

# ADHESIVE CAPSULITIS

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Adhesive capsulitis is a condition of glenohumeral joint, in which there is restriction of active and passive ROM in capsular pattern i.e. external rotation and abduction are mostly restricted followed by internal rotation and flexion whereas extension is relatively free.

Reduction of anterior joint capsule space indicates tightness of anterior capsule limiting shoulder external rotation most. Reduction of inferior redundant joint capsular fold limits shoulder abduction. Relatively less reduction of posterior joint capsule space indicates tightness of posterior capsule limiting shoulder internal rotation to lesser extent.

Cyriax's selective tissue tension test reveals negative response to resisted isometric contraction indicating no contractile tissue (muscle) involvement.

X-ray shows no bony abnormality except disuse osteoporosis.

## **Aetiology**

- Exact cause not known
- Female are more affected than male with 2:1 ratio, and elderly above 40 years of age are more affected than young, except diabetic patients. More commonly it involves nondominant shoulder and in about 12% cases it is bilateral.

The followings are probable hypothesis

### **1. Pain and immobilization**

Patient does not or can not move the part due to pain. The proliferated collagen fibres develop into thick and short scar tissue interfering with movements.

## **2. Posture:**

Head forward posture, increased thoracic kyphosis and rounded shoulder disturb normal upward orientation of glenoid fossa of scapula, which leads to loss of tension of superior joint capsule and coracohumeral ligament. Over activity of rotator cuff increases tensile stress over the capsular ligament to which the rotator cuff tendons blend. The chronic inflammation thickens and fibrosed the capsule over time.

## **3. Periarthritic Personality**

Anxious person: Anxiety changes the posture to kyphotic and reduces the pain threshold, so in some minor problem they voluntarily restrict the movements.

## **4. Degenerative**

As it occurs more in elderly persons, it is thought to be degenerative. As it occurs more in female and particularly post menopausal women, so some post menopausal factor may be responsible.

## **5. Incidence of periarthritis is more in diabetics.**

Secondary frozen shoulder develops due to pain or immobilization following trauma or surgery. In the absence of any known factor the condition is classified as primary idiopathic frozen shoulder. Primary frozen shoulder is the most common form and thought to be autoimmune disorder

### **Cyriax Classified into 3 stages**

**Stage-I:** Patient complaint of pain on the lateral brachial region, not extending below the elbow. Patient can lie on the affected side shoulder.

Movements restricted in capsular pattern with elastic end-feel because of muscle spasm. Pain experienced at the end range of movements and activities.

**Stage-II:** Patient complaint of pain on the lateral brachial region and unable to lie on the affected side shoulder.

Some criteria of stage I could be present.

**Stage-III:** Severe pain extending below the elbow. Pain at rest, become more in the night. Patient can not lie on the affected side shoulder, lying on the affected shoulder become painful due to stretching/ compression of involved structures. Movements restricted in capsular pattern with leathery end feed because of the tension of tight capsule.

### **Conventional Classification**

**Acute stage** is characterised by pain on lateral brachial region, more in the night. Restriction of ROM due to pain and spasm.

**Chronic stage** is characterized by absence of rest pain and night pain. Pain become localised only in lateral brachial region. Pain experienced during activities due to stretching of tight joint capsule. Movements restricted in capsular pattern with leathery end feel.

## **Clinical features**

### **History:**

**Mode of onset:** Gradual onset of pain and restriction of movements.

Patient may present the history of trauma/ Immobilisation or painful shoulder condition. Diabetes may be present.

**Pain:** Patient complaint of vague dull aching pain over lateral brachial region (C<sub>5</sub>, C<sub>6</sub>).

Finds inability/difficulty to do overhead activities like combing, dressing and undressing, reaching the back pocket or tying the dhoti or saree, fastening bra etc.

### **Observation:**

**Posture:** Increased thoracic/ cervico-thoracic kyphosis, head forward and rounded shoulder (protracted and depressed).

**Facial appearance:** Anxious

**Attitude of the upper extremity:** Arm by the side or across the chest, inadequate arm swing during walking.

### **Inspection:**

**Skin:** Not contributory.

**Soft tissue:** Disuse atrophy of both periscapular and shoulder girdle muscles present.

**Bony:** Head forward, increased thoracic/cervico-thoracic kyphosis, rounded shoulders with protraction and depression of scapulae

## **Movements:**

### **Active movements:**

**Willingness** of the patient to move: in acute painful condition one finds difficult to move the arm

**Pain:** acute condition, pain and spasm restrict the movement. Pain experienced through out the abduction elevation movements.

Chronic condition, Pain experienced at the end range of existing limited abduction elevation movement due to stretching of tight capsule.

**ROM:** restricted in capsular pattern i.e. external rotation and abduction restricted more, and internal rotation and flexion restricted to lesser extent.

Painful arc: pain may be present during mid range of abduction-elevation.

### **Passive movements:**

**ROM:** restricted in capsular pattern with muscle spasm end feel at acute stage and leathery end feel at chronic stage.

**Pain:** Acute condition, pain experienced through out the abduction elevation movements.

Chronic condition, Pain experienced at the end range of existing limited abduction elevation movement due to stretching of tight capsule.

Painful arc may be present at the mid range of abduction-elevation.

**End feel:** Acute stage, muscle spasm end feel with pain encountered before the motion barrier. Chronic stage, leathery end feel with pain encountered after the motion barrier.

**Joint play:**

Amplitude of joint play restricted in the following order with pain

- Posterior to Anterior gliding of head of humerus is restricted more limiting the external rotation most
- Inferior gliding restricted limiting abduction
- Posterior gliding restricting limiting internal rotation.

**Resisted Isometric Contraction:**

Muscle strength could be reduced because of disuse atrophy due to pain and stiffness, but no pain experienced during resisted isometric contraction against maximum resistance.

**Neuromuscular examination:**

Some weakness may be present due to disuse atrophy. No other neurological impairment present.

**Palpation**

- Skin: nothing contributory
- Soft tissue: tenderness may be present over insertion of rotator cuff at greater tuberosity, long head of biceps at bicipital groove
- Bony: Greater tuberosity, acromion, AC joint, SC joint.

## **Management**

**Acute stage** is characterised by pain at rest and restriction of motion with muscle spasm end feel.

### **Aim:**

- To relieve pain and spasm
- Prevent and correct stiffness
- Prevent disease atrophy
- Correct posture

### **Means**

- a) Apply ice for 15 – 20 minutes, 5 times per day
- b) Following ice therapy apply Grade I or II inferior gliding of head of humerus. Oscillatory, rhythmic Grade I/II mobilisation reduces spasm and relieves the pain.

Muscle spasm pulls the head of humerus pulled upward, which gets impinged against coracoacromial arch giving rise to pain and spasm. Inferior gliding relieves pain by correcting impingement and there by reduces the spasm.

Pendular shoulder movements (Codmans exercise):

Stand leaning against a table by the sound hand swing the affected arm forward-backward for flexion- extension, sideway for abduction-adduction and clockwise- anticlockwise for rotation & circumduction. One can hold a dumb bell, which will apply inferior gliding, while doing the exercise.

Postural correction:

- Chin tucking.

- Anticlockwise/ backward rotation of the scapulae

**Chronic Stage** is characterised by restriction of ROM in capsular pattern and pain at the end of range of motion with leathery end feel. Pain experienced during activities, but not at rest.

**Aim:**

- Increase the extensibility of the shortened joint capsule and restore pain free full JROM.
- Strengthen the muscle
- Return to activities
- Prevent recurrence

**Means:**

- **Deep heating modalities** such as Ultrasound, SWD and MWD can improve extensibility of collagen fibers of the joint capsule. But US is better.
- **Passive Mobilisation given by the Physiotherapist**

Cyriax's capsular stretching in supine

Starting position: supine lying arm elevated as far as possible with the hand kept in front forehead or under the head.

Physiotherapist stands facing towards the patient keeps one hand over the lower sternum to stabilize the thorax and presses the patient's elbow towards the couch to increase elevation. Hold it for some time and relax, then repeat the same with increase pressure. Progressively rotation can be added cautiously.

Auto mobilisation exercises to do at home.

- In standing position with the affected arm abducted to 90 and elbow flexed to 90 and forearm supported over the wall try to rotate the trunk towards opposite side to experience stretching type of discomfort on the front of the shoulder due to stretching of anterior joint capsule.



- Hold a stick by both the hands behind the head and move it backward.
- Keeping hand on back of head press the elbow back.

- Hold a small towel, one end by sound hand behind the neck and other end by involved hand behind the lower back and move it as if cleaning the back.



- Weight and pulley exercises and theraband exercises can be done for joint mobilization and strengthening of muscles.

- **Strengthening**

- Rotator cuff vs. deltoid

- Trapizeus vs. serratus anterior

- Posture should be taken care of to prevent recurrence.