X-Ray Review of Common Fractures Workshop

AAPA Annual Conference

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Workshop: X-ray Review of Common Fractures

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Disclosures

- Non-Declaration Statement: I have no relevant relationships with ineligible companies to disclose within the past 24 months.

Workshop Assistants

Sarah Scott, PA-C
Dan Coll, PA-C
Robert Thomas, PA-C
Kyle Brooks, PA-C

Educational Objectives: At the conclusion of this workshop, participants should be able to:

- Identify the various types of fractures
- Correctly diagnose pediatric fractures
- Identify and describe hand and wrist fractures, shoulder fractures, hip fractures, foot and ankle fractures, and spine fractures

Institute appropriate care for the fractures

OUR FIRST GOAL:

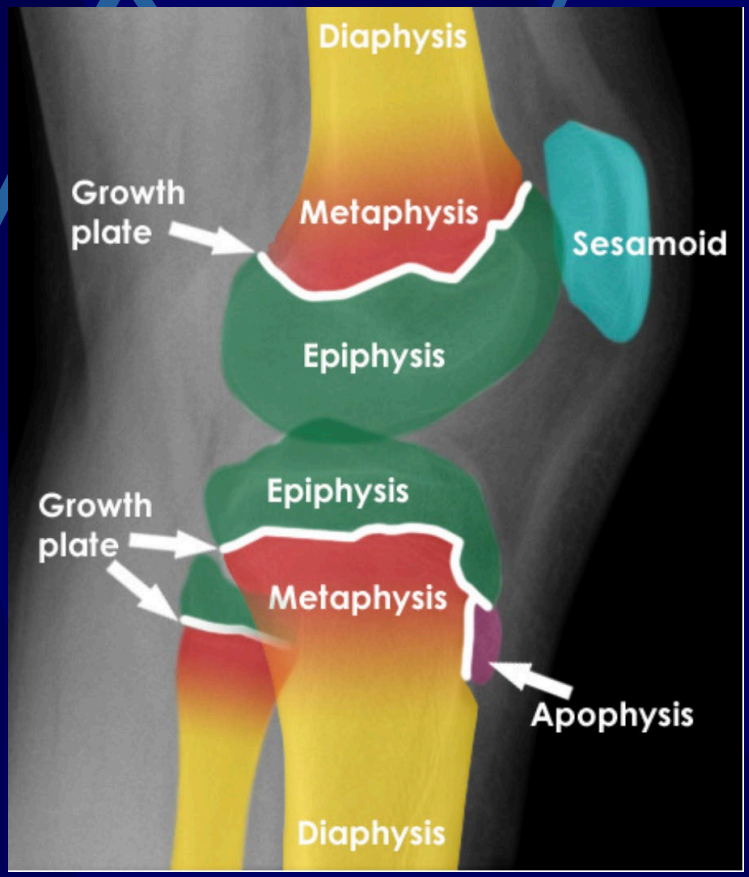
Have Fun!!!!

Today's Workshop

- Quick review of fracture descriptions and types
- Quick review of pediatric fracture types
- Divide into small groups to see x-rays up close

Handouts

Bone Anatomy



Review: Fracture Description Long Bones"BLT LARD”

1. **B: Bone**
2. **L: Location:** proximal, distal, mid-shaft, intraarticular
3. **T: Type:**
   - **Simple**: bone is in **two** pieces
     - *Direction* of fracture: is fx line *Transverse? Oblique? Spiral? Sagittal?*
   - **Comminuted:** bone is in **> 2 pieces**
   - **Compound:** bone protruding through skin

Review: Fracture Description Long Bones"BLT LARD”

4. **L: Lengthening:**
   Shortening: Has there been retraction of the fracture fragment
   Impaction: one bony fragment has been driven into another
   Distraction: decreased contact b/t fracture surfaces
5. **A: Angulation:** do bony fragments form an angle? Describe by *DISTAL* fragment
   Also can describe angulation through direction of fracture apex, “Apex is Anterior” **R: Rotation:** describe according to position of *DISTAL* fragment

D: Displacement: describe by distal fragment…is it displaced laterally, anteriorly, etc.

http://www.radiologymasterclass.co.uk/tutorials/musculoskeletal/trauma/trauma_x-ray_page1.html

Review: Fracture Description "LARD"

A: Angulation: do bony fragments form an angle? Describe by *DISTAL* fragment

1. Also can describe angulation through direction of fracture apex, "Apex is Anterior"

1. **R: Rotation:** describe according to position of *DISTAL* fragment
2. **D: Displacement:** describe by distal fragment…is it displaced laterally, anteriorly, etc.

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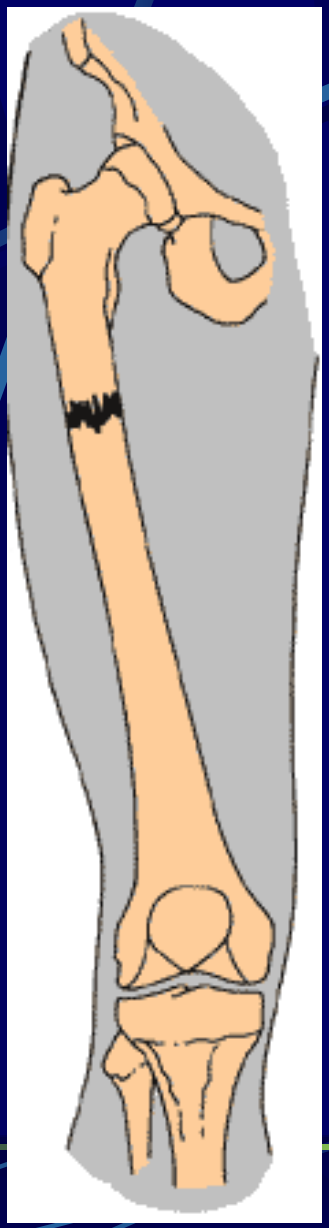
Review of Fracture Types

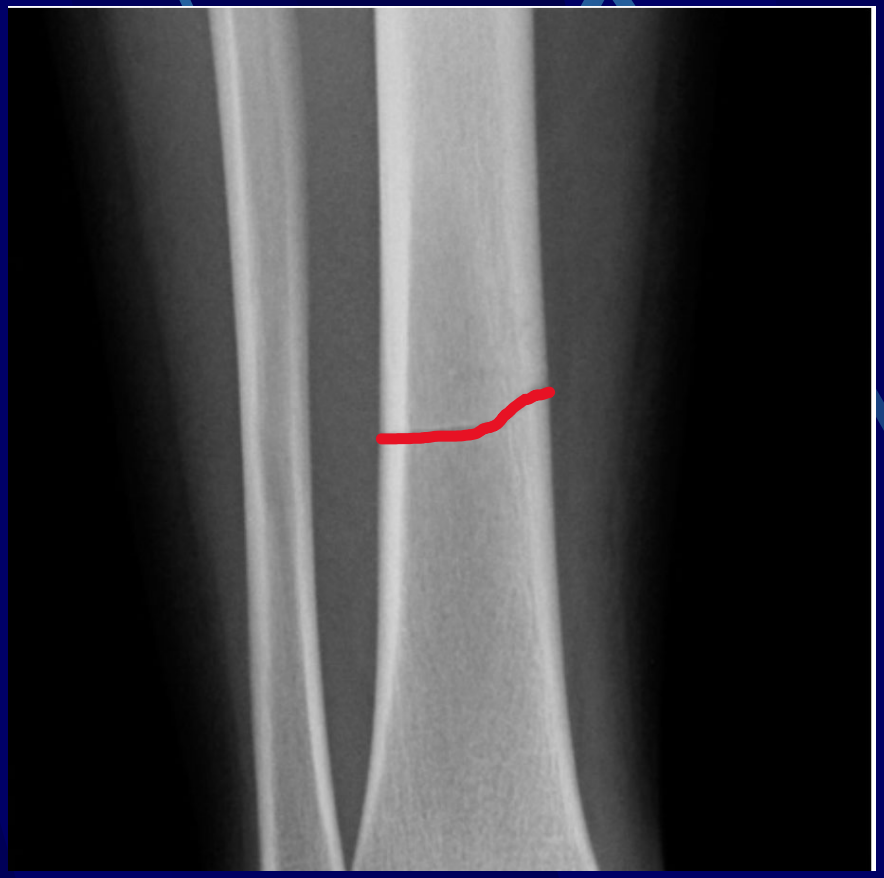
- Transverse
- Oblique
- Spiral
- Comminuted
- Segmental
- Compression
- Avulsion

Fracture Types

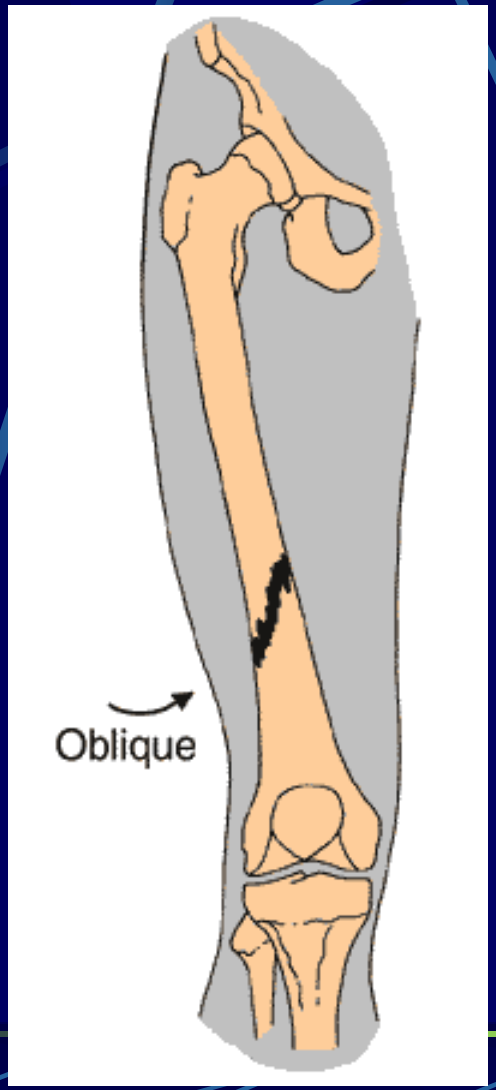
Transverse Fracture



Transverse Fracture

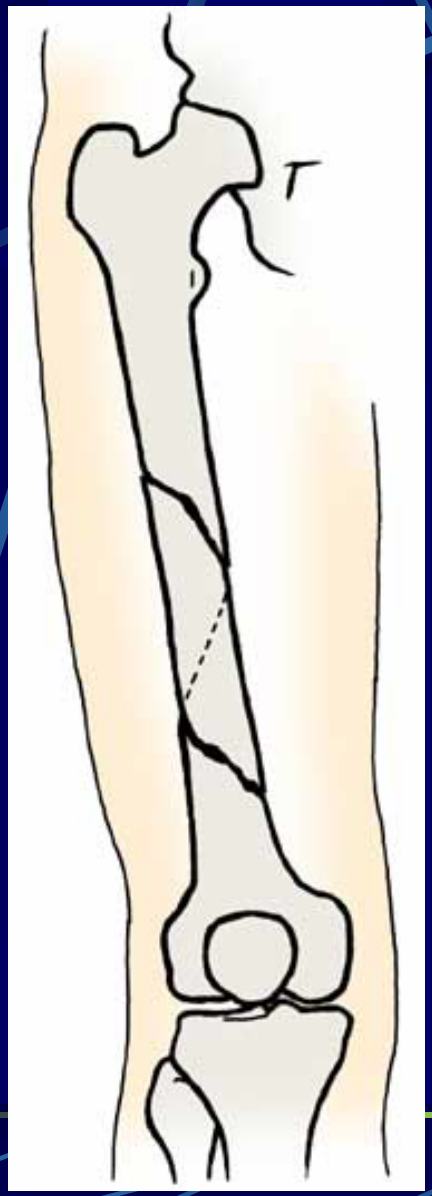


Oblique Fracture

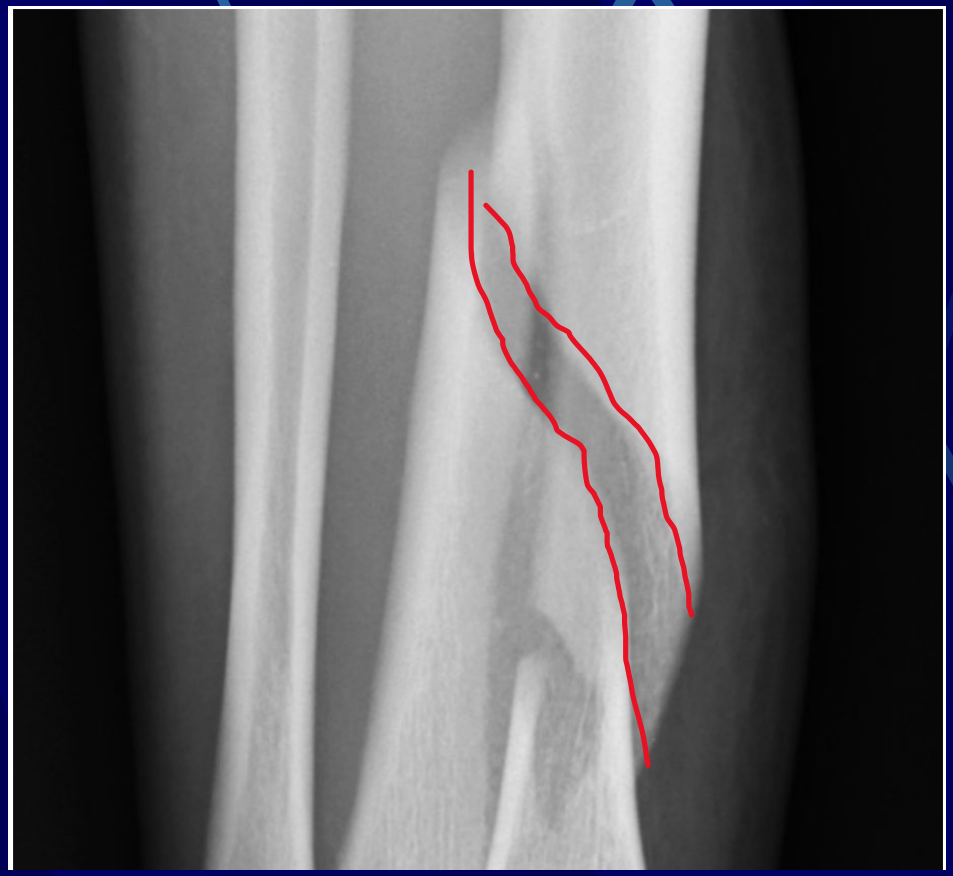


Oblique Fracture

Spiral Fracture

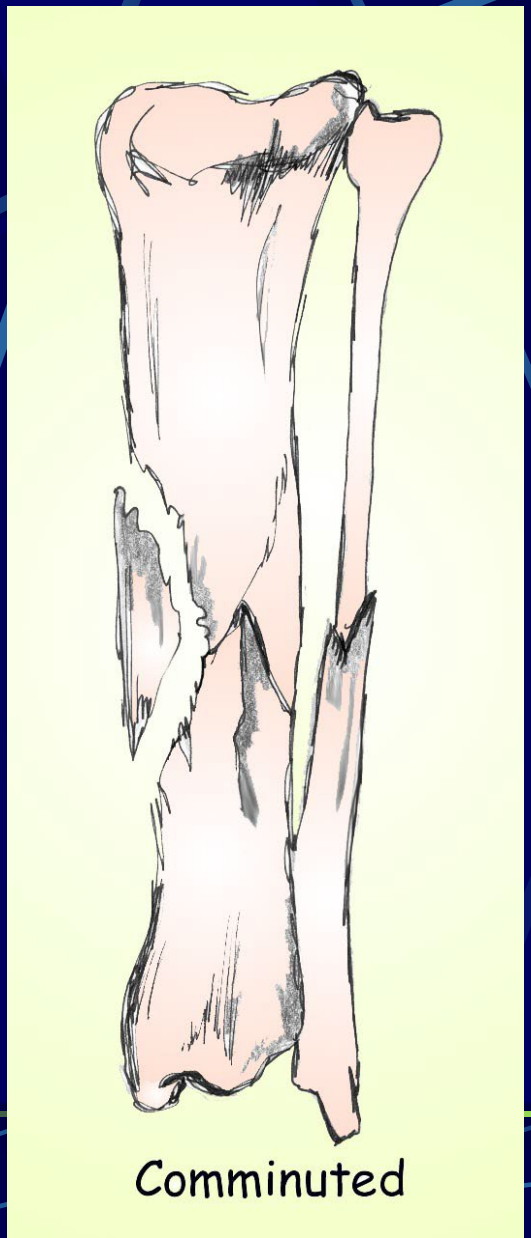


Spiral Fracture



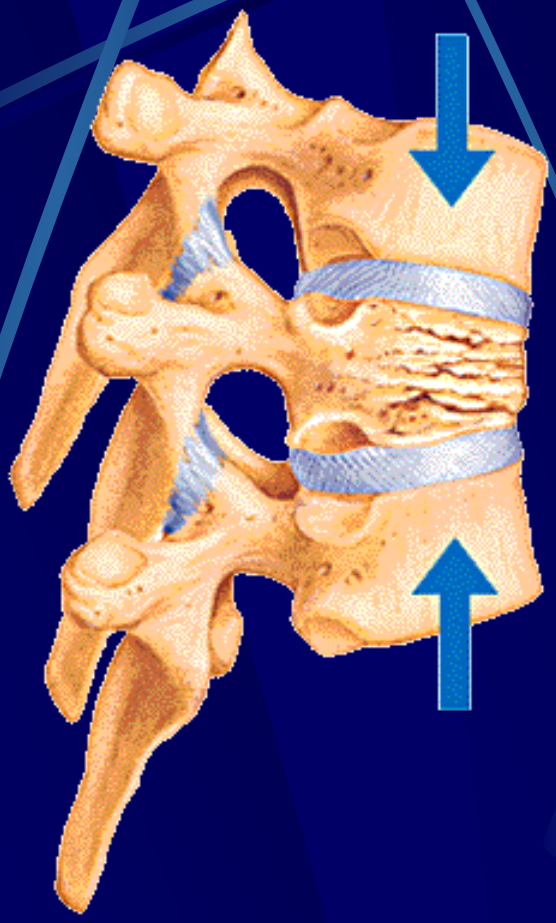
Comminuted Fracture

Comminuted Fracture



Compression Fracture

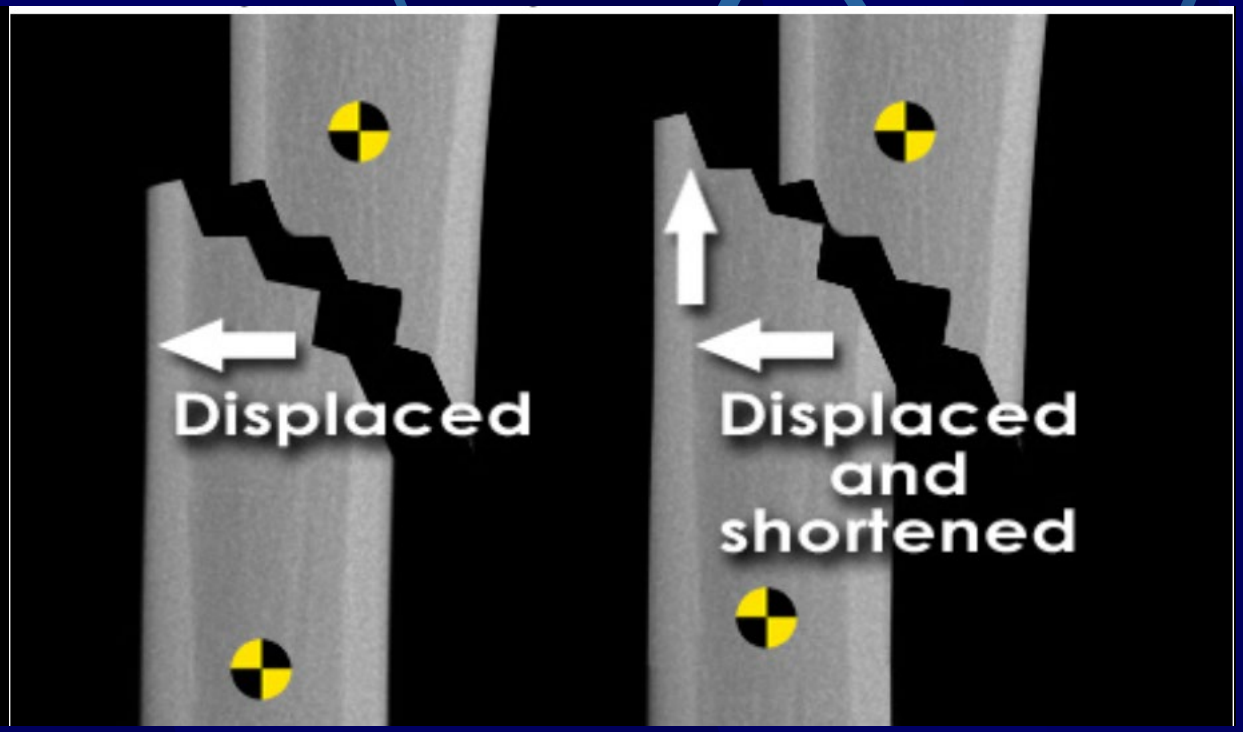
Compression Fracture



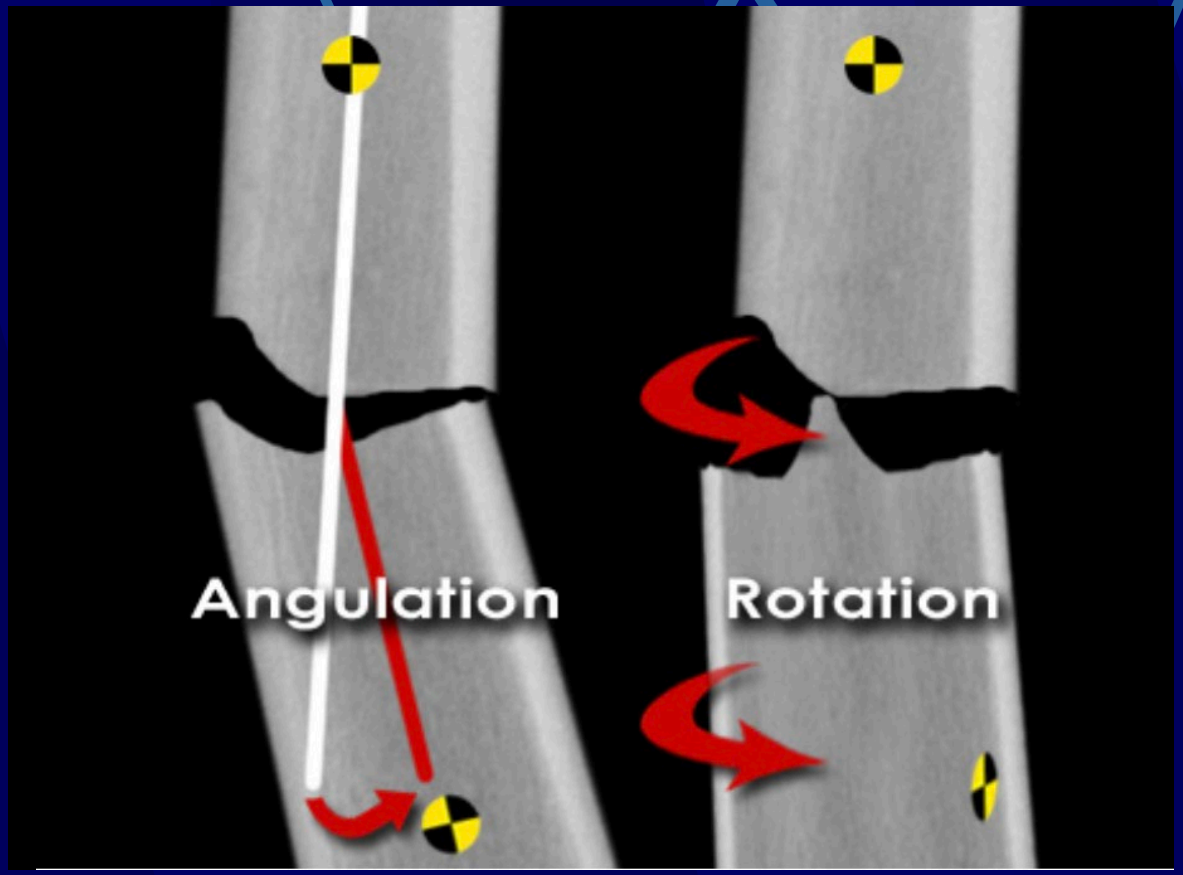

Avulsion
fracture

Avulsion Fracture

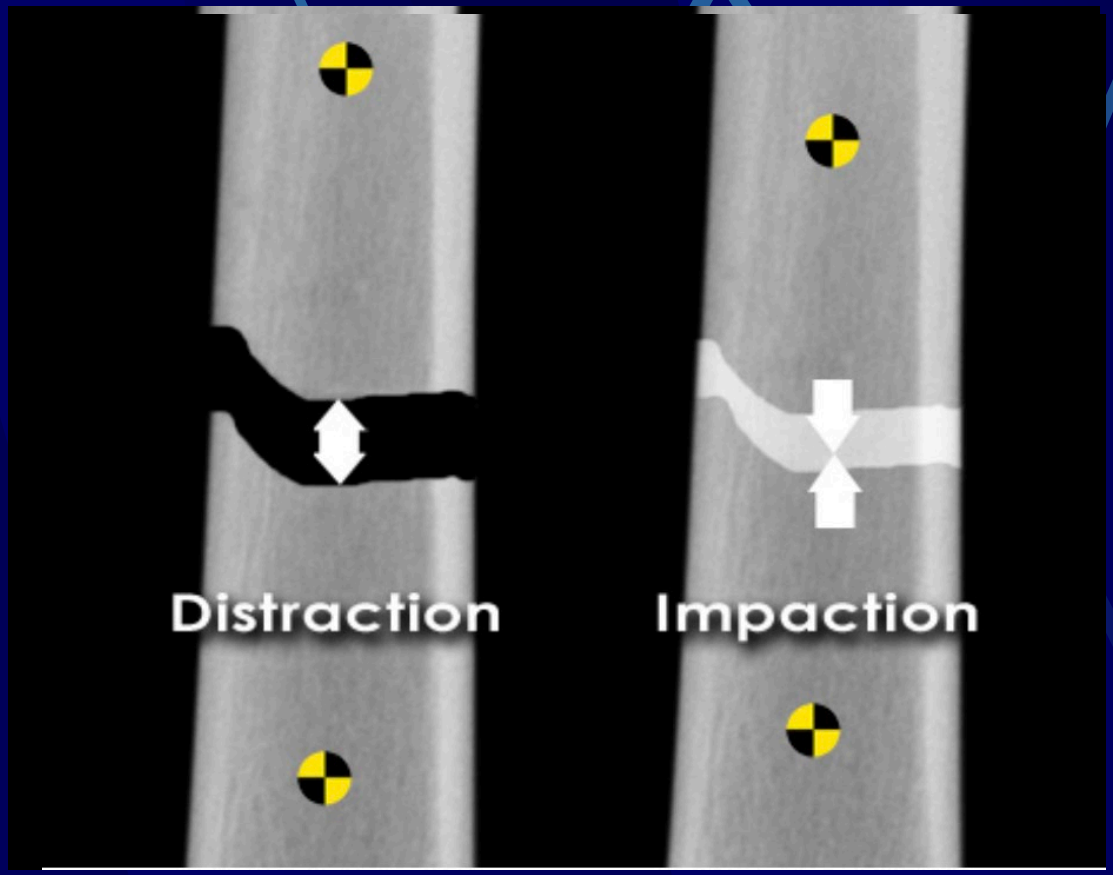
Displaced Fracture



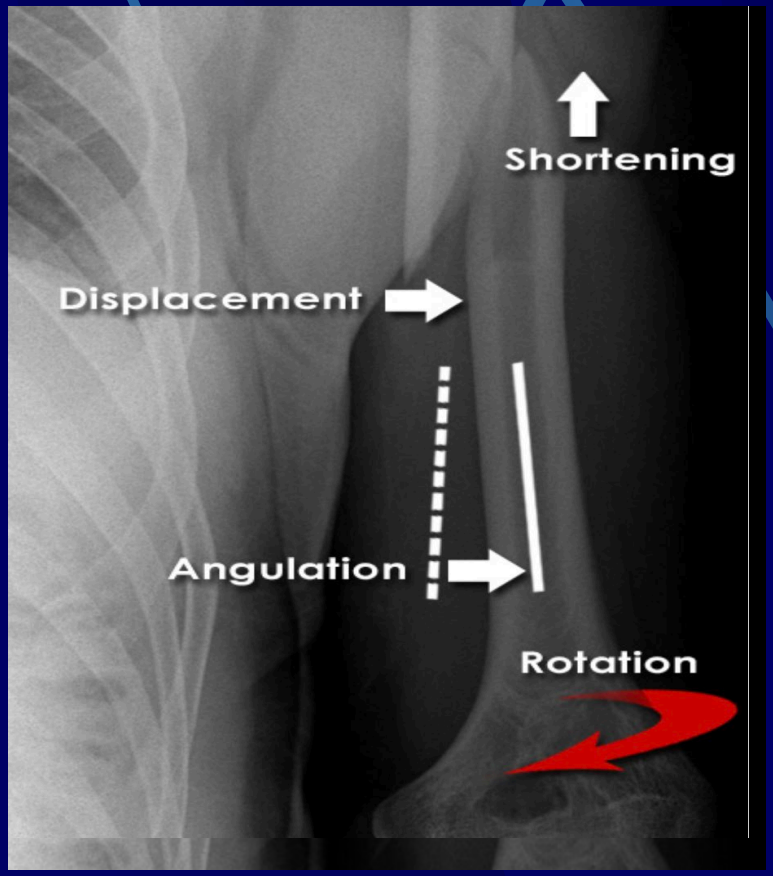
Angulation



Distraction and Impaction

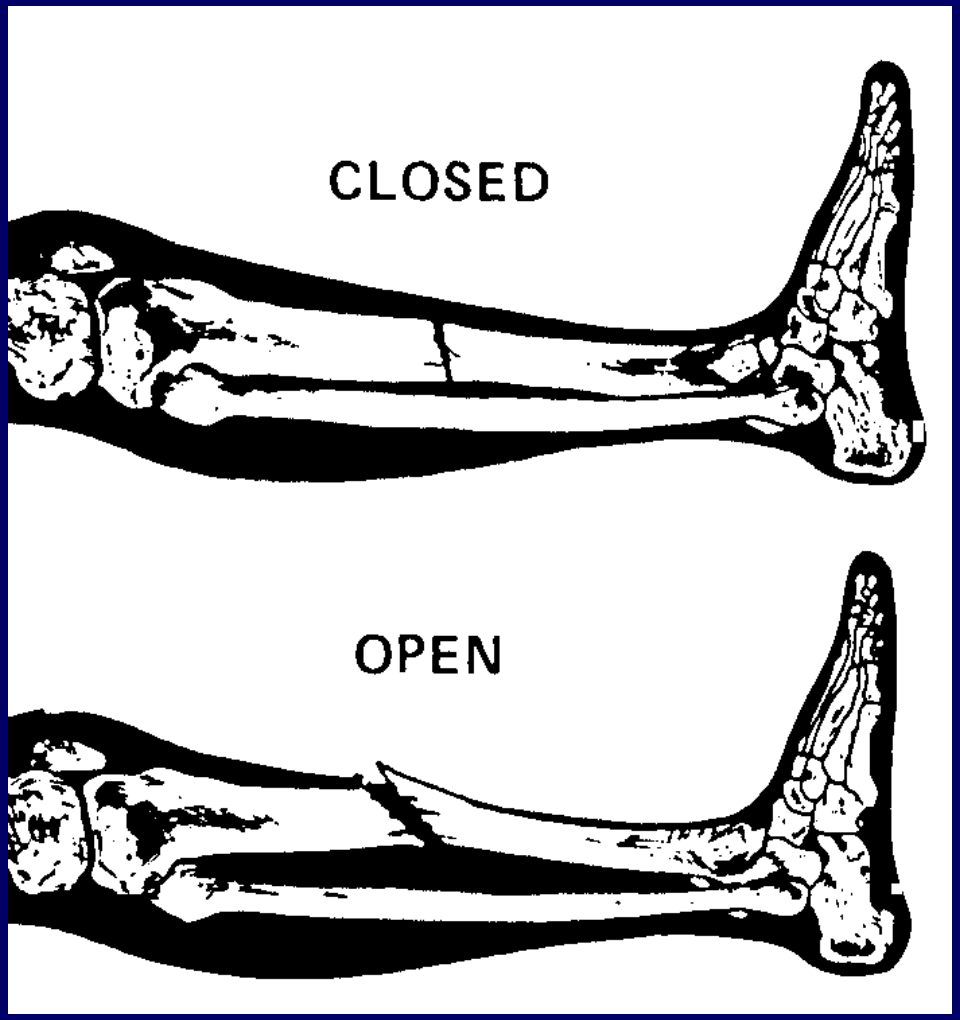


Displacement Combination



Fracture Descriptions

Closed versus Open Fractures



Closed Fracture

Open Fracture

Extra vs Intraarticular

Pediatric Fractures

- Long bone fractures
- Growth plate fractures

Review of Pediatric Long Bone Anatomy

- Epiphysis
- Physis
- Metaphysis
- Diaphysis

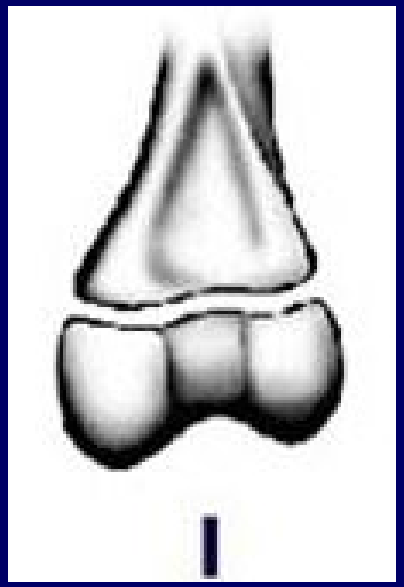
Torus (Buckle) Fracture

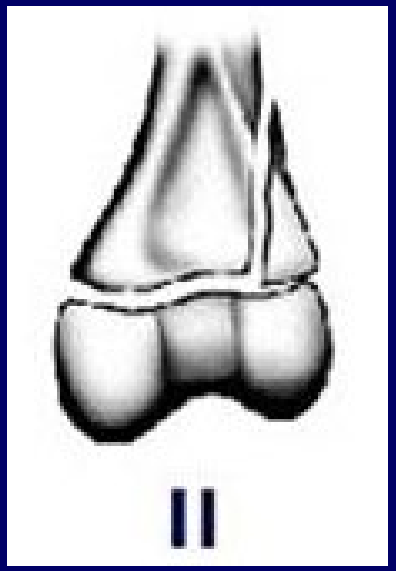
Greenstick Fracture

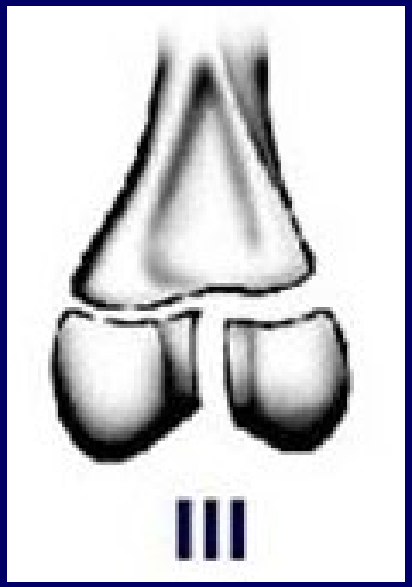
Epiphyseal Fractures

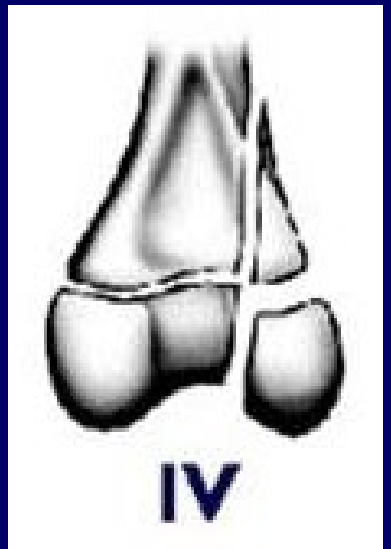
- Salter-Harris I
- Salter-Harris II
- Salter-Harris III
- Salter-Harris IV
- Salter-Harris V

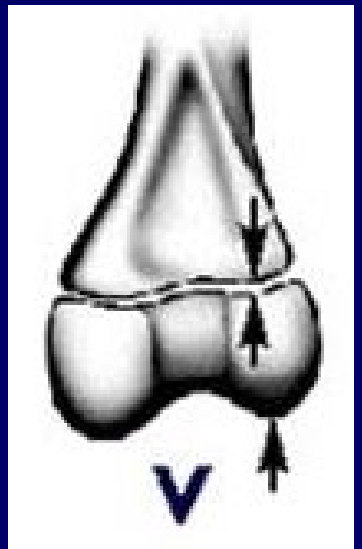
Salter-Harris Classification



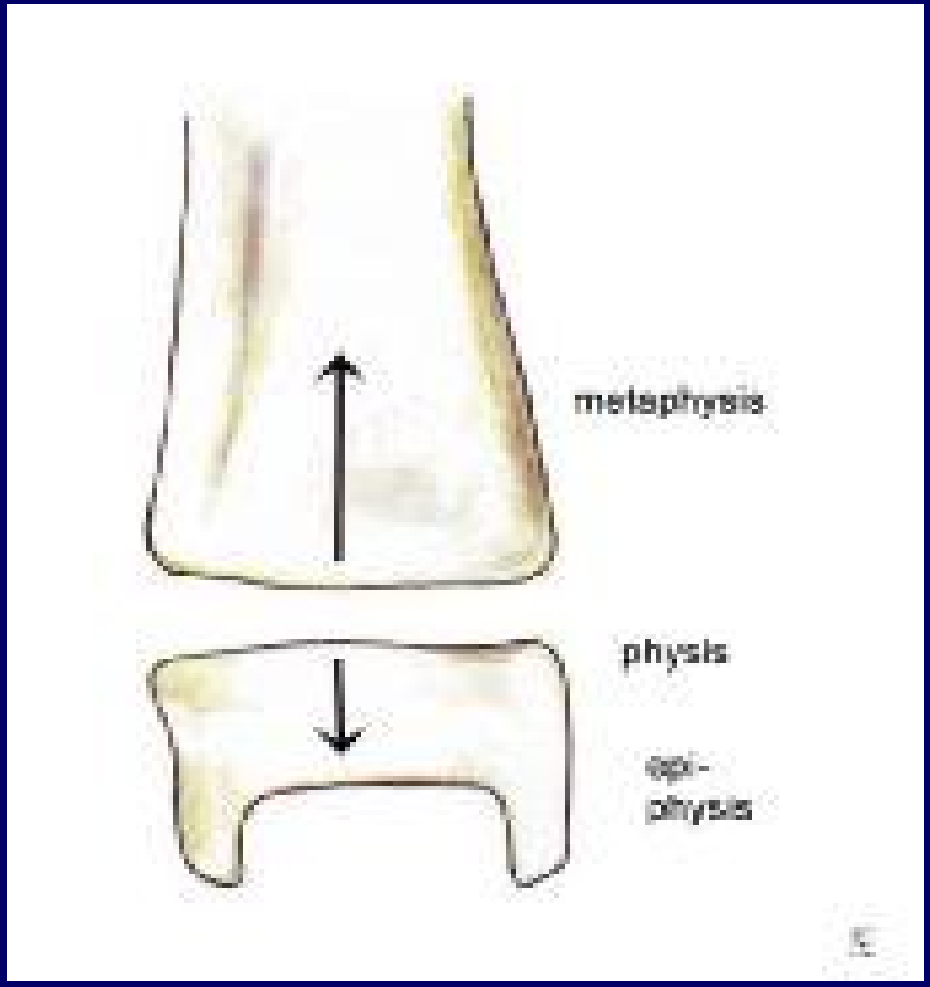






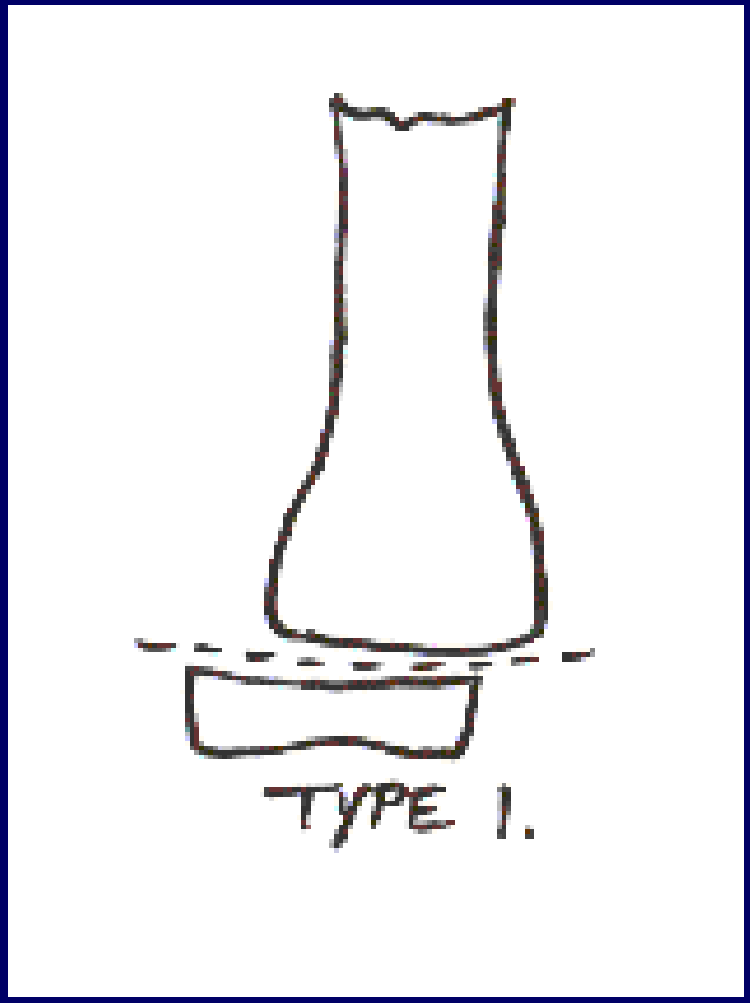


Salter-Harris I

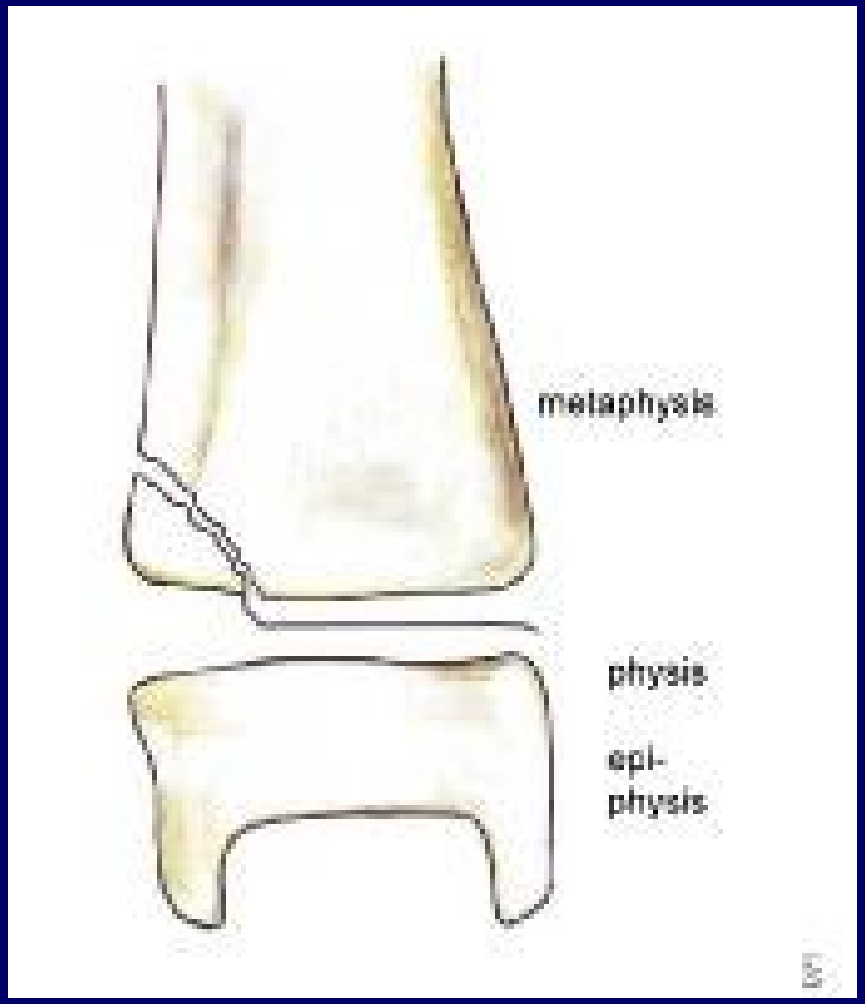


Salter-Harris I

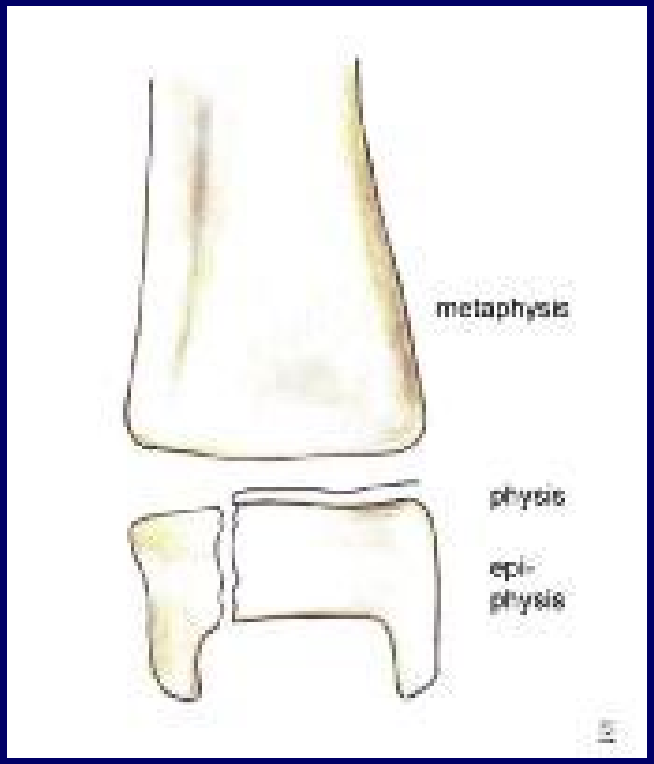
Salter-Harris I



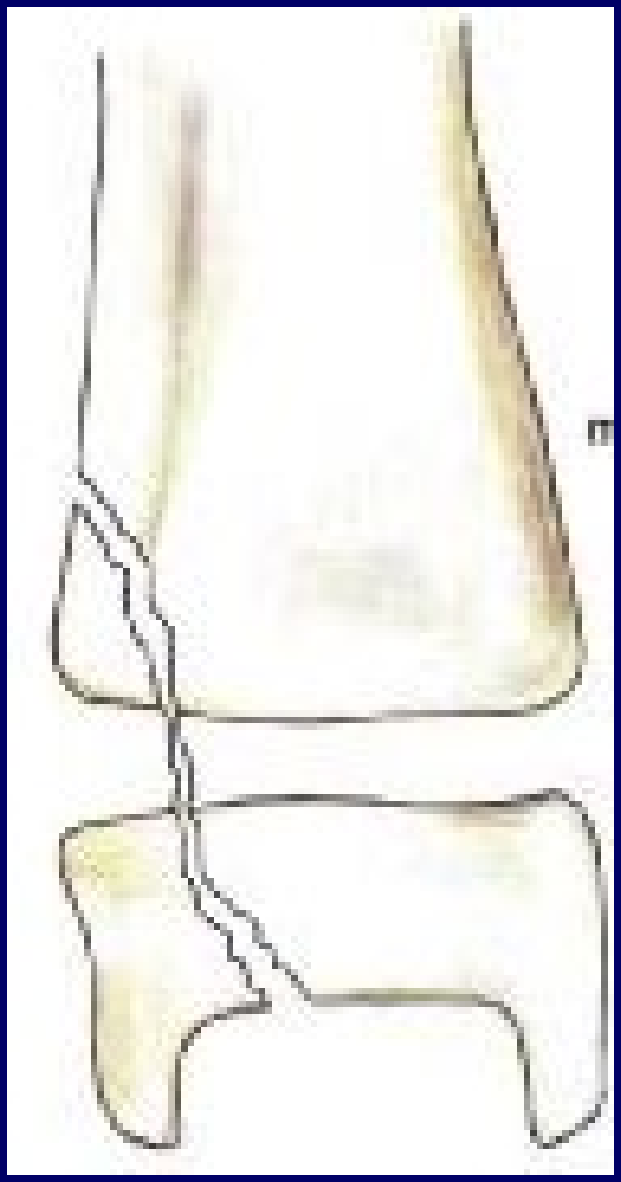
Salter-Harris II



Salter-Harris III

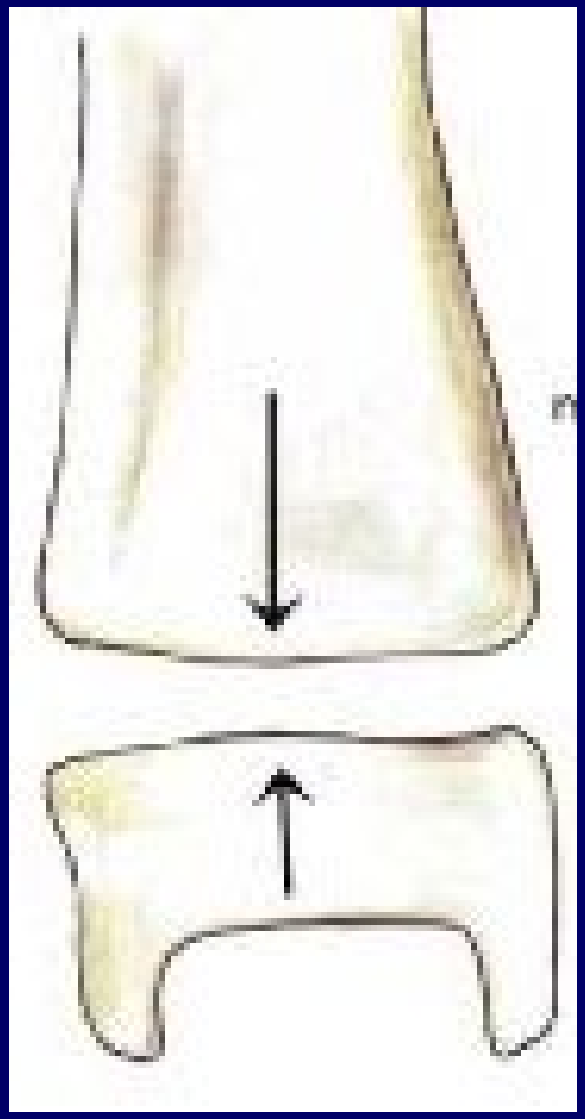


Salter-Harris IV



Normal AP Ankle X-ray

Salter-Harris V Tibia



X-Ray Rules

ALWAYS Get Two Views

Lateral View

AP View

Today's Workshop

- Common fractures
- This is NOT a test: we want to help you
- One instructor for every 5-6 participants
- Take your time; ask questions

Five Stations

Groups will rotate through EACH station

Sarah Scott, PA-C
Ankle and Foot

Robert Thomas, PA-C
Hand & Wrist

Dan Coll, PA-C
Hip and Pelvis

Kyle Brooks, PA-C
Shoulder and Elbow

Dennis Rivenburgh, PA-C
Pediatric

Take Home Points

- Obtain appropriate radiographs if there is ANY concern for a fracture
- Make the correct diagnosis for common fractures
- Provide appropriate explanations to patients about the fracture
- Institute appropriate treatment for the fracture

Reference

- Textbook: Essentials of Musculoskeletal Care, 5th Edition, 2015. American Academy of Orthopaedic Surgeons. Editors: April C. Armstrong and Mark D. Hubbard
- Handbook of Fractures, 2nd Edition, Clayton Perry, John Elstrom