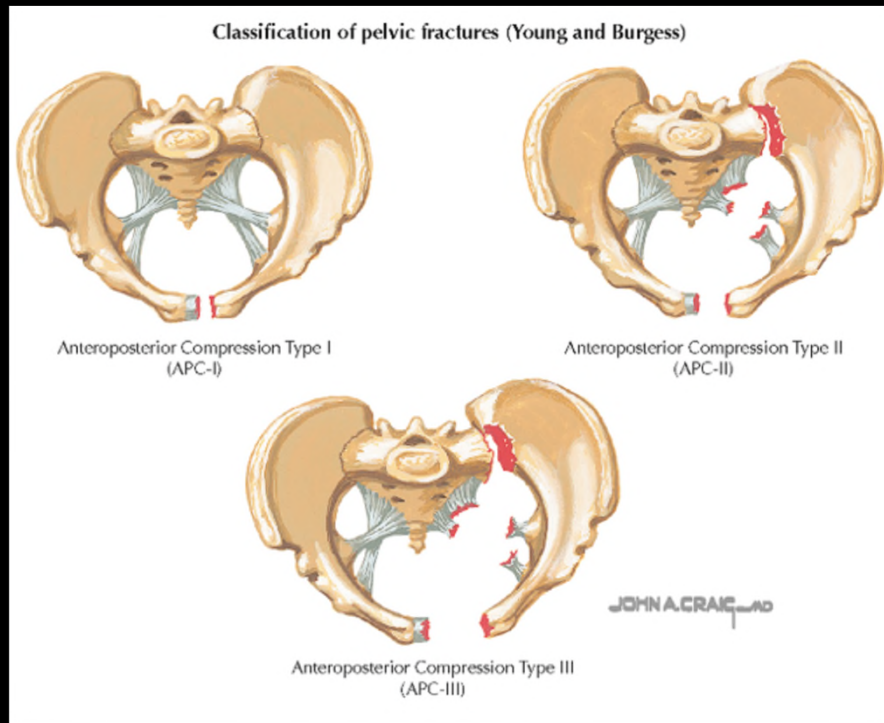
Pelvic Inlet



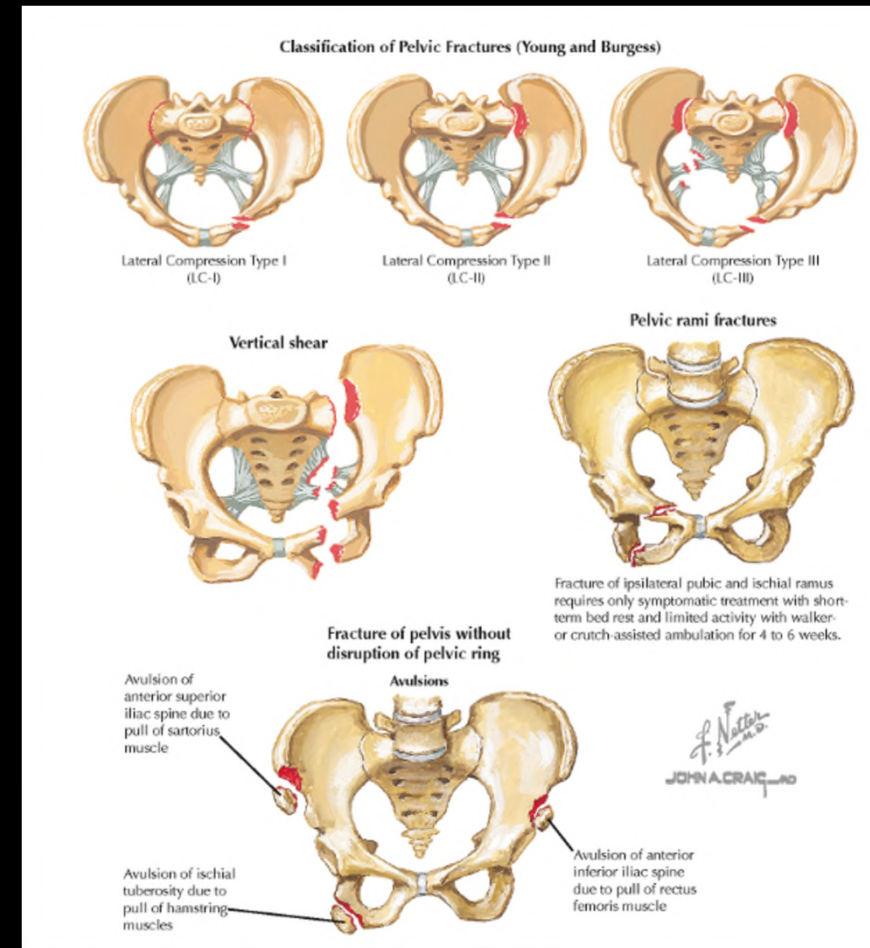
Patient NB - Inlet

<https://radiopaedia.org/articles/pelvis-1?lang=us>

Classification – Young & Burgess



AP Compression

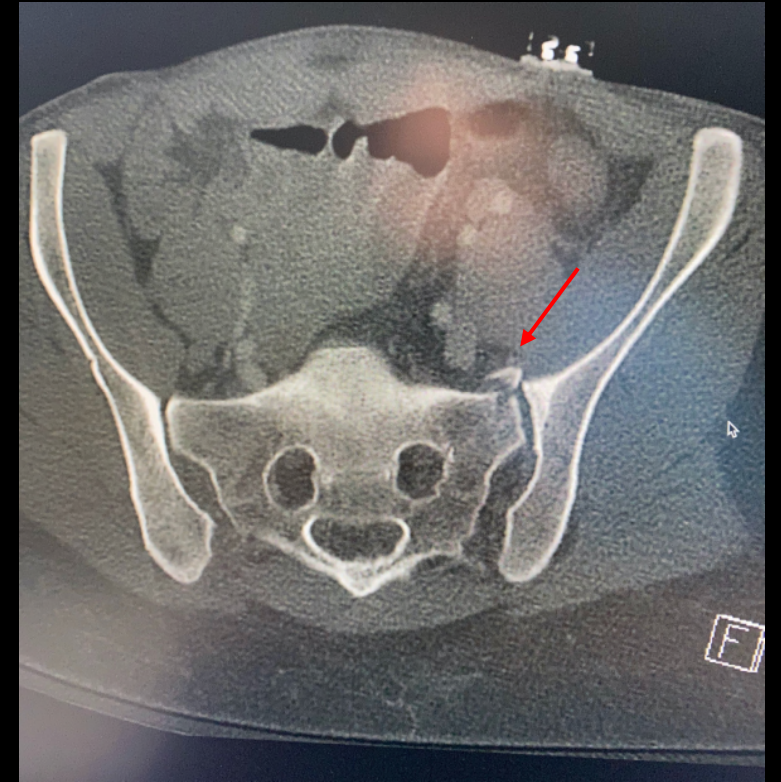
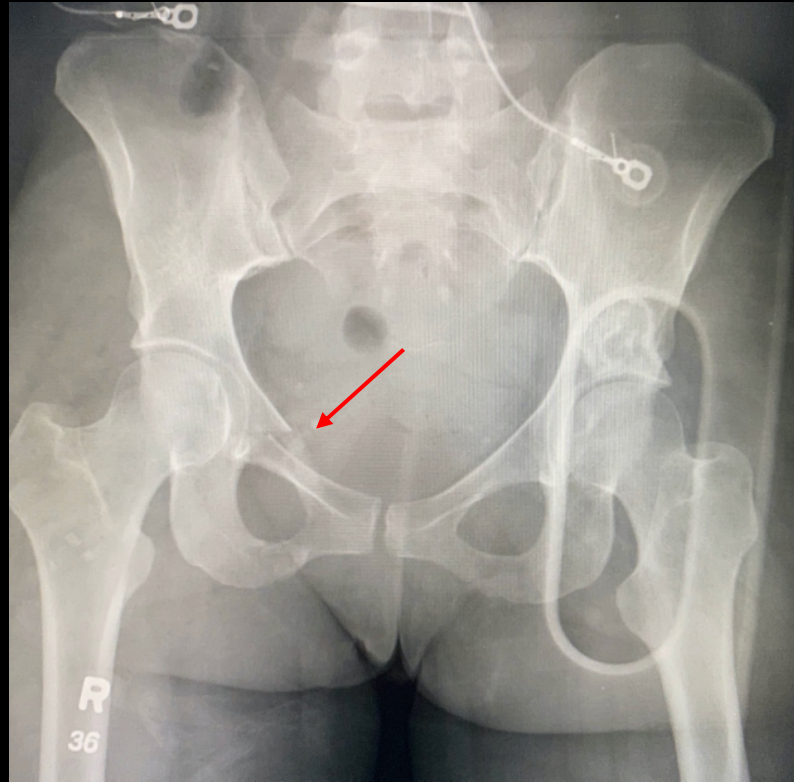


Lateral Compression/VS

Source: Netter's Concise Orthopaedic Anatomy

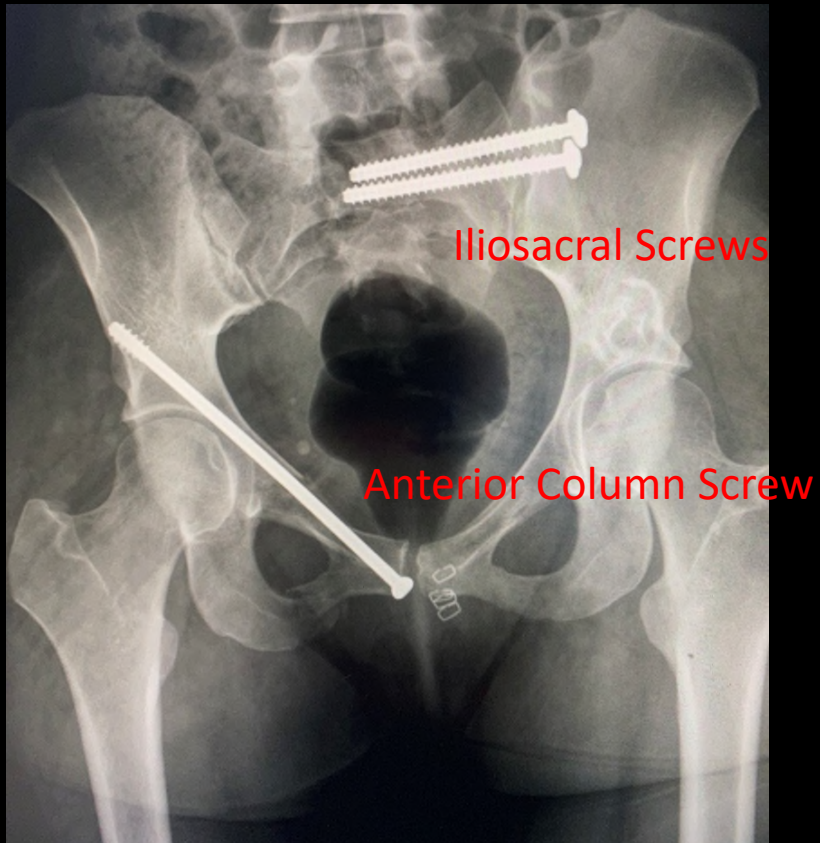
Patient NB

- T-bone MVC mechanism
- Unstable pelvis
 - Unable to support physiologic forces without abnormal deformation
 - Movement upon stress fluoroscopy
- Pretzel analogy
- LC mechanism
 - Binder?



L zone 2 sacral fracture

Treatment



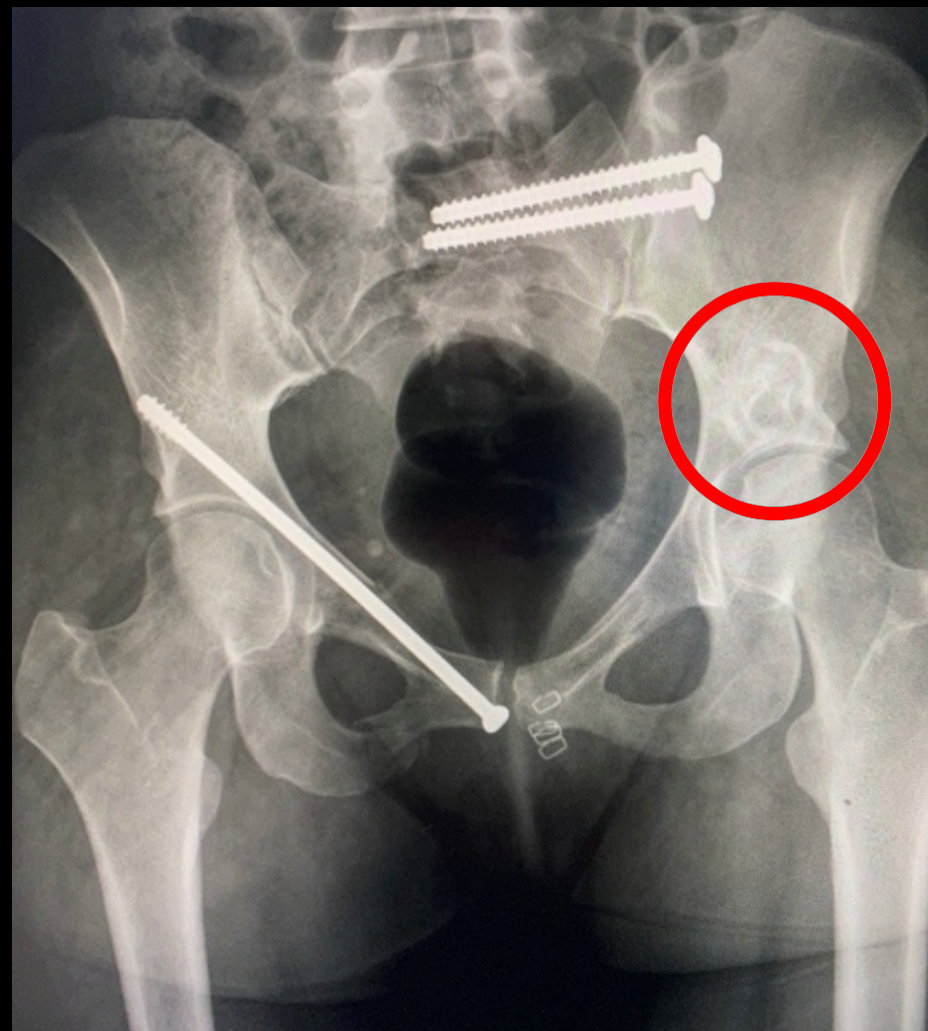
AP



Inlet

Discussion/Follow-up

- Patient recovered from surgery
 - Pelvis Stable
- MHOSH – Bone Bx
 - Infarcted bone



Cost of Imaging

Study	Average Cost	Average Insured Patient Cost
CT Pelvis/Abdomen w/ Contrast	\$7,998	\$480
Pelvis 1-2 Views	\$719	\$111

<https://www.memorialhermann.org/patients-caregivers/pricing-estimates-and-information/>

Take Home Points

- Ring made of sacrum + 2 innominate bones
- Young & Burgess classification system commonly used
 - Doesn't fit every case
- Assess for vascular injury
 - Leading cause of death overall

References

- Netter's Concise Orthopaedic Anatomy
- <https://radiopaedia.org/articles/acetabular-fracture?lang=us>
- <https://radiopaedia.org/articles/pelvis-1?lang=us>
- <https://acsearch.acr.org/docs/3102405/Narrative/>
- <https://www.memorialhermann.org/patients-caregivers/pricing-estimates-and-information/>



Questions?