



Department of Rehabilitation Services
Physical Therapy

Standard of Care: Shoulder Adhesive Capsulitis

Case Type / Diagnosis: (diagnosis specific, impairment/ dysfunction specific)

This standard of care is designed to assist in the physical therapy management of the patient with shoulder adhesive capsulitis.

ICD-9: 726.0

Adhesive capsulitis, also known as frozen shoulder, is a condition characterized by pain and significant loss of both active range of motion (AROM) and passive range of motion (PROM) of the shoulder. While many classification systems are proposed in the literature, frozen shoulder is most commonly classified as either primary or secondary. Primary frozen shoulder is idiopathic in nature, and radiographs appear normal. Secondary frozen shoulder develops due to some disease process, which can further be classified as systemic, extrinsic, or intrinsic. Systemic secondary frozen shoulder develops due to underlying systemic connective tissue disease processes, and causes include diabetes mellitus, hypo- or hyperthyroidism, hypoadrenalism. Extrinsic secondary frozen shoulder occurs from pathology not related to the shoulder, such as cardiopulmonary disease, CVA, cervical disc pathology, humeral fracture, and Parkinsons. Intrinsic secondary frozen shoulder results from known shoulder pathology, including but not limited to rotator cuff tendinopathy, GH arthropathy, and AC arthropathy.¹

Frozen shoulder usually affects patients aged 40-70, with females affected more than males, and no predilection for race. There is a higher incidence of frozen shoulder among patients with diabetes (10-20%), compared with the general population (2-5%). There is an even greater incidence among patients with insulin dependent diabetes (36%), with increased frequency of bilateral shoulder involvement.²

While the etiology of frozen shoulder remains unclear, several studies have found that patients with frozen shoulder had both chronic inflammatory cells and fibroblast cells, indicating the presence of both an inflammatory process and fibrosis¹. Frozen shoulder typically lasts 12 to 18 months with a cycle of 3 clinical stages, the freezing, frozen and thawing stages. These stages last on average 6 months, but the timeframes are variable. The freezing stage is also known as the painful inflammatory phase. Patients present with constant shoulder pain and range of motion (ROM) limitations in a capsular pattern (external rotation (ER)> abduction (ABD)> flexion (FLX)> and internal rotation (IR)). In the second phase, the frozen or stiff phase, the pain progressively decreases as does shoulder motion and individuals commonly experience increased

Standard of Care: Adhesive Capsulitis

restrictions in function. In the last phase, the thawing phase, patients gradually regain shoulder movement and experience progressively less discomfort³.

Recent evidence has not been able to conclude which treatment technique, whether physical therapy, home exercise program, cortisone injection, manipulation, or surgery, is most effective.⁴ Therefore the decision to begin and continue with formal physical therapy should involve input from the physician, the patient preference, and physical therapist after initial evaluation. Patients who may benefit more from formal physical therapy include those with higher disability levels, higher anxiety levels, lower educational levels, and those who have less social support.¹ While evidence regarding the use of intra-articular cortisone injections is conflicting as well, some studies do indicate they provide better short-term (4-6 week) pain reduction than other forms of treatment⁵. Given this information, if this is not offered to patients before referral to physical therapy and they do not demonstrate progress within 3-6 weeks, referral for evaluation for an injection should be considered.¹

Indications for Treatment:

- Shoulder pain
- Decreased AROM/PROM
- Impaired performance of activities of daily living (ADLs)
- Decreased shoulder strength
- Impaired function

Contraindications / Precautions for Treatment:

- A contraindication for joint mobilization is: joint hypermobility
- Precautions: malignancy, bone disease detectable on x-ray, unhealed fracture, excessive pain, hypermobility in associated joints, total joint replacements, systemic connective tissue disease, joint effusion and inflammation, and elderly individuals with weakened connective tissue.³
- Modalities: please refer to specific standards of care for the specific contraindications/precautions for each

Examination:

Medical History: Review past medical/surgical history questionnaire, medical history reported in the computer system, diagnostic imaging, blood work up and other tests listed in the medical record. If possible, take note in the medical record of any prolonged periods of immobilization of the upper extremity (UE), history of diabetes, or history of other autoimmune diseases.

Social History: Review patient's occupational and recreational history and social support system.

Standard of Care: Adhesive Capsulitis

Medications: Medications for management of their shoulder dysfunction include, but are not limited to:

Analgesics, oral steroids, and/ or non-steroidal anti-inflammatory medications

History of Present Illness: Affects women more than men in their fifties, sixties and seventies.

- **Freezing Phase:** In the early stages of the disorder individuals complain of acute, diffuse, constant pain in the shoulder with no identifiable event causing the pain. The pain is usually worse at night with increased discomfort when lying on the affected side. Patients describe using UE progressively less due to the pain, which subsequently facilitates the condition.
- **Frozen Phase:** Pain begins to subside and manifest as a dull ache with active movement and little to no pain at rest. Pain is also felt at end ranges of movement and described as sharply painful. Immobility and functional limitations continue and patients often seek out treatment in this stage because of difficulty using the arm functionally.
- **Thawing Phase:** Pain progressively decreases as motion increases in this phase of adhesive capsulitis. Functional use of the UE improves and the patient is increasingly able to use the UE during basic and instrumental activities of daily living.^{3,6}

Examination (Physical / Cognitive / applicable tests and measures / other)

This section is intended to capture the minimum data set and identify specific circumstance(s) that might require additional tests and measures.

- **Pain:** Assessment made on the verbal rating scale or the numerical rating scale. Variable presentation of pain, ranging from mild to severe aches primarily over the deltoid muscle area. There may also be tenderness at the bicipital groove due to the anatomical fact that the joint capsule bridges the greater and lesser tuberosities of the humeral head. Pain may also be located in the upper back and neck due to overuse of the shoulder girdle musculature.³
- **Observation:** Willingness/Ability to use affected UE, presence or absence of edema, resting position of UE i.e. is it braced against body. Alignment of bones and soft tissues
- **Postural Assessment:** Cervical, thoracic, lumbar alignment and humeral and scapular position. Typical findings may include forward head position, protracted scapula, and excessive thoracic kyphosis.

Standard of Care: Adhesive Capsulitis

- **Palpation:** Including palpation of the scapular, cervical and shoulder girdle musculature. There is conflicting information as to whether there is tenderness to palpation with adhesive capsulitis. One author states that there can be tenderness to palpation at the bicipital groove at the point where the joint capsule bridges the gap between the greater and lesser tuberosities of the humerus, while another states that there will be no tenderness to palpation unless the anterior capsule is stretched.^{3,7}
- **Upper Quarter Neuro screen** including reflexes, myotomes, dermatomes
- **Range of Motion**
 - Functional ROM: observations of ability to use UE
 - Active ROM: restricted ROM, hiking of the shoulder with attempted AROM.³
 - Passive ROM: Limited in capsular pattern of ER>ABD>FLX and IR
 - The loss of passive ER with the arm at the patient's side is a hallmark of this condition.⁸
- **Muscle Performance/Strength:**
 - Manual muscle testing
 - Hand-held dynamometry testing
- **Joint Integrity and Mobility:** compared to contra lateral side, a 30-60% loss of joint mobility is expected.⁹
 - Joint Mobility: In the early stages of adhesive capsulitis, due to pain and guarding, patient presents with an empty end feel. In the later stages, when pain has subsided, the end feel is described as capsular. Tightness is mostly limited in the anterior and inferior aspects of the capsule corresponding to the loss of external rotation (ER) and abduction (ABD).
 - Scapular mobility may also be limited due to adhesions developing in the joint.³
- **Special tests:** The shoulder special tests may be used to rule in or rule out other pathologies that may be limiting shoulder ROM and causing pain. These tests include, but are not limited to the empty can test, Speed's test, drop arm test, and Neer and Hawkins's impingement tests. There is no one specific special test that confirms the diagnosis of adhesive capsulitis.

Differential Diagnosis (if applicable):

- *Posterior Shoulder Dislocation:* ER ROM similarly decreased combined with a limitation in overall shoulder ROM. Differentially diagnosed with axillary view

4

Standard of Care: Adhesive Capsulitis

films with illustrates the position of the humeral head in the glenoid and with the history of present illness.

- *Acute Tendonitis or bursitis*: AROM and PROM restrictions exist as with adhesive capsulitis, but patients with tendonitis or bursitis generally present with a different history
- *Calcific Deposits*: Large deposits may impair AROM and PROM of GH joint. Differentially diagnosed with shoulder radiographs with the shoulder in ER and IR illustrating calcifications in the joint space
- *Acromioclavicular joint dysfunction*: Manifests as localized tenderness over the acromioclavicular joint and with a large palpable lump over the lateral end of the clavicle. The acromioclavicular joint can also be injected with lidocaine which can relieve the pain and improve ROM, which would rule out adhesive capsulitis.
- *Osteochondromatosis*: Loose bodies in the joint space may result in complaints of a painful and stiff joint and may manifest as locking or clicking of the joint. Radiographs are useful in confirming the presence of a loose body.
- *Malignancy*: With patients older than 60 years old, cancer may be considered as the source of the skeletal pain. Cancer is differentially diagnosed if suspected with radiographs, bone scans, blood work and biopsy if warranted.³

Evaluation / Assessment:

Medical Diagnosis: Adhesive capsulitis is medically diagnosed with the use of arthrography, which illustrates a reduction in shoulder joint volume, irregular joint outline, tight and thickened capsule, and loss of an axillary fold. Plain radiographs cannot detect adhesive capsulitis, but can detect mild to moderate osteopenia caused by disuse and a reduced space between the acromion and the head of the humerus. Bone scans demonstrate an increased uptake of contrast material in the capsule and blood work demonstrates an association between HLA-B27 histocompatibility antigen and patients with Adhesive Capsulitis.³

Problem List (identify impairment(s) and/or dysfunction(s))

Impairments:

1. Pain
2. Impaired joint play and ROM in capsular pattern
3. Postural deviations such as protracted scapula and anterior tipping of the scapula and rounded shoulders
4. Decreased arm swing during gait
5. General muscle weakness, poor endurance in glenohumeral (GH) musculature with resultant overuse of the scapular muscles.⁶

Functional Limitations and Disabilities

1. Difficulty with ADLs requiring reaching overhead, behind head and behind back

Standard of Care: Adhesive Capsulitis

2. Unable to lift weighted objects
3. Unable to sustain repetitive UE activities.³

Prognosis: Adhesive capsulitis can last 12 to 18 months, with 3 distinct phases. The first phase can last 2-9 months, the second phase 4-12 months and the last phase, the thawing phase, from 6-9 months.³

Goals (measurable parameters and specific timelines to be included on eval form):

The patient will:

1. Demonstrate knowledge of self management of symptoms
2. Demonstrate independent knowledge of home exercise program
3. Increase ROM of all affected motions to equal ROM on the unaffected side
4. Demonstrate normal postural alignment
5. Demonstrate normal UE motion during gait
6. Demonstrate highest level of muscular performance on involved UE and scapular musculature

Treatment Planning / Interventions

Established Pathway ___ Yes, see attached. ___x_ No

Established Protocol ___ Yes, see attached. ___x_ No

Interventions most commonly used for this case type/diagnosis.

This section is intended to capture the most commonly used interventions for this case type/diagnosis. It is not intended to be either inclusive or exclusive of appropriate interventions.

1. ROM exercises including pendulum exercises, PROM, AAROM, AROM
2. TENS for pain relief
3. Strengthening exercises within pain free range
4. Joint mobilization: grades I-II used in the early stages to inhibit pain and to improve joint nutrition, grades III-IV to increase tissue extensibility
5. Moist heat
6. Stretching
7. Muscle reeducation to regain normal GH and scapulothoracic biomechanics.^{3,6}

Age Specific Considerations

Consideration of the integrity of the bone with older individuals.

Standard of Care: Adhesive Capsulitis

Frequency & Duration

Frequency and duration of treatment are both dependent on the stage that the patient is in. In the initial stages, physical therapy (PT) 1-2 times per week for instruction in home exercise program, patient education, postural awareness education so the patient is able to self manage symptoms and prevent secondary impairments in the UE and shoulder girdle musculature. In the later stages, when the patient is thawing, PT 2-3 times per week.

Patient / family education:

1. Time Frames of healing and of each stage
2. Pathology and natural history of the disorder
3. Role of PT in rehabilitation
4. Home exercise program including strengthening and AROM/AAROM/PROM
5. Pain management techniques
6. Postural awareness education

Recommendations and referrals to other providers

1. Orthopedist

Re-evaluation / assessment

Standard Time Frame: every 30 days

Re-evaluations will also be performed if there is a significant change in status, such as trauma to the involved UE and/or if the patient is not meeting the physical therapy goals.

Discharge Planning

Commonly expected outcomes at discharge:

1. Significant pain reduction
2. Patient will regain functional use of affected UE

Patient's discharge instructions: The patient will be instructed on the continuation and progression of the home exercise program focusing on increasing ROM and strength.

Author(s):

Karen Nye, PT
Candice Reed, PT

Reviewers:

Leigh de Chaves, PT
Joel Fallano, PT

Updated:

Lina Pinakas Lamb, PT
December, 2010

Reviewers:

Michael Cowell, PT
Leigh de Chaves, PT

Standard of Care: Adhesive Capsulitis

REFERENCES

1. Kelley MJ, McClure PW, Leggin BG. Frozen Shoulder: Evidence and a Proposed Model Guiding Rehabilitation. *Journal of Orthopaedic and Sports Physical Therapy*. February 2009;39(2):135-136-148.
2. Pearsall AI, MD. Adhesive Capsulitis. *eMedicine*. 2008. Accessed 06/01/09.
3. Saidoff DC, McDonough AL. *Critical Pathways in Therapeutic Intervention: Extremities and Spine*. St. Louis: Mosby; 2002:134-144.
4. Rookmoneea M et al. The effectiveness of interventions in the management of patients with primary frozen shoulder. *The Journal of Bone & Joint Surgery (Br)*. 2010;92-B(9):1267--1272.
5. Ryans I, Montgomery A, Galway R, Kernohan WG, McKane R. A randomized controlled trial of intra-articular triamcinolone and/or physiotherapy in shoulder capsulitis. *Rheum*. 2005;44(4):529--535.
6. Kissner C, Colby LA. *Therapeutic Exercise: Foundations and Techniques*. Third ed. Philadelphia: F.A. Davis Company:278-280.
7. McGee DJ. *Orthopedic Physical Assessment*. Fourth ed. Philadelphia: Saunders; 1997:210-211.

Standard of Care: Adhesive Capsulitis

8. Brotzman BS,MD, Wilk KE,PT. *Clinical Orthopedic Rehabilitation*. Second ed. Philadelphia, Pennsylvania: Mosby; 2003:227-231.

9. Sandor R. Adhesive Capsulitis: The Optimal Treatment of "Frozen Shoulder". *The Physician and Sports Medicine*. ;28(9).

Standard of Care: Adhesive Capsulitis