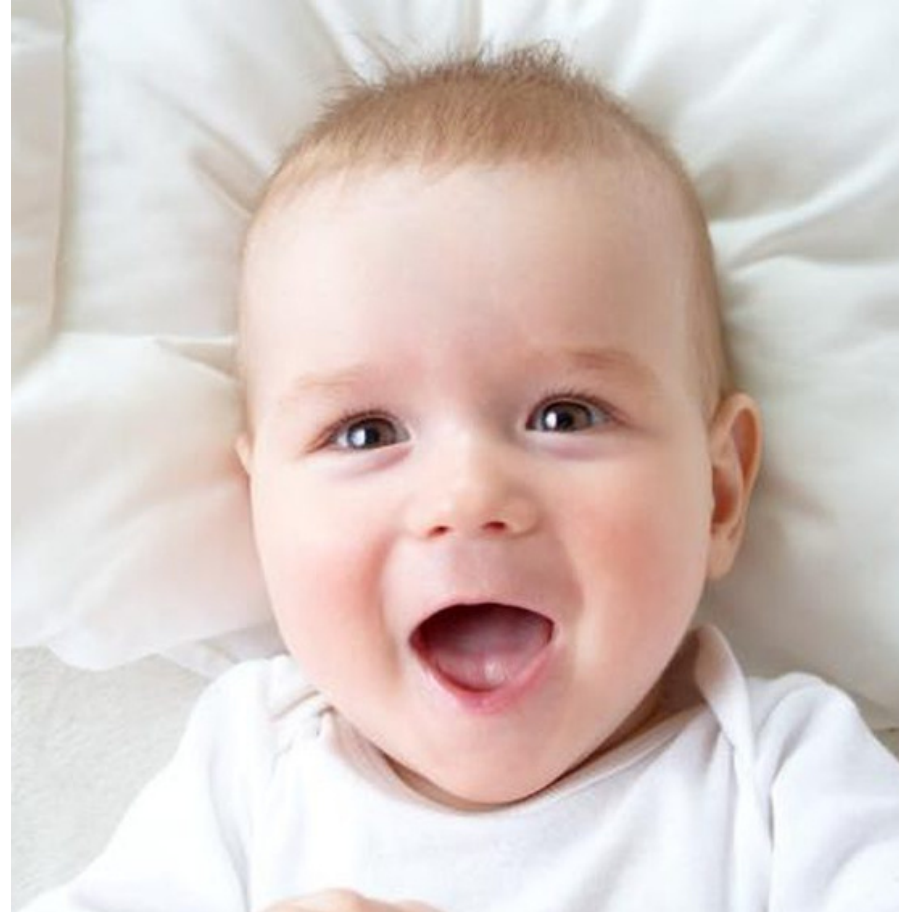


Paediatric fractures

Mohammed Tayyem



**CHILDREN ≠
SMALL ADULTS!!**



Objectives

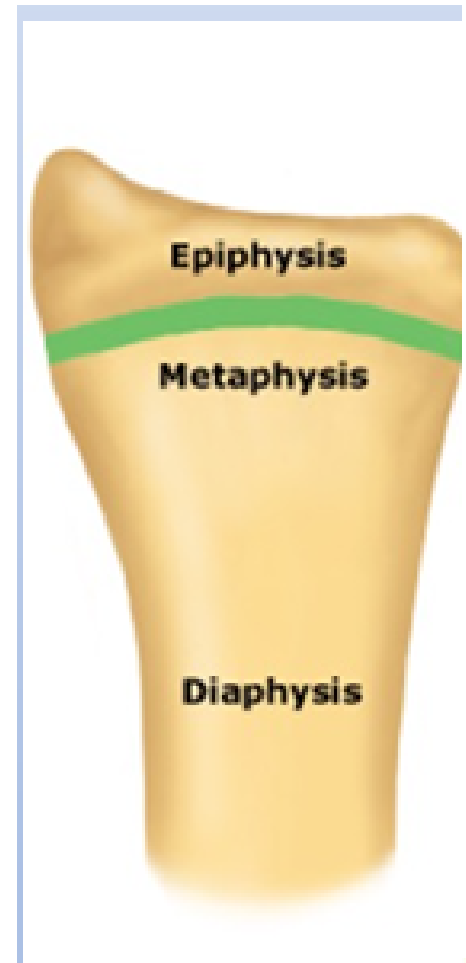
- Recognize the difference in treatment of pediatrics fractures .
- Understand Growth plate injuries.
- Determine the factors that affect remodeling
- Recognise the common fracture patterns



Why are children's fractures different?

Children have different physiology and anatomy

- Growth plate.
 - In infants, GP is stronger than bone
increased diaphyseal fractures
 - Provides perfect remodeling power.
 - Injury of growth plate causes deformity.
 - A fracture might lead to overgrowth.



Why are children's fractures different?

- Bone.
 - Increased cancellous bone
 - reduces tensile strength
 - reduces tendency of fracture to propagate
 - less comminuted fractures



Why are children's fractures different?

- Cartilage.
 - Increased ratio of cartilage to bone
 - difficult x-ray evaluation
 - size of articular fragment often underestimated



Why are children's fractures different?

- Cartilage.
 - Increased ratio of cartilage to bone
 - difficult x-ray evaluation
 - size of articular fragment often underestimated
- Periosteum:
 - Metabolically active
 - more callus, rapid union, increased remodeling
 - Thickness and strength
 - Intact periosteal hinge affects fracture pattern
 - May aid reduction





The choice of treatment according to the type and location of the fracture and the age of the child

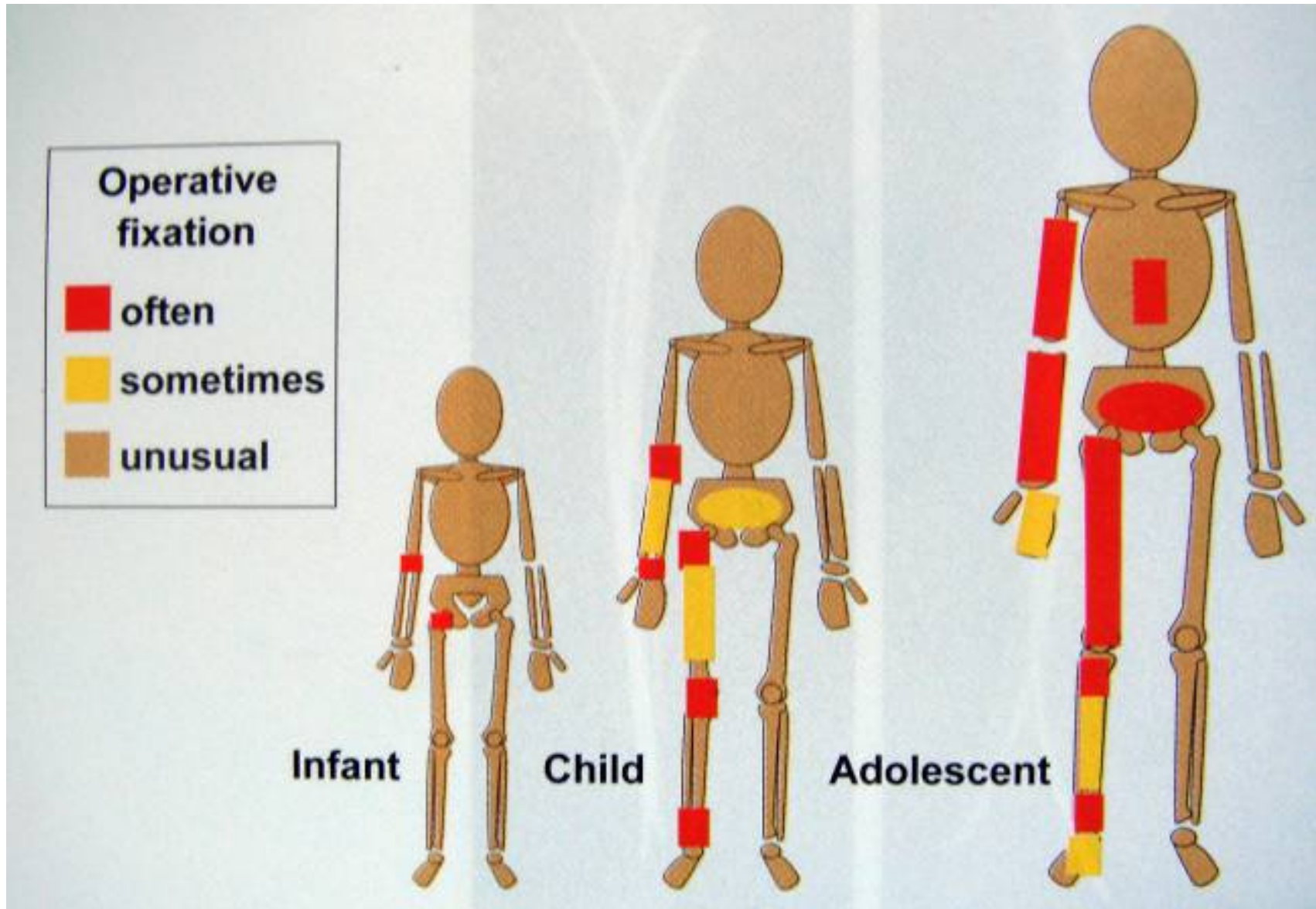
Theddy F. Slongo

Factors influencing treatment

- Age
- Type of fracture
- Bone and segment
- Weight
- The equipment available for surgical treatment
- The experience of the surgeon .



AGE



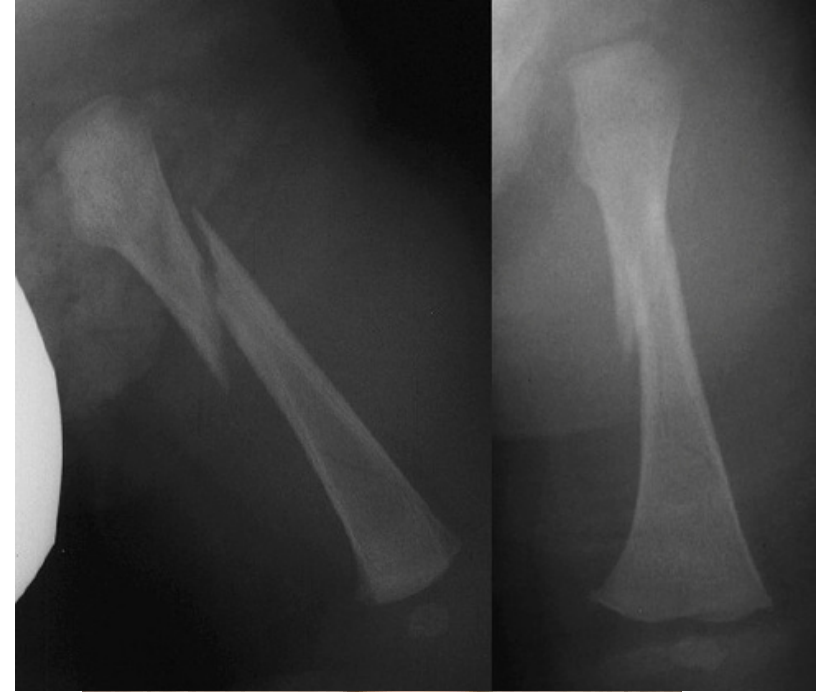
RARE

COMMON



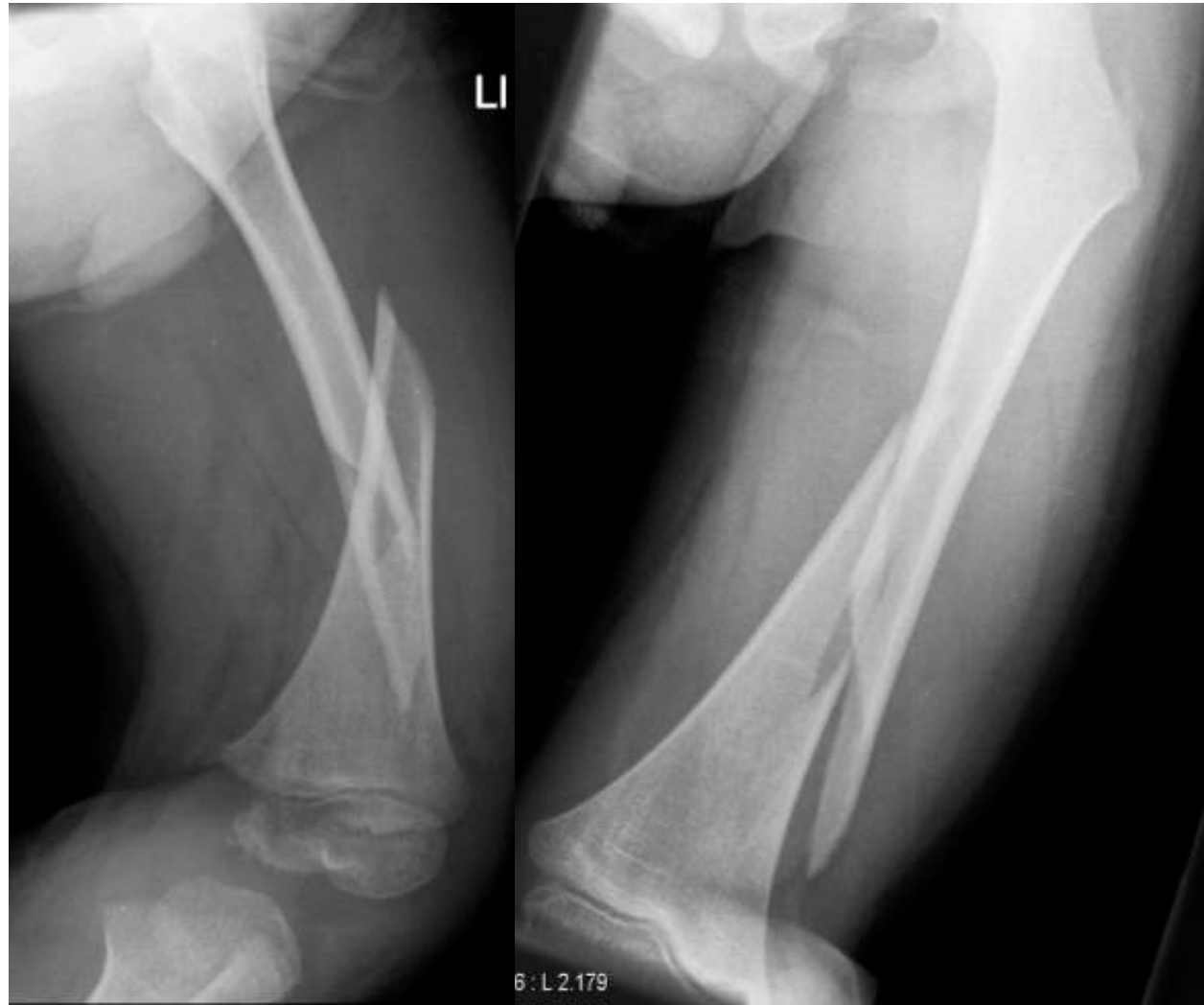
3 month old female patient

- Femur fractures in infants are usually stable because their periosteum is thick.
- Infants rarely need a manipulative reduction of their fracture, nor rigid external immobilization
- Treated by Pavlik harness.



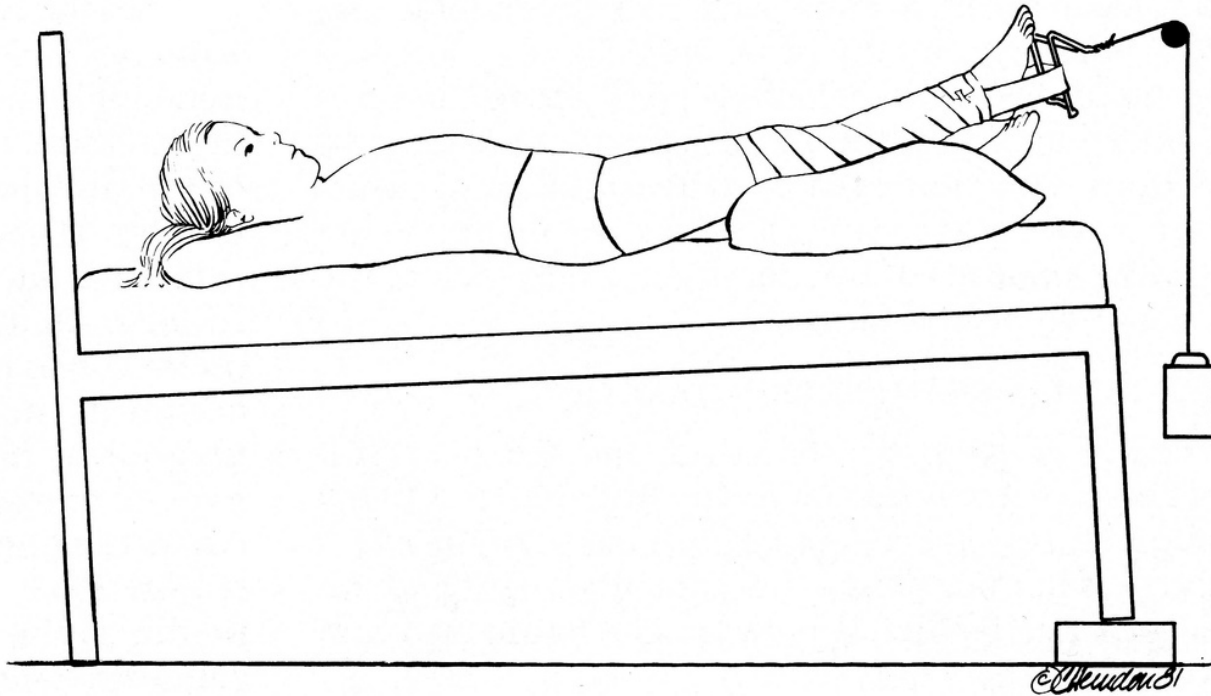
2y male, fell off trampoline

- No other injuries



2y male, fell off trampoline

- Treatment by traction followed by hip spica



2y male, fell off trampoline

- X-rays at 2.5 weeks



2y male, fell off trampoline

- Treatment according to Bryant (traction followed by hip spica).
- 6 weeks post injury
- Shortening and mild varus deformity



2y male, fell off trampoline

- 3 months post injury



2y male, fell off trampoline

- One year: Unrestricted activity



8 year old male

- Falling down from a ladder
- Isolated injury
- Closed reduction and 4 mm flexible titanium nails



Preoperative



Postoperative



After 7 months



15 Y old boy, RTA

- Driver !!
- Car crashed into a palm tree!
- Stable
- Painful swollen L thigh



15 Y old boy, RTA

- Driver !!
- Car crashed into a palm tree!
- Painful swollen L thigh



15 Y old boy, RTA

- Post op after fixation using plate and screw
- Restoration of length and alignment and rotation



15 Y old boy, RTA

- After 1 year showing good signs of healing



Growth plate fractures

Salter Harris Classification



Factors affecting remodelling

- Years of remaining growth – **most important factor**
- Position in the bone
 - the nearer to physis the better the remodelling
- Plane of motion
- Physeal status
- Growth potential of adjacent physis



Case 1





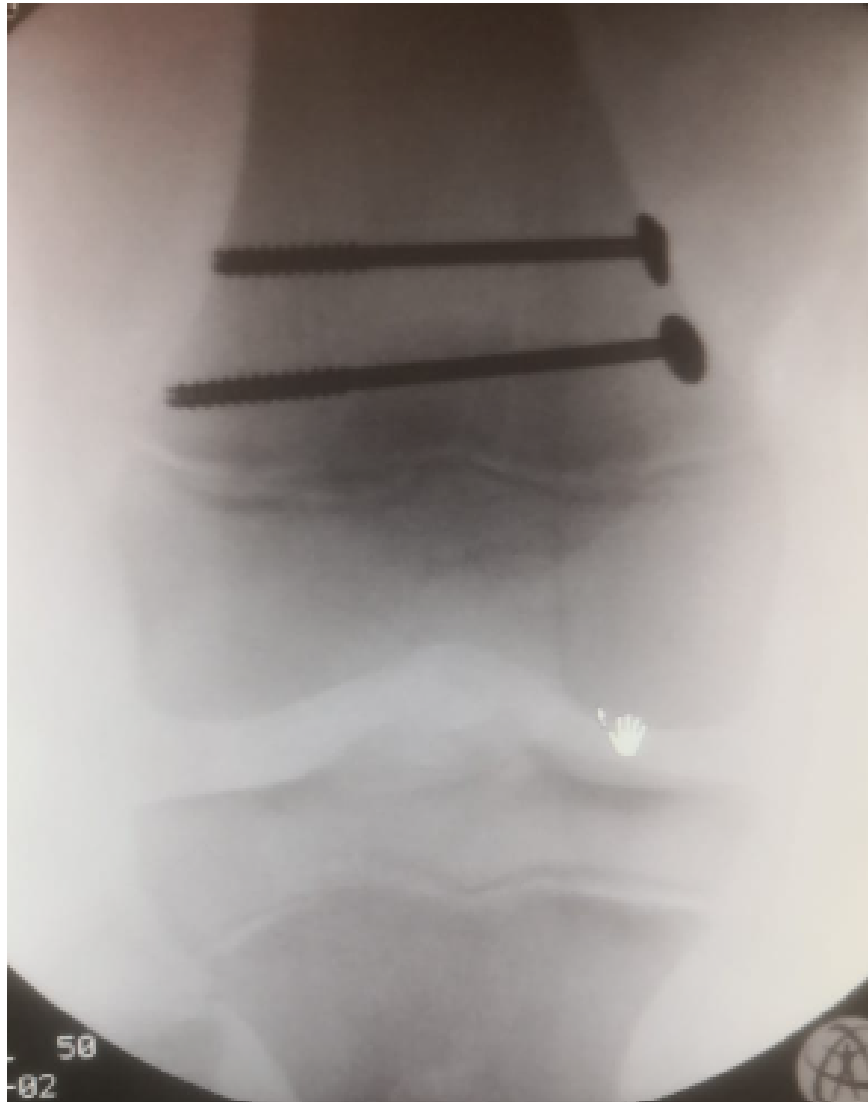
Supracondylar fractures

- Fall on outstretched hand
- Mostly extension type
- Check NV
- AIN nerve injury most common
- Displaced fractures need surgical fixation using K-wires



Case 2





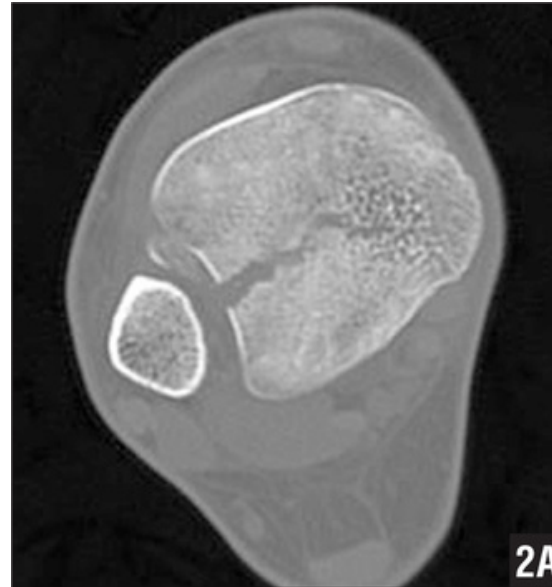
13 Year old girl

- Twisting injury to ankle
- No open wounds



13 Year old girl

- CT SCAN for pre-operative planning
- Needs anatomical reduction and absolute stability



13 Year old girl



Case 4



Complications

- Mal-union is not usually a problem
- Non-union is hardly seen
- Growth disturbance
- Vascular injury
- Nerve injury



TAKE HOME MESSAGE

- Children are not small adults.
- Huge remodeling capacity
- Different factors affect the treatment options.
- The older the child the more the surgical intervention.
- Always consider nonaccidental injury.

