

Introduction to Orthopaedics



Orthopedic Surgery = Not only Bone Surgery



- Orthopedic specialty is the branch of medicine which manage trauma and disease of Musculoskeletal system
- It includes : bones, muscles, tendons, ligaments, joints, peripheral nerves, vertebral column and spinal cord and its nerves

Orthopedic Specialty



- **Sub-Specialties** in orthopedic include :
 - General
 - Pediatric Orthopedic
 - Sport and Reconstructive Orthopedic
 - Orthopedic Trauma
 - Arthroplasty
 - Spinal Surgery
 - Foot and Ankle surgery
 - Oncology
 - Hand Surgery
 - Upper Limb (New)

Red Flags



- Red Flags = Warning Symptom or Sign
- Red flags should always be looked for and remembered
- Presence of a red flag means the necessity for urgent or different action/intervention

Examples of Red Flags



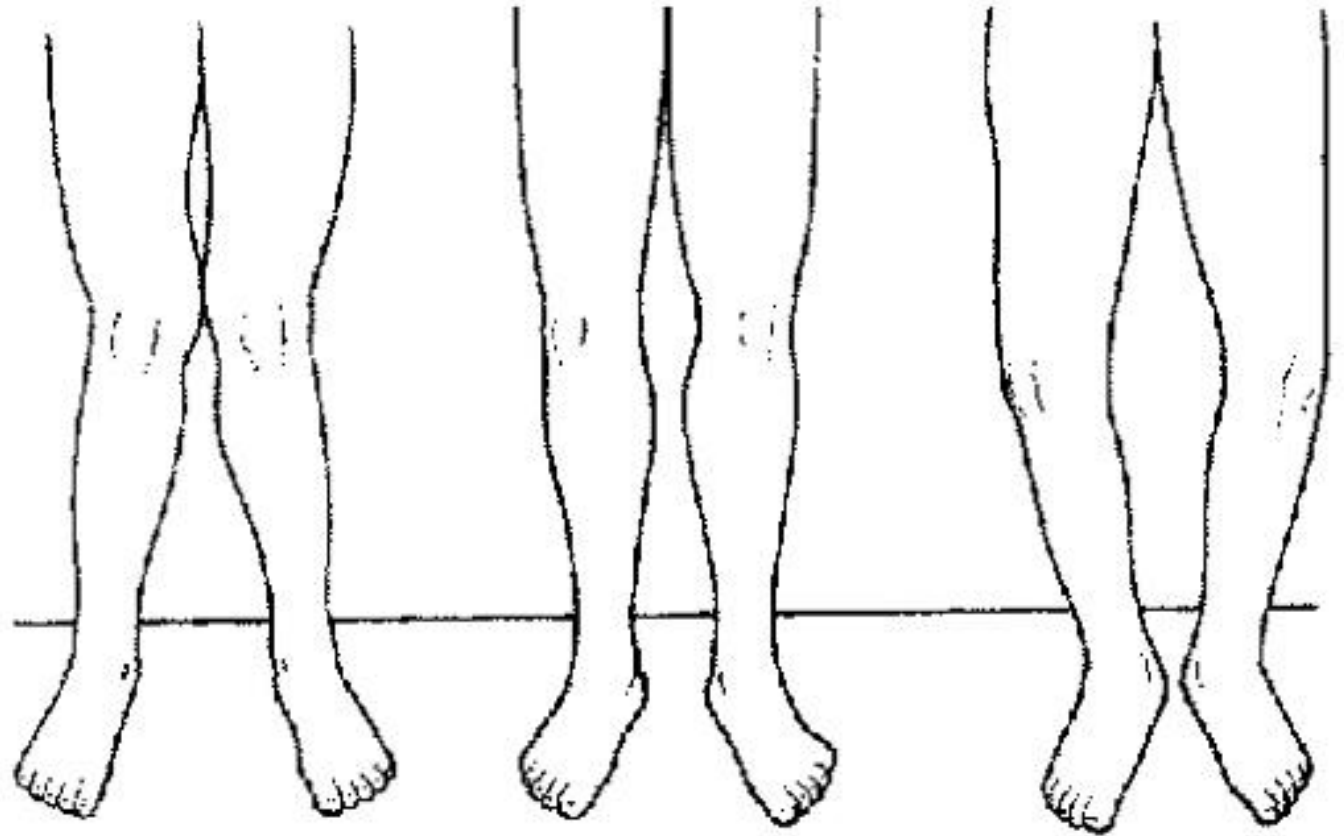
- **Open Fractures** : more serious and very high possibility of infection and complications
- **Complicated Fractures** : fracture with injury to major blood vessel, nerve or nearby structure
- **Compartment Syndrome** : increase in intra-compartment pressure which endangers the blood circulation of the limb and may affect nerve supply
- **Cauda Equina Syndrome** : compression of the nerve roots of the Cauda Equina at the spinal canal which affect motor and nerve supply to lower limbs and bladder (also saddle or peri-anal area)

Examples of Red Flags



- Infection of Bone, Joint and Soft Tissue
 - Osteomyelitis** : Infection of the bone
 - Septic Arthritis** : Infection of the joint
 - Cellulitis** : spreading Infection of the soft tissueMay cause septicemia or irreversible damage
- . **Multiple Trauma or Pelvic Injury**: more than one fracture or injury sustained at the same time
consider massive blood loss and associated injuries
- . **Acute joint Dislocations** : requires urgent reduction or may cause serious complications

Alignment terminology



Genu valgum

Normal

Genu varum

Alignment Terminology: Cubitus Varus



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MAHMUOD SAMI ABDULAL MOHAMMED
Study Date:05/01/1426
Study Time:03:10:07
MRN:767839



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Alignment terminology: Cubitus Valgus



Congenital or Acquired



- **Acquired conditions include :**
 - **Trauma**
 - **Developmental**
 - **Inflammation**
 - **Infection**
 - **Neuromuscular**
 - **Degenerative**
 - **Metabolic**
 - **Tumor**

Congenital Anomaly : Talipes Equino Varus TEV



Traumatic Injuries



- Fractures
- Dislocations
- Soft tissues injuries: ligaments, tendons
- Nerve injuries
- Epiphyseal injuries

Fractures: Break in the continuity of bone



Fig. 1 Complete fracture



Fig. 2 Incomplete fracture

Dislocations



**Complete
separation of the
articular surface**

**Distal to proximal
fragment**

**Anterior, Posterior, Inferior,
Superior**

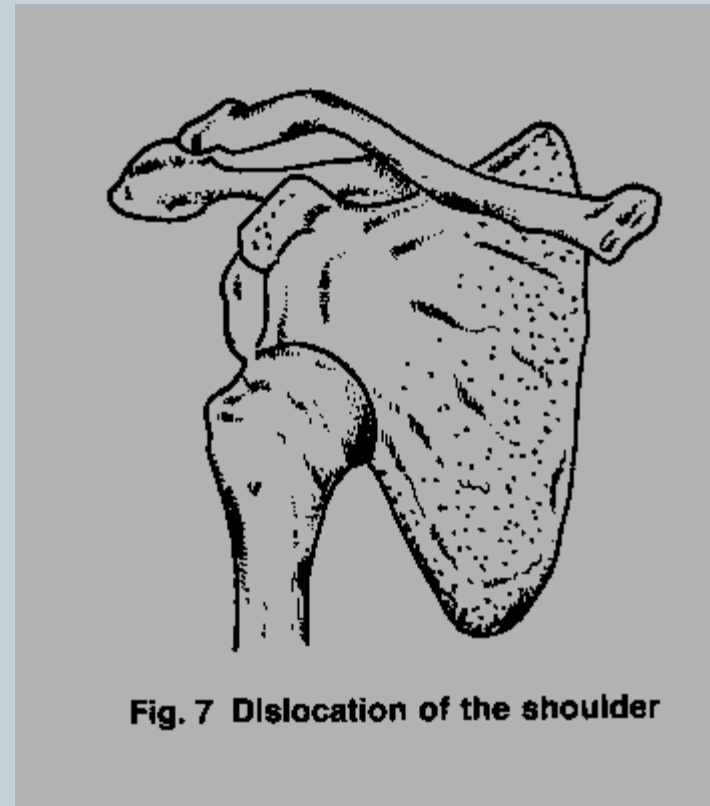


Fig. 7 Dislocation of the shoulder

Fracture Dislocation



Dislocation with fracture of
the bone



**Always X-Ray Joint
Above and Below**

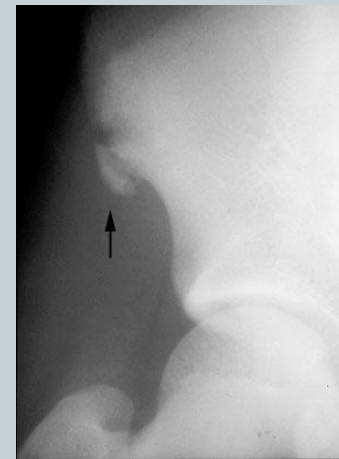
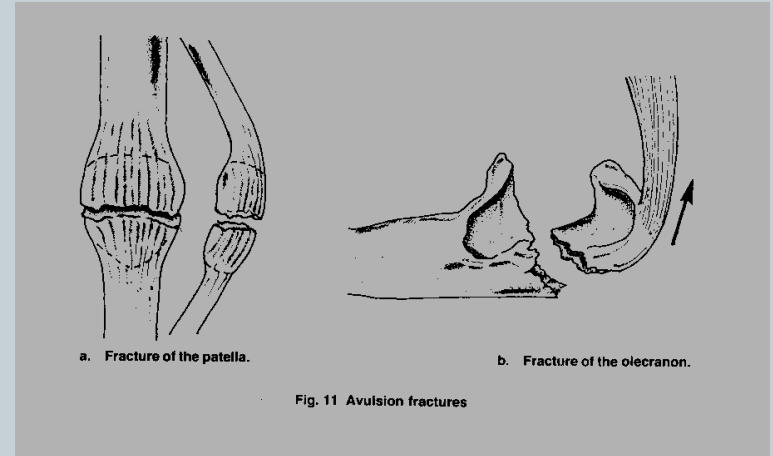


Avulsion Fracture



**Force due to
Resisted Muscle
Action:-**

**“Avulsion”
Transverse pattern**

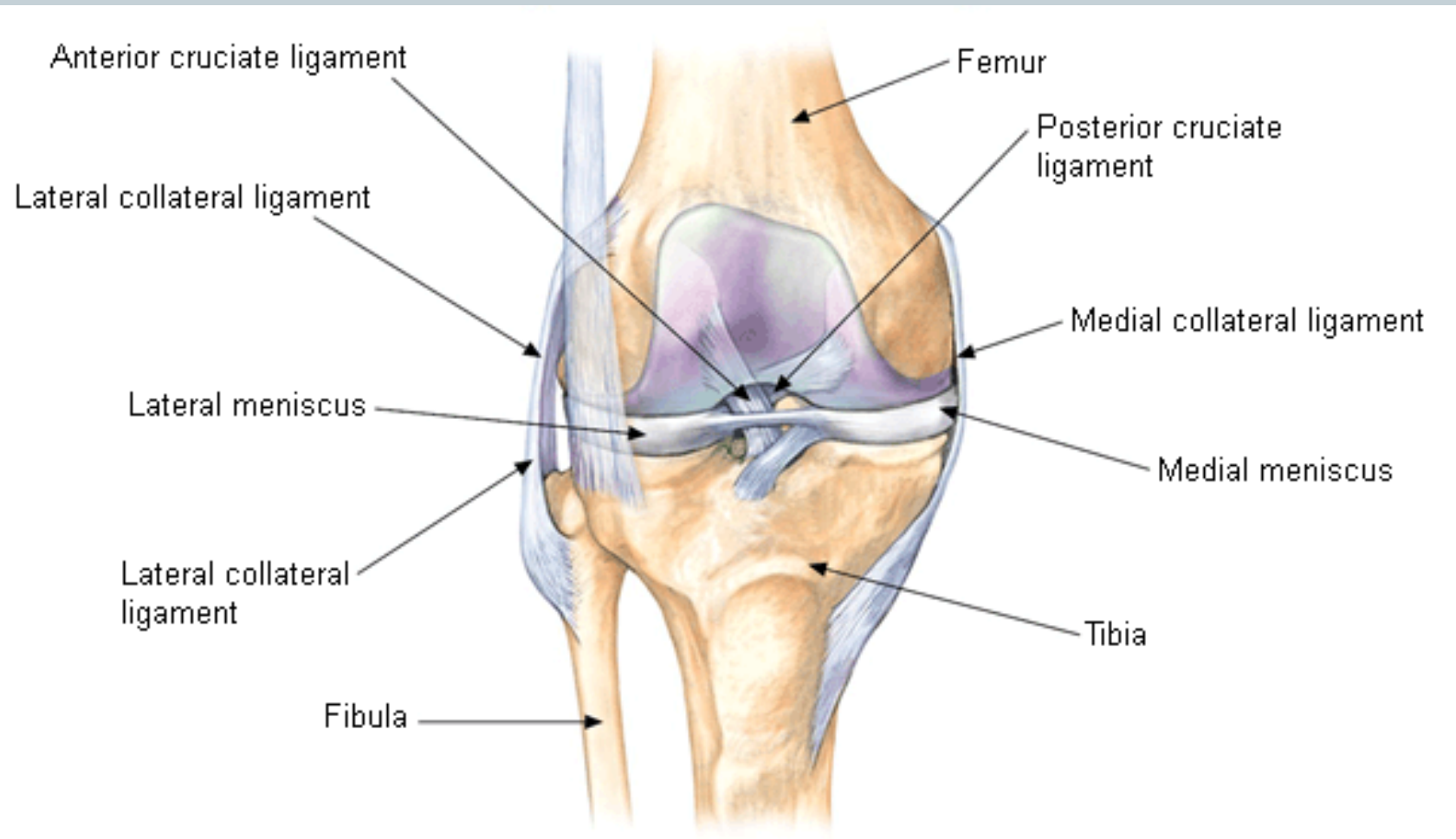


Intra-articular Fractures

- If displaced ; should always be treated by ORIF=
Open Reduction and Internal Fixation
failure to reduce and fix such fracture results in loss of function, deformity and early degenerative changes



Soft tissue injuries of the knee



Anterior Cruciate Ligament injury: MRI



(Developmental Dislocation of Hip) DDH



Developmental Foot deformity: Hallux Valgus



Developmental: SCFE (Slipped Capital Femoral Epiphysis)



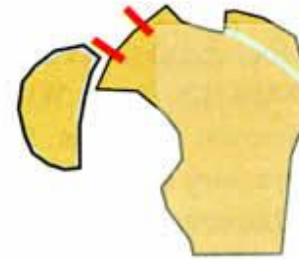
Mild

0–1/3



Moderate

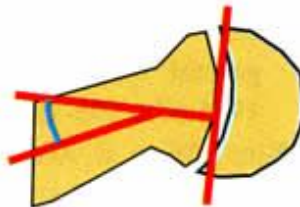
1/3–2/3



Severe

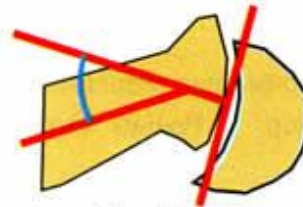
2/3–complete

Change in apposition, AP projection



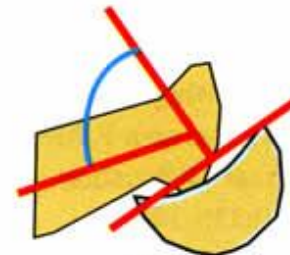
Mild

0–30°



Moderate

30°–60°

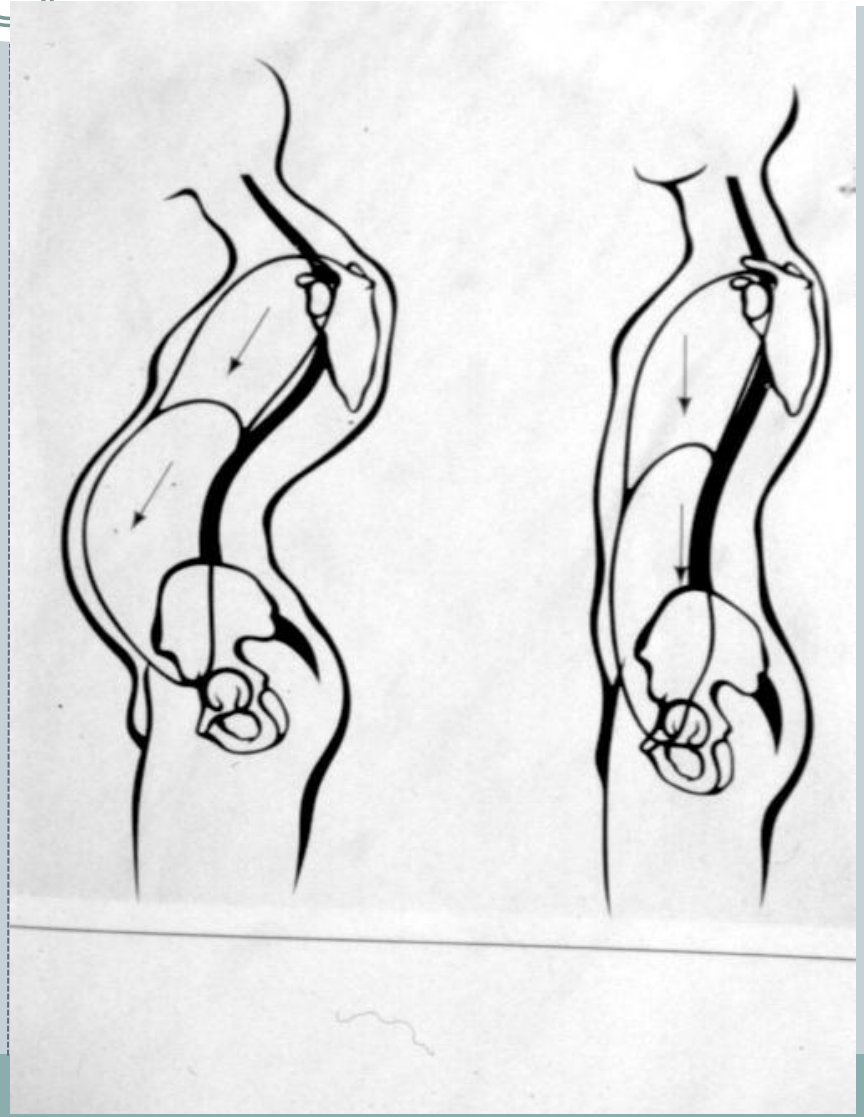
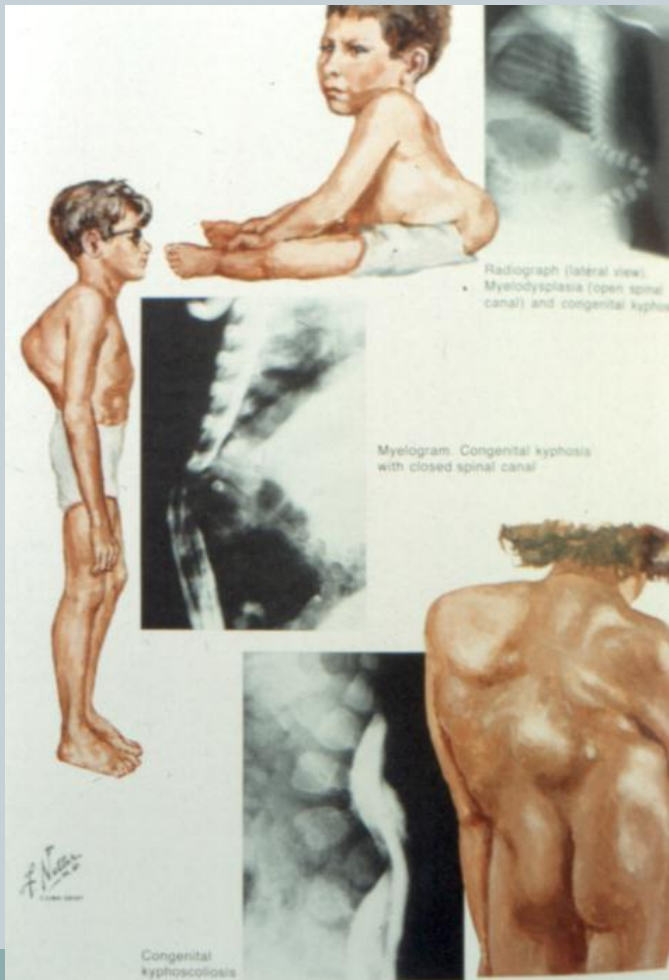


Severe

60°–90°

Slip angle, true lateral projection

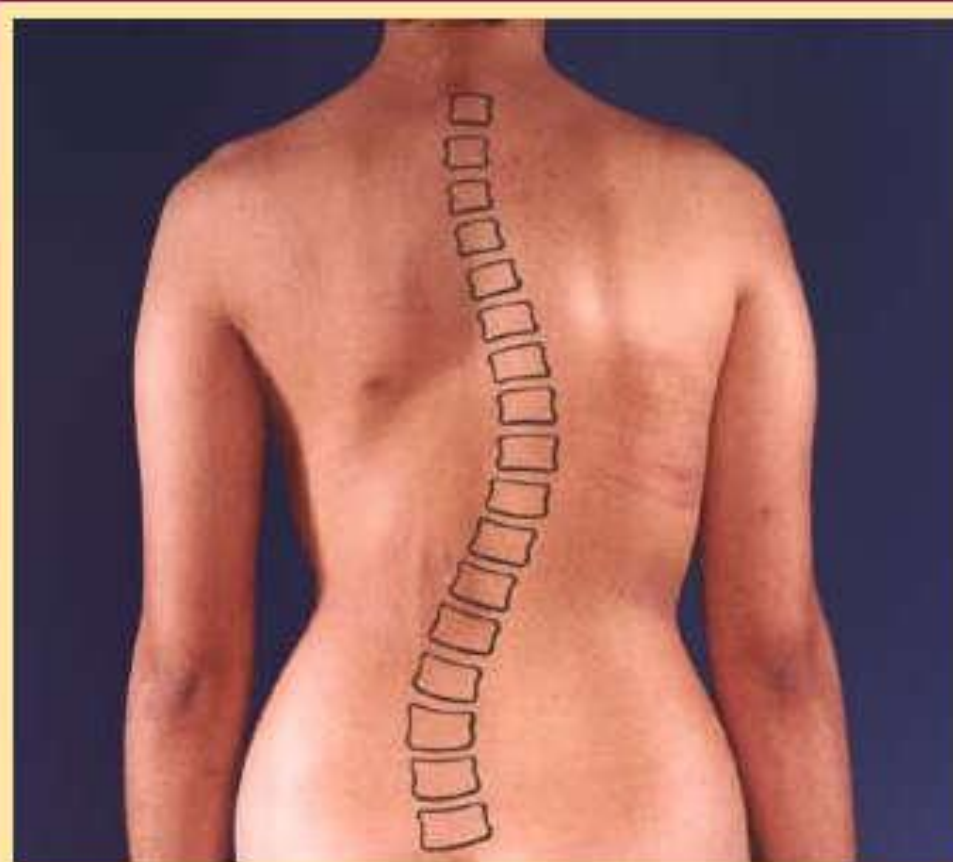
Spinal Deformities: Kyphosis or Hyperlordosis



Spinal Deformity: Scoliosis



Scoliosis



Degenerative Disorders



- Occur at any joint
- Can be primary or secondary
- Can lead to pain and/or deformity and/or loss of function

OA Hip



Osteoarthritis of Knee



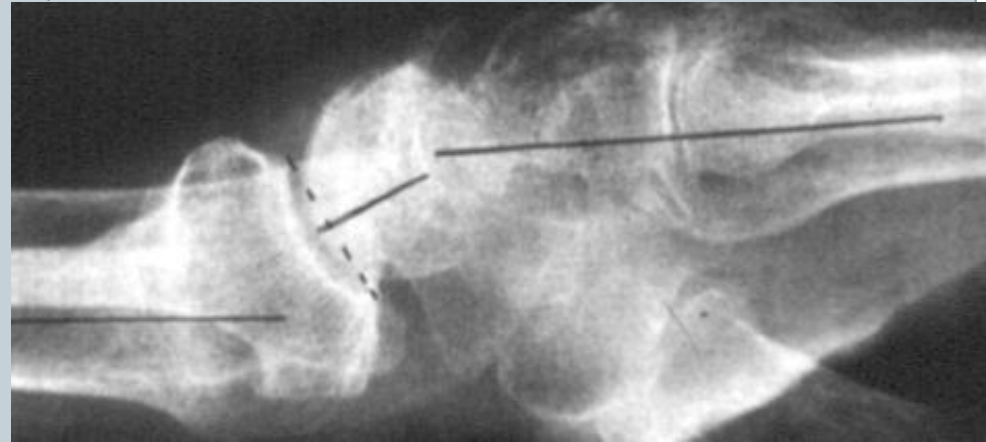
Metabolic Disorders (Rickets): Bow Legs



Osteoporosis: Pathological Fracture



Osteoporosis: Colles fracture



Bone Tumors



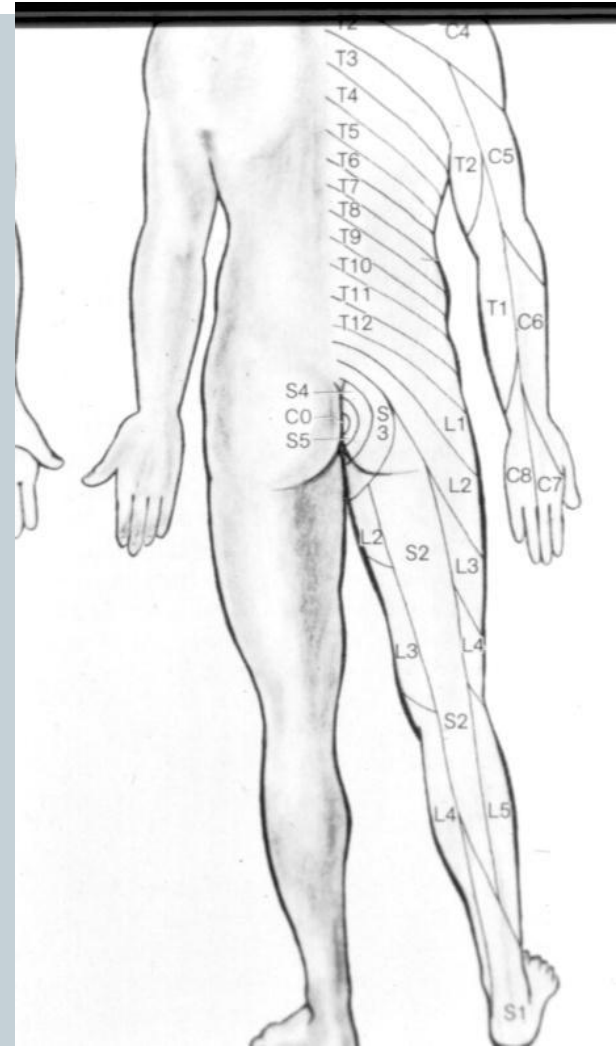
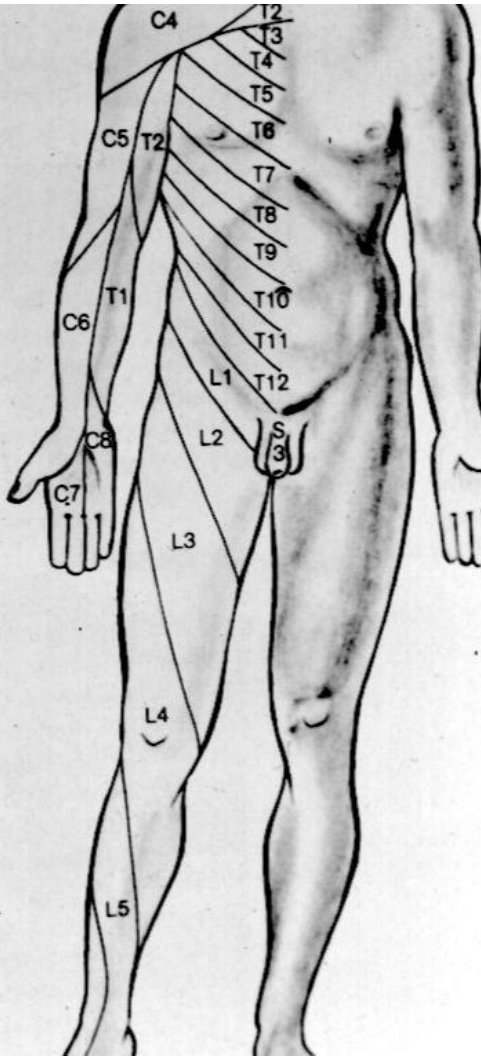
Bone Tumor



Bone tumors



Neurological Evaluation : Sensory & Motor



Nerve Injury: Muscle wasting

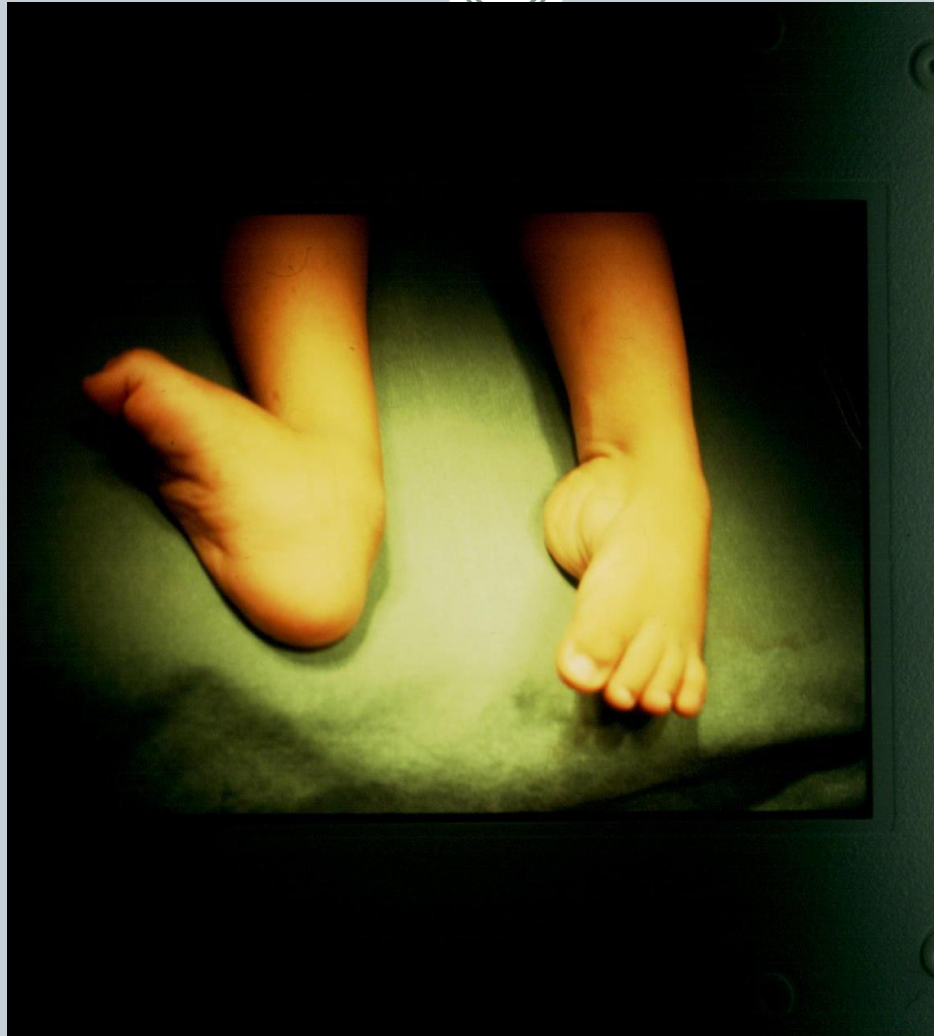


Spinal Cord Injury



- Often results from fracture dislocation of spine
- When injury is at cervical spine it may result in Tetraplegia
- Injury at dorsal spine may result in Paraplegia

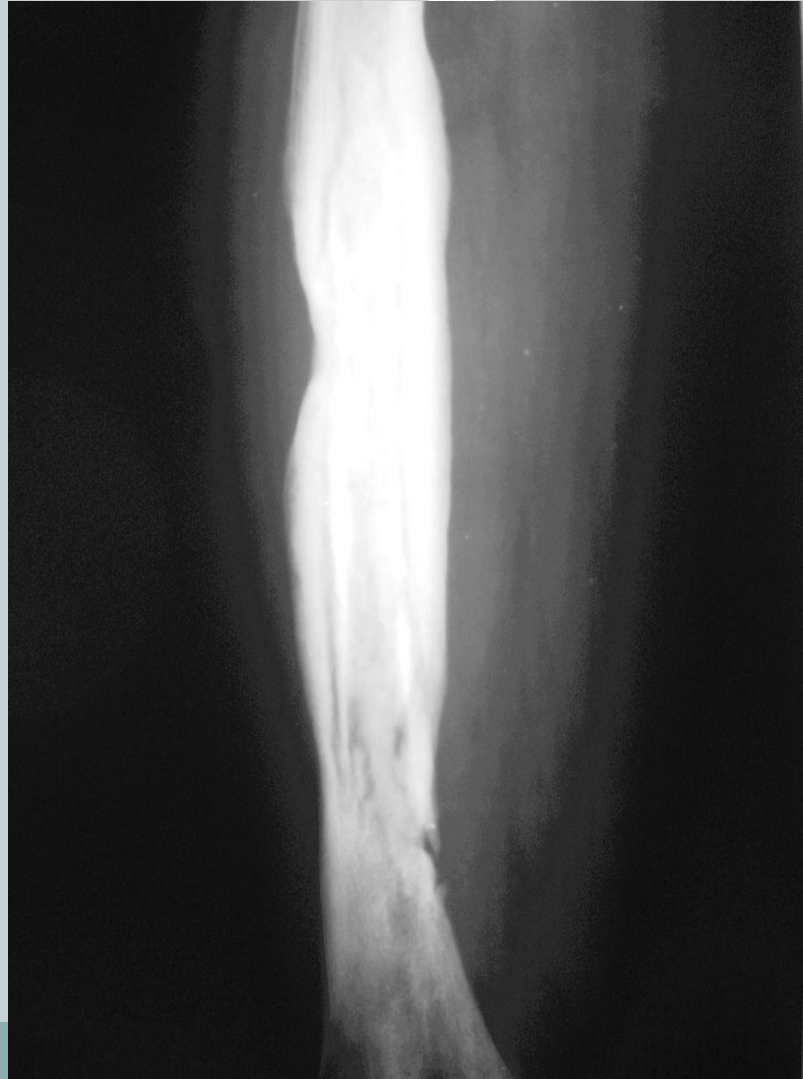
Neuromuscular disorder: Polio



Chronic Osteomyelitis : discharging sinus



Chronic Osteomyelitis : Sequestrum



Physiotherapy for Orthopedic Patients

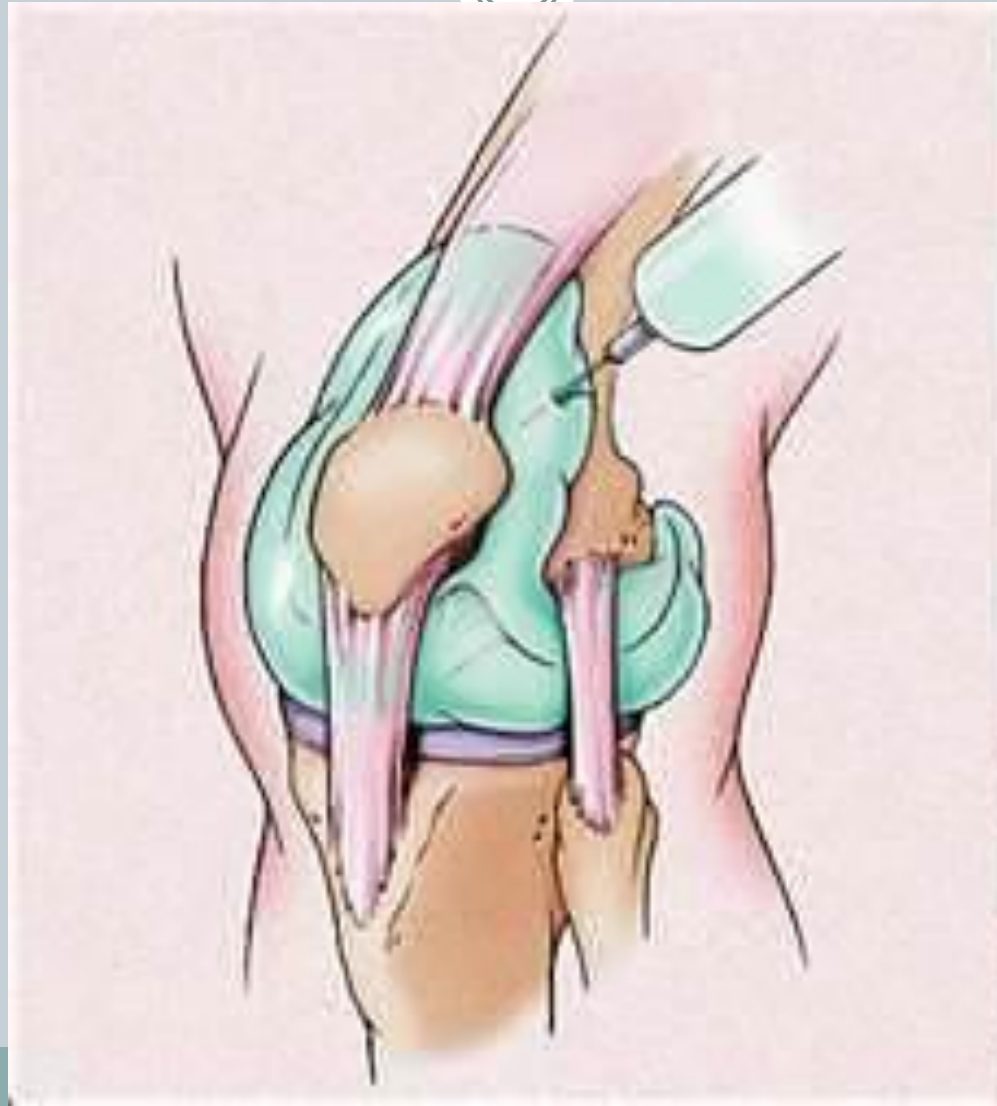


- Physiotherapy is an important part of orthopedic and trauma management
- It is used for : pain relief, prevention of stiffness, muscle strengthening, mobilisation of stiff joint or spine, training non-weight bearing or partial weight bearing
- Physiotherapy modalities include: heat, cold, exercise, ultrasound, traction, electrical stimulation

Clinical Skill: Cast application



Clinical Skills: Knee Aspiration



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