

pt connection

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Adhesive Capsulitis of the Shoulder

Introduction: Brief review of anatomy

The shoulder girdle is a complex series of articulations. The articulations consist of 3 joints: the sternoclavicular joint, the acromioclavicular joint, and the glenohumeral joint.

Muscles of the shoulder joint complex are easier understood when broken down into functional categories:

1. Scapulohumeral muscles originate from the scapula and attach to the humerus. They are subscapularis*, teres major, teres minor*, supraspinatus, infraspinatus*, coracobrachialis and deltoid. (*indicates the muscles that comprise the rotator cuff muscles.)
2. Axioscapular muscles originate on the axial skeleton and attach to various portions of the scapula. They are the trapezius (upper, middle, and lower fibers), serratus anterior, rhomboideus, pectoralis minor and levator scapulae.
3. Muscles traversing from the axial skeleton to the humerus (axiohumeral) include latissimus dorsi and pectoralis major.
4. The scapuloradial muscles (bicep brachii) and scapuloulnar (triceps) are also important in shoulder function.

What is a Frozen Shoulder?

The term frozen shoulder has been loosely applied to conditions when the shoulder is working at less than its optimal stage. The correct term for a true global decrease in shoulder range of motion is adhesive capsulitis. Adhesive capsulitis is a syndrome defined as an idiopathic painful restriction of shoulder movement that results in global restrictions of the glenohumeral joint. Adhesive capsulitis is a painful restriction of both active and passive glenohumeral joint motion in all planes of movement. The condition occurs most commonly in patients 40-60 years of age with a higher incidence in females.

DIAGNOSTIC BREAKDOWN

1. Diabetic or Thyroid
2. Post-traumatic (fracture or dislocation)
3. Post-operative
4. Idiopathic (adhesive capsulitis)

The Three Stages of Adhesive Capsulitis

FIRST STAGE - "FREEZING" OR PAINFUL STAGE

- pain with movement
- generalized ache that is difficult to pinpoint
- muscle spasm
- increasing pain at night and at rest

SECOND STAGE - "FROZEN" OR ADHESIVE STAGE

- less pain
- increasing stiffness and restriction of movement
- decreasing pain at night and at rest
- discomfort felt at extreme ranges of movement



Figure 1 - Speed Test

FINAL STAGE - “THAWING” OR RECOVERY STAGE

- decreased pain
- marked restriction with slow, gradual increase of range of motion
- recovery is spontaneous but frequently incomplete

MUSCLES THAT CAN CONTRIBUTE TO LOSS OF MOTION:

Flexion:

- Bicep

Extension:

- Deltoid
- Teres major
- Teres minor

Abduction:

- Deltoid
- Supraspinatus
- Infraspinatus
- Subscapularis
- Teres minor
- Long head of bicep

Internal Rotation:

- Teres major
- Subscapularis (at side)

External Rotation:

- Infraspinatus
- Teres minor

Physical Examination

The diagnosis of adhesive capsulitis varies depending on the stage in which the patient presents. There are some general findings, which indicate adhesive capsulitis, such as a generalized loss of active and passive range of motion.

Passive external rotation with the arm at the side is limited with pain. This is the hallmark trait of adhesive capsulitis because it helps delineate frozen shoulder from rotator cuff pathology, since passive external rotation is not usually lost with rotator cuff pathology.

When examining a patient suspected of having adhesive capsulitis, the therapist must pay particular attention to history of the symptoms, the onset and duration, any recent trauma to the shoulder, and other medical conditions. After obtaining a thorough history, the physical examination begins. The findings may vary here depending on the stage of adhesive capsulitis.

During the painful or freezing stage, a patient may describe his or her pain as ache, which cannot be pinpointed. He or she may describe stiffness. The patient will describe increased pain at night and difficulty trying to sleep. Another common complaint during this stage is the inability to reach the hand behind the back. On examination the loss of active and passive range of motion will be found. There may also be muscle spasm in the upper trapezius muscle. There will be generalized tenderness around the glenohumeral joint versus pinpoint tenderness. The patients will often have pain with resisted internal rotation and a positive Speed’s Test and Yeager’s Test

Test (figures 1 and 2). However, there will be minimal or no pain with resisted external rotation and abduction.

In the adhesive or frozen stage the stiffness increases, but the pain decreases. The patient may describe less pain at night. Pain is primarily found at the end range of motion. There continues to be a significant loss of range of motion to the point that active range of motion is equal to passive range of motion.

The final stage is known as recovery or thawing stage, and is characterized by minimal pain. However, there continues to be significant loss of range of motion. During this stage, there is spontaneous recovery of motion, but it is rare for a patient without treatment to regain full range of motion. As this recovery progresses, there can be episodes of pain just prior to recovering more motion. Typically, external rotation returns first, then abduction, followed lastly by internal rotation.

Rarely do diagnostic tests, such as x-rays or MRI, reveal anything significant in the diagnosis of adhesive capsulitis.

Treatment

Initial treatment of adhesive capsulitis is usually conservative involving physical therapy, anti-inflammatory medication, and corticosteroid injections. Injections are used to help with pain relief by limiting the inflammatory process that occurs with frozen shoulder. The course of treatment used in physical therapy is outlined nicely in the attached rehabilitation protocol taken from [Clinical Orthopedic Rehabilitation](#), by Kevin Wilk, PT and S. Brent Brotzman.

If a patient has gone through at least 3 months of conservative treatment, and continues to have significant limitations then operative measures are considered. The first operative technique tried is a manipulation under anesthesia, followed again by physical therapy. If manipulation under anesthesia fails, a patient may undergo an arthroscopic release. These techniques are chosen based on a patient’s medical history and current symptoms and limitations in function.



REHABILITATION PROTOCOL (Bach, Cohen, & Romeo)

PHASE 1: WEEKS 0-8

GOALS

- Relieve pain.
- Restore motion.

RESTRICTIONS

- None.

IMMOBILIZATION

- None.

PAIN CONTROL

- Reduction of pain and discomfort is essential for recovery
 - Medications
 - NSAIDS - first-line medications for pain control.
 - GH joint injection: corticosteroid/local anesthetic combination.
 - Oral steroid taper - for patients with refractive or symptomatic frozen shoulder (Pearsall and Speer, 1998)
 - Because of potential side effects of oral steroids, patients must be thoroughly questioned about their past medical history.
 - Therapeutic modalities
 - Ice, ultrasound, HVGS.
 - Moist heat before therapy, ice at end of session.

MOTION: SHOULDER

GOALS

- Controlled, aggressive ROM exercises.
- Focus is on stretching at ROM limits.
- No restrictions on range, but therapist and patient have to communicate to avoid injuries.

EXERCISES

- Initially focus on forward flexion and external and internal rotation with the arm at the side, and the elbow at 90 degrees.
- Active ROM exercises.
- Active-assisted ROM exercises
- Passive ROM exercises
- A home exercise program should be instituted from the beginning
 - Patients should perform their ROM exercises three to five times a day.
 - A sustained stretch, 15-30 seconds, at the end of ROMs should be part of all ROM routines.

PHASE 2: WEEKS 8-16

CRITERIA FOR PROGRESSION TO PHASE 2

- Improvement in shoulder discomfort.
- Improvement of shoulder motion.
- Satisfactory physical examination.

GOALS

- Improve shoulder motion in all planes.
- Improve strength and endurance of rotator cuff and scapular stabilizers.

PAIN CONTROL

- Reduction of pain and discomfort is essential for recovery
 - Medications
 - NSAIDS - first-line medications for pain control.
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 - Oral steroid taper - for patients with refractive or symptomatic frozen shoulder (Pearsall and Speer, 1998)
 - Because of potential side effects of oral steroids, patients must be thoroughly questioned about their past medical history.
 - Therapeutic modalities
 - Ice, ultrasound, HVGS.
 - Moist heat before therapy, ice at end of session.

MOTION: SHOULDER

GOALS

- 140 degrees of forward flexion.
- 45 degrees of external rotation.
- Internal rotation to twelfth thoracic spinous process.

EXERCISES

- Active ROM exercises.
- Active-assisted ROM Exercises.
- Passive ROM Exercises.

MUSCLE STRENGTHENING

- Rotator cuff strengthening - three times per week, 8 to 12 repetitions for three sets
 - Closed-chain isometric strengthening with the elbow flexed to 90 degrees and the arm at the side.
 - Internal rotation.
 - External rotation.
 - Abduction.
 - Forward flexion.
- Progress to open-chain strengthening with Therabands
 - Exercises performed with the elbow flexed to 90 degrees.
 - Starting position is with the shoulder in the neutral position of 0 degrees of forward flexion, abduction, and external rotation.
 - Exercises are performed through an arc of 45 degrees in each of the five planes of motion.
 - Six color-coded bands are available; each provides increasing resistance from 1 to 6 pounds, at increments of one pound.
 - Progression to the next band occurs usually in 2 to 3wk. intervals. Patients are instructed not to progress to the next band if there is any discomfort at the present level.
 - Theraband exercises permit concentric and eccentric strengthening of the shoulder muscles and are a form of isotonic exercises (characterized by variable speed and fixed resistance)
 - Internal rotation
 - External rotation
 - Abduction
 - Forward flexion
- Progress to light isotonic dumbbell exercises
 - Internal rotation
 - External rotation
 - Abduction
 - Forward flexion
- Strengthening of scapular stabilizers
 - Closed-chain strengthening exercises
 - Scapular retraction (rhomboides, middle trapezius).
 - Scapular protraction (serratus anterior).
 - Scapular depression (latissimus dorsi, trapezius, serratus anterior).
 - Shoulder shrugs (trapezius, levator scapulae).
 - Progress to open-chain strengthening.
- Deltoid strengthening.

PHASE 3: MONTHS 4 AND BEYOND

CRITERIA FOR PROGRESSION TO PHASE 4

- Significant functional recovery of shoulder motion
 - Successful participation in activities of daily living.
- Resolution of painful shoulder.
- Satisfactory physical examination.

GOALS

- Home maintenance exercise program
 - ROM exercises two times a day.
 - Rotator cuff strengthening three times a week.
 - Scapular stabilizer strengthening three times a week.

Maximum improvement by 6-9 mo after initiation of treatment program.

WARNING SIGNS

- Loss of motion.
- Continued pain.

TREATMENT COMPLICATIONS

- These patients may need to move back to earlier routines.
- May require increased utilization of pain control modalities as outlined above.
- If loss of motion is persistent and pain continues, patients may require surgical intervention.
 - Manipulation under anesthesia.
 - Arthroscopic release.

