Pelvic injury

FIFTH YEAR – TIKRIT MEDICAL COLLEGE

pelvic bones function

- transmit Weight to both limbs.
- Protection of pelvic viscera.

Types of pelvic injury
pelvic ring fractures.
acetabular fractures.
isolated fractures (intact pelvic ring).
sacrococcygeal fractures.

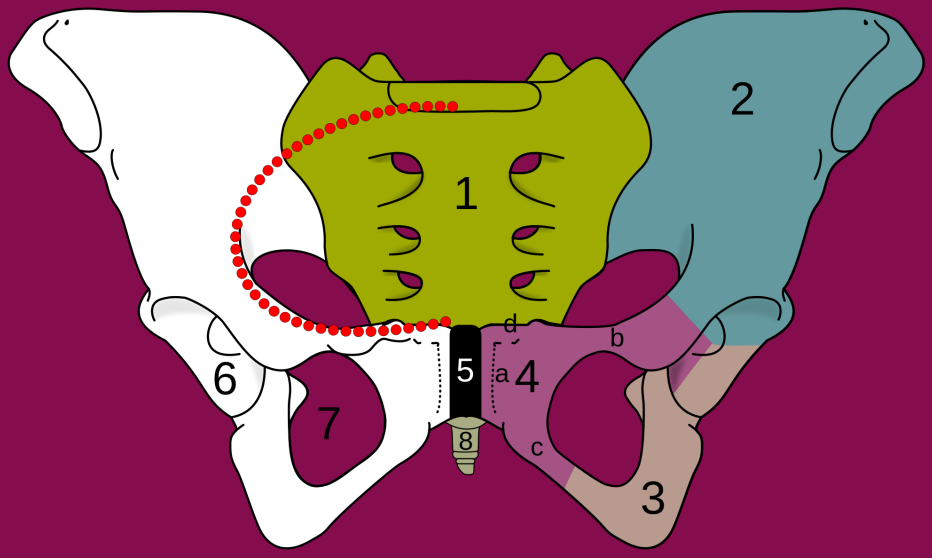
1-pelvic ring fractures.

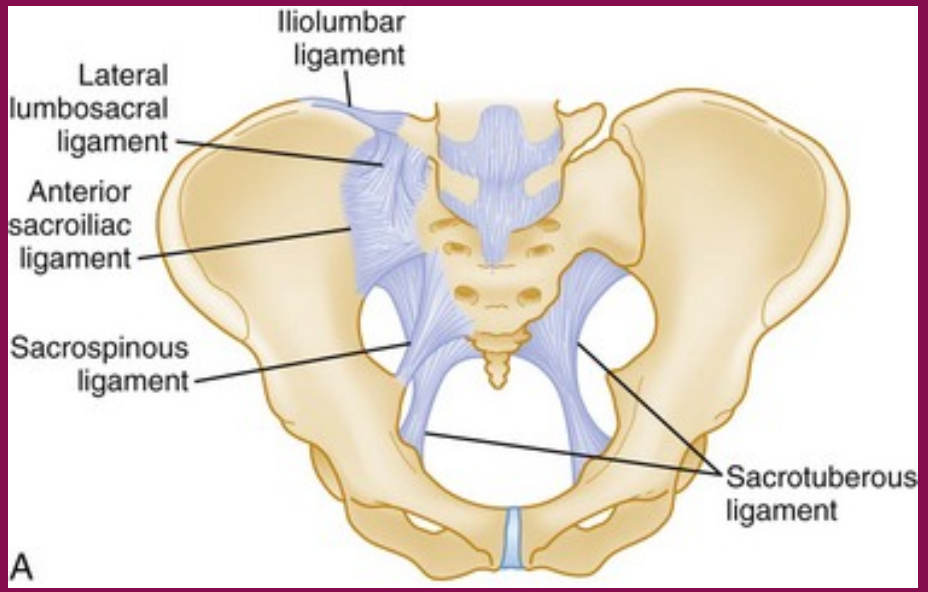
rigid bony ring ... ***any break in a point within that ring is associated with injury at another point of the ring except:-***

- ***fractures in children.***
- ***Direct trauma.***

The stability of this ring is maintained by the integrity of

- 2 innominate hip bones
- symphysis pubis
- sacroiliac ligaments (anterior and posterior sacroiliac ligaments)
  - the posterior sacroiliac ligament is the most important structure.



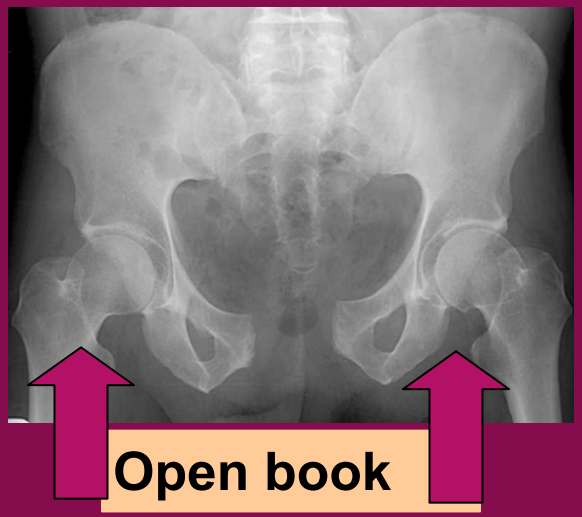


Mechanisms of injury

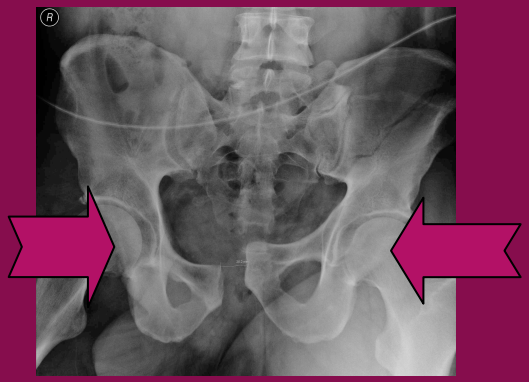
1- AP compression: frontal collision (RTA) leads to open book fracture.

2- Lateral compression: side on impact, roll over accidents leads to closed book fractures.

3- Vertical shear: FFH (standing) severely unstable fracture.
4- Complex injuries: more than one mechanism.



Open book



Closed book

Vertical shear

Clinical approach

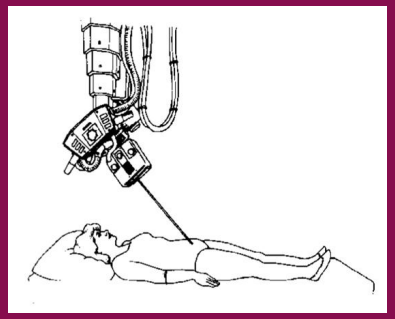
- History of major trauma.
- Multiple injured patient.
- Shock.
- Associated pelvic visceral injury (bladder, urethra , rectum, vessels etc ..)
- Local signs (echymosis, tenderness, inability to stand, swelling).
- Remember to do PR and PV
- Do neurovascular examination of both lower limbs

Imaging:

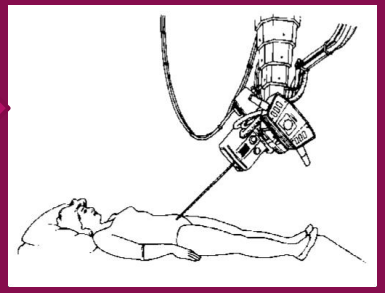
X- ray:- for pattern of injury and displacement

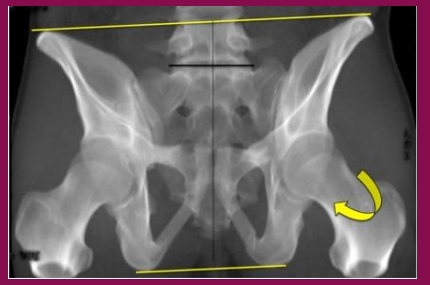
- AP view

- Pelvic inlet view



- Pelvic outlet view





CT scan:-

show the exact picture of the fracture and displacement pattern

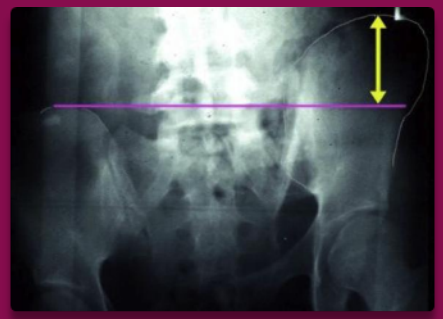
Young-Burgess Classification of pelvic ring fracture

APC

antero posterior compression

LC

Lateral compression



Vertical shear

Management of pelvic fracture

- **Resuscitation .. ABC**
- **PRBC:FFP:Platelets ideally should be transfused 1:1:1**
- **pelvic binder/sheet**
  - initial management of an unstable ring injury

- **external fixation**
  - unstable ring injury with ongoing blood loss
  - pelvic ring injuries with an external rotation component

Definitive treatment of pelvic ring fracture

- **Nonoperative .. weight bearing as tolerated**
  - **APC1widening of symphysis < 2.5 cm with intact posterior pelvic ring**
  - **isolated pubic ramus fractures**

- **Operative .. ORIF ..**
  - **symphysis diastasis > 2.5 cm**
  - **SI joint displacement > 1 cm**
  - **displacement or rotation of hemipelvis**

Complications

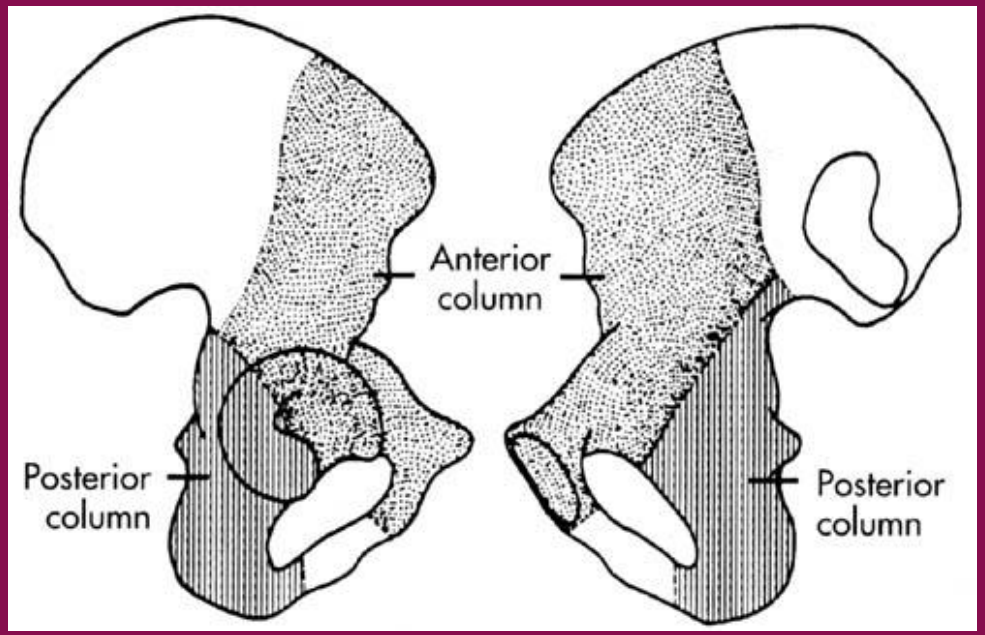
- Neurologic injury
- Visceral injury
- DVT and PE
- Urogenital Injuries
  - posterior urethral tear
  - bladder rupture
- Chronic instability
- Chronic pelvic pain

Acetabular Fractures

Anatomy

- The acetabulum is formed by the three pelvic bones (ilium. Ischium and pubis)

- acetabulum is supported by two columns of pelvic bone
  - posterior column
  - anterior column



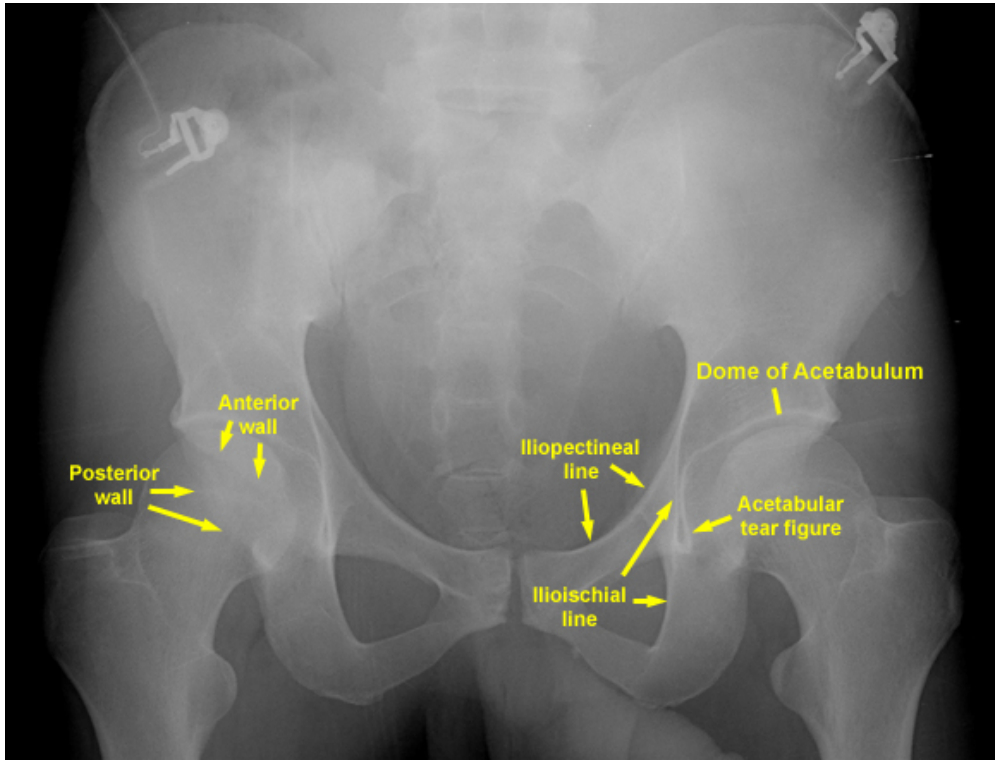
Epidemiology

- bimodal distribution
  - high energy blunt trauma for young patients
  - low energy (fall from standing height) for elderly patients
- posterior wall fractures are most common

- Associated conditions
  - extremity injury (36%)
  - Sciatic nerve palsy (13%)
  - spine injury (4%)

6 radiographic landmarks of the acetabulum

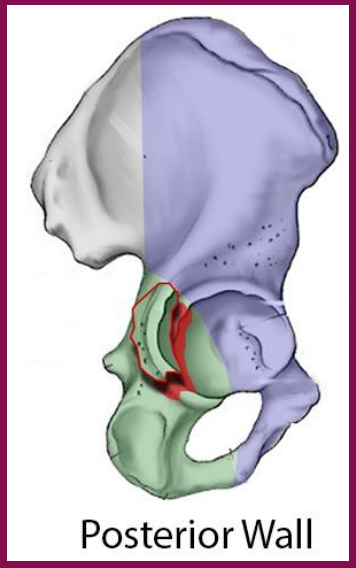
- iliopectineal line (anterior column)
- ilioischial line (posterior column)
- anterior rim
- posterior rim
- teardrop
- weight bearing roof



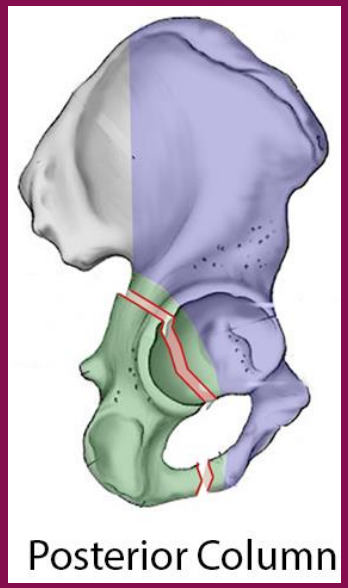
Jude and lotournel classification of acetabular fracture

A- elementary

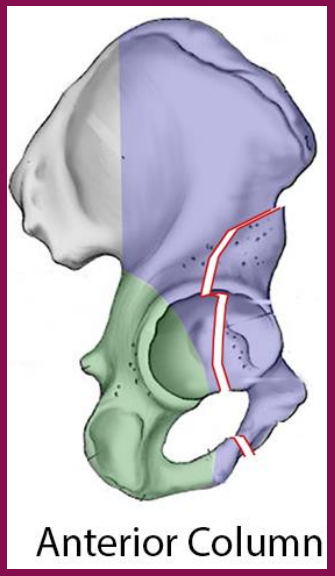
Posterior wall



Posterior column



Anterior column

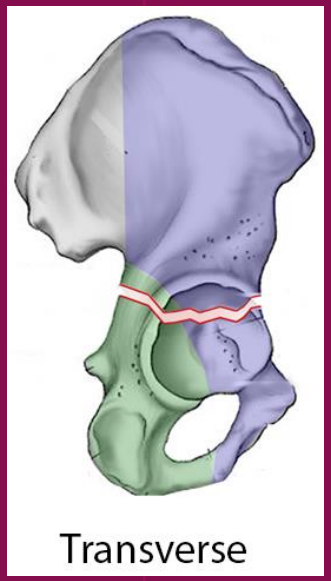


Jude and lotournel classification of acetabular fracture

A- elementary

Anterior wall

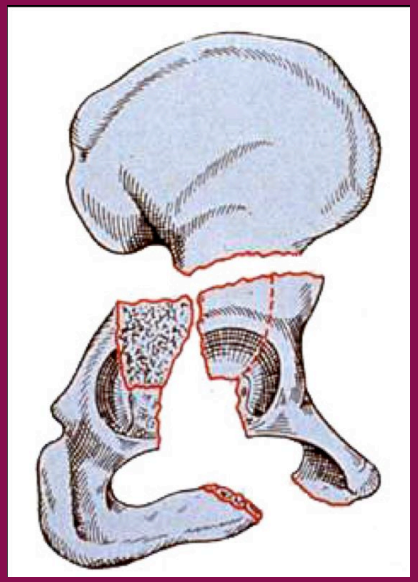
Transverse



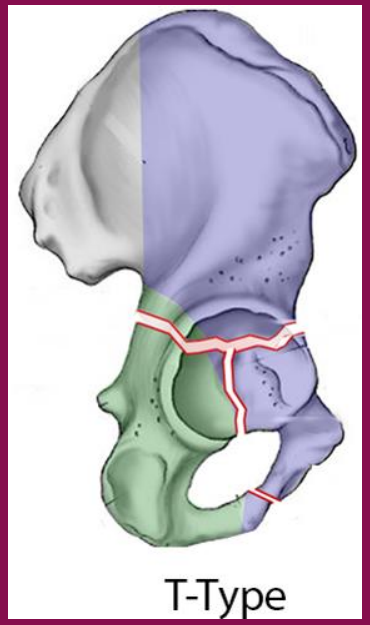
Jude and lotournel classification of acetabular fracture

B- Associated

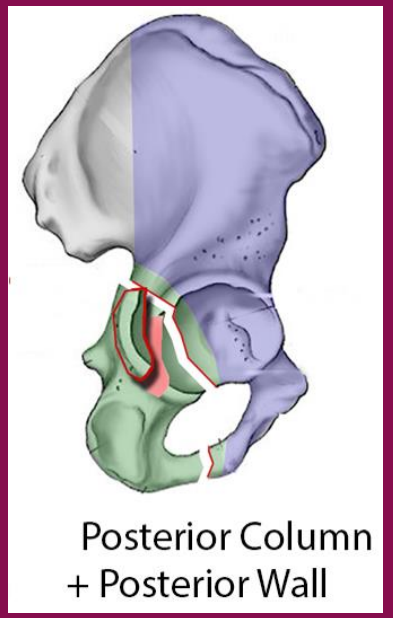
Associated Both Column



T Shaped

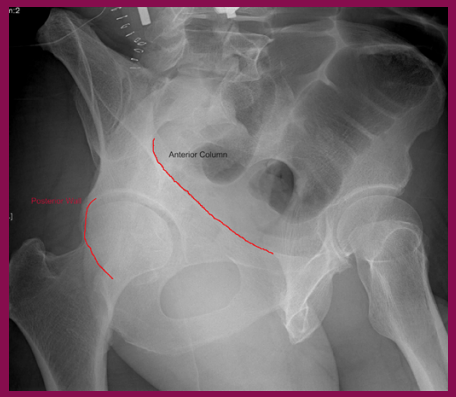


Post. column + Post. Wall

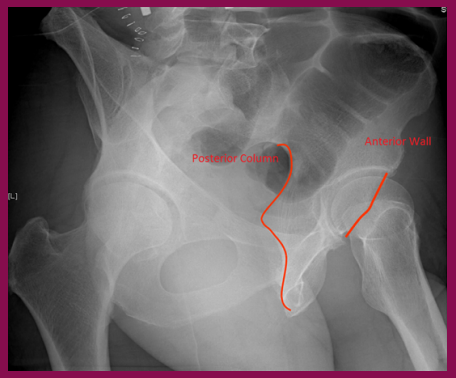


Radiographs

- **AP pelvis**
- **Judet views (45 degree oblique views)**
  - obturator oblique



  - iliac oblique



- **inlet and outlet**

CT scan

- define fragment size and orientation
- identify loose bodies
- look for articular gap or step-of

Treatment

1- Nonoperative .. Traction then protected weight bearing for 6-8 weeks in :

- minimally displaced fracture (< 2mm)
- < 20% posterior wall fractures
- femoral head remains congruent with weight bearing roof

Operative treatment …ORIF in :

- displacement of roof (>2mm)
- posterior wall fracture involving > 40-50%
- marginal impaction
- intra-articular loose bodies
- irreducible fracture-dislocation

Complications

- Post-traumatic DJD
- Heterotopic Ossification
- Osteonecrosis
- DVT and PE
- Infection
- Bleeding
- Neurovascular injury