

Chapter 3:

Physeal Injuries:

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PHYSEAL INJURIES:

These injuries are usually seen in boys than girls and most common in infancy or ages of 10-12 years. A child presents with pain and tenderness near joint arouses suspicion.

These injuries are through growth plate or physis of bone and accounts for about 10% of injuries in children. Physis is relatively weak part and fracture usually runs transversally through hypertrophic Or calcified layer of growth plate. Sometimes these fracture extends to edges with a triangular slip of bone. Usually these have little effects of longitudinal growth of bone because this occurs through the germinal and proliferating layers of physis. The bone growth may be disturbed if the fracture traverses through reproductive layers of injured part.

These injuries are usually caused by fall and traction, mostly during sporting activities or playground tumbles. Salter and Harris classification is given below:

Type -1: it is the transverse fracture through the hyper trophic or calcified zone of growth plate. It has good prognosis, except in proximal femur (due to vascularity). Usually growth disturbance does not occurred even in displaced fracture fractures.

Type-2: This is common injury, fracture occurred through physis and metaphysis but usually associated with triangular metaphyseal split of bone on its edge (Thurston Holland Fragment) Called as a Flag sign. It is seldom associated with abnormal growth.

Type-3: This is an intra articular fracture involving split of epiphysis and then extension into either side through

hypertrophic layer of physis. It damages reproductive layer and produces growth disturbance.

Type-4: in this, fracture splits the epiphysis and extends into the metaphysis. These are mostly displaced resulting in asymmetrical growth. It has to be reduced accurately and need open reduction.

Type-5: This is a longitudinal injury producing compression (crush) of growth plate. Usually causes growth arrest of bone.

Type-6: This is an injury to perichondrial ring causing significant growth disturbance.

On X-rays: There may be – widening of physal gap

- incongruity of joint and
- tilting of epiphyseal axis

Treatment: This depends upon the basic classification of fracture. Mostly undisplaced fractures are treated with splinting the affected part or plaster slab for 2-4 weeks. Repeated check x-rays after 4-7 days should be done to check displacements of fragments.

All displaced fractures of type 1, 2 should be reduced as soon as possible and splinted after anatomical reduction. In all type 3 and 4 fractures, an attempt of gentle manipulation under general anaesthesia should be done. If not reduced, then open reduction and anatomically internal fixation with smooth K-wires should be done. Limb has to be splinted for 4-6 weeks.

Complications: If properly reduced, type 1, 2 have an excellent prognosis. While type 3, 4 may cause premature fusion of part of growth plate Or asymmetrical growth of bone ends. Growth retardation and premature fusion is usually seen in type 5, 6 fractures. An established deformity should be treated by corrective osteotomy.