



Intended Learning Objectives

MSK

1. X-ray Interpretation and Presentation
2. Orthopaedic Emergencies
3. Common Upper Limb Fractures and Dislocations
4. Common Lower Limb Fractures and Dislocations
5. Spinal Disorders
6. Shoulder and Elbow Disorders
7. Hand and Wrist Disorders
8. Hip and Knee Disorders
9. Foot and Ankle Disorders
10. Metabolic Bone Disease
11. Bone and Soft Tissue Tumours
12. Managing Post-op Ortho Patients
13. Infection in Orthopaedics
14. Common Orthopaedic Paediatric Conditions (See paediatric block)

1. X-ray Interpretation and presentation

- Describe the anatomical region on the x-ray, the side (if relevant) and the views shown e.g. AP and Lateral of a Right Hip. **If you are only shown one view always ask for the other.**
- Identify and describe the name and age of the patient and the date the x-ray was taken.
- Describe the most obvious abnormality and bring your presentation to a distinct end.
- If it is a fracture describe:
 1. The configuration of the fracture e.g. spiral, transverse etc.
 2. The part of the bone fractured e.g. proximal or distal tibia
 3. Whether it is displaced or not.
 4. The type of displacement e.g. angulation, translation etc
 5. Whether it is intra-articular or not

2. Orthopaedic Emergencies

Open Fractures/Dislocations

- Outline the initial management of patients with open fractures/dislocations (antibiotics, removal gross debris, photo, sterile covering and splint) in A&E
- List the different types of open fractures (Grade 1-3)
- Outline the types of nerve injuries (neuropraxia, axonmesis, neurotmesis)

Compartment Syndrome

- Discuss the pathophysiology and aetiology of acute compartment syndrome
- Identify the clinical features of compartment syndrome
- Outline the management of compartment syndrome
- Identify complications associated with compartment syndrome

Septic Arthritis

- Define septic arthritis
- Discuss the aetiology of septic arthritis
- Recognise the clinical features of septic arthritis
- Outline a differential diagnosis of septic arthritis
- Understand the investigations and management of septic arthritis
- Identify complications associated with septic arthritis

Cauda Equina Syndrome (CES)

- Outline the anatomy of the lumbosacral spine and relation to spinal cord and cauda equina
- Describe the clinical features of CES
- Understand the investigations and management of CES
- Identify complications associated with CES

Major Trauma Management

- List the crucial steps the immediate assessment of trauma patients (ABCDE)
- List the important aspects of a secondary survey in trauma patients
- Be aware of the importance of manual in-line stabilisation (MILS) of the cervical spine in major trauma patients
- Recognise the significant risk of major haemorrhage with pelvic fractures in the setting of major trauma

3. Common Upper Limb Fractures and Dislocations

X-Ray Interpretation

- Identify the following common upper limb fractures and dislocations on plain x-rays;
 - Clavicle fractures
 - Proximal humerus fractures
 - Acromioclavicular dislocations
 - Anterior and posterior shoulder dislocations
 - Elbow dislocations – simple and complex
 - Radial head fractures
 - Forearm fractures
 - Distal radius fractures
 - Scaphoid and other carpal fractures and dislocations
 - Metacarpal and phalangeal fractures

Proximal Humeral Fractures

- Define a surgical neck of humerus fracture
- Describe basic conservative and surgical management of these injuries

Shoulder Dislocations

- Describe and explain the x-ray views required to identify anterior and posterior dislocations
- Describe the clinical assessment of shoulder dislocations and recognise the risk of associated axillary nerve injury
- Outline the basic emergency management and follow up of these injuries

Humerus Fractures

- Recognise the risk of radial nerve injury in diaphyseal fractures
- Describe basic conservative and surgical management of these injuries

Elbow Dislocations

- Describe the clinical assessment of elbow dislocations and recognise the risk of associated nerve injury
- Outline the basic emergency management and follow up of these injuries

Forearm Fractures and Fracture-Dislocations

- Recognise the importance of examining the wrist and elbow in these injuries
- Recognise risk of compartment syndrome in these fractures
- Describe, recognise and identify Monteggia and Galeazzi fracture dislocations
- Describe basic conservative and surgical management of forearm fractures and fracture dislocations

Distal Radius Fractures

- Evaluate displacement in distal radial fractures
- Recognise risk of median nerve compression in these fractures
- Describe manipulation of distal radial fractures
- Describe basic conservative and surgical management of these injuries

Scaphoid Fractures

- Recognise risk of associated dislocation of carpus
- Describe clinical assessment of these fractures and surface anatomy of anatomical snuffbox
- Recognise importance of requesting scaphoid views to evaluate fracture
- Recognise risk of occult fracture not visible on initial x-ray
- Explain risk of avascular necrosis in these fractures
- Describe basic conservative and surgical management of these injuries

Peri-lunate Dislocations and Fracture-Dislocations

- Explain how to evaluate a lateral wrist x-ray for a perilunate/ lunate dislocation

Metacarpal Fractures and Dislocations

- Recognise importance of clinical rotational deformity
- Describe a 'boxer's' fracture
- Describe a 'Bennett's' fracture dislocation
- Recognise a fracture dislocation of the base of the little finger metacarpal
- Describe basic conservative and surgical management of these injuries

Phalangeal Fractures and Dislocations

- Identify and evaluate all the bones and joints in a hand x-ray
- Recognise importance of clinical rotational deformity
- Describe the 'Position of Safety' when immobilizing the hand in a plaster or splint
- Describe basic conservative and surgical management of these injuries

4. Common Lower Limb Fractures and Dislocations

X-Ray Interpretation

- Identify the following common lower limb fractures and dislocations on plain x-rays;
 - Hip fractures
 - Native hip and knee dislocations
 - Prosthetic hip dislocations
 - Diaphyseal fractures (Femur and tibia)
 - Intra-articular knee fractures
 - Patella fractures
 - Ankle fractures
 - Talar fracture dislocation
 - Lis franc fracture dislocations
 - Metatarsal fractures

Hip Fractures

- Identify hip fractures on plain x-rays
- Differentiate between intra-capsular and extra-capsular hip fractures
- Explain the surgical treatment options for intra-capsular and extra-capsular hip fractures
- Describe the complications of hip fractures
- List the risk factors for osteoporosis
- Interpret a dual energy x-ray absorptiometry (DEXA) scan
- Outline management of patients following hip fractures including drug therapy and rehabilitation (see metabolic bone disease)

Pelvic Fractures

- Differentiate between low energy insufficiency and high energy pelvic fractures
- Describe the important clinical features of high energy pelvic ring fractures
- Discuss the initial management of high energy pelvic fractures

Hip & Knee Dislocation

- Recognise the surgical emergency that native hip and knee dislocations present and associated complications

Femoral Fractures

- Recognise the association of femoral fractures with major haemorrhage
- Describe the initial emergency room management of femoral shaft fractures
- Discuss the basics of operative management of femoral shaft fractures

Tibial Fractures

- Recognise the association of tibial fractures with compartment syndrome
- Describe the initial emergency room management of open tibial fractures

Ankle Fractures and dislocations

- Recognise the clinical urgency of emergent closed reduction of ankle fracture dislocations
- Describe the different treatment options for ankle fractures depending on fracture displacement and stability

Other Fractures in the Foot

- Recognise common simple metatarsal fracture patterns
- Identify higher energy injury fracture patterns in the foot (Lis Franc injury)
- Recognise the emergency that a talus fracture dislocation presents and need for urgent reduction

5. Spinal Conditions

Mechanical back pain

- Recognise the typical clinical presentation of a patient with mechanical back pain
- Explain the treatment options available for mechanical back pain

Nerve root impingement

- Recognise the symptoms and signs of spinal nerve root impingement
- List the most common causes of nerve root impingement
- Explain the treatment options for spinal nerve root impingement

Serious spinal pathology:

- List clinical **red flags** symptoms and signs for back pain

Tumour

- Describe the appropriate investigations and onward referral pathways for malignant spinal cord compression

Infection

- Discuss the typical clinical features of a patient presenting with discitis
- Discuss the initial investigations for patients suspected to have discitis
- Be aware of the treatment options for patients with discitis

Trauma

- Be aware of the importance of manual in-line stabilisation (MILS) of the cervical spine in major trauma patients
- Demonstrate the ability to perform a full neurological examination

Inflammatory conditions

- Discuss the aetiology and clinical features of Ankylosing Spondylitis
- Discuss the common investigation features and treatment options

Cauda Equina Syndrome (CES) & Spinal cord compression

- Recognise the clinical symptoms and signs of CES & spinal cord compression
- Describe the appropriate investigations and onward referral pathways for patients with CES and spinal cord compression
 - Be aware of the American Spinal Injury Association (ASIA) scale in the documentation of

Spinal deformity

- Recognise the clinical appearance of scoliosis and kyphotic deformities
- Recognise the radiological features of scoliosis and kyphotic deformities

6. Shoulder and Elbow Disorders

Elbow

- Outline the common causes of elbow pain (OA, RA, gout, tennis elbow, golfer's elbow)
- Recognise the clinical signs of olecranon bursitis
- Recognise a rheumatoid nodule at the elbow

Shoulder

OA of the Shoulder

- Outline the common causes of shoulder pain
- Be able to identify signs of OA on radiographs
- Be aware of the management options of shoulder osteoarthritis

Instability

- Recognise the clinical features of a shoulder Dislocation in the emergency room
- Recognise the radiologic features of an anterior and posterior shoulder dislocation
- List the static and dynamic shoulder stabilisers
- Be aware of the common complications of shoulder dislocations

Frozen Shoulder

- Recognise the clinical features of a frozen shoulder
- Be aware of the natural history and stages of a frozen shoulder
- Discuss the management of frozen shoulder

Impingement

- Discuss the symptoms, signs and treatment options for sub-acromial impingement
- Be aware of the signs of subacromial impingement

Rotator cuff

- Know the anatomy of the rotator cuff (muscles & nerve supply)
- Discuss the symptoms, signs and treatment options for rotator cuff tears

7. Hand and Wrist Disorders

Carpal Tunnel Syndrome

- Name the contents of the carpal tunnel
- List common causes and associated conditions (hypothyroid, RA, diabetes, pregnancy)
- Be aware of the signs and symptoms of CTS (tingling in median nerve distribution, thenar muscle wasting) including special tests (Phalen's, Tinel's)
- Understand management options (splinting, steroid injections, decompression)

Osteoarthritis of the hand and wrist

- Be able to identify signs of OA on radiographs (See also OA ILO's)
- Be aware of examination findings (Heberden/Bouchard nodes)
- Understand management options (conservative, LA/steroid injections, arthrodesis, trapeziectomy)

Rheumatoid Arthritis

- Be able to list common signs in the rheumatoid hand (ulnar deviation of fingers, Z thumb, extensor tendon rupture, Boutonniere and swan neck deformities, rheumatoid nodules)

Flexor tenosynovitis (trigger finger)

- List common causes and associated conditions (diabetes, RA)
- Understand management options (steroid injection, A1 pulley release)

Dupuytren's Disease

- Be able to identify a patient presenting with Dupuytren's contracture of the hand
- List common causes and associated conditions (alcohol, family history)
- Understand management options (conservative, splinting/physio, operative)

8. Hip and Knee Disorders

Acute Painful / Swollen Joint

- List the common causes of acute painful / hot swollen joint
- Recognise the clinical features of a knee effusion
- Discuss the assessment, investigation of an acute painful / swollen joint
- Recognise the importance of ruling out periprosthetic joint infection (PJI) in patients presenting with an acutely painful joint replacement.

Osteoarthritis of the hip and knee

- Recognise the typical symptoms and signs of patients presenting with OA of the hip
- Discuss the differential diagnosis of patients presenting with hip pain
- Explain the conservative treatment options for hip OA
- Know the indications for onward referral for surgical intervention
- List the common causes of an abnormal gait

Avascular necrosis (AVN) of the Hip

- Describe the pathological process of AVN of the hip
- List common causes of AVN of the hip

Slipped Upper Femoral Epiphysis (SUFE)

- Recognise the typical presentation of a child with SUFE (age, knee pain, etc)
- Recognise the x-ray appearances of SUFE

Development Dysplasia of the Hip (DDH)

- List the risk factors in DDH (Family Hx; Breach position; Female etc..)
- Know of the clinical signs and treatment options in DDH at various stages from infancy through childhood

Quadriceps and Patella Tendon Ruptures at the Knee

- Recognise the importance of clinically recognising a disruption to the extensor mechanism
- Recognise the clinical features of these tendon ruptures
- Discuss the treatment options in acute quadriceps and patella tendon ruptures

Meniscal tears and ligament knee injuries

- Recognise the typical symptoms and signs of a patient presenting with an acute meniscal tear.
- Recognise the typical symptoms and signs of a patient presenting with an acute ligament injury of the knee

9. Foot and Ankle Disorders

Hallux Valgus

- Recognise the clinical and radiologic features of hallux valgus
- List the risk factors for development of hallux valgus
- Discuss the treatment options for Hallux valgus

Achilles Tendon Rupture

- Recognise the typical history of the patient presenting with an achilles tendon injury
- Recognise the clinical features of an achilles tendon rupture
- Recognise the importance of placing an equinus cast on first presentation of an Achilles rupture
- List the risk factors in achilles tendon ruptures

Pes Cavus & Pes Planus

- Recognise the clinical features of pes cavus and pes planus feet
- Understand the difference between congenital and acquired foot deformities
- List the common causes and clinical associated conditions with each

Diabetic Foot

- Discuss the clinical features of patients presenting with diabetic feet
- List common complications of diabetic feet
- Discuss the MDT approach to the management of the diabetic foot

10. Metabolic Bone Disease

Osteoporosis

- Describe the pathophysiology of osteoporosis
- List common sites and risk factor for development of osteoporosis
- Discuss the investigations and treatment of osteoporosis
- Be aware of the risks of long term use of bisphosphonates

Osteomalacia

- Describe the pathophysiology of osteomalacia
- List common types of osteomalacia
- Describe the biochemical features of osteomalacia
- Discuss the treatment of osteomalacia

Pagets Disease

- Be aware of the common anatomical site affected by pagets and radiological features
- List the common associated complications associated with Pagets disease

Avascular necrosis (AVN)

- Describe the pathophysiology of AVN of bone
- List common risk factors in the development of AVN
- List common anatomical sites for development of AVN

11. Bone Tumours

Benign Bone Tumours

- Recognise basic radiologic features simple benign bone cysts

Metastatic Bone Tumours

- Recognise symptoms associated with MSK malignancy (red flag symptoms)
- Recognise the typical radiological features of bone metastasis
- Know the top 5 primary tumours that metastasise to bone
- Discuss the clinical tests for myeloma and lymphomas
- Outline early investigations and management of suspicious bone or soft tissue lesions

Malignant Primary Bone Tumours

- Recognise the typical radiological features of malignant bone tumours
- Know the age groups typically affected by malignant primary bone tumours
- Know about the most common malignant primary bone tumours
- Describe the clinical features (red flags) of a child presenting with a primary bone tumour
- Discuss the pathophysiology of osteosarcomas and Ewing's sarcoma

12. Post-operative Trauma & Orthopaedic patients

Fluid Management & Blood Loss

- Review the physiology of fluid homeostasis
- Describe the different types of fluid loss in post operative trauma and orthopaedic patients
- Appraise the different options for fluid therapy in post operative patients
- Discuss the different strategies in choosing the amount and composition of intra-venous fluids in the context of the post operative patient

Post Operative Infection

- Define surgical site infection
- List the common pathogens that cause surgical site infection
- List patient risk factors for developing post operative surgical site infection
- Discuss the clinical features of a patient presenting with a post operative infection
- Describe the treatment of post operative surgical site infection

Pain Management

- Describe the different types of post operative pain experienced by patients
- Discuss the World Health Organisation (WHO) analgesic ladder in the setting of a post-op patient
- Be aware of alternative pain management techniques that avoid the use of strong analgesics
- Know the common side effects of analgesics

Acute Kidney Injury (AKI) and Shock

- Define AKI
- List risk factors for patients developing post operative AKI
- Describe the management strategies in treating a patient with post operative AKI
- Differentiate between systemic inflammatory response syndrome (SIRS), sepsis, severe sepsis and septic shock in the post operative patient

Compartment syndrome

- Identify the clinical features of compartment syndrome
- Recognise the common injury types and conditions associated with compartment syndrome
- Recognise compartment syndrome as a surgical emergency and need for decompression
- Outline the management of compartment syndrome

Thromboembolic disease

- Describe the pathophysiologic process of venous thrombo-embolism (VTE)
- Describe the clinical features of a post operative patients with a VTE
- Discuss the appropriate initial investigation and management of a surgical patient with a VTE
- List important preventive measures for VTE's

13. Infection in Orthopaedics

Septic Arthritis

- Describe the pathophysiology of septic arthritis and the effect on native cartilage
- List the conditions that form a Differential diagnosis of septic arthritis
- List the common pathogens responsible for septic arthritis

Prosthetic Joint Infection

- Recognise the importance of identifying the infective pathogen in the presence of a joint prosthesis (aspiration of joint before starting antibiotics in well patients)

Osteomyelitis

- Define osteomyelitis
- Describe the risk factors for developing osteomyelitis
- List the common pathogens that cause osteomyelitis
- Discuss the investigations and treatment of patients with osteomyelitis

Cellulitis

- Define cellulitis
- List the common pathogens of cellulitis
- List the clinical features that differentiate simple cellulitis from necrotising fasciitis

Tendon Sheath Infection

- Describe the clinical features of acute flexor sheath infection of the hand

14. Common MSK Paediatric Conditions

The Limping Child

- Know the common causes of a limping child
- Understand that differential diagnosis is linked to age of child

Fractures in children

- Understand that fractures in children are different to adults (periosteum, remodelling ability)
- Be aware of importance of fracture location and relation to physes
- Be aware of the Salter Harris classification system
- Understand the importance of neurovascular integrity in supracondylar distal humeral fractures and how to examine them

Clubfoot

- Be aware of nature of deformity (Cavus, Adductus, Varus, Equinus – CAVE)
- Understand it can be idiopathic or associated with other congenital abnormalities
- Know that mainstay of treatment is serial casting using the Ponsetti regimen

Normal Variants

- Be aware of spectrum of common conditions in paediatric population (flat foot, intoeing, genu varum/valgus) and that these are often normal variants

Non-Accidental Injury

- Be aware of importance of NAI and need to always consider it
- Be aware of “red flags” (serial bruising, atypical injuries for age of child, inconsistent history)