



The Knee

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Objectives

- Recognise common adult fracture patterns for:
 - Knee – including patella
 - Tibia
 - Fibula
- Correlate to clinical signs

Objectives

- Anatomy of Knee
- Standard x ray views
- Common pathologies
- Recognise common adult fracture patterns for:
 - Knee – including patella
 - Tibia
 - Fibula
- General comments on interpretation of the Xrays
- UCC / ED Mx strategies
- Referral criteria

A systematic approach

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

Knee

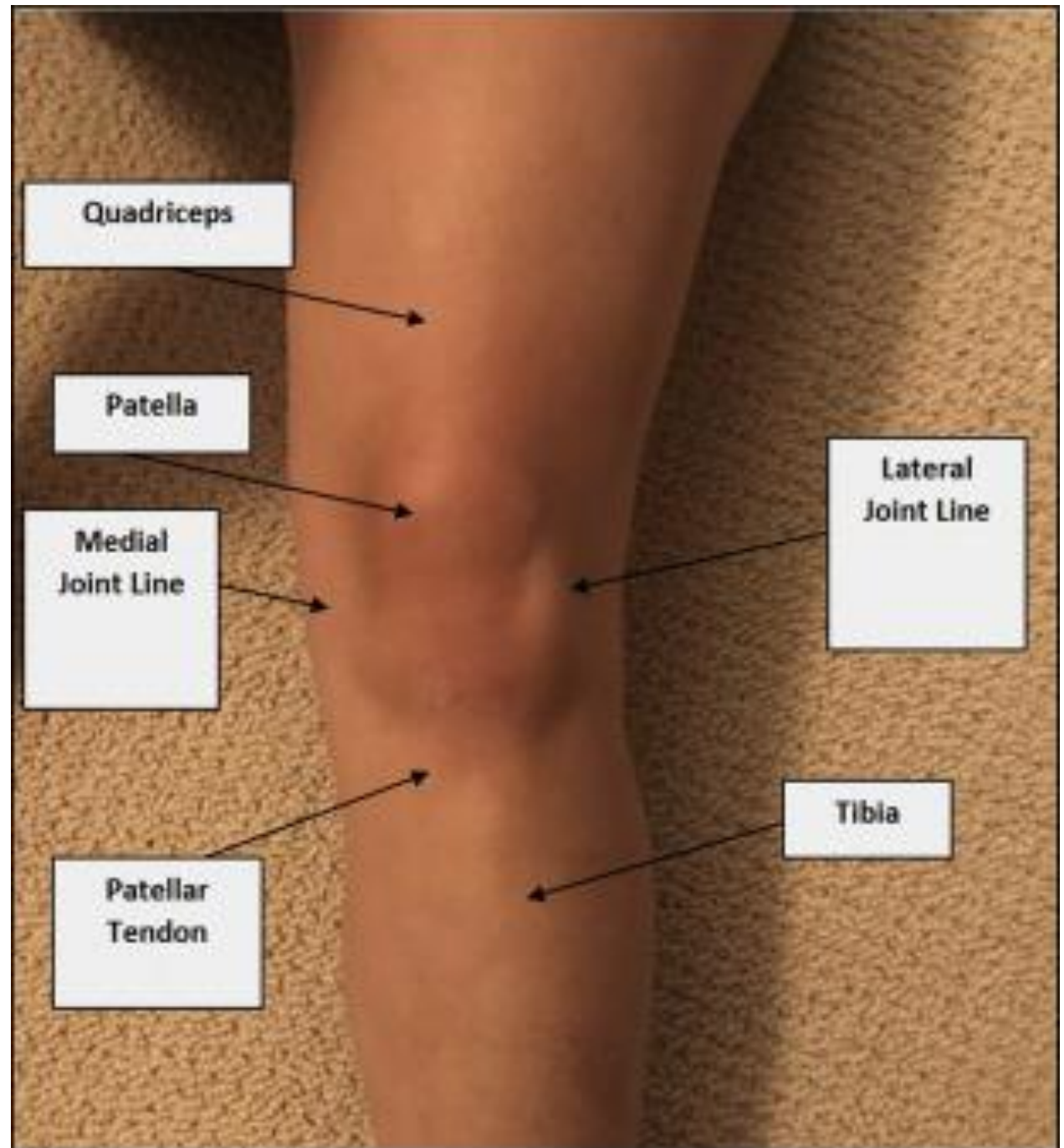
- Common site of injury
- Common presentation to ED
- Multiple potential injuries:
 - Bones:
Femur/Tibia/Fibula/Patella
 - Cartilage
 - Ligaments:
collaterals/cruciate

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



Surface Anatomy



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



Knee - clinical signs

Ottawa Knee Rules

A knee x-ray is required if any of:

- Age over 55
- *Isolated* patella tenderness
- Tenderness at head of fibula
- Inability to flex to 90°
- Inability to bear weight (4 steps) both at time and in the ED

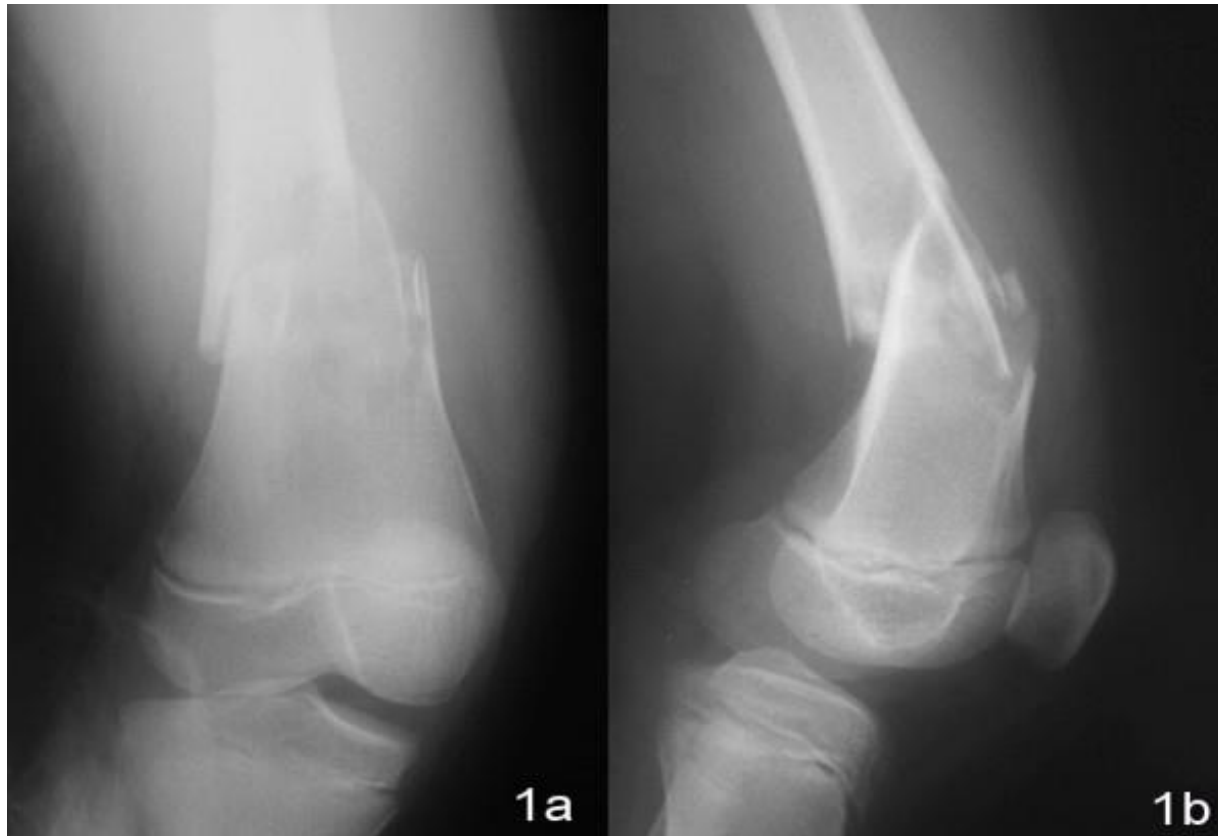
Knee

34 ♀ Tripped and fell
onto knee

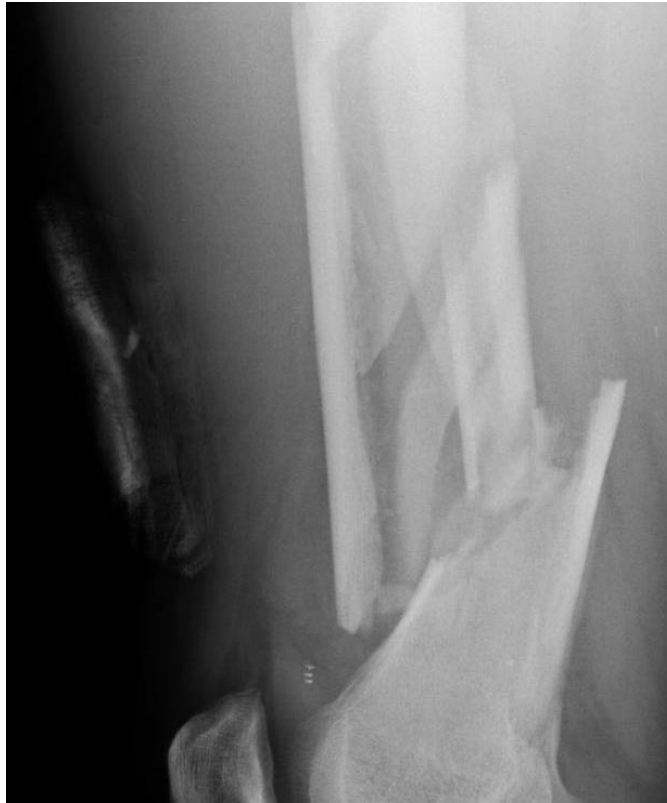


Knee

9 ♀ passenger in RTC



Hit by car
bumper



Knee - clasification

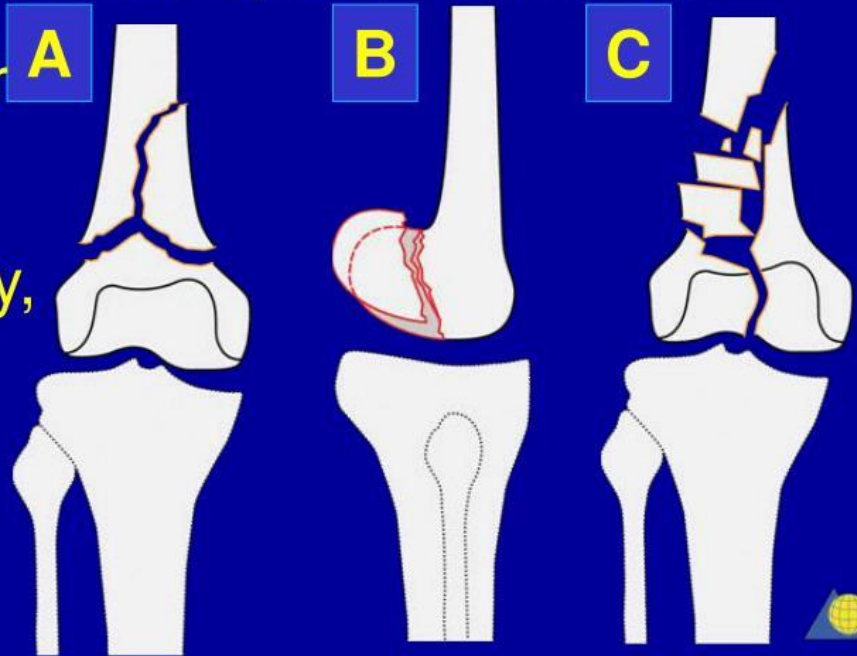
Classification (Müller AO) 33 -

A extraarticular / supracondylar

B intra-articular unicondylar (incl.Hoffa)

C intra-articular
bicondylar

- Often high energy, open fractures,
- neuro-vascular injuries in 3-4%



Knee

79 ♀ Tripped and fell
onto knee

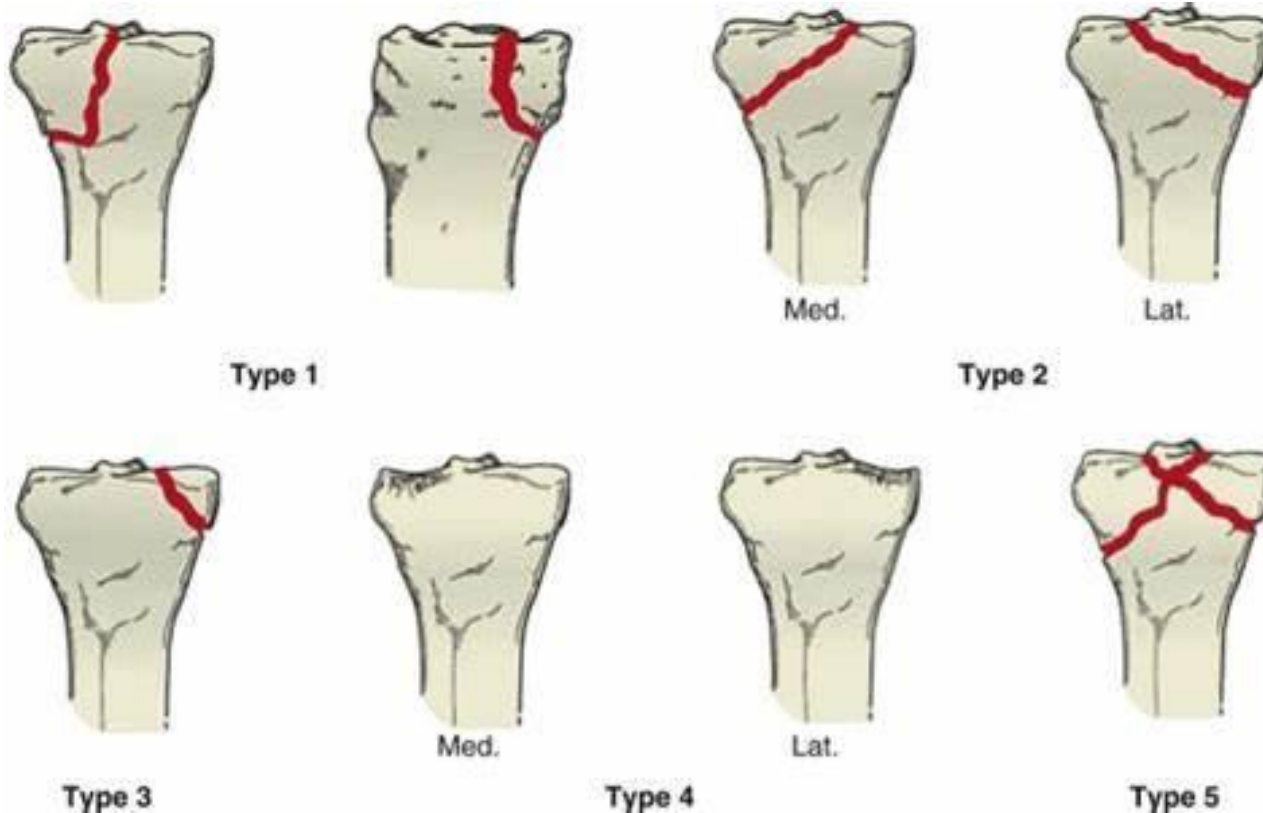


Knee

34 ♀ hit by car bumper
10mph



Knee – Tib Plateau classification Schatzker



Knee –

34 ♀ Tripped and fell
onto knee

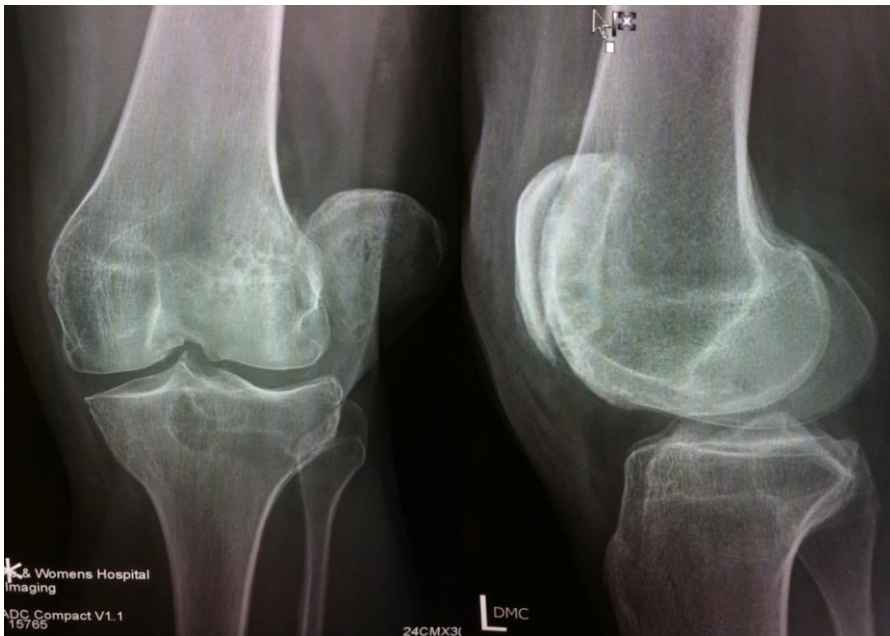


Knee

45 ♀ Fell down 12
steps



35 Yr male gymnast slipped



Patellar Skyline view



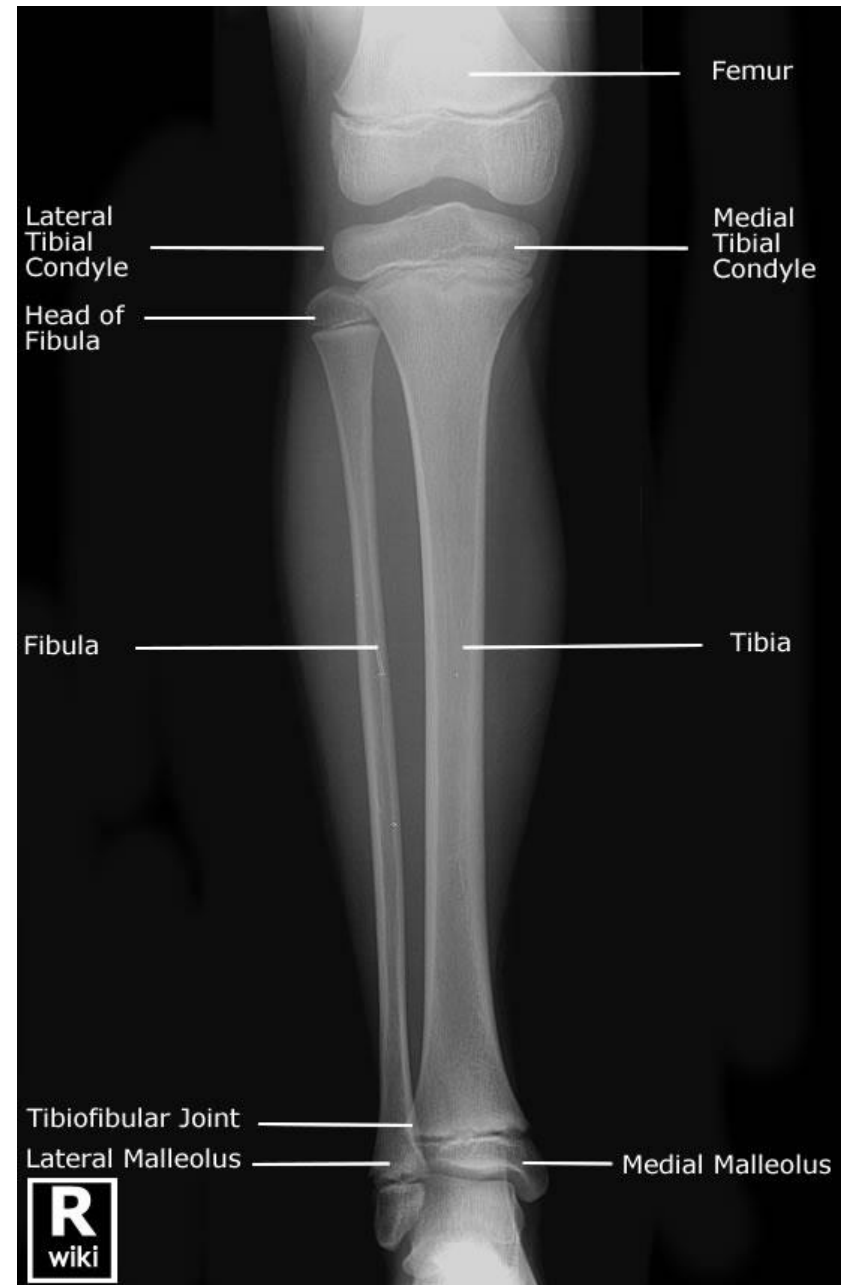
Tibia & fibula

- (Not including ankle)
- Act as a ring
- If you see one fracture, look for another
- Clinical features:
 - Usually significant mechanism
 - Usually won't walk
 - Beware 'Compartment Syndrome'

Tib & Fib – Normal

- Adequacy: AP & lateral to include whole of knee and ankle
- B: Outline and rest of bone of tibia & fibula
- C: Mortice joint

Tib & Fib – Normal Paeds



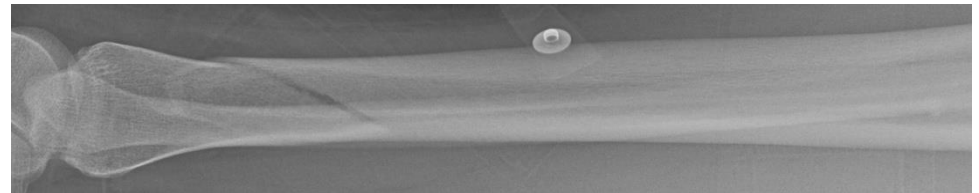
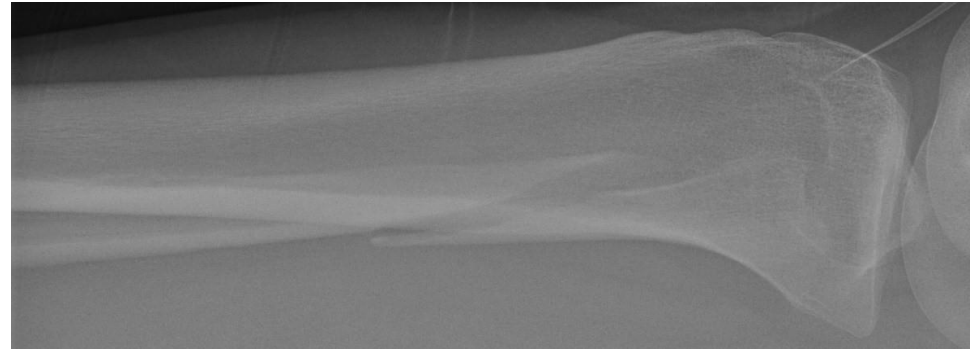
Tib & Fib – Normal Adult



Fibula fractures



Tib & Fib – 21 ♀ Slipped on ice



Paediatric Spirals



Summary

- Knee fractures check for subtle anomalies check the patient be aware of soft tissue damage.
- Relate mechanism to possible fracture pattern
- Obvious # early escalation and resuscitate and seek expert help
- If clinically suspicious treat as knee # and re image according to local policy
- If you do see an abnormality in this region think of the potential soft tissues affected.