



35 y/o riding on the back of pick up truck, fell off and dragged for undetermined distance, then a car hit him throwing the gentleman a significant distance.

Syed Ali

R/TRH



R/TRH

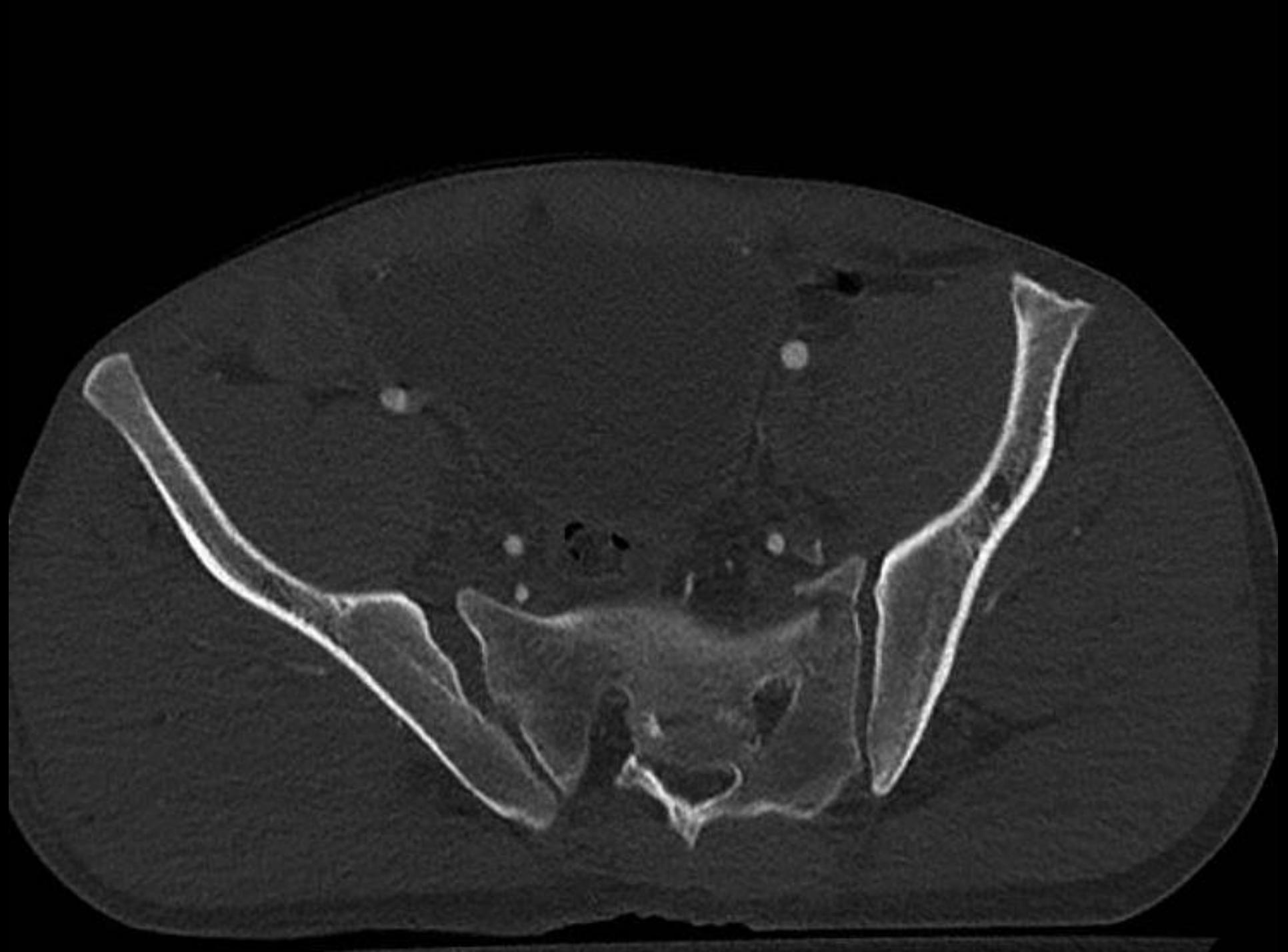


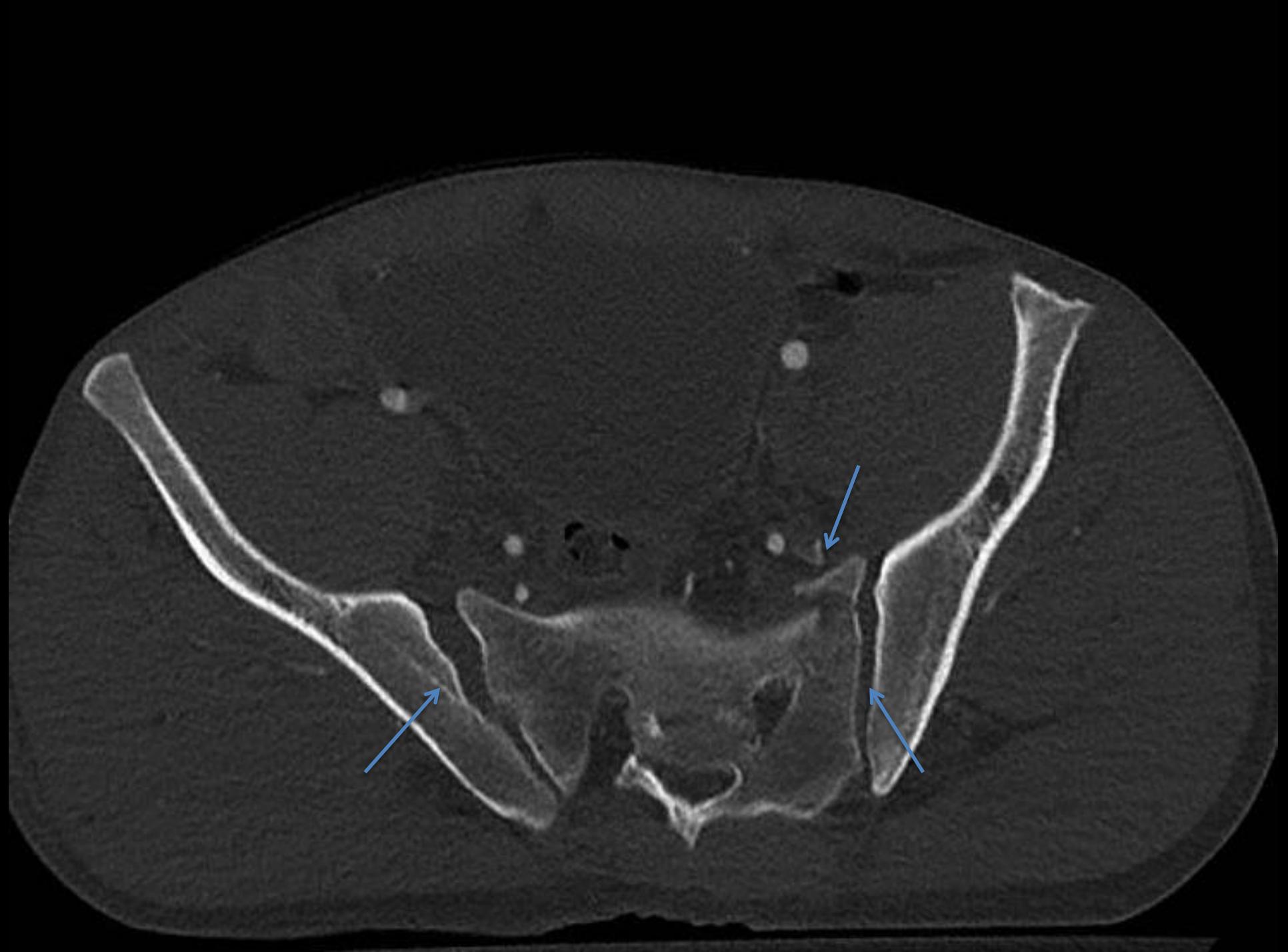
L/LS



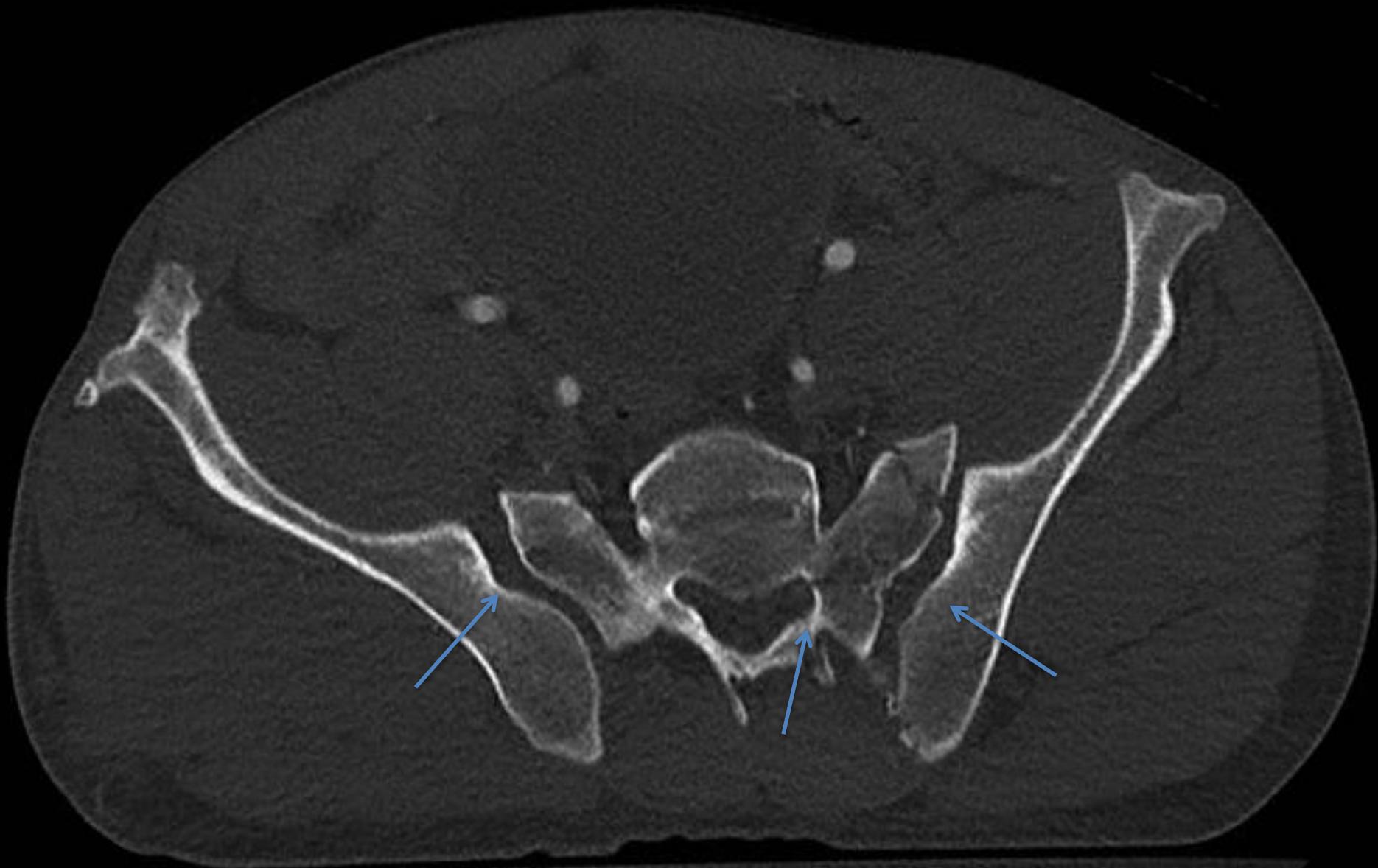
L/LS







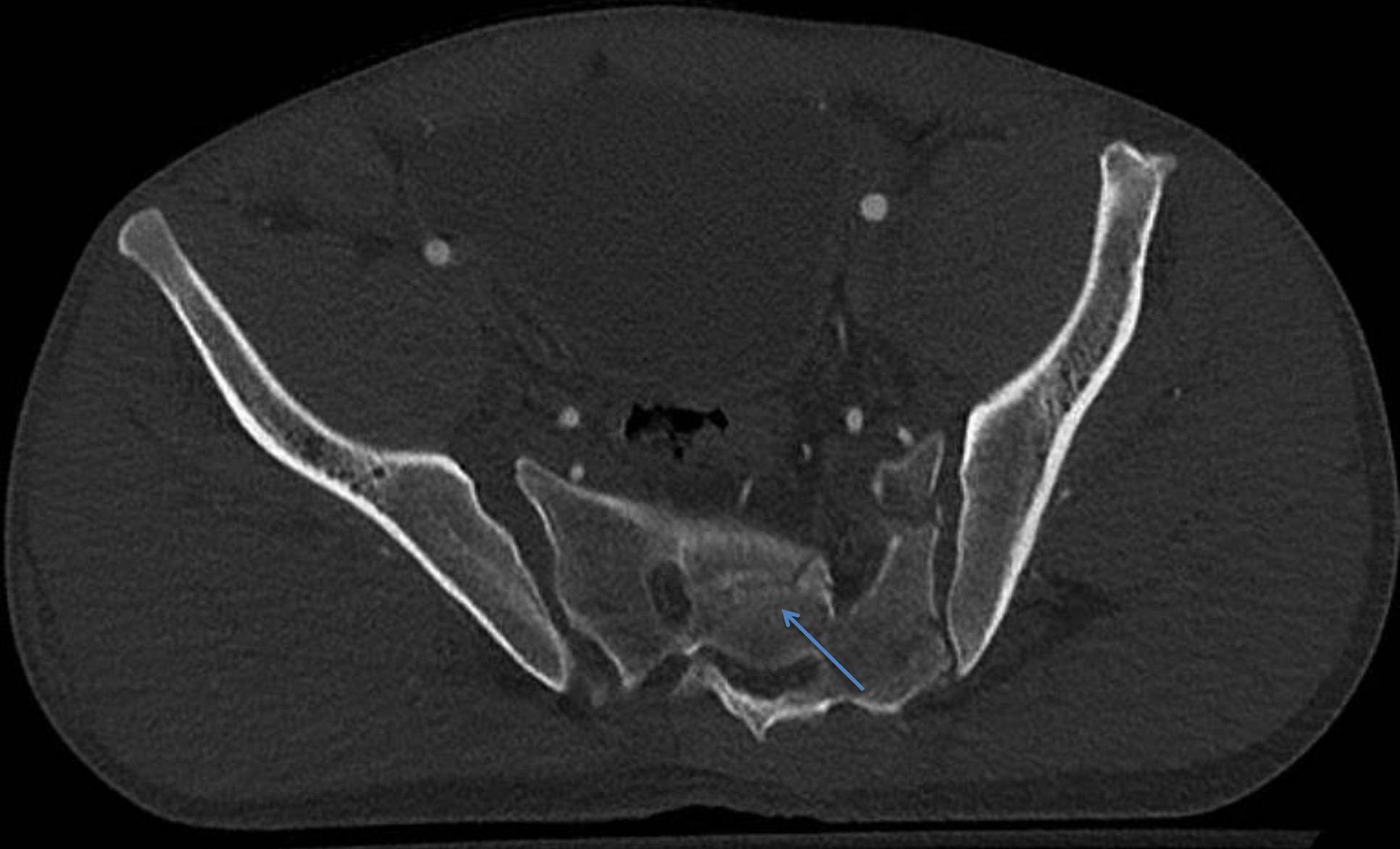




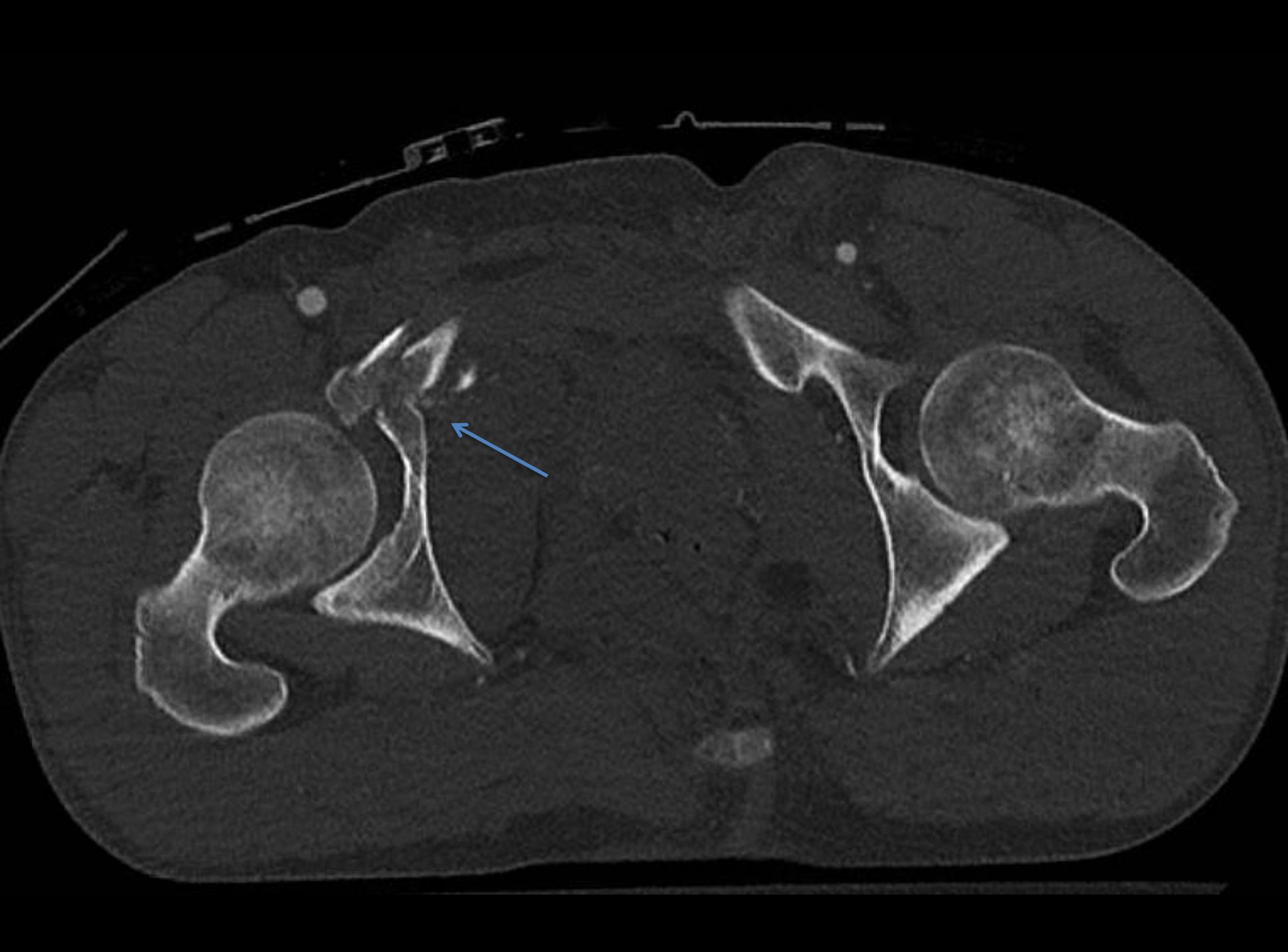


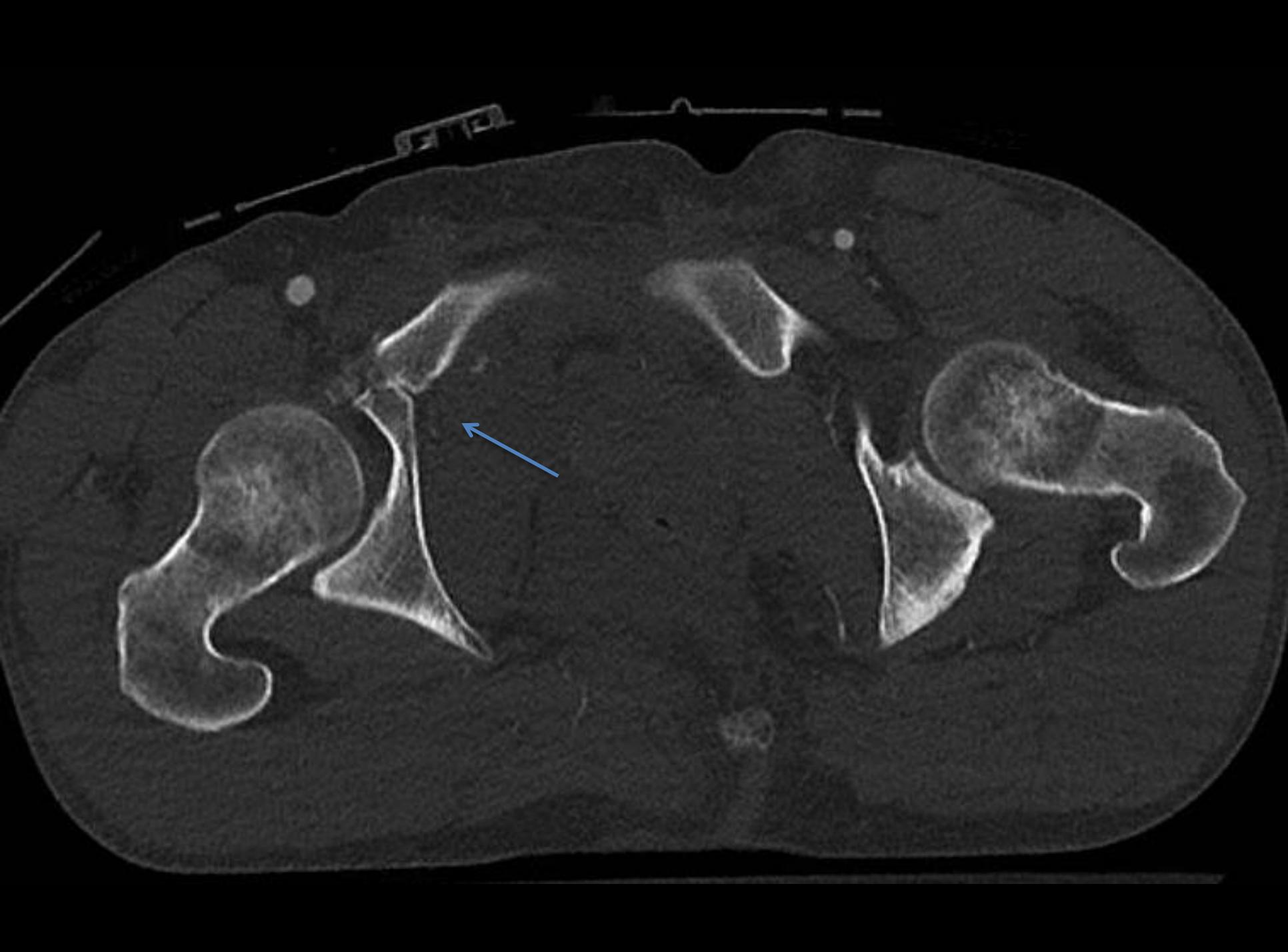


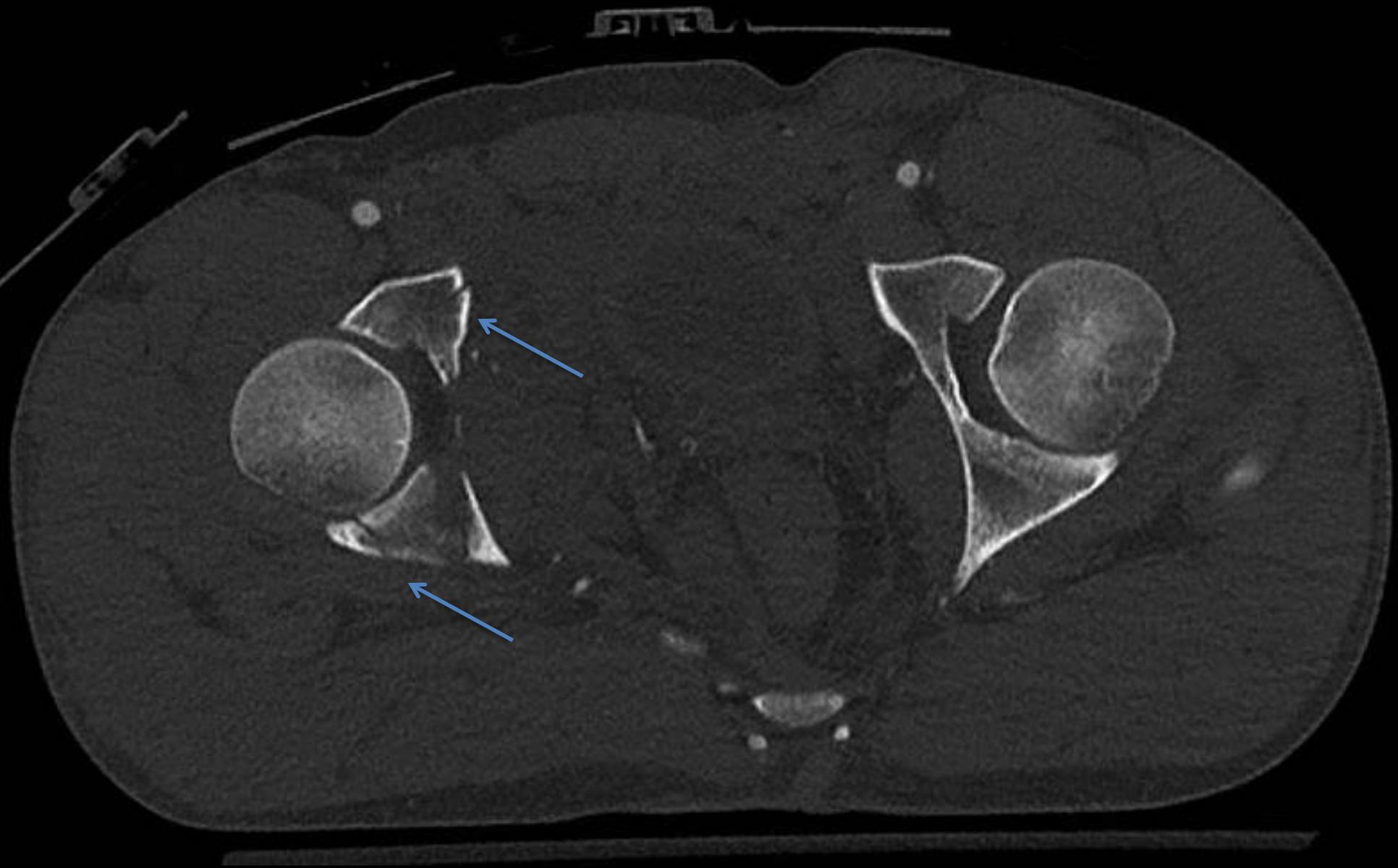


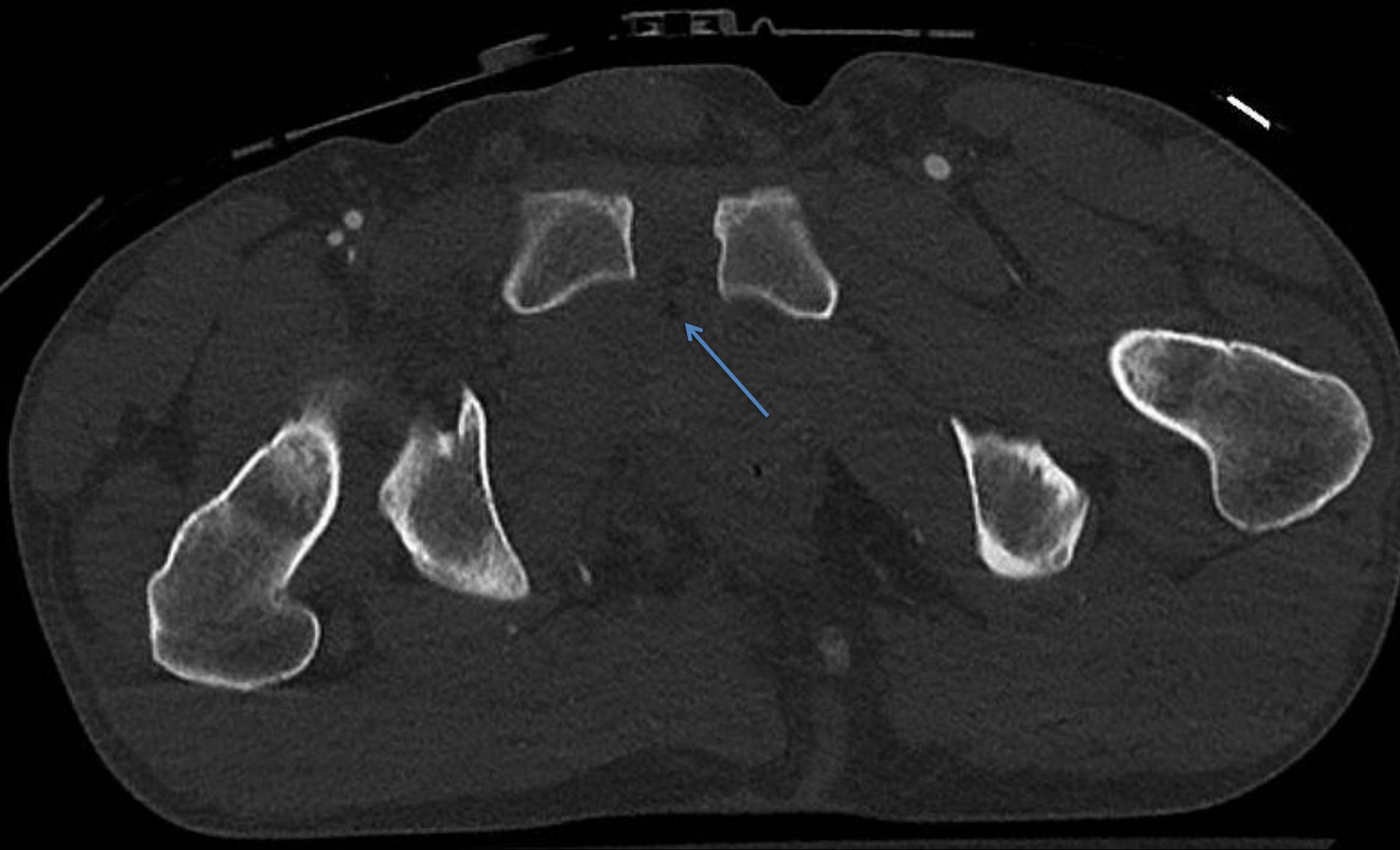










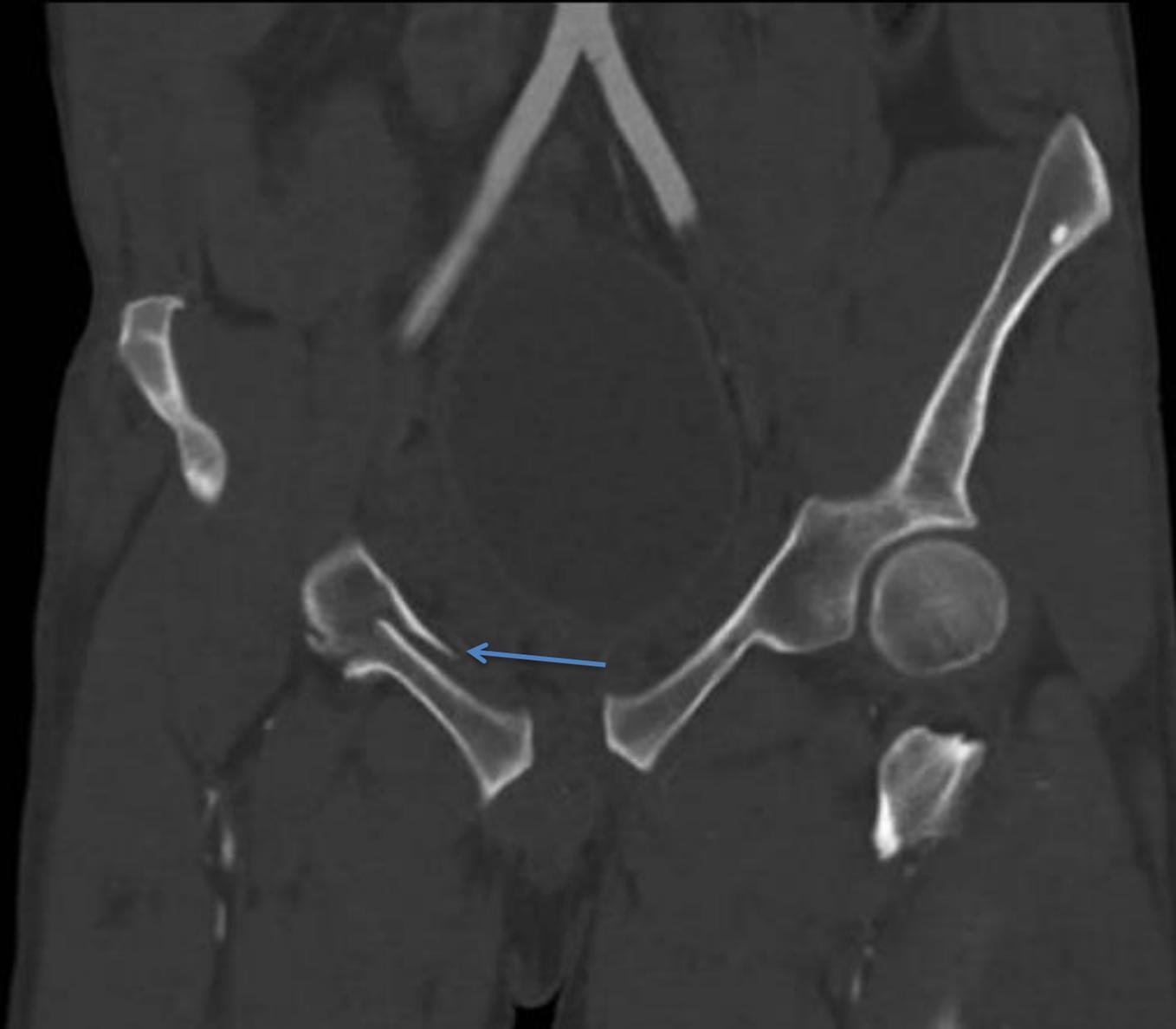


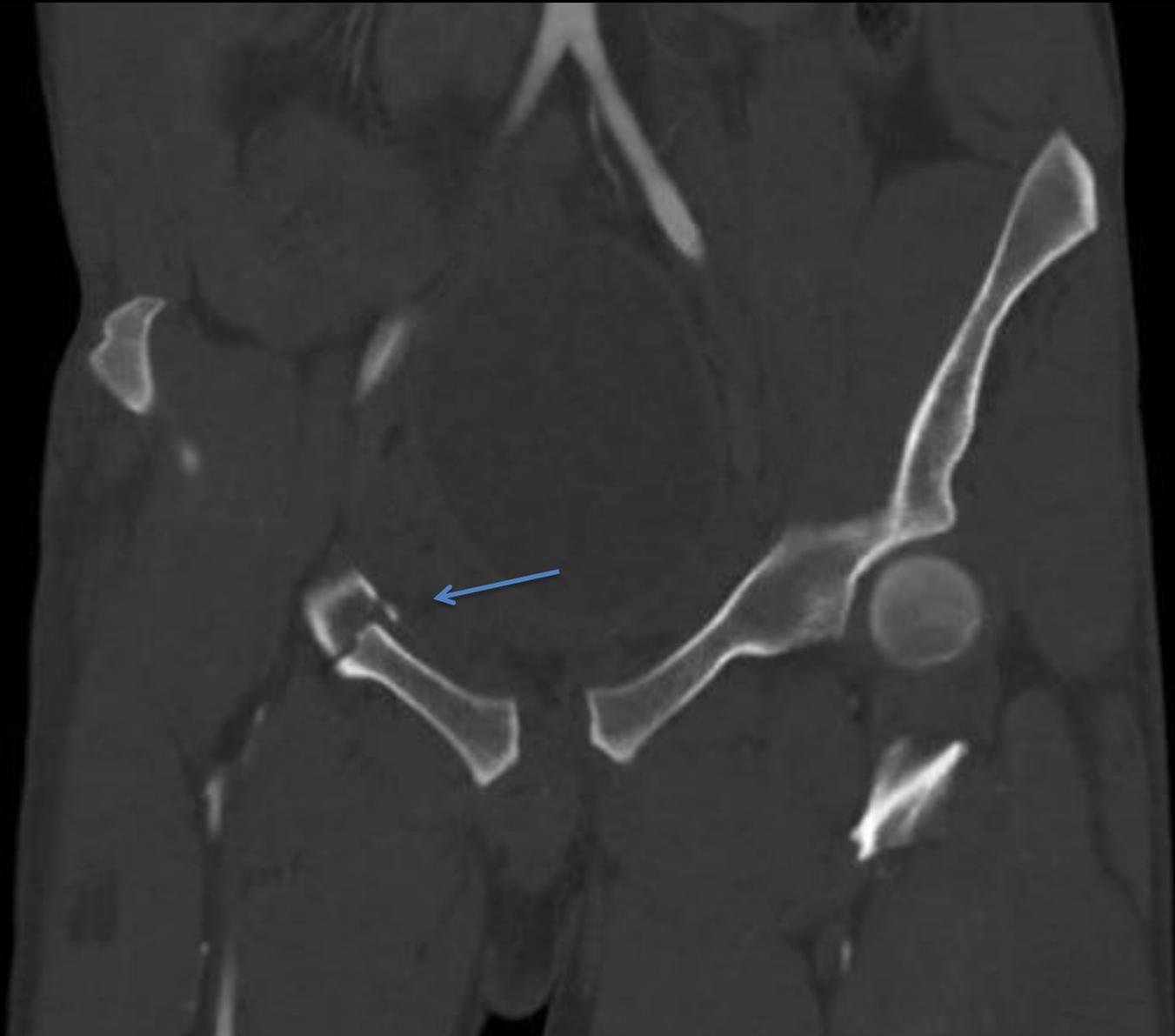












Findings

- Pubic Diastasis and Diastatic widening of both sacroiliac joints
- Comminuted zone 3 fracture of the left sacral ala
- Undisplaced zone 2 right sacral ala fracture
- Undisplaced transverse fracture seen across the S2/S3 level
- Comminuted fracture of the right acetabulum involving both the anterior and posterior walls, and extending centrally through the quadrilateral plate
- Accompanying fractures of the right superior and inferior pubic rami
- Open book type of pelvic injury and transverse type acetabular fracture

Letournel Classification

| | <i>Illus.</i> | <i>AP</i> | <i>Obt.Obl.</i> | <i>Iliac.Obl.</i> | <i>CT</i> | <i>Comments</i> |
|--|---------------|-----------|-----------------|-------------------|-----------|---|
| Elementary 📷 | | | | | | |
| Posterior wall ? | 📷 | 📷 | 📷 | | 📷 | <ul style="list-style-type: none"> • Most common • "gull sign" on obturator oblique view |
| Posterior column | 📷 | 📷 | 📷 | 📷 | 📷 | <ul style="list-style-type: none"> • check for injury to superior gluteal NV bundle |
| Anterior wall | 📷 | 📷 | | | 📷 | <ul style="list-style-type: none"> • Very rare |
| Anterior column | 📷 | 📷 | | 📷 | 📷 | <ul style="list-style-type: none"> • More common in elderly patients with fall from standing |
| Transverse ? ? ? | 📷 | 📷 | 📷 | 📷 | 📷 📷 | <ul style="list-style-type: none"> • Axial CT shows anterior to posterior fx line • Only elementary fx to involve both columns |
| Associated 📷 | | | | | | |
| Associated Both Column ? | 📷 | 📷 | 📷 | 📷 | | <ul style="list-style-type: none"> • Characterized by dissociation of the articular surface from the inonimate bone ? ? • will see "spur sign" on obturator oblique ? |
| Transverse + Post. Wall ? | 📷 | 📷 | | | 📷 | <ul style="list-style-type: none"> • Most common associated fx |
| T Shaped | 📷 | 📷 | | | 📷 | <ul style="list-style-type: none"> • May need combined approach |
| Anterior column or wall + Post. hemitransverse | 📷 | 📷 | 📷 | 📷 | 📷 | <ul style="list-style-type: none"> • Common in elderly patients |
| Post. column + Post. wall | 📷 | 📷 | 📷 | 📷 | 📷 | <ul style="list-style-type: none"> • Only associated fracture that does not involve both columns |

Review

Acetabular Fractures: Easier Classification with a Systematic Approach

Eric Brandser¹ and J. L. Marsh²

Brandser E, Marsh JL. Acetabular fractures: easier classification with a systematic approach. AJR 1998; 171:1217-1228

Wall Fractures



Posterior Wall



**Posterior Column
with Posterior Wall**



**Transverse with
Posterior Wall**



Anterior Wall

Column Fractures



Posterior Column



Anterior Column



Both-Column



**Posterior Column
with Posterior Wall**



**Anterior Column with
Posterior Hemitransverse**

Transverse Fractures



T-Shaped



**Transverse with
Posterior Wall**



Transverse



**Anterior Column with
Posterior Hemitransverse**



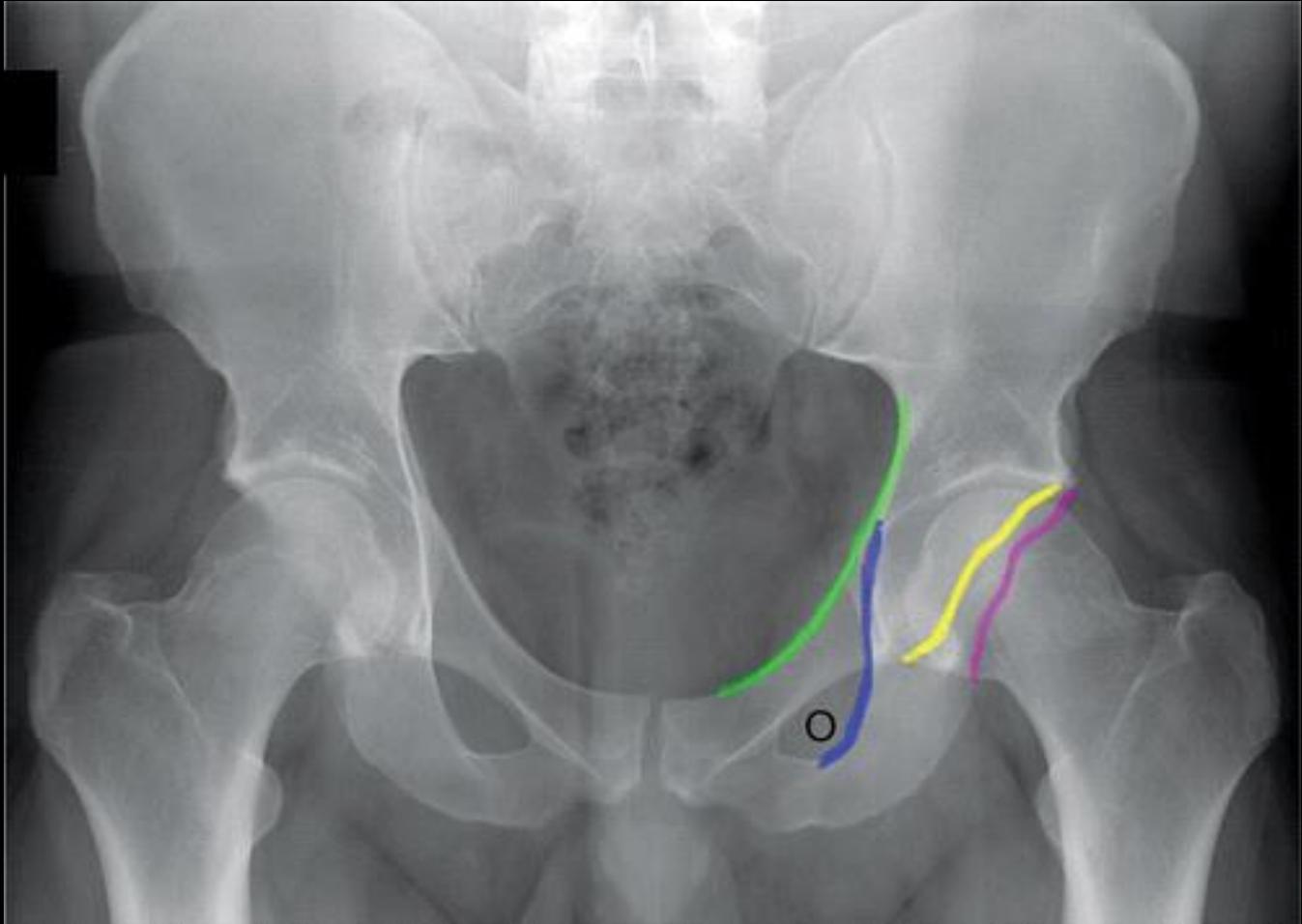
Classification of Common Acetabular Fractures: Radiographic and CT Appearances

N. Jarrod Durkee^{1,2}
Jon Jacobson¹
David Jamadar¹
Madhav A. Karunakar³
Yoav Morag¹
Curtis Hayes^{1,4}

OBJECTIVE. Accurate characterization of acetabular fractures can be difficult because of the complex acetabular anatomy and the many fracture patterns. In this article, the five most common acetabular fractures are reviewed: both-column, T-shaped, transverse, transverse with posterior wall, and isolated posterior wall. Fracture patterns on radiography are correlated with CT, including multiplanar reconstruction and 3D surface rendering.

CONCLUSION. In the evaluation of the five most common acetabular fractures, assessment of the obturator ring, followed by the iliopectineal and ilioischial lines and iliac wing, for fracture allows accurate classification. CT is helpful in understanding the various fracture patterns.

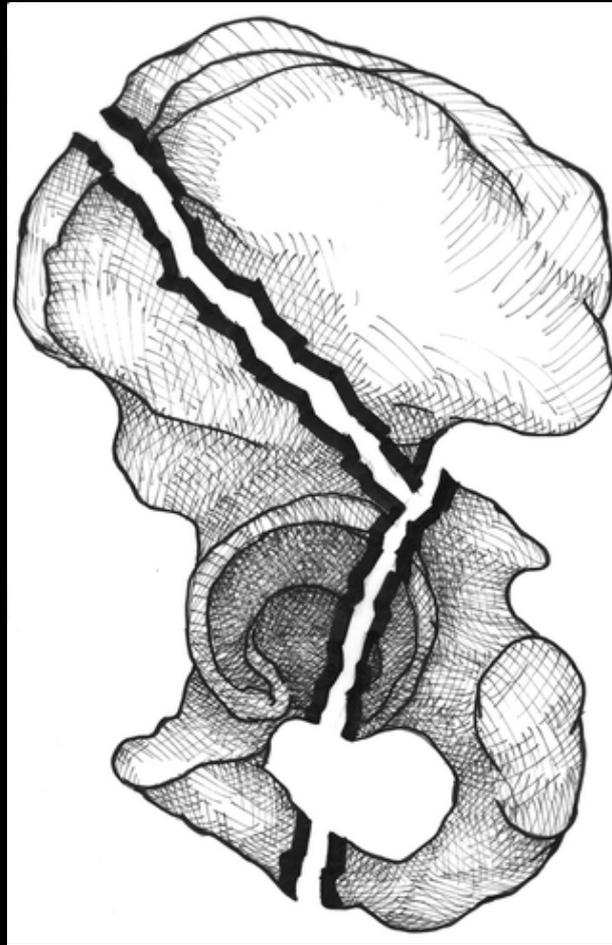




5 major type

- Both Column Fracture
- T-shape Fracture
- Transverse Fracture
- Transverse Posterior Wall Fracture
- Isolated Posterior Wall Fracture

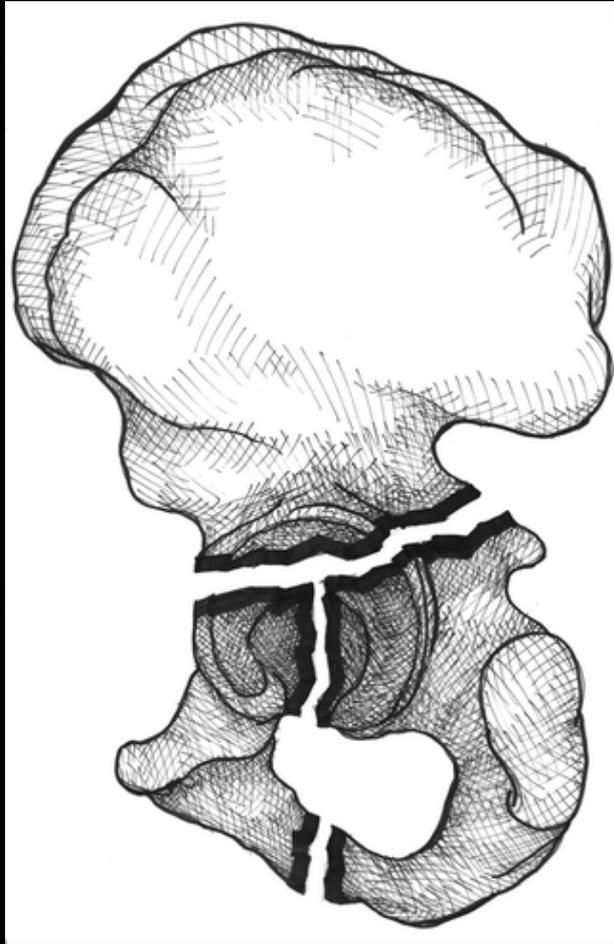
Both Column Fracture



Both Column Fracture



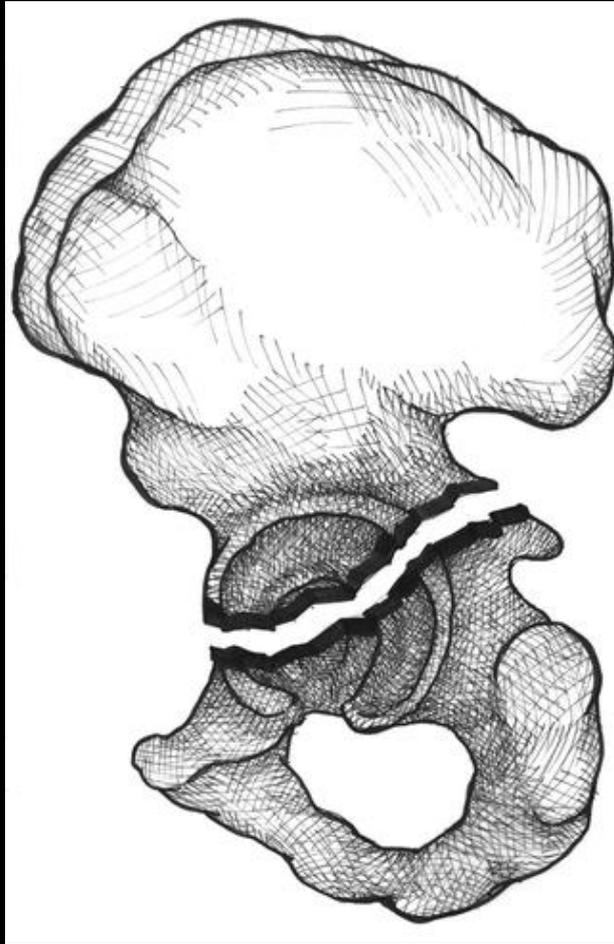
T- Shaped Fracture



T- Shaped Fracture



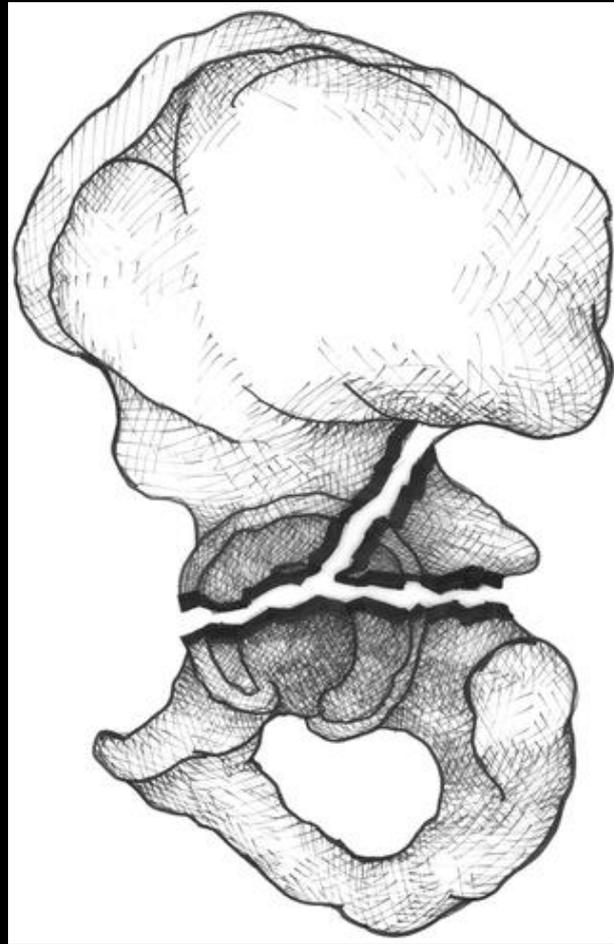
Transverse Fracture



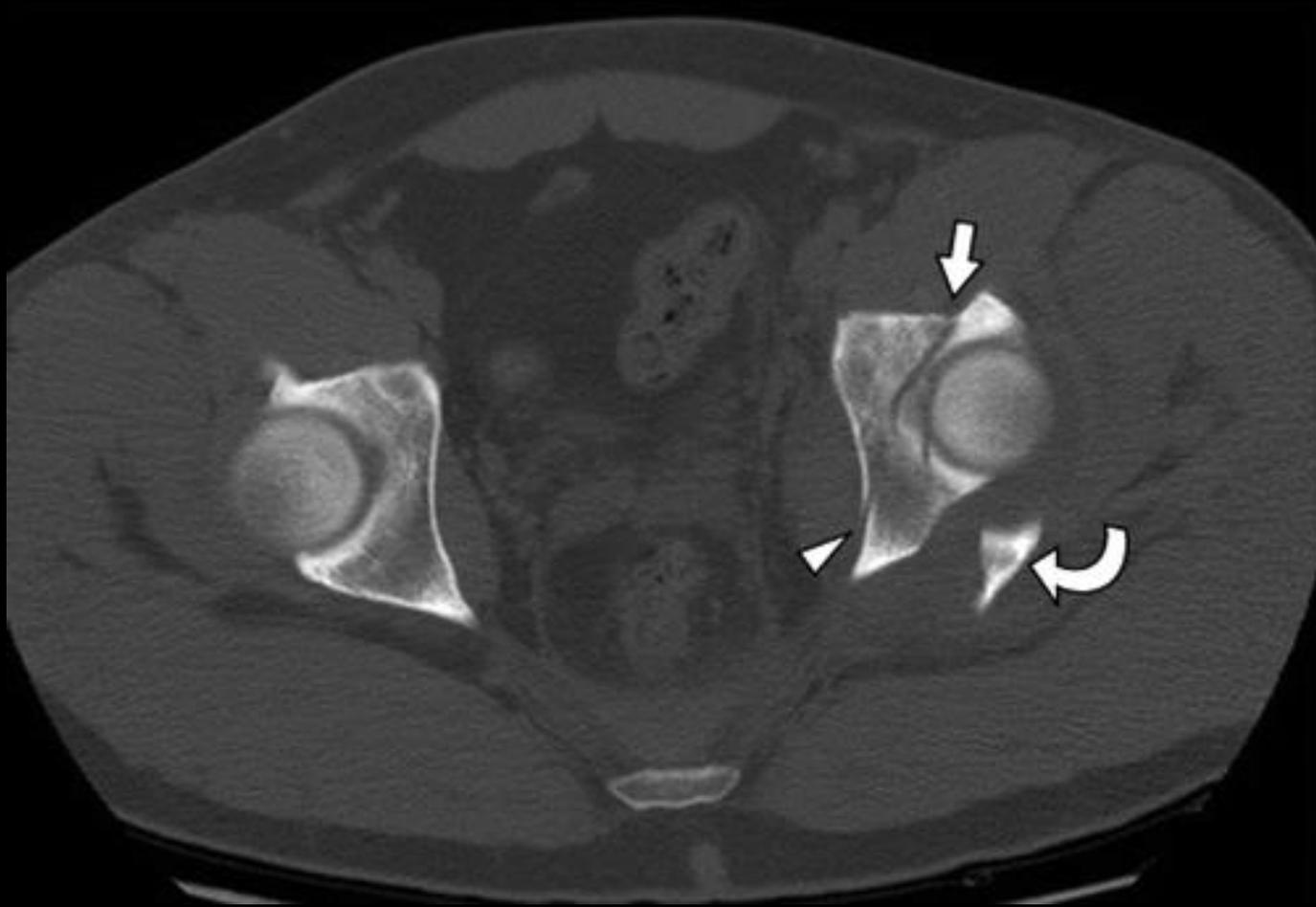
Transverse Fracture



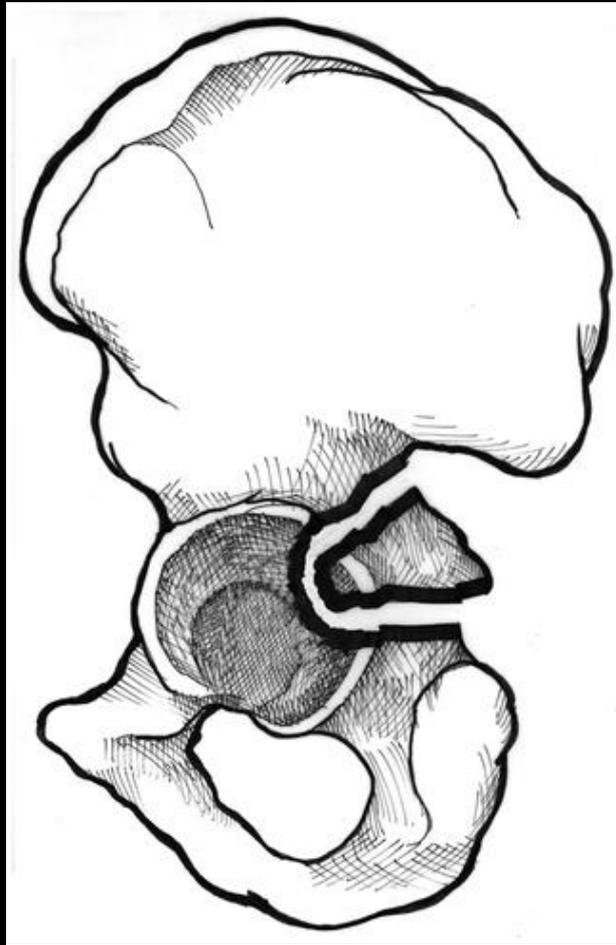
Transverse with Posterior Wall Fracture



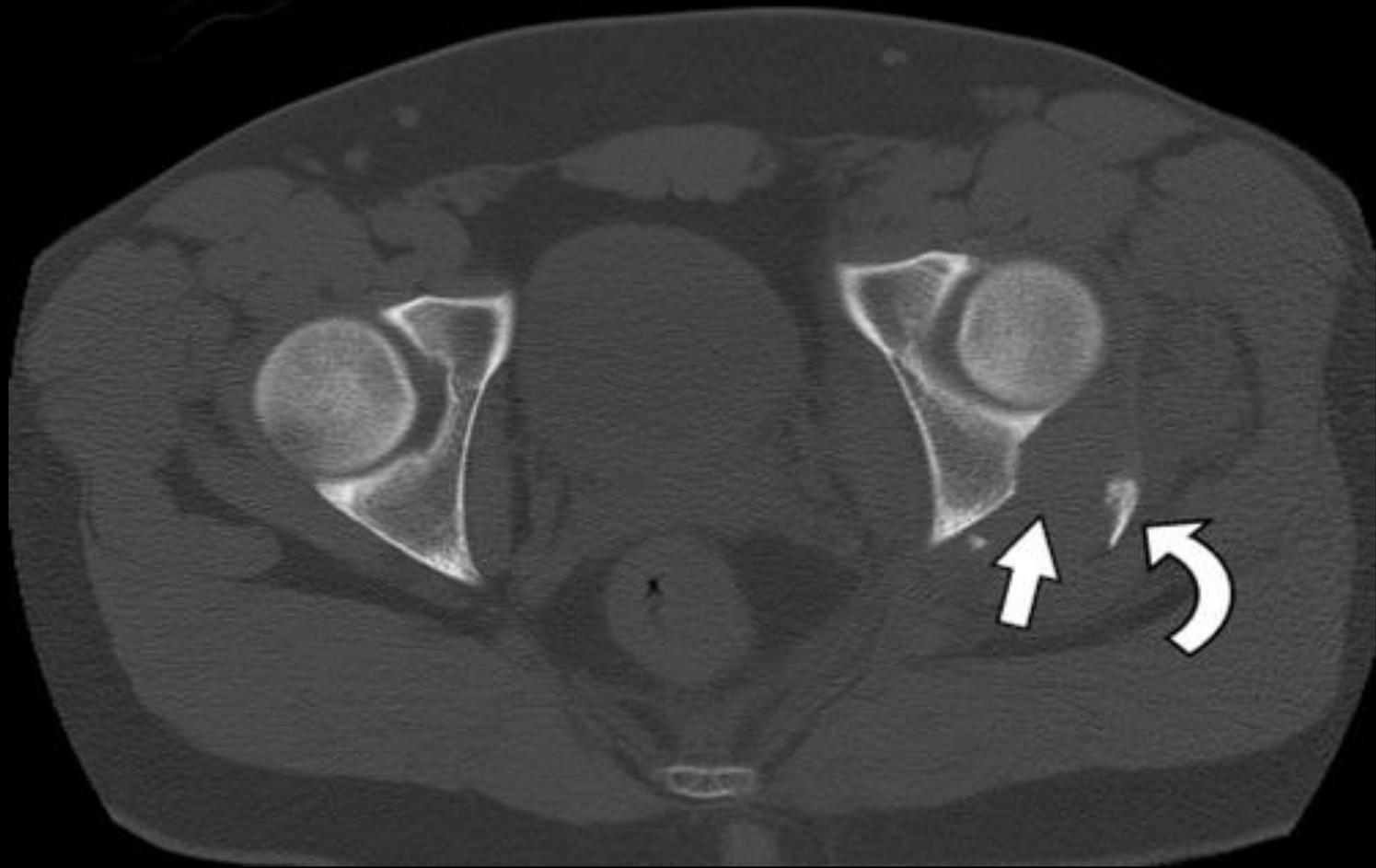
Transverse with Posterior Wall Fracture

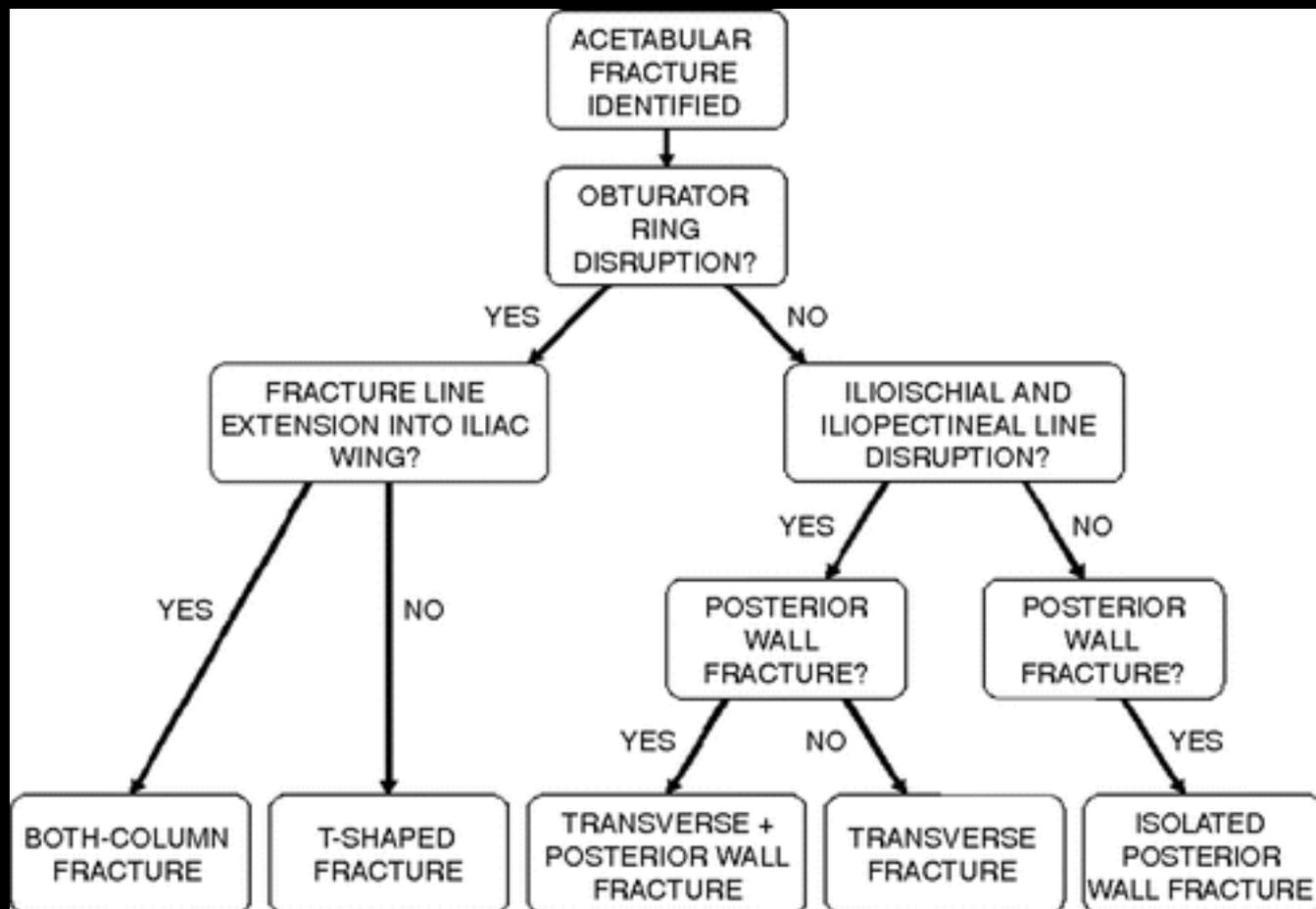


Isolated Posterior Wall Fracture



Isolated Posterior Wall Fracture

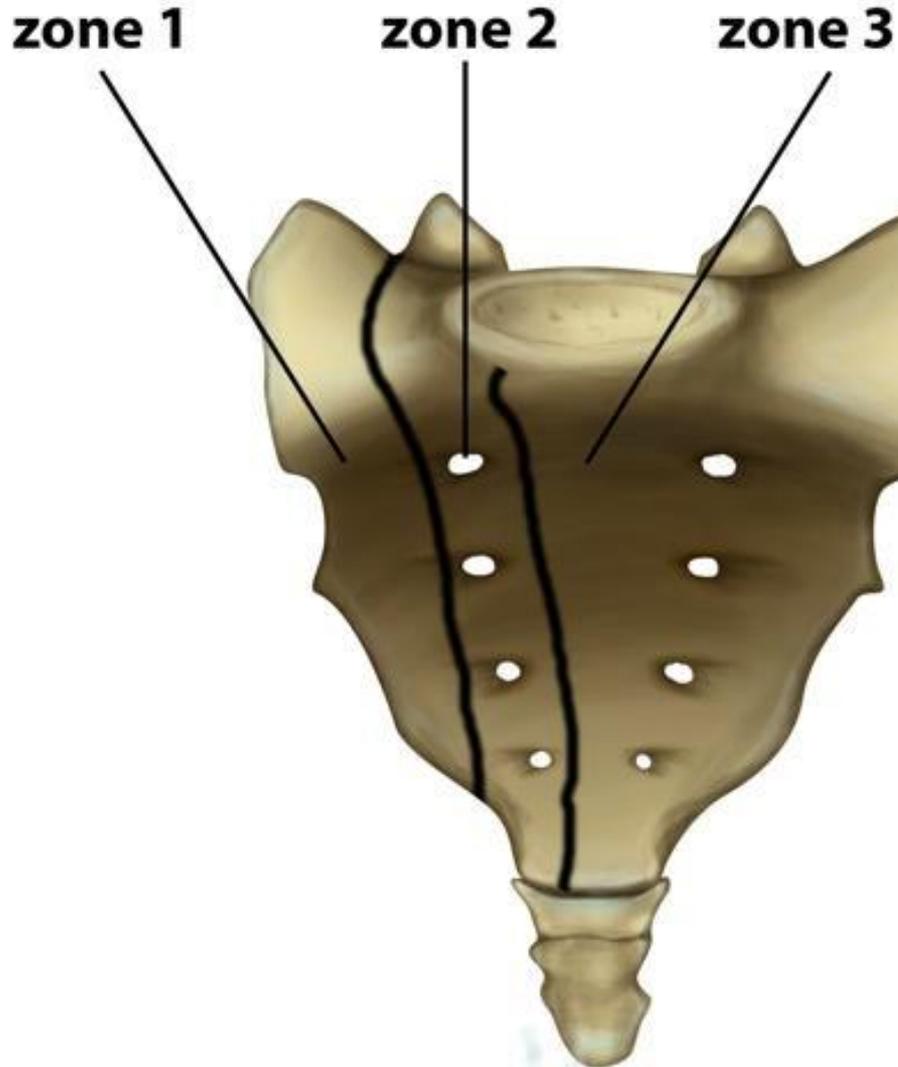




- “Although fracture of the obturator ring may be seen in combination with acetabular fractures, it is important to note that obturator ring fractures may be associated with other pelvic injuries outside of the acetabulum, such as lateral pelvic compression injury, where the obturator ring fracture is associated with either an ipsilateral or contralateral sacral fracture”

| Approaches | Indications | Risks |
|--|---|---|
| Anterior Approach (Ilioinguinal) ▶ | <ul style="list-style-type: none"> • anterior wall and anterior column ? • both column fracture • posterior hemitransverse | <ul style="list-style-type: none"> • femoral nerve injury • LFCN injury • thrombosis of femoral vessels • laceration of corona mortis in 10-15%. ? ? |
| Posterior Approach (Kocher-Langenbach) ▶ | <ul style="list-style-type: none"> • posterior wall and posterior column fx ? ? • <u>most transverse and T-shaped</u> • combination of above | <ul style="list-style-type: none"> • increased HO risk compared with anterior approach • sciatic nerve injury (2-10%) ? ? • damage to blood supply of femoral head (medial femoral circumflex) |
| Extensile Approach (extended iliofemoral) ▶ | <ul style="list-style-type: none"> • only single approach that allows direct visualization of both columns • associated fracture pattern 21 days after injury • some transverse fxs and T types ? ? • some both column fxs (if posterior comminution is present) ? | <ul style="list-style-type: none"> • massive heterotopic ossification • posterior gluteal muscle necrosis |
| Modified Stoppa Approach ▶ ? | <ul style="list-style-type: none"> • access to quadrilateral plate to buttress comminuted medial wall fractures | <ul style="list-style-type: none"> • Corona mortis must be exposed and ligated in this approach |

Denis classification



M. Skalski



Denis classification

zone 1

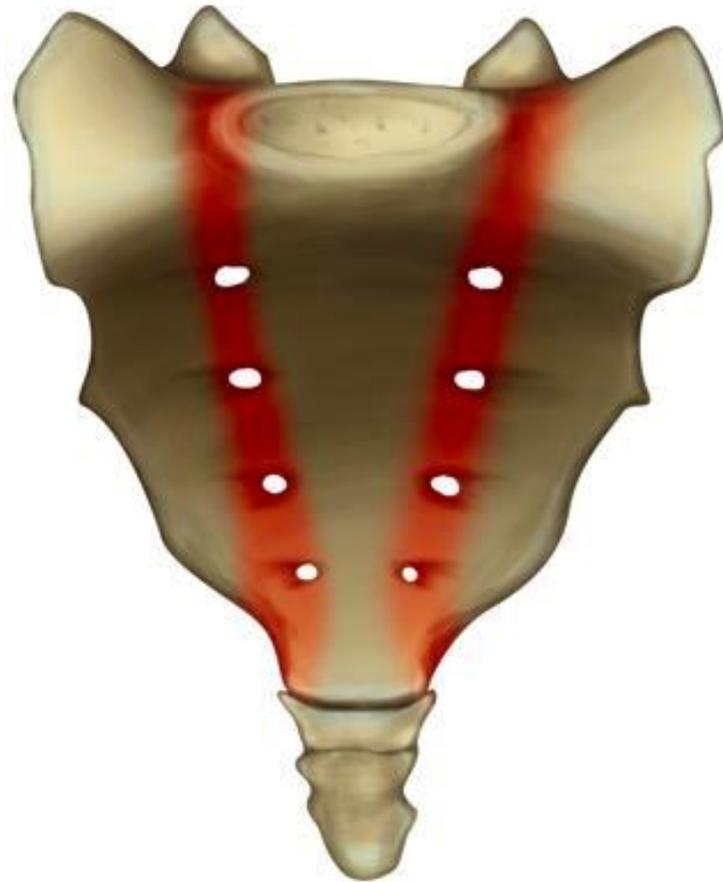


M. Skalski



Denis classification

zone 2

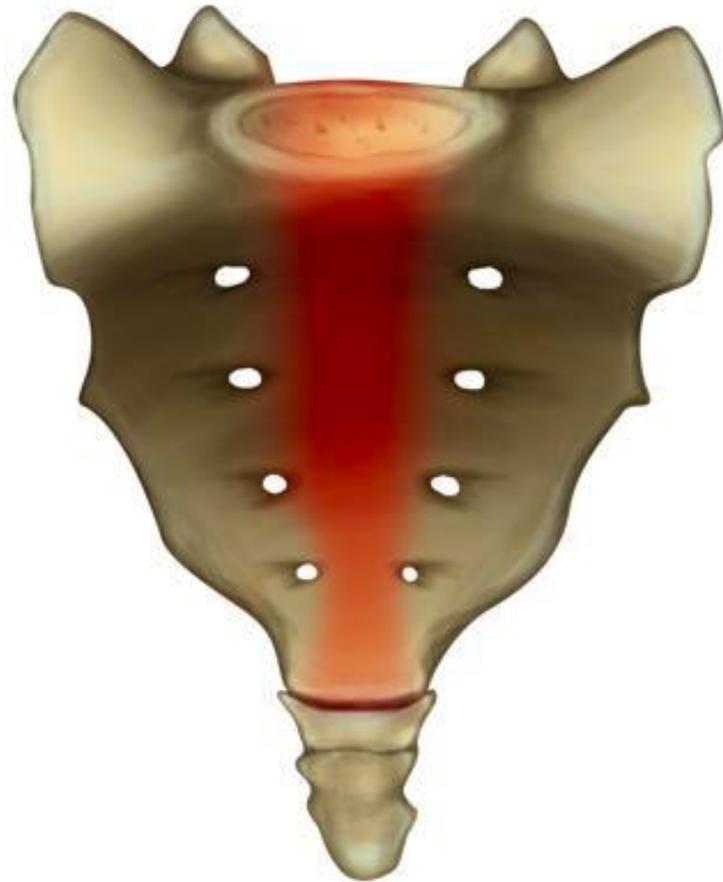


M. Skalski



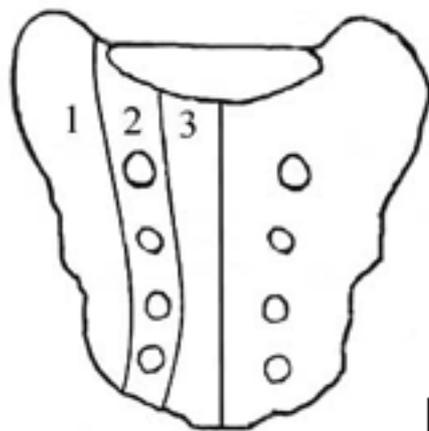
Denis classification

zone 3

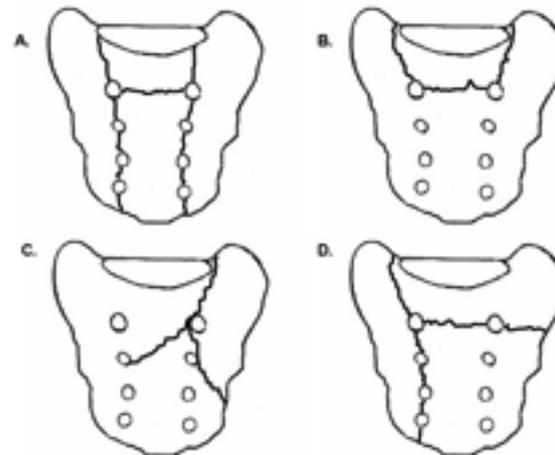


M. Skalski



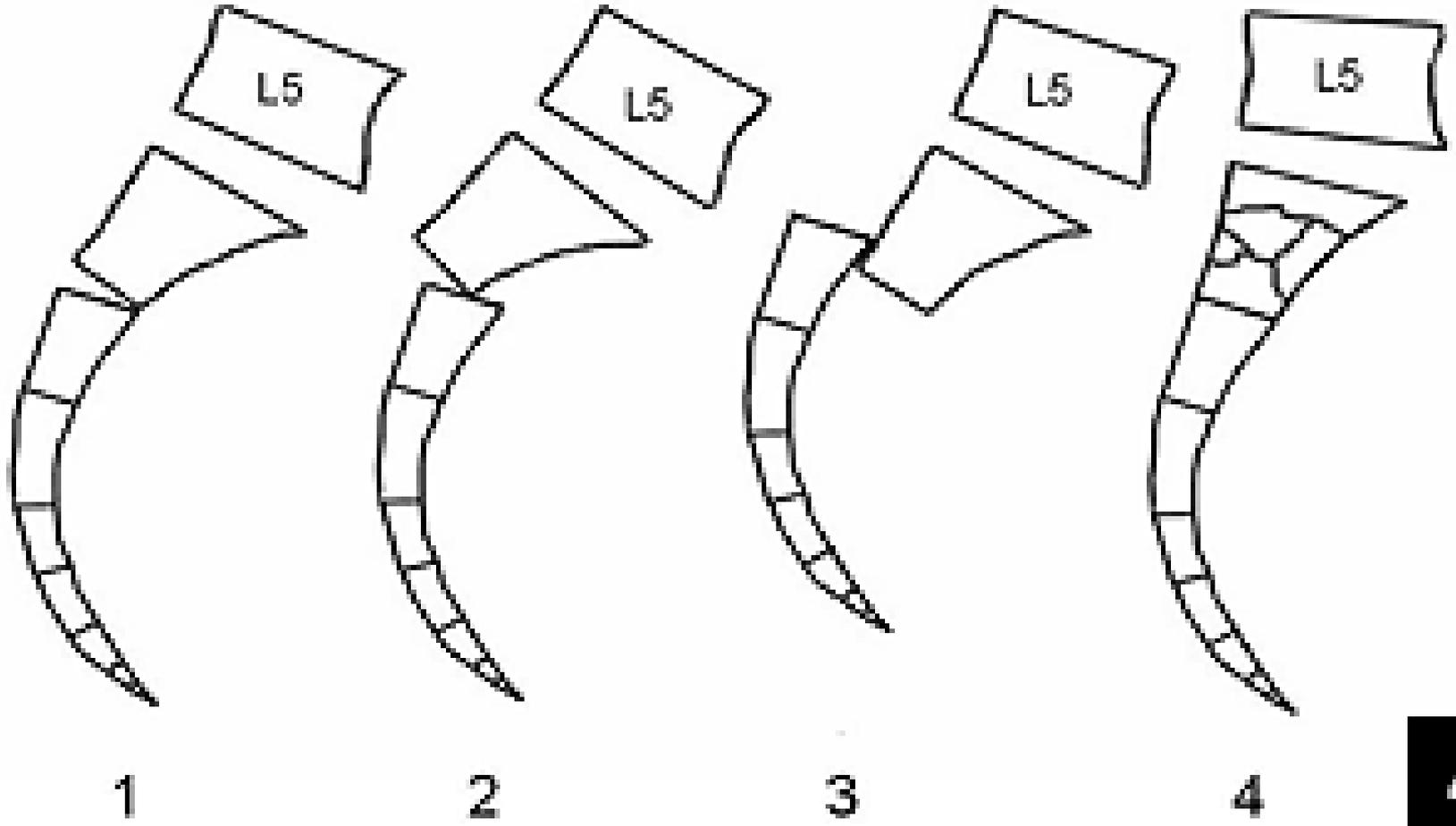


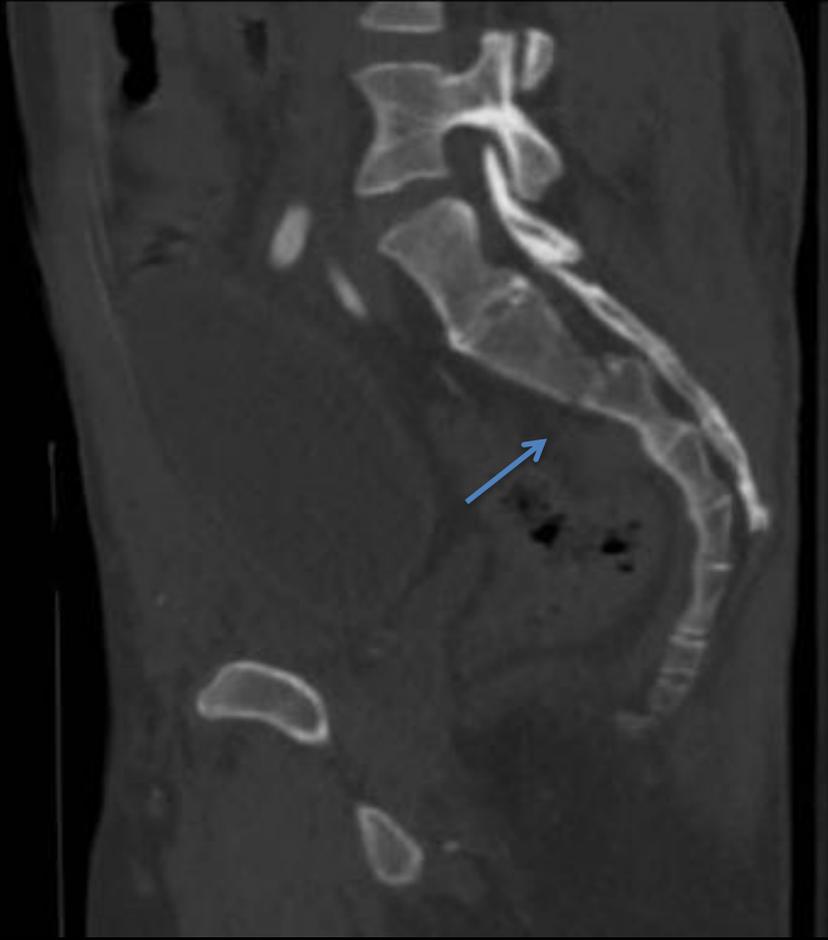
2



3

Figure 2: Denis classification of sacral fractures. **Figure 3:** Descriptive patterns of transverse sacral fractures. H (A), U (B), Lamba (C), and T (D) patterns.







OEC

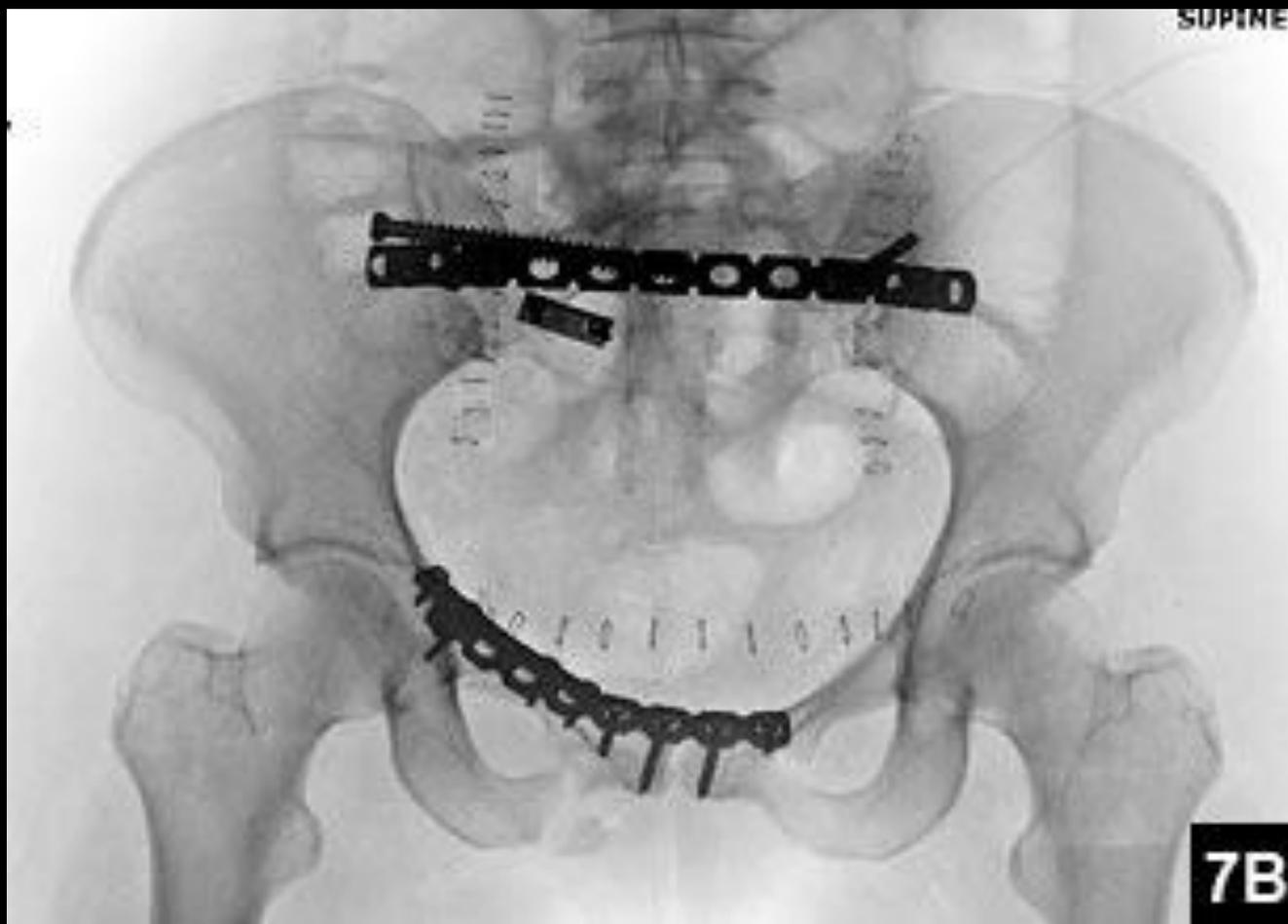
F PELVIS
I3117
HWARTZ
#1726

1



83 kVp
38 mA

Posterior Tension Band Fixation



References

1. <http://www.orthobullets.com/trauma/1034/acetabular-fractures>
2. Classification of Common Acetabular Fractures: Radiographic and CT Appearances N. Jarrod Durkee, Jon Jacobson, American Journal of Roentgenology 2006 187:4, 915-925
3. Acetabular fractures: easier classification with a systematic approach. E Brandser and J L Marsh American Journal of Roentgenology 1998 171:5, 1217-1228