

## Adhesive Capsulitis: A Case Study

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Adhesive capsulitis refers to a mysterious fibrosis of the glenohumeral joint capsule, manifested by diffuse, dull, aching pain in the shoulder and progressive restriction of motion, but usually no localized tenderness.<sup>1</sup>

Generalized pain is usually the precursor to voluntary restricted shoulder movement, which leads to more pain and stiffness, and eventually, involuntary restricted shoulder range of motion in the absence of pain.

Adhesive capsulitis is the physiologic process whereby adhesions or inflammatory bands connect the otherwise freely moving opposing surfaces of the shoulder capsule and the head of the humerus. According to an article in the *American Family Physician*:

"To avoid confusion, the term 'adhesive capsulitis' should be used to refer to the primary idiopathic condition, and the term 'secondary adhesive capsulitis' should be applied to the condition that is associated with, or results from, other pathologic states. Each case must be evaluated to determine if the restriction is idiopathic (primary) or the result of an underlying systemic illness or anatomic process (secondary). Either condition causes pain and decreased shoulder mobility."<sup>2</sup>

### Case Report

A 30-year-old male business project manager presents suffering from constant, mild, dull generalized left shoulder pain that was precipitated by clicking and followed by a gradual loss of motion. Particularly, the patient noted the inability to wash, comb his hair, and retrieve his wallet from his back pocket.

The patient began recreational weightlifting approximately one year prior to the onset of his symptoms and noted that overhead movements and lateral dumbbell raises increased his pain, and as such, were discontinued.

Prior to the patient's presentation, radiographs of the left shoulder were exposed and negative for fracture or dislocation. A brief course of over-the-counter anti-inflammatory medications and rest provided no relief.

The patient reported that his loss of motion came about gradually, and he was initially in more pain. He stated that the pain tapered off, but his motion was reduced to the point that all activities of daily living (ADLs) are performed with the use of his right arm.

A cervical, thoracic and bilateral shoulder examination was performed. The patient tested negatively for cervical compression and thoracic outlet syndrome. Mild restriction to osseous motion palpation was detected at T2 through T5. No bruits were noted, and cervical vascular testing was within normal

limits. There was no tenderness to digital pressure over the bicipital tendon or groove, with resisted supination of the forearm.

Both passive and active ranges of motion were moderately decreased, with minimal pain in the end ranges. Measurement via goniometer was as follows: flexion, 20/45; extension, 20/45; abduction, 120/180; internal rotation, 20/55; external rotation, 10/45. Diffuse myospasm and active trigger-point nodules were palpable in the left trapezius, deltoid and teres muscles.

Postural evaluation noted elevation of the left shoulder as observed from the P-A view.

## Treatment

Treatment goals included increased of pain-free range of motion and restoration of normal, pain-free shoulder function.

Treatment began at the acute intervention phase of rehabilitation. Manipulation of the shoulder joint was avoided during this stage, as "some believe that overly aggressive manipulation can prolong the disorder."<sup>3</sup>

The fundamental goal of the acute phase of intervention was to reduce and decrease muscle spasm. This was accomplished through the use of prescription ibuprofen (800 mg TID, as prescribed by the patient's primary care provider). In clinic, cryotherapy was administered at a 15-minute duration, followed by aggressive sustained digital ischemic compression to areas of myospasm, with additional focus on palpable trigger-point nodules located in the teres, trapezius and rhomboid muscles.

Continuous ultrasound at  $1.0\text{w}/\text{cm}^2$  was utilized with a hypoallergenic gel medium (continuous motion) to additionally reduce pain, spasm and inflammation. The patient was treated passively three times per week for one week, with home instructions to begin incorporating left arm movements in the pain-free range.

By the patient's fourth visit, passive range of motion, ultrasound, digital ischemic compression and cryotherapy provided a substantial increase in the pain-free active range of motion.

On the fifth visit, light mobilization of the scapula was tolerated without difficulty. Additionally, diversified manipulation of the fixated thoracic segments was introduced with the patient prone.

These treatment protocols were administered during visits 5-7, in conjunction with PNF stretching utilizing a "stretch, hold, contract, relax" method to increase passive range of motion (one set of five repetitions of 10 seconds).

By the patient's eight visit, "wall walking" was introduced and performed for three sets of five repetitions to 60 degrees of 90 degrees, pain-free. At the same time, pendulum exercises were instituted, unweighted in the clockwise, counter-clockwise and figure-eight motions. Active protocols were preceded by ultrasound and followed by cryotherapy for visits 8-10.

Visit 10 introduced weighted pendulum exercises with a wrist weight. By this point, left shoulder flexion was pain-free to 90 degrees in the wall walk. Abduction, adduction and extension were also pain-free in the active range.

Following visit 10, a therapeutic withdrawal from treatment began, with home instruction to continue pendulum exercises holding a soup can, and wall walking to 90 degrees, using three sets of repetitions twice daily (following with cryotherapy at a 15-minute duration).

The patient returned after a two-week withdrawal from treatment without repercussion or recrudescence of his condition.

A re-evaluation of shoulder range of motion determined active flexion, 85/90; extension, 45/45; abduction, 170/180; adduction, 40/45; internal rotation, 50/55; and external rotation, 40/45. The patient was provided with level 1 therabands and instructed in proper use. Home exercise protocols consisted of flexion, extension, internal and external rotation, and vertical lifts at a frequency of three times per week, using three sets of 10 repetitions, for three weeks. If he experienced an increase in symptoms or a loss of function, he was to discontinue the exercises and contact the facility.

Following three weeks of home protocols, the patient was again re-evaluated and remained asymptomatic, with full, unrestricted left shoulder range of motion.

## Conclusion

Primary adhesive capsulitis, also known as frozen shoulder, is characterized by an initial course of generalized shoulder pain, followed by a gradual nonpainful loss in shoulder range of motion. As evident by this case study, conservative methods (including passive modalities) followed by transition to active protocols, with a release to independent exercise instruction, are valuable in promoting a return to normal, nonphysician-dependent function.

## References

1. Bates B. *A Guide to Physical Examination and History Taking*, fifth edition. J.B. Lippincott Company, 1991.
2. Siegel LB. Adhesive capsulitis: a sticky issue. *American Family Physician*, Apr. 1, 1999.
3. Sander R. Adhesive capsulitis: optimal treatment of "frozen shoulder." *The Physician and Sports Medicine*, Sept. 2000;28(9).

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