

Orthopedics complications (CJP)

Fat embolism
Compartment syndrome

Fat embolism	Compartment syndrome
<ul style="list-style-type: none"> ● Cause <ul style="list-style-type: none"> ○ Fat globules >10 um from marrow of long bones ○ May lead to ARDS ● Presentation <ul style="list-style-type: none"> ○ PE → tachypnoea, tachycardia ○ Fever ○ Circulating FAT → confusion, coma ○ Petechiae in eyes and axilla ● Investigation <ul style="list-style-type: none"> ○ Fat globules in urine ○ PaO₂ <8 kPa/60 mmHg ○ CXR - wedge infarct ● Management <ul style="list-style-type: none"> ○ Sitting position ○ Oxygen ○ Reduce - hold - stabilise fracture ● Fat embolism pathophysiology: <ul style="list-style-type: none"> ■ Two theories - <p>The mechanical theory: FES results from physical obstruction of the pulmonary and systemic vasculature with embolized fat.</p> <p>The biochemical theory: Circulating free fatty acids are directly toxic to pneumocytes and capillary endothelium in the lung</p> ■ FE can produce tissue damage by direct vascular occlusion, breakdown to toxic free-fatty acids, activation of platelets, and coagulative and fibrinolytic cascades with release of vasoactive amines. 	<ul style="list-style-type: none"> ● Cause <ul style="list-style-type: none"> ○ Bleeding and oedema → increased pressure → reduced capillary flow → ischaemia → muscle fibrosis → Volkmann's contracture ● Presentation: pain disproportionate to injury, paresis and paraesthesia ● Risk factors <ul style="list-style-type: none"> ○ High risk in elbow, forearm, tibial # ● Investigations <ul style="list-style-type: none"> ○ Split catheter - measure pressure difference between diastolic and compartment pressure ● Management <ul style="list-style-type: none"> ○ Remove cast ○ Do not elevate limb as it will reduce perfusion ○ If pressure difference less than 30 mmHg <ul style="list-style-type: none"> ■ Fasciotomy of 4 compartments ■ Leave open for 2 days ■ Debride necrotic tissue ■ Sutured + skin graft

Infections (CJP)

Septic arthritis
Osteomyelitis - acute haematogenous, subacute, chronic

1. Septic arthritis

- a. Presentation: fever, joint pain, site infection sign, **limited ROM (maybe NO)**
- b. Cause
 - i. Haematogenous
 - ii. Direct spread - open wound/laceration (cracks over the heel also can)
 - iii. SA, HI, NG
- c. Investigation: FBC, ESR, CRP (f/up), joint aspiration, C+S (joint and blood), X-ray, MRI
- d. Management
 - i. Joint aspiration
 - ii. Antibiotics (empirical - po Flucloxacillin)

2. Osteomyelitis (OM)

Acute hematogenous OM	<ul style="list-style-type: none"> ● Usually occurs in children ● Phases: inflammation→ suppuration→ necrosis→ new bone formation→ resolution ● Causes: SA, SP, S. pneumoniae ● Presentation <ul style="list-style-type: none"> ○ Failure to thrive ○ Retarded growth and deformity ● Investigation <ul style="list-style-type: none"> ○ WCC, ESR, CRP increase ○ MRI to see foci of infection ○ Aspiration of synovial fluid and C+S ● Management <ul style="list-style-type: none"> ○ Rest ○ Analgesia ○ Drain abscess ○ Antibiotics depending on microorganism <ul style="list-style-type: none"> ■ If staph aureus, <u>flucloxacillin</u> and <u>fusidic acid</u> ■ If MRSA, <u>vancomycin</u> ■ If pseudomonas, salmonella, proteus, third gen cephalosporin
Subacute OM	<ul style="list-style-type: none"> ● Less virulent ● Causes: SA, SE ● Investigation <ul style="list-style-type: none"> ○ X-ray → oval cavity surrounded by sclerotic bone (Brodie's abscess) ○ Biopsy ● Management → po Flucloxacillin and fusidic acid
Chronic OM	<ul style="list-style-type: none"> ● Frequently follows open fractures or operations ● Causes: as acute OM

	<ul style="list-style-type: none">● Presentation: as acute OM● Investigation<ul style="list-style-type: none">○ X-ray<ul style="list-style-type: none">■ Bone rarefaction surrounded by dense sclerosis■ Sinuses○ CT○ MRI: bone destruction, oedema, abscess, sequestra● Management<ul style="list-style-type: none">○ Antibiotics○ <u>Sequestrectomy</u> - removal of dead spicules of bone
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Back pain (CJP)

Spondylolisthesis

Spondylosis

PID

Spinal stenosis

SPONDYLOLISTHESIS	SPONDYLOSIS - cervical or lumbar (as above)
<ul style="list-style-type: none"> Usually between L4/L5 and L5/sacrum Anterior displacement of vertebral body If posterior - retrolisthesis Causes: OA, TB, neoplasm, stress #, dysplasia of facet joints <u>Types</u> Dysplastic <ul style="list-style-type: none"> Children Scoliosis Protruding abdomen Lytic <ul style="list-style-type: none"> Adults Back pain A 'step' can be felt Degenerative <ul style="list-style-type: none"> >40 years old Investigation: X-ray and CT <u>Management</u> Conservative Operation (posterior intertransverse fusion and decompression) if <ul style="list-style-type: none"> Disabling Slipped forward >50% Neurological complications 	<ul style="list-style-type: none"> Cause: degeneration of IVD → bone spurs to stabilise the joint → compression of nerve root Presentation: pain, numbness, weakness, stiffness and deduced ROM Investigations <ul style="list-style-type: none"> X-ray - OA changes MRI - nerve root compression <u>Management</u> Conservative <ul style="list-style-type: none"> Heat Massage Collar - Philadelphia Physiotherapy Operative <ul style="list-style-type: none"> Foraminotomy - part of facet joint removed Laminectomy Disc replacement Anterior discectomy and fusion <ul style="list-style-type: none"> Disc replaced with bone graft
PID (often C6)	SPINAL STENOSIS
<ul style="list-style-type: none"> Causes: strain, injury, trauma Presentation <ul style="list-style-type: none"> Neck pain and stiffness 	<ul style="list-style-type: none"> Narrowing of spinal canal Cause: OA, spondylolisthesis, trauma, neoplasm Presentation