SURGICAL RESULTS IN ROTATOR CUFF LESIONS WITH ADHESIVE CAPSULITIS

Jih-Yang Ko, Mei-Hui Kuo*, Han-Shiang Chen, Ching-Jen Wang
Orthopaedic Department, *Rehabilitation department
Chang Gung Memorial Hospital at Kaohsiung, Taiwan, R.O.C.

[Background]

Idiopathic adhesive capsulitis, also known as frozen shoulder is a condition of uncertain etiology characterized by a restriction of both active and passive shoulder motion. However, adhesive capsulitis may also occur secondary to intrinsic shoulder pathology such as subacromial impingement syndrome; extrinsic disorders such as pulmonary diseases, or systemic conditions such as diabetes. There has been no agreement about the treatment of rotator cuff lesions associated with refractory adhesive capsulitis. We have prospectively treated these patients since May 1995 and report the surgical results.

[Methods]

Forty-three patients (47 shoulders) who underwent surgery for rotated cuff lesions associated with refractory adhesive capsulitis were available for follow-up of more than 2 years between May 1995 and December 2000.

Preoperative data involving chief complaints, duration of the symptoms, trauma history, sports activity, profession, and other past medical diseases were collected. All patients had active and passive limitation of motion of equal or more than half the normal range. Initial treatment was conservative such as NSAID, avoidance of causative activity, and rehabilitation for at least 9 months before surgery. All patients had temporary improvement of the symptoms after injection of steroid and xylocain into the subacromial bursa. Magnetic resonance imagings (MRI) or glenohumeral arthrography were performed in addition to routine AP and outlet radiographs. The surgical procedure included manipulation under anesthesia, anterior acromioplasty, excision of coracoacromial ligament and coracohumeral ligament, partial bursectomy, lysis of rotator interval and periarticular adhesion down to the axillary pouch, and intra-articular bumping followed by rotator cuff repair. Postoperative rehabilitation should be aggressive and included pendular exercise and passive elevation from the second postoperative day. The patients progressed with active-assisted exercises including elevation, exernal rotation and internal rotation five days postoperatively. Active exercise was started as tolerated, usually ten days after the surgery. Then regular follow-ups were made including functional score of Constant and Murley and radiographs. The pre- and postoperative data were

analysed with Wilcoxon Signed Ranks test. The results of different types of rotator cuff tears were analysed with Mann-Whitney test.

[Results]

There were 30 females (33 shoulders) and 13 males (14 shoulders). The mean (±SD) age at surgery was 54±9 years and the mean (±SD) duration of follow-up was 48.55±17.97 months. The subjective scores of Constant and Murley improved from 11.74±3.91 preopeatively to 29.47±4.32 points postoperatively ($p<0.001$). The objective scores improved from 14.64±4.15 to 36.34±2.96 points ($p<0.001$). The strength score improved from 18.94±2.32 to 23.62±2.49 points ($p<0.001$). The flexion improved from 78.30±12.57 to 165.85±14.00 degrees; the abduction improved from 67.66±15.10 to 158.19±15.51 degrees; and the external rotation from 7.34±8.96 to 34.26±11.61 degrees. The total scores of Constant and Murley improved from 45.11±8.84 to 89.43±8.36 points ($p<0.001$).

There was no statistical difference in total Constant scores between patients with and without diabetes mellitus ($p=0.123$). Although there was statistical difference in total scores between patients with partial cuff tears and complete rotator cuff tears ($p=0.018$) and between patients with partial tears and large tears ($p=0.041$), there were no difference in the degree of flexion, abduction, and external rotation among patients with different types of rotator cuff tear.

There were no neurovascular damage, wound infection, or recurrence of frozen shoulder at the latest follow-up in this study. One patient had symptoms of reflex sympathetic dystrophy which resolved after rehabilitation. The other patient had arthroscopic debridement half year after the index operation due to persistent discomfort and poor improvement of the motion.

[Discussion]

The information about the associated refractory adhesive capsulitis in rotator cuff tears has been few. There were 11% (47 in 424 shoulders) of such patients in a period of 5 years and 7 months in our surgical experience. Treatment for adhesive capsulitis consists of (1) supportive treatment including ultrasound, transcutaneous electrical nerve stimulation, and massage, (2) medications given orally, topically, and parenterally (local and intra-articular), (3) stretching exercises or traction, (4) injections of fluid, arthrographic dye, or medications for the purpose of joint distension to release capsular contracture, (5) manipulative therapy with or without anesthesia to release adhesions or contracted structures, and (6) surgical release of adhesions or contractive structures by open or arthroscopic means. Harryman et al stated that if the patient had a rotator cuff tear and secondary shoulder stiffness, the

shoulder stiffness should be treated initially because a rotator cuff repair was a "shoulder – tightening" procedure and might increase stiffness postoperatively. However, many authors also reported that for recalcitrant frozen shoulders, aggressive surgical release by open or arthroscopic methods might be the only option. We did not observe the "shoulder – tightening" effect in our patients. The relatively poor results in patients with complete and large rotator cuff tears were due to the status of the cuff tear. No recurrence of adhesive capsulitis was noted in our patients. We believe that our procedure blocks the cascard pathway of fibroplasia and adhesion which is initiated and processed through the mediators of cytokines and growth factors.

[Conclusion]

Rehabiliation and conservative treatment for adhesive capsulitis was usually suggested before repair of the rotator cuff tear. However it is reasonable to surgically treat the patients who have rotator cuff tears and refractory adhesive capsulitis concomitantly. The procedure we describe affords satisfactory results for most of the patients.

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