



ORIGINAL RESEARCH PAPER

Medicine

A SYSTEMIC REVIEW OF ADHESIVE CAPSULITIS OF SHOULDER

KEY WORDS: Adhesive capsulitis, physiotherapy, frozen shoulder, self management.

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ABSTRACT

Adhesive capsulitis is a musculoskeletal condition that has a disabling capability. This review discusses the diagnosis and both operative and non-operative management of this shoulder condition that causes significant morbidity. Issues related to medications rehabilitation and post-surgical considerations are discusses.

INTRODUCTION:

It is a condition characterized by stiffness and pain in shoulder joint. Pain and stiffness that develops gradually get worse and then finally goes away. The common features of a slow onset of pain felt near the insertion of the deltoid muscle, restriction in active and passive external rotation and inability to sleep on affected side. It is an *Adhesive shoulder capsulitis* or *artho-fibrosis* or adhesions across the glenohumeral joint. Capsulitis leading to stiffness pain and dysfunction of the shoulder joint which leads the *periarthrits* which is called *Scapulohumoral periarthrits*. It is a common conditions characterized by progressive Inflammation of the joint capsule and suprequent stiffness of the shoulder. The term frozen shoulder has in the past been used inaccurately as a general diagnosis for shoulder pain and stiffness. The term frozen shoulder firstly used by Dr. Cadon 1934, describe the classical diagnostic criteria which include idiopathic etiology, restriction of shoulder joint movement, server restriction of external rotation, painful at the outset and normal plain X-ray findings. The term Periarthrits was used by Dr. Neviasier in 1945 described as "adhesive Capsulitis". Using the term adhesive to describe the texture and integrity of inflamed capsule. The incidence of frozen shoulder in approximately 4% in the population but affects up to 36% of the patient suffering from diabetes. Female patients are more affecting than male, typically in the 5th to 7th decades of life the condition affects both side equally and frequently and rarely present bilaterally in a simultaneous fashion. Bilaterally occurrence may be found in up to 50% of the concerned cases. Adhesive capsulitis can be classified as primary (Idiopathic) or secondary. The primary groups have a gradual onset, slow development of the symptoms. In second group cases are in general due to trauma or prolonged immobilization or stork. The patient may develop symptoms suddenly and have a slow recovery phase. The recovery is satisfying in most of the cases, even through this may take up to 2 to 3 years. The majority of patients reporting in our department are from middle or lower middle class who are actually heavy manual laborers. Capsulitis develop slowly in three stages:-

Freezing Stage

any movement of your shoulder causes pain and your shoulder's range of motion stats to become limited.

Frozen Stage

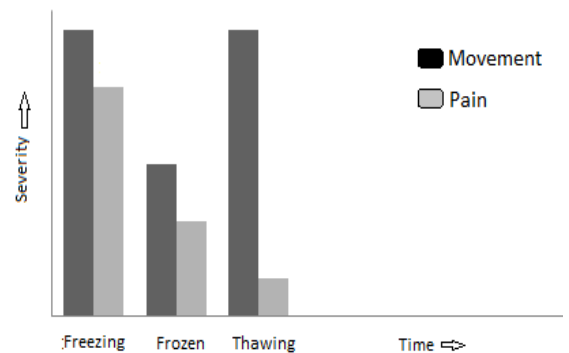
pain may begin to diminish during this stage. However your shoulder become stiffer, and using it becomes more difficult.

Thawing Stage

the range of motion in your shoulder begins to improve.

In some people the pain worses at night, some time disrupting sleep people who have had prolonged immobility may be

the result of many factors including rotator cuff surgery, broken arm stroke and recovery from surgery etc.



AETIOLOGY

The a etiology of primary adhesive capsulitis is still unknown. It is frequently associated with other systemic conditions most commonly diabetic mellitus. In addition to diabetes, adhesive capsulitis is seen commonly in thyroid disorders, Parkinson's disease, cardiac, pulmonary disease, surgical procedure (Radial neck dissection), Neurosurgery and cardiac surgery can also trigger frozen shoulder, particularly when patients are bed bound for prolonged period of time. Bunker et al. studied histological sample of capsule tissue from patient with frozen shoulder and found a pathological picture comparable to Dupuytren's Disease. There is a increase in local collagen production, myofibroblast and fibroplasia.

The prominent macroscopic findings are synovitis within the rotator interval with thickening and contracture of anterior capsule specially the coracohumeral ligament and the meddle glenohumeral ligament. This process leads to a reduced glenohumeral joint space or volume, and restricts movements of the shoulder, particularly affecting external rotation in natural cracohumeral ligament and mid elevation of middle glenohumeral ligament.

EPIDEMIOLOGY

Adhesive capsulitis occur in up 1-5% of females, are 4 time more often affected than man while the non-dominant shoulder is more prone to be affected.

PATHOLOGY

Features of this pathologic condition include chronic capsular inflammation with fibrosis and perivascular infiltration in chronic case of frozen shoulder demonstrate constructive capsulitis, characterized by adhesion of the joint cavity and a thickened contracted capsule that eventually becomes fixed to the bone.

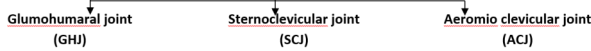
HISTOPATHOLOGY

During arthroscopy in case of adhesive capsulitis following structures may be seen in GHJ space

- Subacromial fibrosis
- Proliferative synovitis
- Capsular thickening

BIOMECHANICS OF SHOULDER JOINT

SHOULDER JOINT COMPLEX



The coordinating movements of these joint during arm movement is referred to as scapula humeral rhythm

- Kinematics of shoulder joint abduction occurring at a ratio of 2:1
- Full arc of shoulder abduction is 180°
- 180° arc contribute 120° of glenohumeral joint abduction + 60° scapulothoracic upward rotation.

Stage I – Includes glenohumeral movement alone for first 30° inferior angle of scapula shoulder not move the clavicle and elevate 5°.

Stage II – Includes of scapular elevation & upward rotation 20° point glenoid cavity towards the ceiling humeral head glides inferiorly by 90° revealing a sulcus.

Stage III – Includes 60° abduction 90° lateral rotation of humerus, 30° rotation of scapula and 30-50° rotation up to 15° elevation of clavicle.

CLINICAL FEATURES

- On inspection, the patient often present with the arm in adduction and internal rotation. In some cases atrophy of the shoulder muscles can be found.
- On palpation, there may be diffused tenderness along the shoulder joint, in some cases, there is usually a global restriction of the shoulder joint which is painful in early and middle stages of disease.
- In the chronic causes these is an almost complete loss of external rotation, is confirm by testing the active and more importantly, the passive range of movement. Adhesive capsulitis is a clinical diagnosis and normally does not require extensive investigations plain radiographs of the shoulder to exclude osteoarthritis of the shoulder joint or other pathologies are usually sufficient, blood tests, including infection markers are normal in true frozen shoulder cases.
- Arthrography was used to assess the volume of joint and typically shows a reduction in glenohumeral joint volume (GHJV). Normal GHJV is 25 to 30 ml which may reduce to 5 to 10 ml in severe cases.
- In bone scan demonstration 90% cases have more uptake around the affected joint.
- Magnetic resonance imaging (MRI) demonstrates a thickening in the joint capsule and the affected ligaments, as well as sign of synovitis.

MANAGEMENT:-

In the most cases adhesive capsulitis is a self-limited with high rate of spontaneous recovery within 18 – 30 months. Treatment is focused on symptomatic relief and improving range of motion (ROM)

(A)Conservative Management (B) Operative Management

(A)Conservative Management:-

At Freezing Phase- Patient are benefited from pain reliving techniques.

- Gentle shoulder mobilizing exercise, with in rotator range (eg. Pendulum exercise, passive supine forward alleviation passive external rotation, active assisted range of motion in extension, horizontal abduction and internal rotation)
- Hot or Ice pack can be applied as a modality to relive pain

before the start of these exercises.

- Moist heat in conjunction with stretching has been shown to improve muscle extensivity.

At Frozen Phase –

- Hot and Ice pack can be applied during frozen phase to relive the pain before commencing exercises.
- Stretching exercise for the chest muscle and back muscle of shoulder should be maintained.
- Isometric and static contractions exercises are required to maintained muscles strength, without joint movement and can be done without worrying about increasing pain in the shoulder.
- Strengthening exercises and scapular retraction exercise can be performed at home.
- To avoid introducing aggressive and overenthusiastic treatment, aggravate the capsular synovitis and subsequently cause pain.

Thawing Phase-

- In this phase patient experiences a gradual return of motion. It is crucial to get the shoulder back to normal as quickly as possible by regaining full movement and strength.
- Strengthening exercise are more important, as the shoulder is considerably weakened after a few months of little movement.
- Rotator cuff exercises, exercises for the deltoid and chest muscle and postural exercises can be included in the treatment as well.

A-1- NSAIDS:- During the initial phase for symptomatic/ NSAIDS can be used to aid to control pain relief, which can be used at any stage of adhesive capsulitis however, there is little evidence to suggest that the disease progression is affected.

A-2- Manipulation under Anesthesia:-

In this technique a general anesthesia, shoulder joint capsule is gently stretched by moving the humerus into flexion, abduction and finally by moving the adducted humerus in to external rotation. Great care must be taken to minimize the lever arm used and to maximize the surface area of the arm to which pressure is applied. Manipulation under anesthesia has been shown to be an efficacious treatment. However the result of manipulation when compared to hydro dilation and steroid injection are equivocal at best.

A-3- Hydro-dilation:(arthrographic distention) – This treatment involves the injection of local anesthetic or saline and steroid into the capsule at a pressure high enough to distend and stretch the joint capsule. That is a statistically significant improvement seen in range of motion in eight weeks but no differences in visual analogue pain scores. This technique appears to be efficacious but there is no good evidence to suggest any superiority to other treatment.

A-4- Steroid Injection:-

Steroid Injection is another almost best intervention in adhesive capsulitis injecting corticosteroids in a shoulder joint may help by decreasing the pain and improve shoulder mobility, especially in the early stages of the processes

Steroid only	-	Good
Steroid + Local anaesthesia	-	Very good result

A-5- Physiotherapy:-

Most patient are initially prescribed a course of physiotherapy prior to referral a surgeon. The aim behind is to prevent further reduction in range of motion and eventually to increase the range of motion in the affected shoulder. Passive mobilization and capsular stretching are two of the most commonly used techniques. There are number of adjuncts are often used with physiotherapy like electric magnetic stimulation, acupuncture, lasers and extra corporeal shockwave therapy. All physical therapy exercises targeted at adhesive capsulitis which can be used in combination with common analgesics.

Operative Management:

Surgery in adhesive capsulitis shoulder is rare when if nothing else has helped than surgery is recommended to remove the scare tissue and adhesions inside the shoulder joint. This surgery is performed by a lighted tubular instruments. Through a small incisions around the joint known as arthroscopic (arthroscopy).

(I) Indications For Surgery

- Patients fails a trial of NSAIDS or prednisolone
- Doesn't respond to glenohumeral or subacromial injection.
- Does not respond to physical therapy

(II) Contraindications For Surgery

- Patients has had an inadequate course of steroid or NSAIDS
- Patient has not had any attempt at conservative therapy
- There is on acute injection
- Patient has a concomitant malignancy in the shoulder
- Patients has a neurologically deficit or nerve complaint originating from the cervical spine.
- Patient has severe diabetes /SLE or severe skin disease

Differential Diagnosis

- Cervical radiculopathies
- Rotator cuff impingement syndrome
- Shoulder impingement syndrome.
- Polymyalgia rheumatica
- Malignancy
- Fracture
- Traumatic ankylosis
- Post brachial plexes stiffness
- Stroke stiffness
- Head injury stiffness

Complications

- Residual shoulder pain or stiffness.
- Humoral fracture
- Rupture of the biceps & subscapularis tendons
- Post op-osteomyelitis (if surgery occur)

Alternative Medicine/ Education

- Acupressure
- Transcutaneous electrical nerve stimulation (TENS)
- Post-Operative and rehabilitation case
- Deterrence and patients education
- Enhancing healthcare outcomes

Summery

Adhesive capsulitis is a common shoulder condition. These is often a delay of patient presentation, and some time delay in diagnosis as it can share symptoms with many other shoulder conditions. Typical history is that of minor or no trauma with the gradual progression of pain & loss of ROM. The hallmark of physical examination of physical examination is loss of both passive and active ROM without degenerative changes on X-Ray. A combination of pharmacological, rehabilitative and/or surgical treatment is commonly helpful for the patient affected with adhesive capsulitis. Comorbid factors may play a key role in length and amount of recovery.

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