

Idiopathic frozen shoulder is a condition of uncertain etiology characterized by significant restriction of active and passive shoulder motion that occurs in the absence of intrinsic shoulder disorders⁷⁾ and takes self-limited course of 12-18 months duration⁴⁾ with the cumulative risk of 2%²⁾. Although as high as 50% of patients were reported to have mild pain and decreased range of motion after 7 years from onset⁵⁾, functional limitation is small in most patients. According to Neer, elevation of 150°, external rotation to 50°, and internal rotation to T8 is sufficient for normal function. Because restriction is mainly in external rotation and most functional demands of the shoulder depends on elevation, it may be easier for the patient to compensated for this loss¹⁾. Therefore, conservative treatment is indicated in most patients.

Treatment of the frozen shoulder primarily aims to shorten the duration of pain. Relieving the pain helps the patients to undergo rehabilitation program, and consequently enables early recovery of motion and function of the shoulder.

In order to decrease pain, local rest for a short period of time, non-steroidal anti-inflammatory medication and physical modalities are utilized. Some patients benefit from the use of local corticosteroid hormone, either by trigger point or gleno-humeral injection. However, intra-articular injection has a theoretical advantage over trigger point injection as it targets the pathological region, and takes relatively good effect when there is severe pain^{3,6)}.

Exercise program, which is the mainstay of conservative management, is basically passive stretching for the gleno-humeral joint capsule under contracture. There are several exercise programs with some differences in detail. However, the basic principles for stretching apply to the various programs equally. First, the stretching should be performed at low speed, and at the end-point of motion arc, the same stretching force should be maintained for several seconds. As the soft tissue has visco-elastic property, putting the capsule under sustained resistance with low speed enables maximal stretching with small force, while minimizing injury. Second, the intensity of exercise should be of a degree that is capable of stimulating the tissue to be treated, but without causing much pain. If there is persistent pain an hour or so after finishing the exercise, the intensity and/or duration of exercise should be reduced to prevent tissue injury. Third, application of heat before stretching helps to increase the effectiveness of stretching by promoting local circulation, and cold compression just after stretching reduces swelling by vasoconstriction effect.

The intensity, number of repetition, and frequency of stretching should be directed to the patients in detail and in concrete terms. In the early stage of treatment, it would be better to have the patients visit the physical therapist frequently to be familiar with the

methods of stretching. However, it should be stressed that it is basically a home-based rehabilitation program executed by the patient himself or herself, unless there are medical conditions precluding effective exercise by oneself.

The first stage of stretching consists of elevation in scapular plane and external rotation of the adducted arm, which aim to stretch the inferior and anterior glenohumeral capsule. These exercises are more effectively performed in supine position by minimizing scapular rolling than in erect position. Usually a stick is utilized in external rotation stretching, and putting a pillow under the elbow in supine position is recommended to make the rotation occur in scapular plane. Typically, two sets of 10 or more repetitions for each exercise are prescribed for a session, but the number of repetition can vary according to the condition and compliance of the patients. At least three sessions of exercise are needed a day. After improvement of elevation and external rotation, usually at around 6 to 12 weeks after commencement of therapy, stage two exercises are started. They consist of internal rotation and adduction, which target the posterior capsule to stretch. Frequently, improvement in motion is slow in the second stage stretching. However, secondary subacromial impingement occurs on elevation of the arm because the humeral head is pushed anterosuperiorly by the contracted posterior capsule, unless posterior capsular contracture does not resolve. The third and final stage of exercise is terminal arc stretching utilizing body weight as a stretching force in all arcs of motion. They should be performed slowly and in a controlled manner to prevent injury to the capsule.

Usually the patients show improvement of pain in parallel to the improvement in motion. After improvement of motion, rotator muscle strengthening exercise is prescribed because the muscles are almost always weakened by lack of active use for a long period of time. Also, sports activities of the patients' choice are encouraged.

In a very small number of patients, the improvement of motion is unsatisfactory in spite of the above mentioned treatment. If the pain is intolerable in such patients, causes other than the primary frozen shoulder should be sorted out, after which surgical intervention for the idiopathic frozen shoulder should be taken into consideration.

References

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