Science Education Collection

Shoulder Exam I

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Overview

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Examination of the shoulder can be complex, because it actually consists of four separate joints: are the glenohumeral (GH) joint, the acromioclavicular (AC) joint, the sternoclavicular joint, and the scapulothoracic joint. The GH joint is primarily responsible for shoulder motion and is the most mobile joint in the body. It has been likened to a golf ball sitting on a tee and is prone to instability. It is held in place by the four rotator cuff muscles (supraspinatus, infraspinatus, teres minor, and subscapularis), along with the GH ligaments.

The shoulder exam begins with the inspection and palpation of the key anatomic landmarks, followed by an assessment of the patient's range of motion. The opposite shoulder should be used as the standard to evaluate the injured shoulder, provided it has not been previously injured.

Procedure

1. Inspection

1. Look at both exposed shoulders in the front and in the back, and compare for asymmetry. Muscle atrophy may suggest rotator cuff tear with disuse or a nerve injury. Keep in mind that asymmetry may be seen due to adaptive hypertrophy of the throwing shoulder in an athlete. Venous distension may suggest effort thrombosis (often only with exertion).
2. Note the presence of ecchymosis and swelling. Ecchymosis or swelling around the shoulder may suggest trauma or muscle tear.

2. Palpation

Palpate the shoulder for areas of tenderness using the tips of your index and middle fingers. It is essential to have an understanding of the anatomic structures being palpated. Palpable tenderness or swelling suggests injury to the underlying structures. Palpate the following areas:

1. Sternoclavicular joint - located in the midline, at the front of the neck. Tenderness here suggests traumatic dislocation or osteoarthritis (OA). Movement of the proximal end of the clavicle (piano keying) suggests tearing or laxity of the sternoclavicular ligaments.
2. Clavicle - extends medially from the sternoclavicular joint. Palpate the entire length. Tenderness suggests fracture or contusion.
3. Acromioclavicular (AC) joint - located near the distal end of the clavicle, just beyond a slight bony prominence. Tenderness here suggests an AC separation, osteoarthritis, or osteolysis of the distal end of the clavicle. A palpable lump in the area of the distal clavicle suggests a grade II or III AC separation.
4. Bicipital groove - this is located just below the AC joint, along the anterior surface of the humeral head. Have the patient internally and externally rotate the shoulder. Palpate this area and feel the long head of the biceps tendon moving under your fingers. Tenderness here suggests tendonitis or a tear in the long head of the biceps.
5. Anterior glenohumeral (GH) joint line - move your fingers medially from the bicipital groove to feel the head of the humerus curve away in a posterior direction, leading to the anterior GH joint line. The tendon of the pectoralis major muscle can also be felt in this area and, more medially, the muscle itself. Tenderness at the GH joint line may suggest a tear of the glenoid labrum or osteoarthritis of the GH joint, or possibly tendonitis or tearing of the pectoralis major tendon.
6. Subacromial space - located by moving your fingers back, laterally, across the humeral head to the anterior tip of the acromion. Dropping your fingers just below the boney acromion, feel the subacromial space. Palpate in the front, on the side, and in the back. Tenderness suggests rotator cuff tendonitis, impingement, or rotator cuff tear.
7. Posterior glenohumeral (GH) joint line - drop your fingers down from the posterior tip of the acromion bone to feel the hardness of the posterior humeral head. Palpate medially and feel the humeral head curve away in a posterior direction, leading to the posterior GH joint line. Because the infraspinatus and teres minor muscles lie above, the GH joint line can be difficult to feel. Tenderness here may be from a posterior labrum tear or GH joint arthritis.
8. Spine of the scapula - move your fingertips from the posterior tip of the acromion bone in a medial and inferior direction. Above the spine of the scapula sits the supraspinatus muscle, and below it sit the infraspinatus and teres minor muscles. Tenderness along the spine can be from a contusion or fracture, while tenderness over the muscle can be due to overuse or contusion of the muscle.

3. Range of motion (ROM)

Assess the range of motion (ROM) in the shoulder actively and passively. Active ROM is tested by asking the patient to move the shoulder. If the patient is unable to perform the motions, the passive motion is attempted by grasping the patient's arm and moving the shoulder through the same motions. ROM is measured from the "zero starting position" with both arms hanging at the side of the body. When checking ROM, assess the following motions:

1. Forward flexion (180°) - Ask the patient to raise both arms in front and overhead, as far as possible.
2. Extension (45°) - Ask the patient to extend both arms behind, as far as possible.
3. Abduction (150°) - Ask the patient to raise both arms to the side and overhead, as far as possible.

4. External rotation (90°) - Ask the patient to bend both elbows to 90° with the arms hanging at the side, and then rotate both hands away from the midline of the body, as far as possible.
5. Internal rotation (90°) - Ask the patient to bend both elbows to 90° with the arms hanging at the side, and then rotate both hands toward the midline of the body, as far as possible.
6. Horizontal adduction (130°) - Ask the patient to raise the unaffected arm forward to 90° and then move the hand across the body as far as it can go toward the opposite shoulder. Repeat on the affected side and compare.
7. Conduct the "drop arm test" by lifting the patient's arm 90° to the side and letting go, while asking the patient to hold the arm in this position. The test is positive when the patient is unable to lift or hold the arm in the 90° abducted position. When positive, this suggests a large rotator cuff tear or nerve injury.

Summary

Examination of the shoulder is done best by following a stepwise approach. It is important to have the patient remove enough clothing so the surface anatomy can be seen and compared to the uninvolved side. The exam should begin with inspection, looking for asymmetry between the involved and uninvolved shoulders. Next comes the palpation of the key structures, looking for tenderness, swelling, or deformity. This is followed with an assessment of the ROM, first actively and then passively, if the patient is unable to move the arm unassisted. A loss of active motion alone suggests a RC tear or nerve injury. A loss of both active and passive motion suggests a mechanical block (such as labrum tear, adhesive capsulitis, or severe impingement). From there, the exam should include assessments of the rotator cuff, glenoid labrum, and shoulder stability.