Musculoskeletal Trauma: An Introduction

1. Glossary of Muskuloskeletal Terms
2. Types of Fractures
3. Basic Limb Anatomy
4. Imaging Classifications

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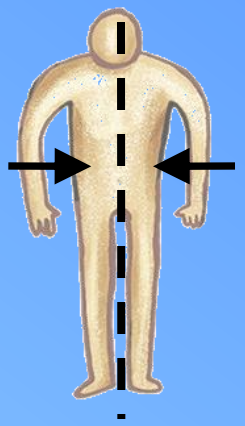
Medial:

Towards the midline

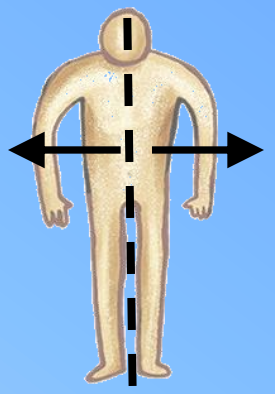
E.g.: The left eye is medial to the left ear



Lateral:

Away from the midline

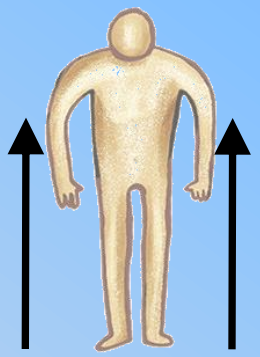
E.g.: The right ear is lateral to the right eye.



Cranial:

Towards head (cranium)

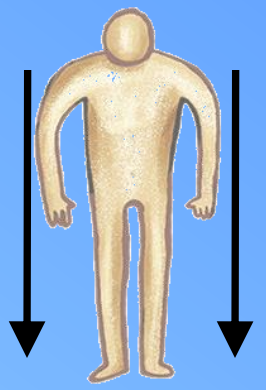
E.g.: The chest is cranial to the feet.



Caudal:

Towards the feet

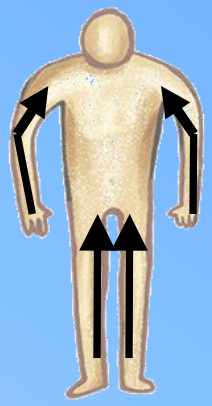
E.g.: The knees are caudal to the shoulders.



Proximal:

Towards the body. Generally used for the limbs.

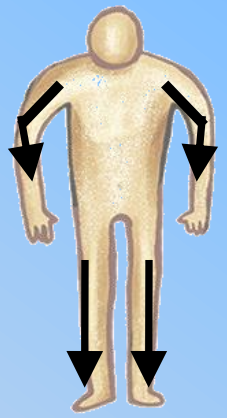
E.g.: The elbow is proximal to the hand



Distal:

Away from the body. Generally used for the limbs.

E.g.: The tibia is distal to the hip.



A Few More Terms:

Posterior:
Behind/towards the back

Anterior:
In front/towards the front of the body

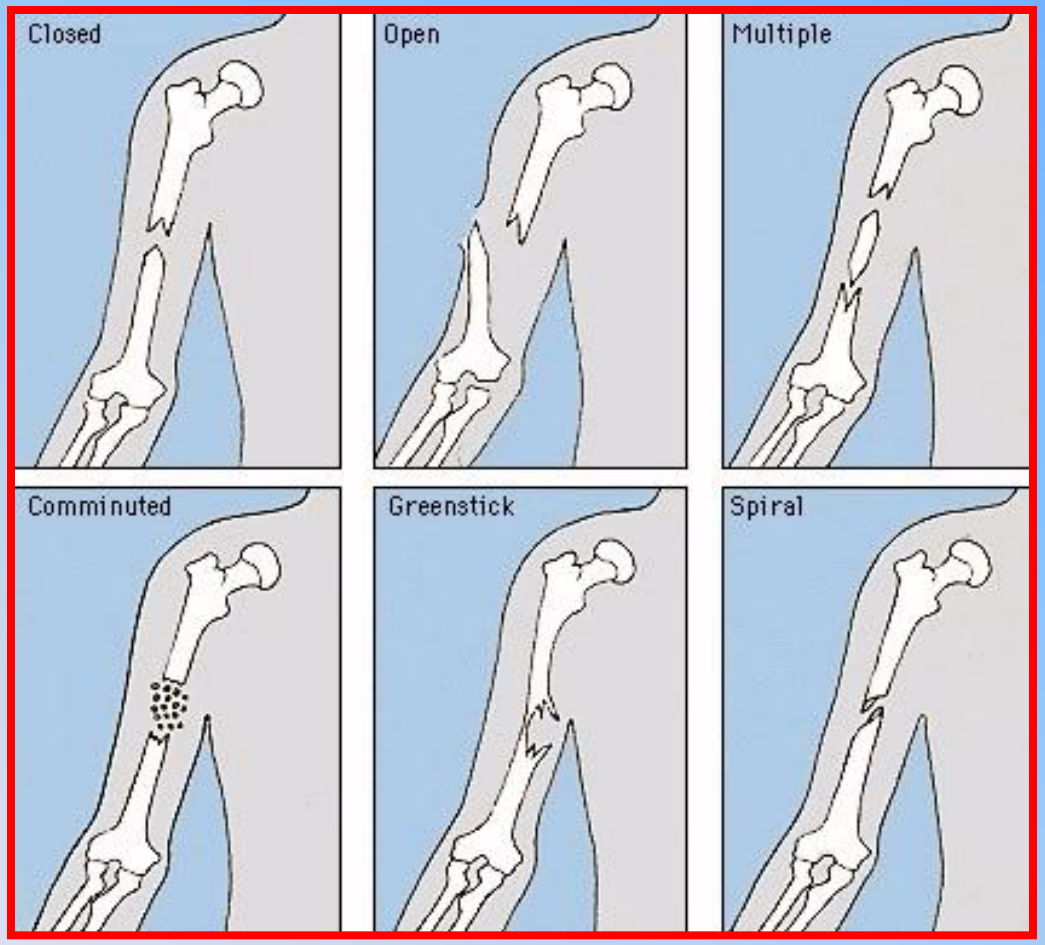
Superior: above

Superficial:
towards the skin surface

Deep:
Away from (deep to) the skin surface

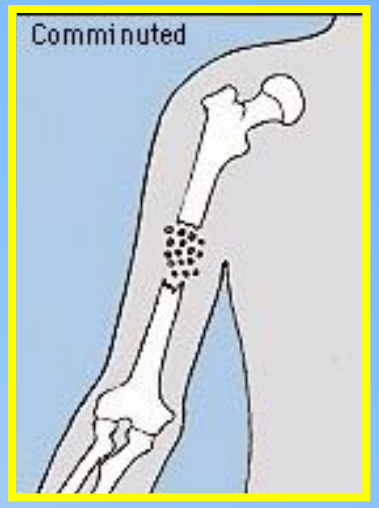
Inferior: below

Types of Fractures



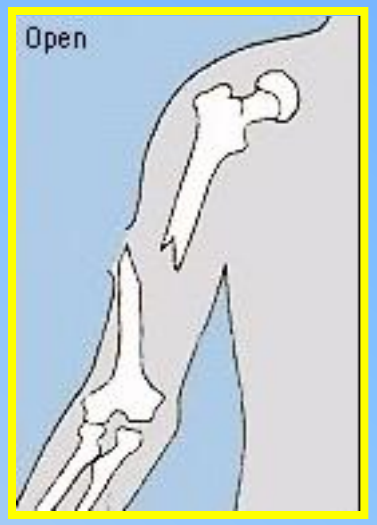
Comminuted Fracture

- A fracture in which bone is broken, splintered or crushed into a number of pieces.
- Easy to diagnose with an X-ray



Open Fracture

- Also called Compound fracture
- Bone penetrates the skin
- Needs immediate attention & often surgery
- Caused by high-energy injuries such as slip & falls, motor vehicle accidents, workplace or sports injuries



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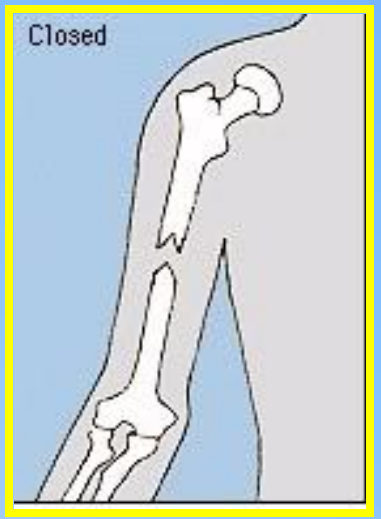
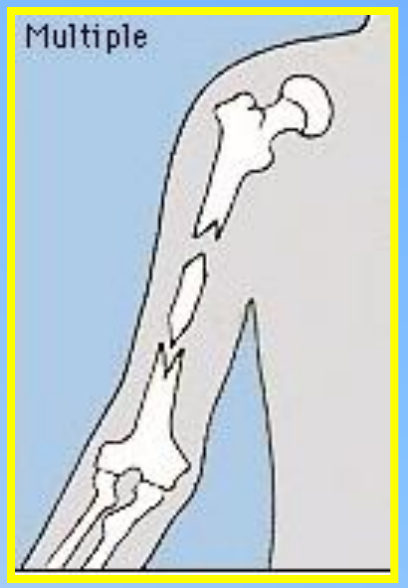
Closed Fracture

- A broken bone that does not penetrate skin
- Also called a Simple fracture
- May not need surgery



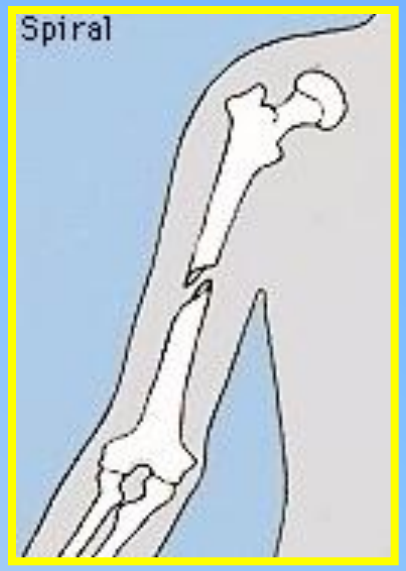
Multiple Fracture

- the fracture of several bones at one time or from the same injury



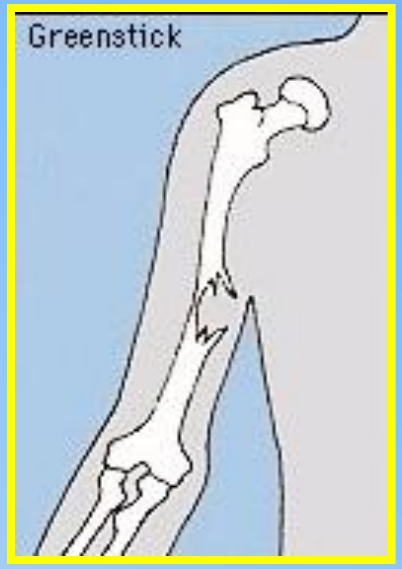
Spiral Fracture

- Also called a Torsion fracture
- At least one part of the bone has been twisted apart

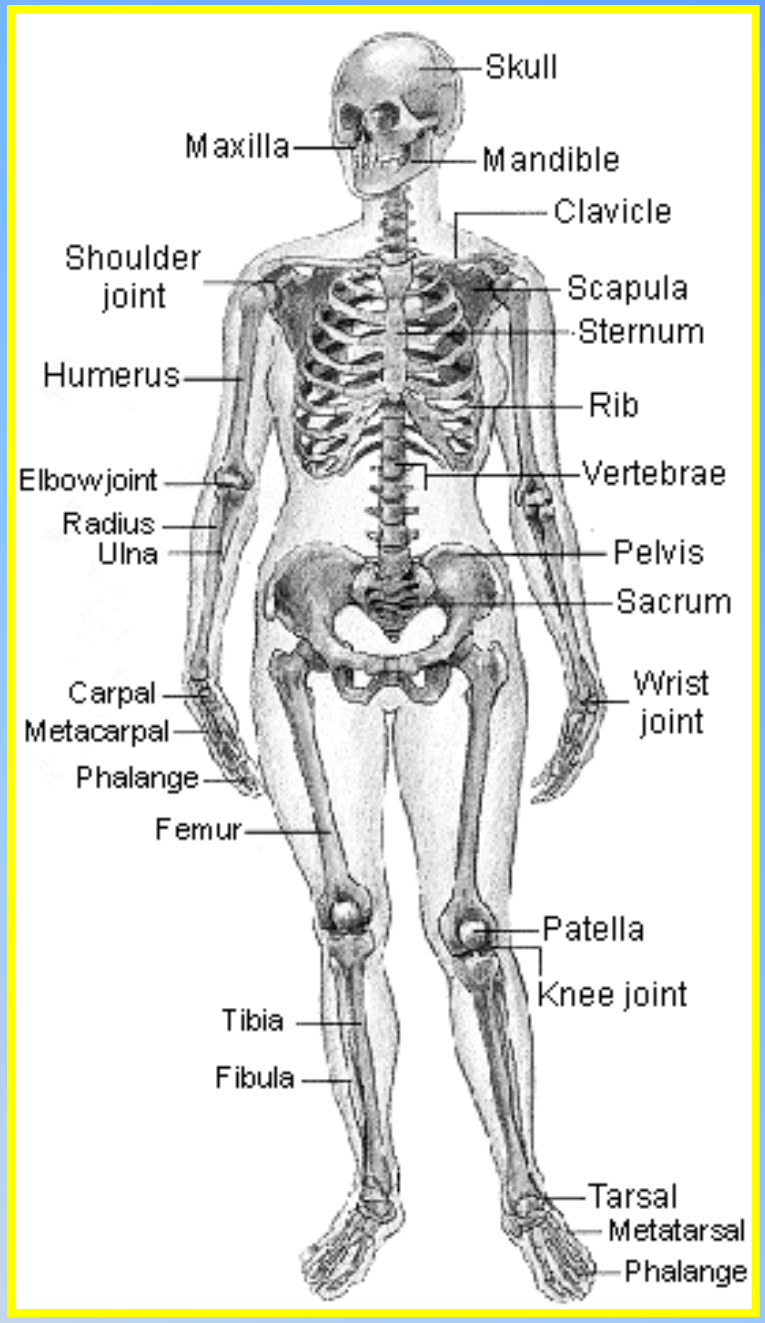


Greenstick Fracture

- Classified as an incomplete break
- One side of the fracture is broken & the other side is bent
- Can take a long time to heal because they tend to occur in the middle, slower growing parts of bone.



Basic Extremity (Limb) Anatomy



Imaging Classifications

- X-ray (plain film, general radiography)
- Ultrasound (US)
- Computed Tomography (CT)
- Magnetic Resonance Imaging (MRI, MR)
- Nuclear Medicine (Nucs, Bone Scan)

X-ray

- Radiation sent through pt to film
- First line study for most medical issues
- Excellent for fractures/bony detail
- Very limited for soft tissues (ligaments, tendons, muscles)
- Only a screening tool in the spine

X-ray Report

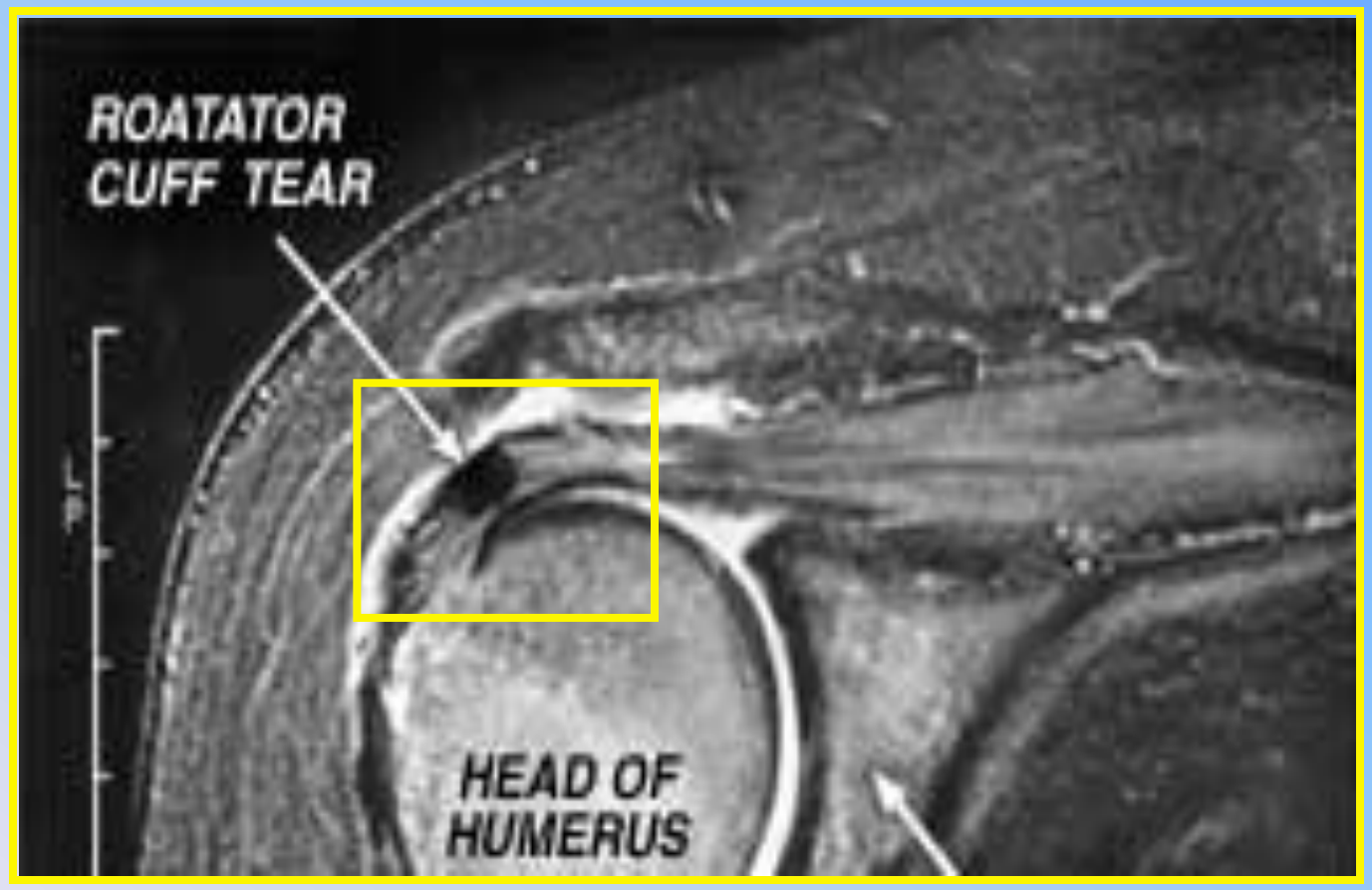
A *lateral* view of the ankle is provided in this image. All bone and joint markings are within normal limits.

There is no evidence of *fracture* or dislocation and soft tissue planes are unremarkable.

Ultrasound

- Sound waves sent to pt and bounce back
- No radiation
- Highly effective with definite role
- Limited
- Soft tissues
- Very poor for bony and intra-articular
- Operator dependant
- MSK work requires a specialist (vital!)

Ultrasound of a Shoulder



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Computed Tomography (CT)

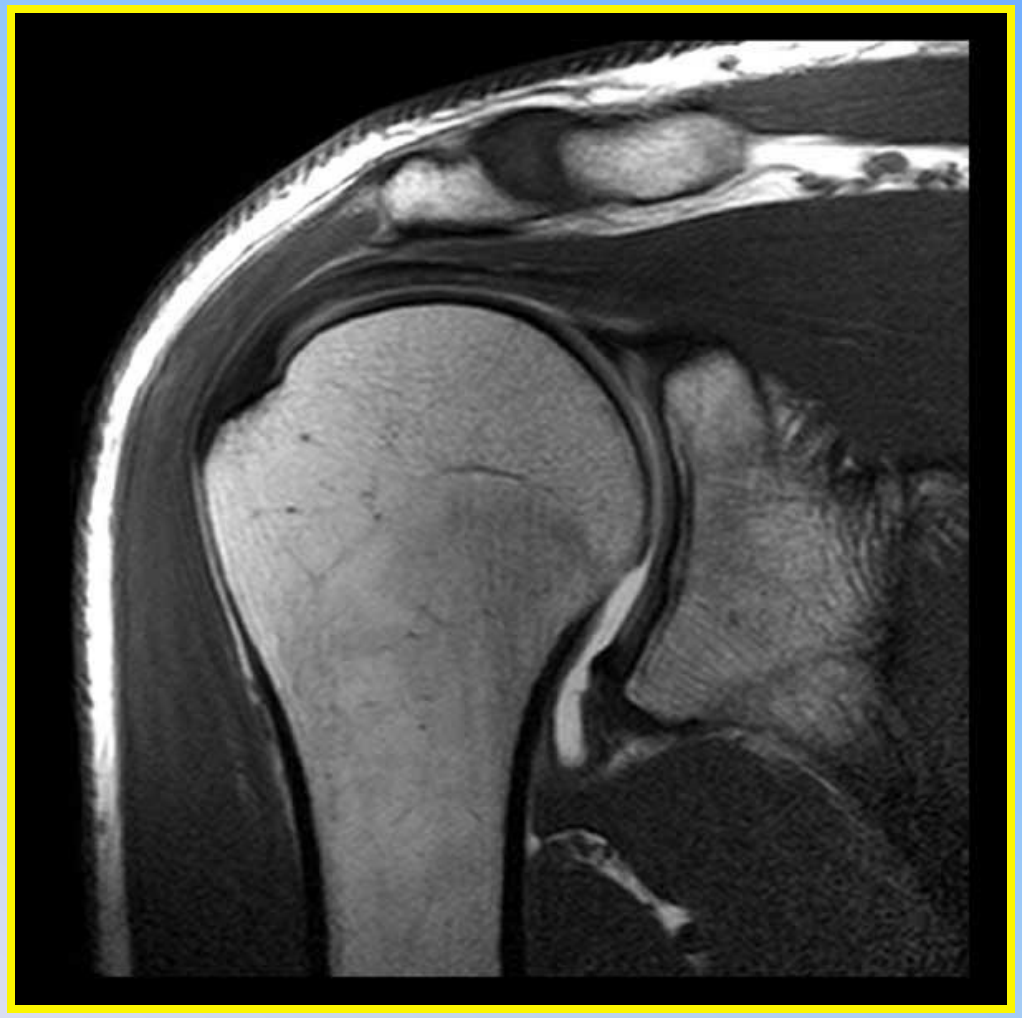
- Fancy X-ray
- Excellent for bony structural anatomy in the setting of complicated fracture
- Less effective than MR for soft tissues and active processes
- High radiation Dose

CT of Foot Fracture

Magnetic Resonance Imaging (MRI)

- a non-invasive imaging technique that does not involve exposure to ionizing radiation
- proven valuable in diagnosing a broad range of conditions, including cancer, heart disease and muscular and bone abnormalities.
- MRI typically costs more and may take more time to perform than other imaging modalities

MRI Scan of a Shoulder



Nuclear Medicine (Nucs, Bone Scan)

- procedures involves the injection of a radioactive phosphate tracer into a vein
- Used to detect fracture or broken bones, causes of back pain, detect or follow incidence of cancer that spreads to the bones
- More detailed than a plain x-ray

Nuclear Medicine Bone Scan of a Pelvis