

A How-To Guide to Shoulder Evaluation

**Aly Abdulla, BSc, MD, LMCC, CCFP(C), DipSportMed (CASM), FCFP(C), CTH (ISTM); and
Faiza Abdulla, CDA, RPN, CTH (ISTM)**

Presented at the University of Ottawa's 57th Annual Refresher Course for Family Physicians, April 2008.

Musculoskeletal conditions comprise up to 25% of a primary practitioner's practice and shoulder conditions make up 25% of those cases. Despite being so prevalent in clinical practice, it is commonly noted that musculoskeletal evaluation is not as well represented in the curriculum. Therefore, the intent of this article is to present a systematic approach to the history and physical examination of the shoulder and will hopefully serve as a template for readers to modify for their own compendium.

Anatomy review

The shoulder is a multi-axial joint made of a bony socket/shelf of clavicle and scapula and humerus contiguous with the distal appendage. The high freedom of movement happens at the glenohumeral joint. The joint is stabilized by the inner glenoid labrum, ligaments and capsule, partially supported by the acromioclavicular (AC) joint and finally by the inner and overlying musculature. Because of all of its functionality, it is the most dislocatable joint in the human body (Figure 1).

The muscles and tendons of the shoulder are best divided into five distinct regional/functional segments, as follows (the four rotator cuff muscles are italicized):

- **Medial/adductor/internal rotator:** pectorals and *subscapularis*
- **Anterior/flexor:** anterior deltoid
- **Lateral/abductor/external rotator:** *supraspinatus* (abductor), *infraspinatus* (external rotator), *teres minor* (external rotator), deltoid (abductor)

Meet Barry

Barry is a 54-year-old government worker. He painted a house over the weekend and ended up with an acutely painful right shoulder and cannot raise his arm.

- Investigations show equivocal drop arm sign, tender anterior rotator cuff and subacromial bursa, painful arc. He is using ibuprofen and acetaminophen to cope, iced initially, failing physiotherapy
- Shoulder ultrasound showing bursitis and tendonitis, no rotator cuff tear
- Treated with cortisone injection and aggressive physiotherapy
- Told to hire painters next time

- **Posterior/extensor:** posterior deltoid
- **Scapular:** trapezius, serratus anterior, rhomboids, levator scapulae

The key motor challenges, dermatomes, peripheral nerves and peripheral muscle of the upper limb are listed in Table 1.

History

Obtaining a detailed history is tantamount to obtaining an accurate diagnosis. In sports medicine, if you understand how the injury occurred and can touch the painful area, you will get the diagnosis.

Ask about the main complaint (acute or chronic), time of onset, method of injury, location, description and severity of symptoms. Ask about trauma, especially the position of the joint during

Table 1

Upper extremity correlation of motor challenge, dermatomes and peripheral nerves and muscles

Motor challenge	Dermatomes	Peripheral nerves	Peripheral muscles
Abduction	C4	Axillary	Deltoid
Elbow flexion	C5-6	Musculocutaneous	Biceps
Elbow extension	C6-8	Radial	Triceps
Finger extension	C7-8	Posterior interosseous	Extensor digitorum
Finger flexion	C8	Median and ulnar	Flexor digitorum superficialis and profundus
Finger abduction/adduction	T1	Ulnar	Palmar and dorsal interossei
Serratus anterior	C5-7	Long thoracic nerve	Serratus anterior

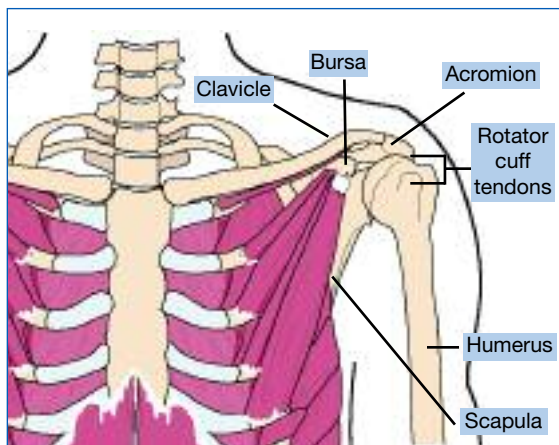


Figure 1. Bony and soft tissue structures of shoulder.

injury. Ask about aggravating and alleviating factors. Ask about tingling, numbness, swelling, weakness, stiffness, skin or temperature changes. It is important to ask what treatment the patient has tried and their effectiveness. Ask about previous injuries or similar conditions and their treatments. As well, it is important to know about pre-existing musculoskeletal abnormalities, especially those involving the cervical spine distally and the elbow, wrist and fingers, proximally.

Physical examination techniques

The author’s approach begins with inspection of the neck and shoulders: alignment, symmetry, muscle development or atrophy. Next, dynamic

range of motion of both shoulders through forward flexion, extension, hands behind head to scapula tip for abduction and external rotation (this is called Apley’s scratch testing) and to reach behind back to both scapulas for adduction and internal rotation. You now move onto bony and soft tissue palpation of the above structures to delineate exact painful regions. Finally, there are a series of special tests as follows:

- **Provocative (provoking the rotator cuff muscles, AC or bursa):**
 - **Scarf or crossover sign:** affected arm across the anterior chest like a scarf to aggravate ant rotater cuff, bursa or AC joint
 - **Jobe’s empty beer can:** affected arm abducted at 40° and forward flexion with the thumbs turned down “spilling beer” to aggravate rotater cuff muscles
 - **Painful arc:** affected arm going through full abduction and adduction to find a region of discomfort aggravating the rotater cuff
 - **Neer’s:** affected arm in full flexion and then rotated internally to aggravate rotater cuff or bursa
 - **Hawkin’s:** forward flexion of the arm to 90° and then internal rotation to aggravate rotater cuff muscles especially supraspinatus



Take-home message

1. Understanding mechanism of injury and the exact structure that is painful almost always leads to diagnosis
2. Know your anatomy and develop a consistent pattern of evaluation and you will never go wrong

- **Instability (confirming joint or muscle instability):**
 - **Apprehension anterior/posterior:** anterior/posterior pressure on the affected joint with external rotation
 - **Sulcus sign (inferior instability):** inferior traction while affected arm is lying against body looking for glenohumeral sulcus
 - **Yergason's test:** elbow flexed to 90° with forearm resisted in pronation for biceps instability or tendonitis in shoulder
 - **Speed's:** elbow flexed at 30° and forearm resisted in supination for biceps tendon instability or tendonitis in elbow
 - **Drop arm (for rotator cuff tear):** affected arm lowered from full abduction to see sudden weakness for rotator cuff tear
- **Bursal:**
Affected arm in extension to check for swelling and tenderness of subacromial bursa
- **Cervical:**
 - **Spurling's test:** neck extended, facing affected shoulder with axial loading to challenge nerve root in cervical spine

For resources, please contact cme@sta.ca

cme



Dr. Abdulla is an Assistant Professor, Department of Family Medicine, University of Ottawa; and Medical Director, The Kingsway Health Centre, Ottawa, Ontario.



Mrs. Abdulla is Executive Director/ Owner, The Kingsway Health Centre, Ottawa, Ontario.

OMNARIS is indicated for the treatment of seasonal allergic rhinitis, including hayfever, and perennial allergic rhinitis in adults and adolescents 12 years of age and older.

OMNARIS is contraindicated in patients with a hypersensitivity to any of the ingredients. OMNARIS should be used with caution, if at all, in patients with active or quiescent tuberculosis infections of the respiratory tract.

The most common adverse reactions with OMNARIS reported in short-term clinical trials of SAR and PAR in patients 12 years of age and older were epistaxis (2.7% vs. 2.1% placebo), nasal passage irritation (2.4% vs. 2.2% placebo) and headache (1.3% vs. 0.7% placebo).

The most common adverse reactions with OMNARIS reported in a 52-week clinical trial of PAR in patients 12 years of age and older were epistaxis (8.4% vs. 6.3% placebo), nasal passage irritation (4.3% vs. 3.6% placebo) and headache (1.6% vs. 0.5% placebo).

OMNARIS should be used with caution, if at all, in patients with untreated local or systemic fungal or bacterial infections; systemic viral or parasitic infections; or ocular herpes simplex. Patients who are on drugs that suppress the immune system are more susceptible to infections than healthy individuals. Because of the inhibitory effect of corticosteroids on wound healing, patients who have experienced recent nasal septal ulcers, nasal surgery, or nasal trauma should not use a nasal corticosteroid until healing has occurred. Rarely, immediate hypersensitivity reactions or contact dermatitis may occur after the administration of intranasal corticosteroids. Rare instances of wheezing, nasal septum perforation, cataracts, glaucoma, and increased intraocular pressure have been reported following the intranasal application of corticosteroids. To minimize the systemic effects of intranasal corticosteroids each patient should be titrated to his/her lowest effective dose. In patients who have asthma or other clinical conditions requiring long-term systemic corticosteroid treatment, rapid decreases in systemic corticosteroid dosages may cause severe exacerbation of their symptoms. There are no adequate studies with OMNARIS in pregnant women. It is unknown if ciclesonide is excreted in human milk.

Product monograph available upon request.

*Mean change in average reflective AM and PM total nasal symptom score: after 2 weeks in SAR – OMNARIS -2.40 vs. -1.50 placebo, $p < 0.001$; after 6 weeks in PAR – OMNARIS -2.51 vs. -1.89 placebo, $p < 0.001$.