

WEEK FIVE-

HOW ARE FRACTURES ACQUIRED?

- Trauma
- Accidental injury
 - Motor Vehicle Accidents, pedestrian
 - Bicycle, skateboard
 - Falls, playground, equipment
 - Sporting
- Non-accidental injury
- Childhood obesity increases the risk of fractures and complications associated with fracture

Anatomical & Physiological Characteristics

- Young children have more cartilage than bone
 - Ossification gradually occurs through to puberty
 - Thicker periosteum that limits displacement of bone/cartilage
 - Bone may bend instead of fracturing
- Healing is more rapid in children
 - Bone growth is still occurring
 - Rapid replacement of bone cells
 - High levels of activity stimulates bone growth and remodelling
- Children's bones are more easily damaged than an adult
 - E.g. by twisting, minor falls
 - Less bony so less force is required to cause fracture
 - Active mobility and lack of coordination contribute to frequency of fractures in children
- Fractures are less likely to be accompanied by soft tissue damage

Treatment

- Alignment- depends on age
 - Distance of the fracture from the end of bone
 - The amount of angulation
 - The younger the child and the closer to the epiphyseal plate, the greater the chance of deformity

Treatment of paediatric hip fractures has the following goals:

- Anatomic reduction
- Maintenance of reduction until complete healing
- Minimisation of complications associated with the injury and treatment
- The most important factors determining the outcome of treatment in these injuries are:
 - Age of the child
 - Type of fracture
 - Degree of displacement of the fracture fragments
 - Length of time since injury

Growth Plates and Fractures

- Growth plates in long bones are the weakest area
 - Weaker than supporting ligaments
 - Forces that would cause a sprain in an adult may cause a fracture in children
- Fractures can occur across physes (growth plate), epiphyses and metaphyses
- Salter-Harris classification types for fractures involving growth plate:

TYPE 1- In a type I separation, the epiphysis separates from the metaphysis. The plane of separation is horizontal and the germinal cells remain with the epiphysis



Type I

TYPE 2- The type II injury starts as a horizontal separation (like type I) but this is completed by exiting through the metaphysis, resulting in a triangular fragment



Type II

TYPE 3- Transverse fracture through the growth plate and a vertical fracture through the epiphysis



Type III

TYPE 4- Vertical fracture through all three components, metaphysis, physis and epiphysis



Type IV

TYPE 5- Compression fracture or crushing of the growth plate



Type V