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ORIGINAL ARTICLE

Acromioplasty in patients selected for operation by national guidelines

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Background: Shoulder impingement syndrome is the most common shoulder disorder. Even though conservative treatment is the primary treatment of choice, surgery has increased substantially in several countries during the last 20 years. This has resulted in recommended clinical guidelines for treatment of shoulder impingement syndrome in countries such as The Netherlands and Denmark during recent years. The aim of this study was to investigate the effectiveness of an arthroscopic subacromial decompression in 244 patients selected for surgery according to national clinical guidelines.

Materials and Methods: Patients were included from an Internet-based shoulder and elbow database. They were asked to complete 2 questionnaires consisting of the Oxford Shoulder Score (OSS) and the EuroQol 5-Dimension 3-Level and visual analog scale preoperatively and at 6-month follow-up. All patients were carefully selected for surgery according to the national guidelines, with symptoms persisting for at least 6 months. Furthermore, subgroups related to the OSS were formed to assess the clinical outcome according to preoperative status and age.

Results: For the complete study group, an OSS change of 10 (8.8-11.2; $P = .0001$) was found at 6-month follow-up. No significant difference was found between the genders ($P = .17$). The largest clinical effect from the intervention was found in the low preoperative OSS (pre-OSS) group, in which a mean change of 17 was found. The moderate and high pre-OSS groups had mean changes of 13 and 5, respectively. Similarly, according to the EuroQol 5-Dimension 3-Level and visual analog scale, the largest improvements were seen in the low and moderate pre-OSS groups.

Conclusion: Arthroscopic subacromial decompression is a valid treatment, reducing pain and improving quality of life for patients selected for surgery according to the Danish national guidelines.

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

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Keywords: Acromioplasty; arthroscopic subacromial decompression; national guidelines; Internet-based database; patient-reported outcome measure; quality of life; physiotherapy

Shoulder impingement syndrome (SIS) is the most common disorder of the shoulder.[9,34] The pathologic mechanism of the disease was first thought to be of pure mechanical origin,[31,32] although other reasons for development of SIS are currently thought to play a significant role in the pathogenesis.[14,24]

Even though there is a consensus that the primary treatment is conservative, surgical treatment of patients suffering from SIS has increased substantially during the last 20 years in several countries.[36,40] Previous studies of long-term effects of conservative treatment and surgical intervention suggest that both are valid treatment possibilities with good outcome.[15,26,28,33] Indications for surgery are still

Ethical approval is not applicable to this study.

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controversial if symptoms do not improve by conservative means, and sparse evidence has supported that surgery is superior to conservative treatment.[4] The most common surgical technique is an arthroscopic subacromial decompression (ASD).[18] Ketola et al[26] recently reported in a randomized controlled study that the long-term effects of ASD are not superior to those of supervised physiotherapy and therefore the indications for ASD should be reconsidered. Other randomized controlled studies have provided similar results.[7,17,20,21]

Few studies have investigated on a larger scale which patients would benefit the most from an ASD. Singh et al[35] reported that their preoperative scoring system was helpful in selecting patients for surgery. Furthermore, Magaji et al[29] investigated preoperative status and found significant improvement of patients who presented with a consistently positive Hawkins test result, pain in the mid-arc of abduction, radiologic evidence of impingement, and temporary benefit from a steroid injection.

In Denmark, national treatment guidelines for SIS were initiated in 2011. According to the guidelines, specific tests—Hawkins test, Neer test, and painful arc in abduction test—for clinical assessment of patients suffering from SIS are the most sensitive. Furthermore, imaging in the form of radiography, ultrasound, or magnetic resonance imaging is also recommended to be included in the diagnostic process, although in capable hands they are found to be equally sensitive according to the guidelines. Local anesthetic is also recommended and can be used diagnostically as well as therapeutically, but patients should always be encouraged to seek physiotherapy subsequently. The guidelines recommended no more than 2 or 3 injections.

The main conservative treatment is physiotherapy. It can be conducted as a supervised physiotherapy program or by written guidance on home exercises. The guidelines do not specifically mention any preferred exercises, but they should include rotator cuff and scapula muscle stabilizing exercises.

The use of nonsteroidal anti-inflammatory agents is recommended, but it should be individualized. They should be administered at the lowest dose and for the shortest period possible.

If pain and restrictions of daily living are persistent after 6 months and physiotherapy has been carried out for at least 3 months without improvement, surgery is an option. An ASD is the recommended surgical method.

Postoperatively, the guidelines recommend giving the patients at least advice concerning favorable exercises. A supervised exercise program can also be considered.[37]

In The Netherlands, the guidelines are more restricted, favoring a more conservative approach, although surgery is an option after exhaustive conservative treatment.[14]

The aim of this investigation was to report the short-term effect (6 months) of an ASD in 244 patients selected for surgery following national clinical guidelines of SIS treatment.

Materials and Methods

Patients in this study were included from an Internet-based research database. The database enrolls consecutive patients with a shoulder or elbow disorder at the first visit to the outpatient clinic. It is designed to collect data at inclusion, and follow-up data are collected after 6 months, 2 years, and 5 years. Patients submitted an electronic questionnaire consisting of a patient-reported outcome measure and a health-related quality of life instrument. Patients without electronic skills answered by written questionnaires. Patients failing to submit the questionnaire within 1 week were reminded once to submit it.

ASD was offered in case of clinical impingement with a minimum duration of 6 months in accordance with the national clinical guidelines for conservative treatment of SIS during the period. The guidelines imply that patients suffering from SIS, which has been clinically assessed by at least the Hawkins test, Neer test, and painful arc test, should first be treated conservatively with a physiotherapy program. The guidelines are not very specific regarding this program, but it is underlined that training of rotator cuff muscles and scapular stabilizing muscles should be included. Furthermore, the program includes both supervised training and training at home on a daily basis. Glucocorticoid injections can also be applied but should be kept to a restricted level.[37]

We selected patients from the database according to the primary treatment code and reviewed all patient charts to meet study criteria. The exclusion criteria are listed in Table I; some of these were verified by initial arthroscopy.

The primary outcome measure was the Oxford Shoulder Score (OSS).[12] The EuroQol 5-Dimension 3-Level (EQ-5D-3L) and EuroQol visual analog scale (EQ-VAS) were used to measure health-related quality of life.[16]

The OSS is a specific 12-item questionnaire and reports the patient's subjective view of the affected shoulder. Each question contains 5 possibilities with levels from 1-5 related to daily function of the affected shoulder and pain. Total score ranges from 0 (worst possible) to 48 (best possible).[14] The minimal clinical important change according to the OSS has previously been investigated by Christiansen et al[10] and van Kampen et al.[38] Both studies found a difference in OSS of 6 points as slight improvement. Therefore, in our study, a difference in the OSS of a minimum of 6 points was regarded as minimally clinically important. The OSS has been translated and validated in several countries.[2,13,19]

The EQ-5D-3L is a standardized questionnaire to measure health-related quality of life. It consists of 2 parts: 5 questions related to mobility, self-care, usual activities, pain/discomfort, and anxiety/depression, with 3 levels—no problem, moderate problem, or extreme problem. The EQ-5D index was calculated to measure any changes

Table I Exclusion criteria

Osteoarthritis
Major cartilage defects
Complementary acromioclavicular resection
Glenohumeral instability
Complete rotator cuff lesions
Acute trauma or fracture on affected shoulder during last 6 months before surgery
Previous surgery on the affected shoulder

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