Shoulder Upper Arm & Elbow (Apley's p 733-766)

(A) ***Must know of***

- Clavicle # (Hoppenfeld p74-83) – Mid shaft # (most common 69-82%), lateral # (21-28%) & medial # (2-3%)
- Mechanism: FOOSH/shoulder. Mid shaft # - outer fragment pulled down by weight of arm & inner half held up by SCM mm. # on outer end – if lig's are intact – little displacement; but if coracolaclavicular lig's (made up of Trapezoid/Conoid lig's at acromioclavicular joint→ suspends scapula & UL from clavicle & prevents inf displacement of acromion) are torn or # is just medial to these lig's, displacement – severe & CR impossible.
- Clinical Features: arm clasped to chest. Subcutaneous lump, sharp fragment threatens skin.
- Imaging: radiograph - AP view & 30 deg cephalic tilt.
- Classification: Group 1 (middle 3rd #), 2 (lateral 3rd # [a. coracoclavicular lig's intact, b. torn/detached lig's from medial segment but trapezoid lig remains intact to distal segment & c. intra-articular #) & 3 (medial 3rd #)
- Treatment: Middle 3rd # - undisplaced – non-operatively - sling. Undisplaced >2cm – IF (plating & IM fixation). Lateral 3rd # - undisplaced (lig's intact) – sling. Displaced – disruption of lig's – higher rate of non-union (non-operatively but surgery has complications controversy). Medial 3rd # - extra-articular – non-operatively, unless medialstinal structure threatened – IF.
- Complications: Early – rare – pneumothorax, subclavian vesels & brachial plexus injuries. Late – Non-union (1-15%), lat clavicle # higher rate (11.5-40%), Mal-union (if shortening >1.5cm). Stiffness of shoulder
- Paediatric Cases: children clavicle # easily – unites rapidly & w/out complications.
- Scapula #
- Mechanism: crushing force. Neck of scapula – blow/fall on shoulder/attached long head of triceps may drag glenoid downwards/laterally (Infraglenoid tubercle gives attachment to long head of triceps brachii). Coracoid process (pec minor, coracobrachialis & short head of biceps attaches) may # across base/ be avulsed at the tip. Acromion # - direct force. Glenoid fossa # - medially directed force or shoulder dislocation.
- Clinical Features: arm held immobile, severe bruising over scapula/chest wall High energy – sever injuries to chest, brachial plexus, spine, abdomen & head.
- Imaging: radiograph (difficult to define due to surrounding tissue), CT useful – glenoid/body fractures.
- Classification: # scapular body, # glenoid neck, # intra-articular glenoid fossa (Type 1 - # glenoid rim, 2 – through glenoid fossa, 3 – oblique # through glenoid, 4 – horizontal # through med scapula border, 5 – Type 4 & # separating inf half of glenoid, 6- commuted glenoid surface), # acromion process (Type 1 – minimally displaced, 2 – displaced but not reducing subacromial space, 3 – inf displacement & reduced subacromial space) & # coracoid process (1 – prox to attach of coracoclavicular lig/acromioclavicular separation & 2 – distal to coraco-acromial lig)
- Treatment: Body # - sling. Isolated glenoid neck # - sling. Intra-articular # (1 – displaced more than a 3rd of glenoid surface – fixation considered, 2 – inf subluxation of head of humerus – ORIF, 3-6 – if head centered in middle – non-operative approach), acromion # (only 3 – operative intervention), coracoid process # - (1 – may need operation [AC separation], 2 – non-operative), combined # - fixation to stabilize fragments.

- Complications:
- Paediatric Cases:

Hip & Femur (Apley's p 843-873)

- ***Must know of***
- Hip dislocation: Posterior; most common
- Mechanism: road accident – someone seated in car thrown forward – striking knee against dashboard – femur thrusts upwards & femoral head forced out of socket (often piece of bone at back of acetabulum sheared off)
- Clinical Features: leg is short, lies add, internally rot & slightly flexed.
- Imaging: AP – femoral head out of socket above acetabulum. Oblique films in determining size, if there's a fragment missing from acetabular rim/femoral head.
- Classification: 1 – dislocation with no more than minor chip #s. 2 – dislocation with single large fragment of post acet wall. 3 – dislocation with comminuted fragments of post acet wall. 4 – dislocation with # through acetabular floor. 5 – dislocation with # through acetabular floor & femoral head.
- Treatment: CR or ORIF. 1 – apply traction & maintain for a few days – mvt & exs begin asap as pain allows (end range is avoided to allow healing of capsule/lig). Active limb control (may take 2/52) – walk with crutches NWB (prevent collapse of femoral head). If reduced within 6/24 – 6/52 on crutches, if longer delay – 12/52 with progression of WB. 2 – ORIF. 3 – CR or ORIF. 4/5 – CR but instability, retained fragments & joint incongruity calls for ORIF (traction for 2-4/52 & full WB deffered for 12/52).
- Complications: Early – Sciatic Nerve Injury (must be testes before reduction) – ankle may be splinted (overcome foot drop), vascular injury (sup glut artery torn), assoc # of femoral shaft. Late – Avascular necrosis, myositis ossificans & osteoarthritis (cartilage damage, presence of retained fragments)
- Paediatric Cases:
- Anterior; rare
- Mechanism: post directed force on abducted & externally rot hip – neck impinges on acetabular rim & lever femoral head out in front of socket
- Clinical Features: leg lies ext rot, abd & slightly flexed. From side – ant bulge of dislocated head unmistakable. Hip mvt impossible.
- Imaging: AP view – occasionally head is almost directly in front of normal position
- Classification: 1 – fem head will lie superiorly (pubic) or 2 – inferiorly (obturator)
- Treatment: look above at post dislocation.
- Complications: avascular necrosis
- Paediatric Cases:
- Central - Mechanism: fall on side (fall from height) or blow over greater trochanter – force fem head medially through acet floor – really a # of acetabulum (refer above to acetabular #)
- Neck of Femur # (intracapsular): Garden's Classification (Stage I – IV) (Hoppenfeld p258-272)
- Mechanism: may be simple fall, twisting into hip ext rot (low energy – elderly). Young – fall from height, high energy MVA.
- Clinical Features: hip pain, if displaced – lies with limb in lat rot & leg looks short
- Imaging: displacement is judged by abnormal shape of bone outlines & degree of mismatch of trabecular lines in fem head & neck & pelvis.
- Classification: Stage 1 – incomplete impacted #, 2 – complete but undisplaced #, 3-complete # with mode displacement & 4 – severely displaced #

- Treatment: 1 & 2 – displaced #s – reduced IF & early activity. 3 & 4 – ORIF (if under 60). Prosthetic replacement (over 60 – less risk of revision surgery – cannot add/int rot [pillow in b/w knees]). 1st day post-op – sit up in bed, breathing exs & begin walking (with crutches/walker) asap.
- Bone Healing – 12-16/52. Rehab time – 15-30/52.
- Rehab: 1st week – WB as tolerated (if stable) – crutches, walker, once pain/swelling subsides – AROM of hip. Functional activities – roll on to unaffected side & raise themselves from bed, stand-pivot transfers, raised toilet seat/chair. 2-4th week – similar. 4-6th week – CR/ORIF – stable – PWB/full WB – crutches/walker, prosthesis – WBAT. Isometric & now isotonic exs to hip/knee. 8-12th week: WB (use gait aids as necessary), isokinetic exs. 12-16th week – almost full WB.
- Complications: sciatic neuropraxia, general complications (DVT, PE, venous pooling, pneumonia & bed sores), avascular necrosis, non-union (high rate due to disurpiuton of blood supply), leg length discrepancy & osteoarthritis. Muscle weakness (areas exposed during surgical t/ment)– glute max (urch) or vastus lateralis (quads)
- Paediatric Cases: prox fem # in children – rare (high velocity)