Recurrent traumatic anterior dislocation of the shoulder

218 consecutive cases treated by a modified Magnuson-Stack procedure and follow for 2–18 years

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Over a period of 30 years (1961–1991), 218 patients with recurrent anterior dislocation of the shoulder were operated on at the Naval Hospital of Greece using a modified Magnuson-Stack method. The modification involved transfer of the subscapularis tendon not only laterally to the bicipital groove, but also 1 cm distally (Karadimas et al. 1980). 210 patients (213 shoulders) were examined after a follow-up of 9 (2–18) years. Results were evaluated according to pain, limitation of motion, muscular power and atrophy. 183 patients (87%) had very good results, 21 cases (10%) had good results, while 6 cases (3%) had fair results. Only 3 recurrences (1%) were recorded.

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Although Hippocrates first described recurrent anterior dislocation of the shoulder as early as the 5th century BC, the causes of instability have only recently been clarified and classified. As regards treatment, the literature is replete with various surgical techniques which suggest variable results and a lack of consensus.

The incidence of recurrence varied in early reports with limited numbers of patients according to the technique and author, ranging from 0% with the modified Bristow method (May 1970) to 100% with the Henderson method (Rowe 1956). More recent and larger series show better results (Karadimas et al. 1980, Wallace 1993).

Four main surgical techniques are in use today, including a bone block procedure with transfer of coracoid, repair of the glenoid labrum and the inferior glenohumeral ligament and capsule, indirect intervention, such as humeral derotation osteotomy and arthroscopic approaches. I report my experience since 1961 with transfer of the subscapularis tendon using a modified Magnuson and Stack (1943) method (Magnuson 1945).

Patients and methods

Between 1961 and 1991, 218 patients with recurrent traumatic anterior dislocation of the shoulder were operated on at 4 Naval Hospitals in Greece. Part of the series has been previously reported (Karadimas et al. 1980). 8 patients lost to follow-up or with a follow-up less than 2 years were excluded. 210 patients with 213 operations were reviewed. 1 patient had had both shoulders operated on and 2 underwent a second procedure for recurrence of dislocation due to a new injury.

All patients were men with an average age 23 (16–40) years and were either Navy and Coast Guard personnel. All patients were in good general health and none had epilepsy or habitual dislocation of the shoulder. The duration of disability ranged from 6 months to 12 years. In 154 patients (73%), a violent injury had caused the first dislocation. Most of dislocated shoulders had not been adequately immobilized after reduction of the first dislocation; two-thirds had been immobilized less than 3 weeks or not at all. None. but 7, of the patients ahd any previous shaoulder surgery.

82 cases were treated in the first decade (1961–1971), 70 in the second and 66 in the third. All patients had had at least 5 recurrences, mostly during dressing-undressing, athletic activities or during sleep. In 3 patients the dislocation was bilateral, but only 1 underwent surgery on both shoulders. The left shoulder was involved in 47 patients. Of the 146 patients who had dislocation of the right shoulder, all were right-handed. Preoperative radiographs were taken of all patients, but only 149 were available for review. The Hill-Sachs defect was observed in 52 (35%).

Patients underwent a modified Magnuson-Stack method involving transfer of the subscapularis tendon, not only laterally (to about 1 cm lateral to the bicipital groove), but also distally (approximately 1

cm distal to the greater tuberocity). A bony wedge was not transplanted with the insertion of the subscapularis tendon. Rather, the insertion itself was transferred. Once the shoulder joint was opened, any loose cartilage fragments were removed, ignoring the presence of Bankart lesions.

The shoulder was immobilized postoperatively in a Velpeau dressing for about 4 weeks. After a short course of short wave diathermy, graduated pendulum exercises were begun followed by more active flexion–abduction exercises. Rotation was avoided from the beginning. Once almost full range of shoulder motion was achieved, exercises against resistance were initiated. Care was taken to avoid external rotation at the beginning of the training.

All patients were reexamined after 9 (2–18) years. This was easy to achieve since, all of the patients were personnel of the Greek Navy or Coast Guard. Results were evaluated according to postoperative pain, the degree of limitation of external rotation and muscular power and atrophy.

Results

No infections or other serious complications were recorded. 5 cases had a deep hematoma which settled. A limitation of external rotation was observed in almost all cases during the first 6 months. This limitation, however, decreased substantially by the end of the first year.

Results were very good with no pain and less than 10° limitation of external rotation in 183 cases (87%), good with no pain and 10°–20° limitation of external rotation in 21 cases (10%), and fair with some pain and 20°–30° limitation of external rotation and about 10° limitation of abduction in 6 cases (3%). Pain and disability occurred mostly during athletic activity.

There were 3 recurrences (1%). One patient was involved in a traffic accident 1 year after his first operation; he was reoperated using the same method, with no further recurrences. The second patient, who had a postoperative hematoma which required drainage, had recurrence after a minor injury 6 months after the first operation. He was reoperated using the same method with no problems at 6 years follow-up. The third patient had a recurrence 8 years postoperatively while lifting luggage over his head. He refused further surgical intervention. None of the patients changed their duties or hobbies or retired for reasons related to the operated shoulder. Although there were no professional athletes in this series, 1 patient became a Balkan Champion in rowing 3 years after operation.

Discussion

Previous reports using the subcapularis transfer referred to relatively small series (Magnuson and Stack 1943, DePalma 1950, Gartland and Dowling 1954, Robertson 1954, Rowe 1956, MacAusland 1956, Palumbo et al. 1960, Aamoth and O'Phelan 1977, Miller et al. 1984). Demographically this series is similar to others with two exceptions. First, all of the patients were military men, similar to 1 other series (Ahmadain 1987). Second, the dominant hand was involved twice as often as the nondominant one.

The incidence of recurrent anterior dislocation of the shoulder was noted to decrease with the time in this series; specifically, from 44 cases during 1961–1966 to 18 cases during 1991–1996. This may be due to better treatment of the first dislocation, with longer immobilization which appears to be a prime factor for later instability.

Follow-up which averaged 9 (2–18) years in this series appears to be long enough to accurately assess the recurrence rate. Four fifths of the recurrences occurred during the first 2 postoperative years. Only 3 recurrences (1%) were observed in this series. This low incidence is similar to that reported by some (Walch 1996), but it is less than that found in other large series (Rowe and Zarins 1981, Symeonides 1989, Johnson 1989).

Although the 87% very good results achieved is similar to that found with arthroscopic repair, Bankart staples, the Bristow procedure or capsular imbrication (Johnson 1989, Caspari et al. 1990, Walch 1996, Wirth et al. 1996), it is somewhat less than that reported for the Bankart procedure or rotational humeral osteotomy (Rowe et al. 1978, Yamamoto et al. 1989).

The initial criticism of the Magnuson-Stack procedure was that it produces an excessive limitation of external rotation. This was not apparent in our series. External rotation was not permitted in our patients immediately postoperatively. However, it gradually increased to near full range of motion by the end of the first year. A limitation in external rotation of 10°–20° was observed in 21 of the cases (10%), while only 6 cases had a limition between 20° and 30°. None of the patients complained of the limitation or changed their duties or sports activities.

The Magnuson-Stack procedure tightens the grip of the subscapularis around the head of the humerus and restores the muscular balance around the shoulder (De Palma 1973) which may prevent, in part, a limitation in external rotation. The modified Magnuson-Stack procedure with transfer of the subscapularis tendon laterally, as well as distally appears to be an improvement of the original technique.

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