

Lower Limb Radiology

Dr Sam Thenabudu

Consultant Adult & Paediatric Emergency Medicine

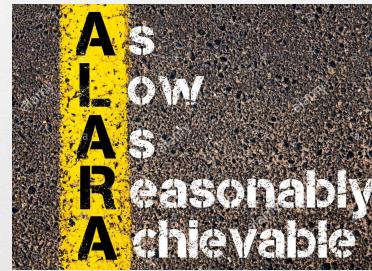
Aim of this talk



Radiology Principles



Ionising Radiation
(Medical Exposure)
Regulations (e-IRMER)



‘Shall we just get an XR...?’



The C Spine



A systematic approach

- A: ADEQUACY
 - Name & Date
 - C1-C7/T1 junction on lateral and AP (incl. PEG)
- B: BONES
 - Alignment: 3 lines
 - Trace all bones on each view
- C: CARTILAGE & SOFT TISSUE
 - Anterior soft tissue shadow
 - Disc spaces and C1→Peg distance

C-spine Adequacy

3 views:



Must include C1-C7/T1 junction

C-spine - Lateral

- Adequacy:
 - C1 – C7/T1 border



C-spine - Lateral

- Bones:
 - Alignment
 - 3 lines
 - Anterior spinal
 - Posterior spinal
 - Spino-laminar



C-spine - Lateral

Lateral

- Bones:
 - Trace each bone



C-spine - Lateral

- Cartilage & Soft tissue:



C-spine - Lateral

- Cartilage & Soft tissue:

- Anterior soft tissue shadow
 - 3mm to C3
 - 7 mm below C3



C-spine - Lateral

Cartilage & Soft tissue:

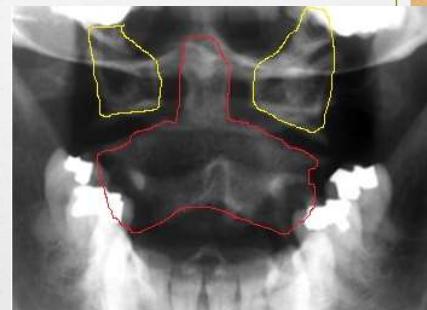
- Gap between Peg and C1 (<3mm in adults)
- Disc spaces
- Facet joints



C-spine - Peg

Bones:

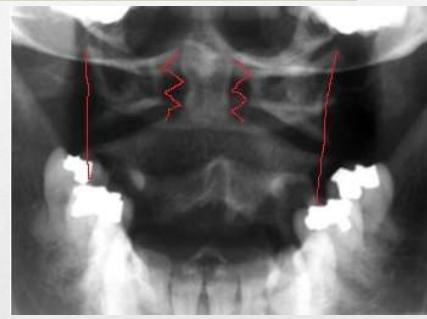
- Trace around lateral masses C1
- Trace around C2
- Examine each bone for lucent lines



C-spine - Peg

- Cartilage/Soft tissues:

- Check lateral masses C1 symmetrical about C2 and do not overlap borders C2



C-spine - AP

- Adequacy:

- C1 (incl. Peg) – T1

- Bones:

- Look at each vertebra
- Spinous processes
 - Alignment
 - Equal spacing

- Cartilage.....



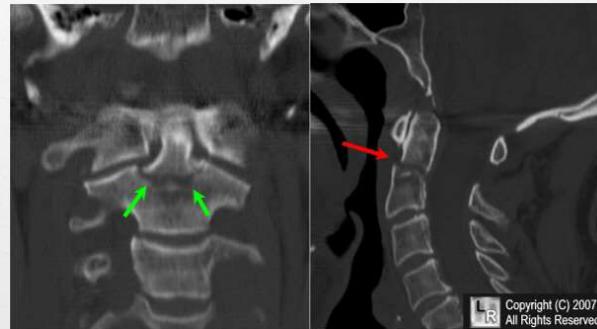
25 year old fell from quad bike



75 year old slipped and hit head



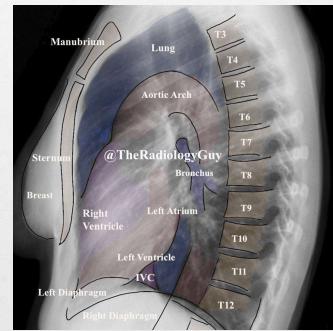
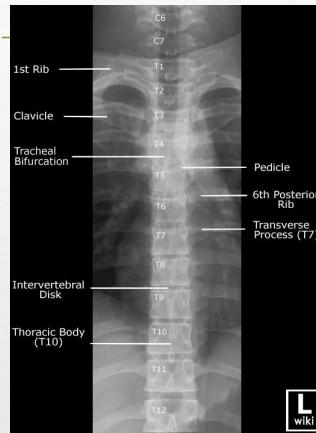
CT confirmation



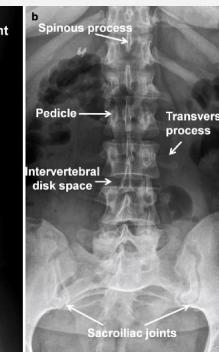
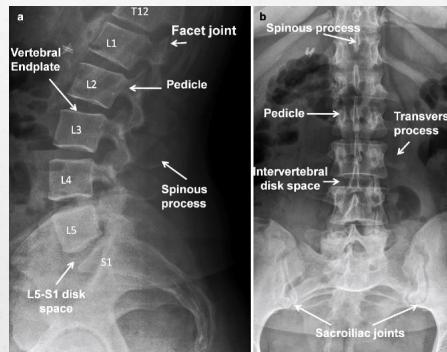
‘Clearing the C-spine’

- If no indication for C-spine imaging
- If normal C-spine imaging *and*:
 - No midline tenderness
 - No abnormal neurology
 - GCS 15/15 & not intoxicated

Thoracic spine – normal



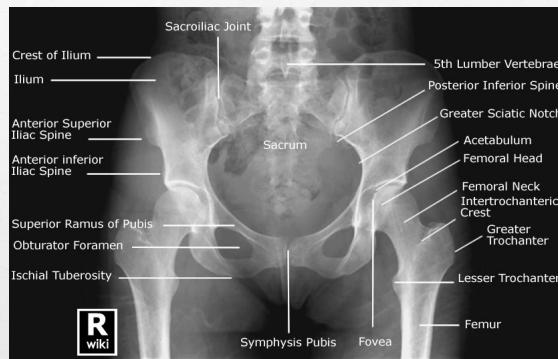
Lumbar Spine – normal



60 yr old fell from chair



Pelvis – normal

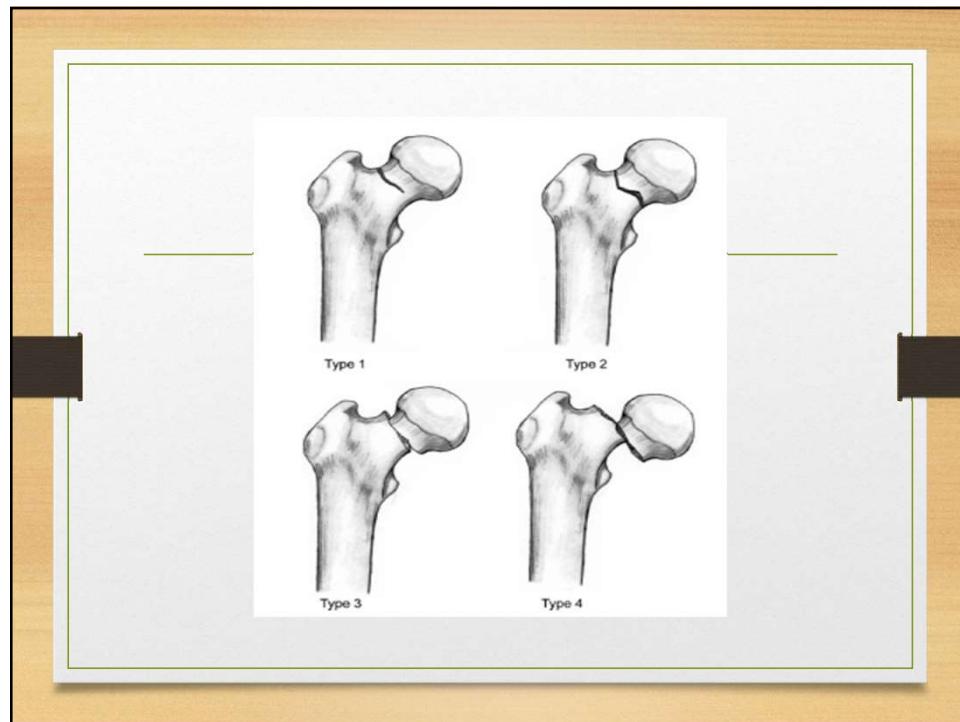


72 year old fell from chair



72 year old fell from chair

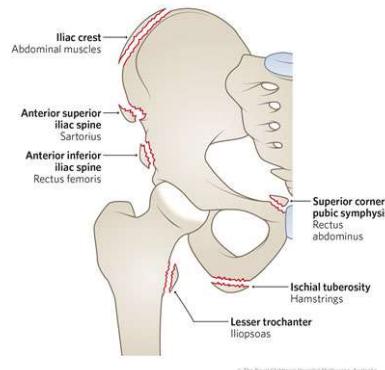




23 year old playing football

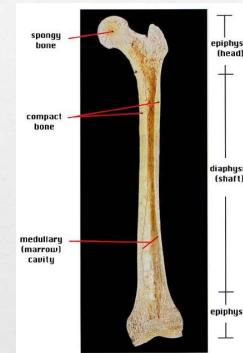


Insertions



Femur (shaft/diaphysis)

- Largest, strongest bone, lots of surrounding muscle
- High force injury
- Blood loss ~ 1000ml



General *systematic* approach

- A: ADEQUACY
 - Name & date
 - Whole bone visualised
 - Correct views
- B: BONES
 - Trace cortices
 - Scan whole bone: lucent or sclerotic areas or lines
 - Bones in the right place – dislocation scan be misses
- C: CARTILAGE & SOFT TISSUE
 - Joint spaces
 - Haemarthroses
 - Muscles and soft tissues: swelling, defects, foreign bodies, air

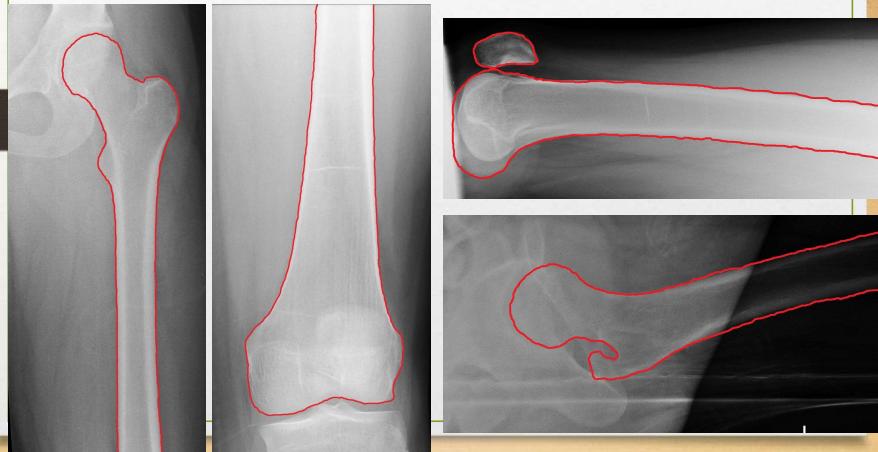
Femur – systematic approach

- Adequacy: AP & lateral of *whole* femur



Femur – systematic approach

- Bones: Trace the cortices



Femur – systematic approach

- Cartilage & *soft tissues*



35 Yr old fall from E-scooter



70 Yr old fall from mobility scooter



Knee – Normal

- Adequacy: AP & lateral to above patella groove and below head of fibula
- B: Outline and rest of bone of distal femur, patella, proximal tibia & fibula
- C: Joint space on AP, supra-patella pouch



34 yr male fell onto knee



40 Yr drunk down 12 steps



35 Yr gymnast slipped



Ankle - normal

- A: AP & lateral ideally to include from 5th MT to top distal 1/3 tibia
- B: Outline and rest of bone of tibia, fibula & talus and review rest of bones visible
- C: Mortice joint



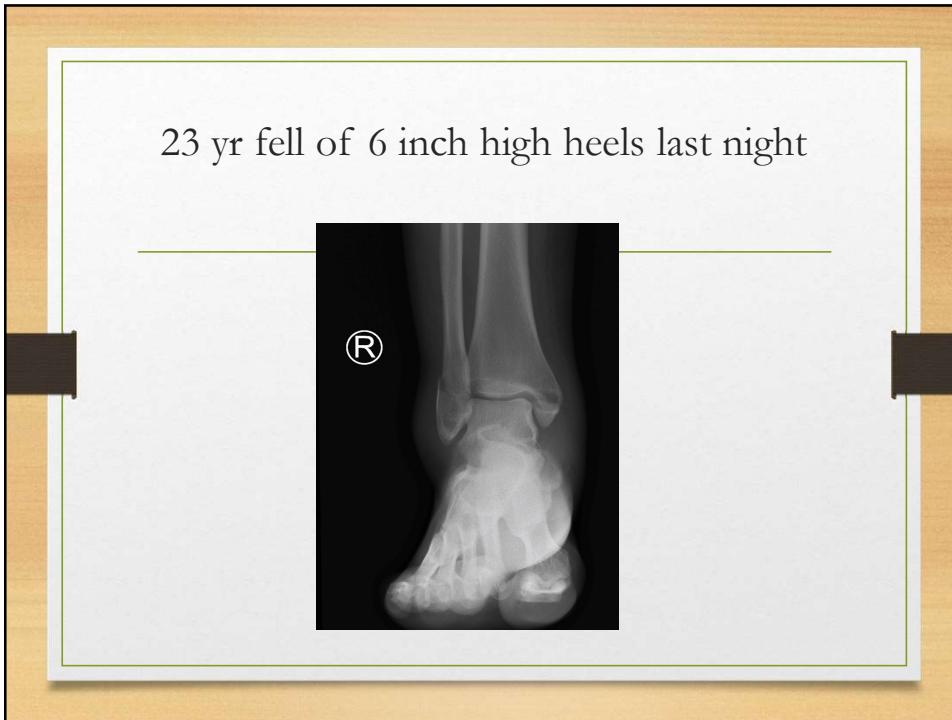
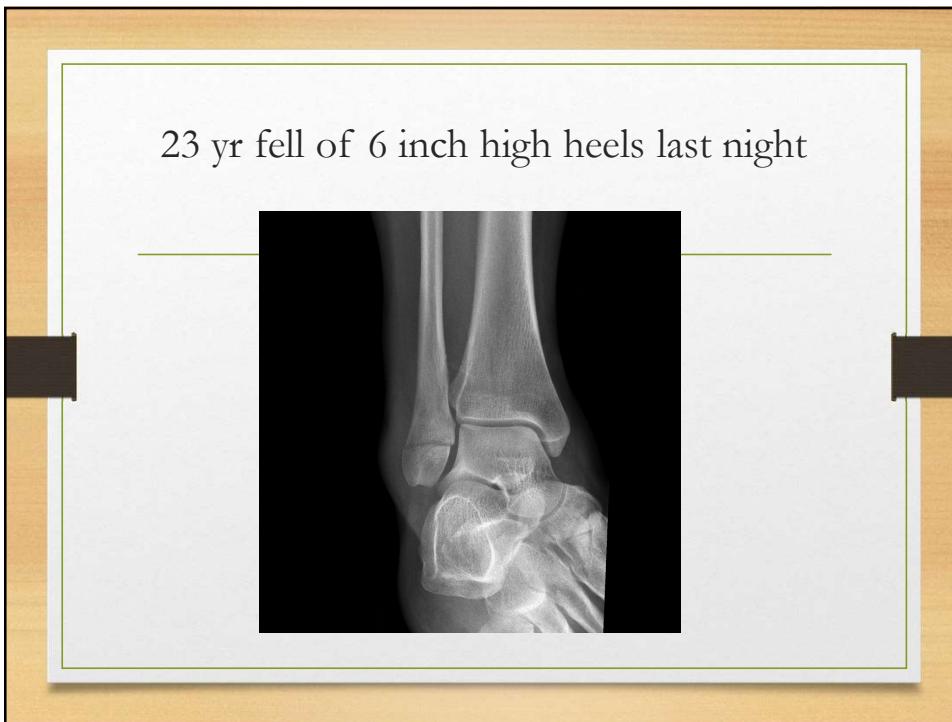
Ankle Fractures – Weber Classification

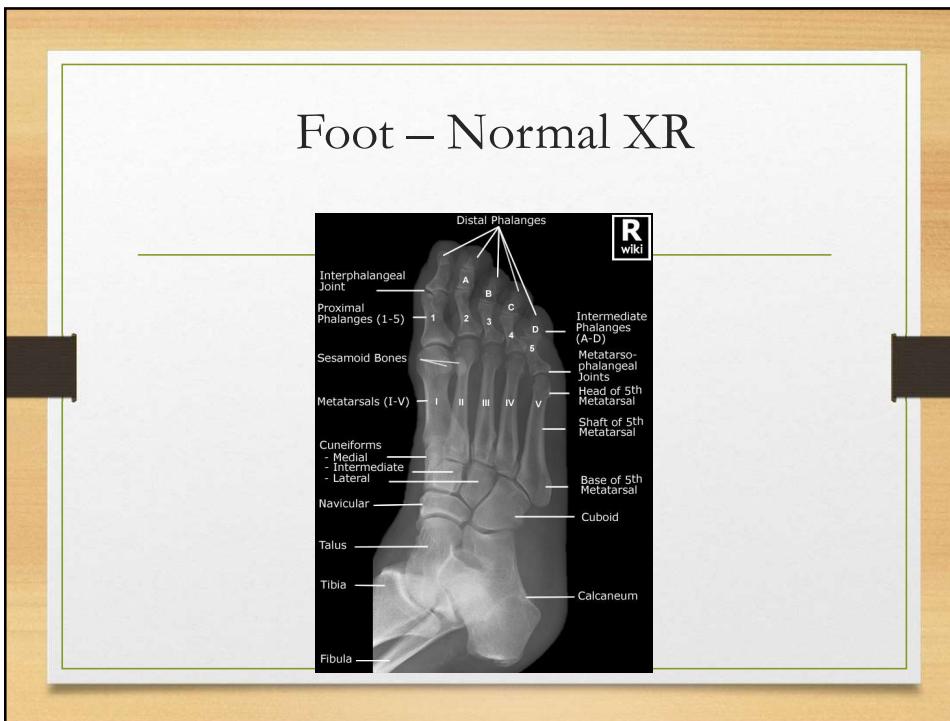


C: Above the mortice (almost) always unstable

B: Spiral starting at level of mortice: need to assess whether mortice disrupted

A: Below the level of the mortice: stable



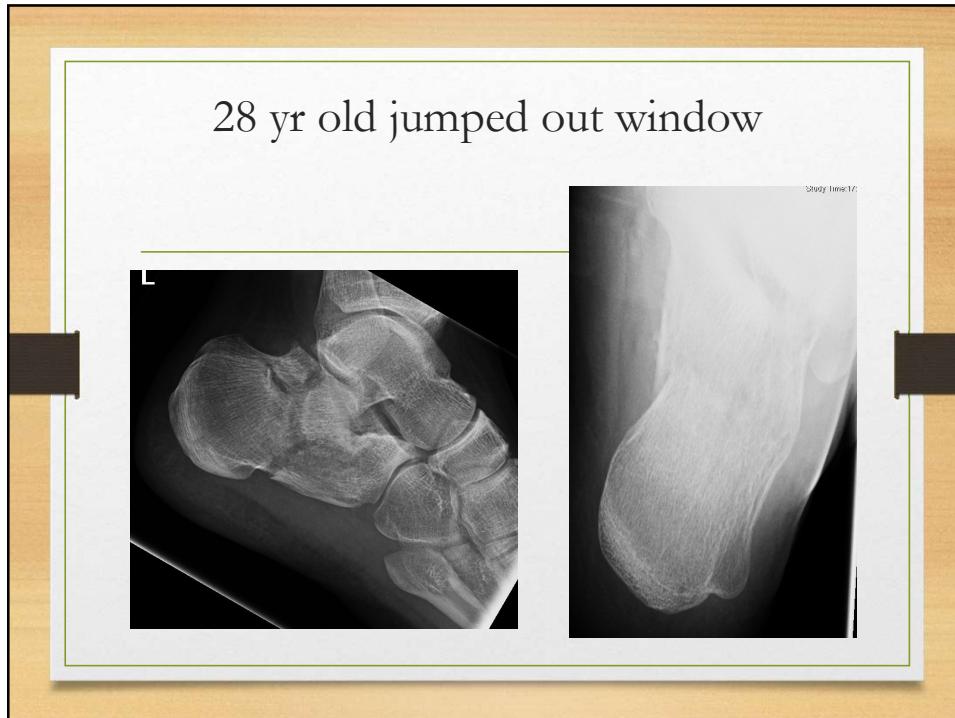
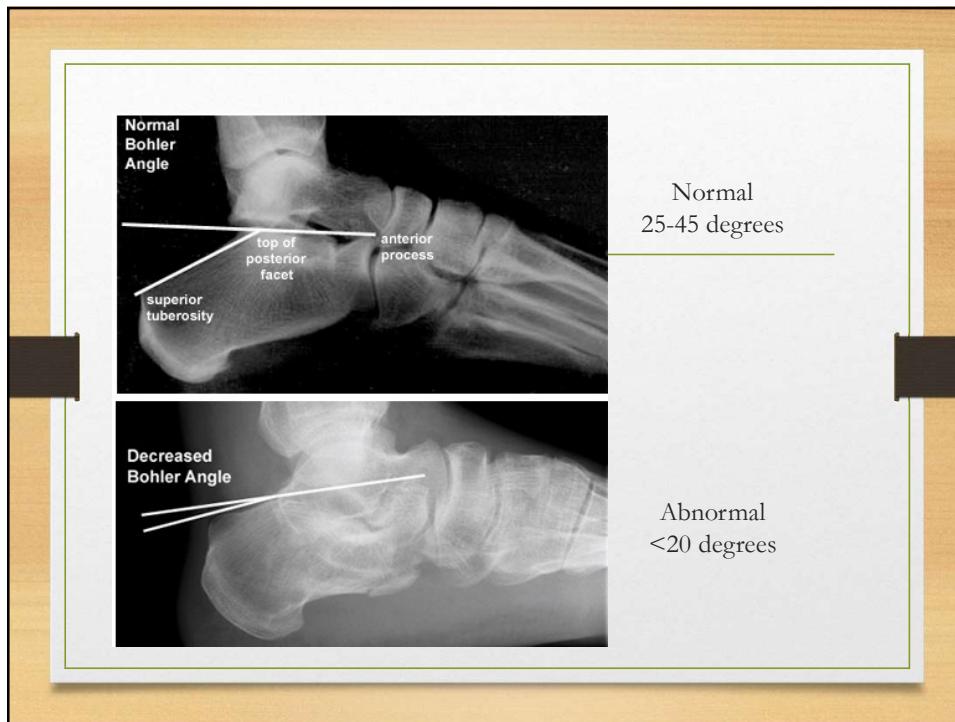


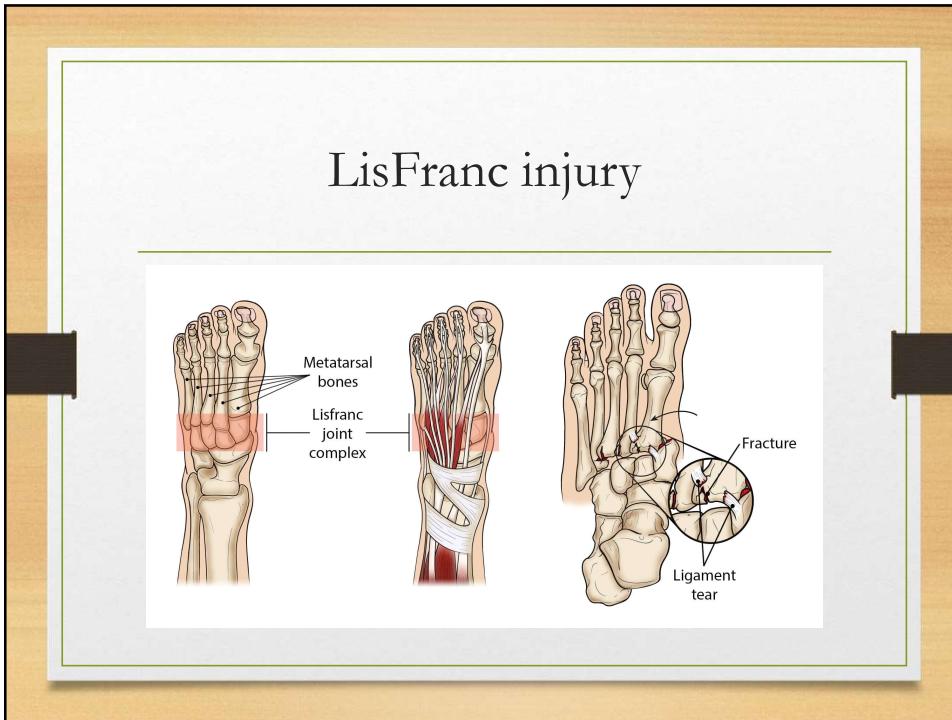
40 yr old kicked chair in anger



21 yr old fell slipped whilst belly dancing







50 yr ballerina stubbed bigtoe



ANY
QUESTIONS?

Sam.thenabadu@nhs.net

