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Clinical and structural outcome 22 years after acromioplasty without tendon repair in patients with subacromial pain and cuff tears

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Background: Long-term results regarding tear progression, arthropathy, and clinical scores of unrepaired rotator cuff tears are largely unknown. This study investigated whether the condition of the glenohumeral joint and rotator cuff had deteriorated at a minimum of 20 years after an acromioplasty without cuff repair and assessed the clinical results.

Methods: A retrospective analysis was conducted of a consecutive series of patients treated between 1989 and 1993 with acromioplasty without cuff repair due to subacromial pain and cuff tear. At follow-up results of x-ray, ultrasonography, and clinical scores were recorded.

Results: At a mean of 22 years (range, 21-25 years), 69 patients were available for follow-up with Western Ontario Rotator Cuff Index, Constant-Murley (CM) score, x-ray, and ultrasonography. Mean age at operation was 49 years (range, 19-69 years). There were 45 partial-thickness tears (PTT) and 24 full-thickness tears (FTT). Of 23 patients with FTT, 17 (74% with x-ray) had developed cuff tear arthropathy (Hamada ≥2) and 20 (87% with ultrasonography) had progressed in tear size. Mean relative CM in patients with FTT and cuff tear arthropathy was 62 (standard deviation [SD], 27), and the mean WORC was 58% (SD, 26%). In the 43 PTT patients, 3 (7% with x-ray) had developed cuff tear arthropathy and 16 (42% with ultrasonography) had tear progression. With PTT at follow-up, the mean relative CM was 101 (SD, 22), and the mean WORC was 81% (SD, 20%).

Conclusions: After an acromioplasty, most unrepaired full-thickness tears will, in long-term, increase in size and be accompanied by cuff tear arthropathy changes. Most partial thickness tears remain unchanged; cuff tear arthropathy is rare, and clinical scores generally good.

Level of evidence: Level IV; Case Series; Treatment Study

Keywords: Shoulder; rotator cuff; long-term; tear progression; cuff tear arthropathy; acromioplasty; natural history

The optimal treatment for rotator cuff tears is still controversial.[7,45] Published results of rotator cuff repair are generally good,[12,32] but the retear rate is reported to be between 11% and 94%,[13,32] and the rehabilitation period is

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sometimes extensive.[29] Randomized trials of rotator cuff repair compared with acromioplasty or only physiotherapy have not yet shown a clinically relevant difference in outcome in the short-term to medium-term.[31,35] Potential drawbacks of not repairing a cuff tear are tear progression,[27,33,41] functional deterioration, and development of cuff tear arthropathy.[21,38] The structural deterioration is likely to be a slow process over several years, and the clinical significance is largely unknown. The follow-up period in studies of conservative treatment or subacromial decompression without repair is generally of short-term to medium-term,[9,11,15,26,33,41,50] and long-term studies that include structural changes of the shoulder joint are lacking.[22]

The overall aim of this study was to investigate whether the condition of the glenohumeral joint and rotator cuff had deteriorated at a minimum of 21 years after an acromioplasty, without cuff repair, in patients with partial and full-thickness rotator cuff tears. The two main outcomes were tear progression and cuff tear arthropathy. A secondary aim was to examine the clinical results.

Materials and methods

A consecutive series of 111 patients with an intraoperative finding of a rotator cuff tear was identified through all surgical protocols from patients having undergone an arthroscopic subacromial decompression at Linköping University Hospital between 1989 and 1993. During this period, most of the patients with subacromial pain were believed to have had a good outcome of an arthroscopic subacromial decompression only. Therefore, all patients who needed surgery were initially treated with only arthroscopic subacromial decompression regardless of the cuff condition. At follow-up, 21 patients had died, 11 were medically too ill to be contacted, and 1 patient could not be located. The remaining 78 patients were contacted, and 69 accepted participation, resulting in a follow-up rate of 88% for eligible patients. A flow-chart of the inclusion process is presented in Fig. 1. Each patient gave written informed consent.

Medical records were retrospectively reviewed. All included patients had preoperatively suffered from shoulder pain for more than 6 months and had been diagnosed with subacromial pain or impingement syndrome by an orthopedic surgeon. Preoperative standard x-rays, with frontal and lateral projections, were without signs of osteoarthritis or cuff tear arthropathy. All patients had been treated before surgery with a period of physiotherapy and at least 1 subacromial corticosteroid injection.

Surgical technique

The operations were performed with the patients in lateral decubitus by 1 of 4 experienced senior shoulder surgeons. A standard posterior portal was used for the arthroscope and a lateral portal for instruments. The glenohumeral joint was routinely examined according to a specially designed protocol. All findings were documented in the protocol where the alternatives for integrity of each rotator cuff tendon were intact, articular-side partial tear, bursal-side partial tear, or full-thickness tear. There was no requirement of tear size measurements, but the location of a tear was indicated in a drawing.

Subacromial bursal resection and an acromioplasty were performed, including release of the coracoacromial ligament. The anterolateral undersurface of the acromion was resected to a flat contour with a slight upward slope toward the insertion of the coracoacromial ligament. The resection typically aimed at creating a distance equaling a distance that was twice the width of the 6-mm shaver blade between the supraspinatus tendon and the acromion. Any osteophytes surrounding the undersurface of the acromioclavicular joint were resected. No rotator cuff tears identified during arthroscopy were repaired or trimmed. The biceps tendon was not measured. Postoperatively the patients wore a sling for comfort. Postoperative rehabilitation was guided by a physiotherapist.

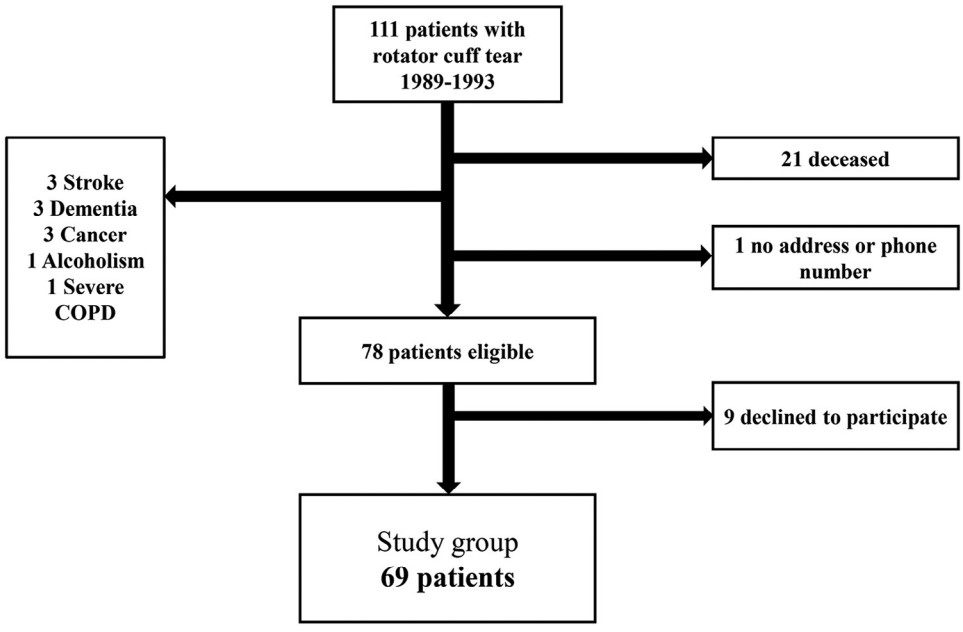

Figure 1 Flow-chart of the inclusion process. *COPD*, chronic obstructive pulmonary disease.