

AAP BRS podcast: Shoulder Part 2

Scapular Winging

Imbalanced and abnormal motion of the scapula secondary to muscle dysfunction. Initial evaluation via inspection shows abnormal scapular positioning and movement. Wall push-up test helps. Electrodiagnostics can help isolate involved muscles/nerves.

Two classifications based on **direction of the superomedial scapular corner**:

1. Medial Scapular Winging:

- **Pathophysiology**: Deficiency of the serratus anterior caused by injury of the long thoracic nerve or the muscle itself.
- **Presentation**: Typically affects young collegiate athletes or occurs in high-energy trauma such as motorcycle accidents. Vague pain around the base of neck, scapula, and deltoid.

2. Lateral Scapular Winging:

- **Pathophysiology**: Deficiency of the trapezius caused by injury of the spinal accessory nerve (CN XI).
- **Presentation**: Usually due to damage of the posterior triangle of the neck from procedures such as radical neck dissection.

Management:

- **Medial Scapular Winging**: Serratus anterior strengthening and stretching. If conservative treatment fails, split pectoralis major transfer is considered.
- **Lateral Scapular Winging**: If injury is found within 20 months of onset, exploration and repair of spinal accessory nerve. If beyond 20 months, Eden-Lange transfer (levator scapulae and rhomboids from medial border to lateral scapular border).

Stress Fracture

Often due to a repetitive throwing motion. Affects the proximal growth plate of adolescents and shaft of the humerus in adults.

- **Outcome**: Will lead to spiral fracture of humerus and neurovascular problems such as radial nerve injury. Could also lead to premature physis closure in adolescents.
- **Evaluation**: Replication of pain through throwing motion or ROM testing of resisting abduction with internal rotation.
- **Radiographic finding**: Cortical thickening along the middle humerus on the medial cortex due to chronic stress force. AP films in adolescents show widening of the lateral aspect of the physis.

Deltoid Avulsions

Rare injury secondary to repeat corticosteroid injections into the deltoid, massive rotator cuff injuries, or trauma.

- **Evaluation**: Swelling, tenderness to palpation, decreased shoulder joint mobility, bruising, and muscular injury.
MRI to differentiate partial vs complete deltoid tears and pathology associated with the rotator cuff.
- **Treatment**: Ice and immobilization acutely; gradual rehab with strengthening and stretching.

Proximal Humerus Fracture

Often occurs in the elderly with a female to male ratio of 2:1. The axillary nerve is most affected; median nerve is least affected.

- **Presentation**: Usually FOOSH. Pain, swelling and decreased motion.
- **Radiographs**: True AP, scapular Y, axillary. May need CT for operative planning.

Neer Classification	
<ul style="list-style-type: none"> • 4 segments: greater tuberosity, lesser tuberosity, articular surface, shaft • “Separate” = $\geq 1\text{cm}$ displacement or $\geq 45^\circ$ angulation • 1 part: minimal displacement (most common) • 2 part: one fragment displaced • 3 part: two fragments are displaced • 4 part: all fragments are displaced 	
Non-op	<ul style="list-style-type: none"> - Minimally displaced neck (1, 2, 3 part) or GT $< 5\text{mm}$ - About 85%: sling immobilization, early ROM (within 14 days). “pendulum” shoulder, elbow/wrist motion preservation
Surgical	<ul style="list-style-type: none"> - Closed reduction with percutaneous pinning, ORIF, Intramedullary rod, Hemi vs Total vs Reverse arthroplasty - Based on age, fracture type, displacement, bone quality, concurrent injuries, medical status, etc.

Distal Clavicular Fractures

- **Presentation**: Fall or other trauma. Most commonly occurs in elderly or osteoporotic patients. Anterior shoulder pain.
- **Evaluation**: Swelling, ecchymosis and tenderness. AC joint deformity.
- **Treatment**: Uncomplicated cases are managed by sling immobilization with gentle mobilization from weeks 2-4 and strengthening exercises by week 6. Complicated cases will involve ORIF.

AO Classification		
Type A = nondisplaced + intact CC ligaments	A1= extra-articular A2= intra-articular	Non-Operative
Type B = displaced + intact CC ligaments	B1= extra-articular B2= comminuted	Non-Operative vs Operative
Type C = displaced + torn CC ligaments	C1= extra-articular C2= intra-articular	Operative