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Surgical or conservative treatment for impingement of the rotator cuff?

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Occupational physician, insurance physician: what is your advice?

Your patient is a 45-year old painter and employee working for a construction company. He experienced a sharp and severe pain in his dominant right shoulder while painting a ceiling. After six weeks, the pain persisted limiting the mobility of the arm and the patient's capacity to work. A physician assessing the patient diagnosed a subacromial impingement syndrome and excluded a full-thickness rotator cuff tear (full thickness tears refers to the entire separation or avulsion of the tendon from the bone) and other differential diagnoses by ultrasound. Following the recommendations of the 2014 Guideline for Diagnosis and Treatment of Subacromial Pain Syndrome by the Dutch Orthopaedic Association, the surgeon recommended a conservative treatment with a subacromial injection with corticosteroids and physiotherapy. The physiotherapy focused on muscle strengthening, scapular stabilization, stretching and flexibility exercises, and proper posture.[1] After five months and despite some improvement in pain and function, the patient was still not able to return to work. He decided to consult a second orthopedist who suggested a surgical procedure (subacromial decompression). The patient asks for your advice on the benefits and implications of having surgery versus conservative treatment to improve shoulder pain, function and his ability to work. Below we summarize the findings from a recent Cochrane review on the use of surgical or conservative treatment for impingement syndrome of the shoulder and its impact on outcomes such as, pain, shoulder function, quality of life, participants' assessment of success, participation on work and recreational activities, adverse events, serious adverse events, and treatment failure.

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Background

Rotator cuff disease is a term encompassing all symptomatic disorders of the rotator cuff and are usually related to acute injuries, overuse, degenerative mechanisms and inflammatory changes. Common diagnoses include rotator cuff tendinopathy, the subacromial impingement syndrome, partial and complete rotator cuff tears, calcific tendinitis and subacromial bursitis.[2] Subacromial impingement can be the result of pressure between the humeral head and the acromion causing symptoms when lifting the arm up. Certain jobs have been associated with an increased risk of rotator cuff disease, including assembly workers, fishermen, fish processing workers, slaughterhouse workers, manual workers, construction workers, metal workers, nurses and military personnel, among others. Similarly, jobs involving frequent elevation of the arm and shoulder load increase the incidence of shoulder disorders.[3]

Interventions for treating rotator cuff disease

Surgery for rotator cuff is often used when non-operative interventions fail to improve symptoms and function. These surgical procedures are often performed arthroscopically and may include removing some bone reducing the pressure on the rotator cuff tendons (acromioplasty), removing swollen or inflamed bursa and debriding of soft tissues to expand the space where the tendons pass (subacromial decompression). Common adverse events associated with surgical procedures are infections, adhesive capsulitis or frozen shoulder, nerve injury and persistent pain.
Non-surgical treatments include physiotherapy, nonsteroidal anti-inflammatory drugs (NSAIDs), glucocorticoid injection, acupuncture, transcutaneous electrical nerve stimulation

(TENS), iontophoresis, phonophoresis, pulsed electromagnetic file (PEMF), topical glyceryl trinitrate and ultrasound.[1]

What was studied in the review?

The objective of the systematic review was to compare the benefits and harms of subacromial decompression surgery with placebo, no treatment or non-surgical interventions (e.g. exercise) in patients with rotator cuff disease (excluding full thickness tears).[2] The authors included randomized and quasi-randomized controlled trials, and prospective cohort studies to identify serious adverse events. The main outcomes addressed by the studies (trials) were pain, shoulder function, quality of life, participants' assessment of success, adverse events and serious adverse events. Other outcomes were work and recreational participation, and treatment failure. The primary endpoint for the assessment of outcomes was one year.

Main results of the review

The review included eight randomized controlled trials conducted in high-income countries and enrolling 1062 participants with subacromial impingement. The diagnosis was established based on the presence of clinical features compatible with impingement syndrome, including pain during the abduction of the shoulder and a positive impingement test. Participant mean age ranged between 42 and 65 years.
Here, we report mainly on two trials for the primary comparison, arthroscopic subacromial decompression versus placebo surgery (arthroscopy only).[4,5] These trials were selected as they were considered at low risk of bias. In comparison to the other trials, they provided high- to moderate-certainty evidence. These two trials enrolled 506 participants. All patients received postoperative exercises. One of these trials reported on work and recreational participation.[4]

Outcomes

Patients receiving subacromial decompression surgery showed little to no clinically important benefit compared to placebo. Pain and function improved by 3% in the surgery group. Patients experienced moderate pain and impaired function for up to one year, however, these symptoms seemed to improve over two years of follow-up. Treatment success, defined as 'being much better or without problems', was 5% higher in the surgery group. Health-related quality of life worsened by 2% in patients receiving surgery.
Paavola 2018, defined work and recreational participation as the number of individuals who were absent from work or were able to perform recreational activities without limitations. The authors found no important differences in work participation or sport/leisure activities up to two years of follow-up, with measurements at 3 months, 6 months, 1 year and 2 years.[4] These findings were similar to the ones described in two additional trials by Brox 1993 and Ketola 2009, comparing arthroscopic subacromial decompression plus exercise versus exercise therapy (Brox 1993 reported work participation as the number of participants absent from work. Ketola 2009 assessed work participation using a self-reporting visual analogue scale for working ability and the number of days on sick leave due to shoulder problems). The authors found no important differences in work participation among interventions. However, the certainty on the results was moderate to low for the measurements at different time points.[6,7]
Adverse events were 1% lower in people treated with surgery and severe adverse events after surgery occurred in 5 or 6 out of 1000 people (e.g. infection, pulmonary embolism, nerve injury and death).

Conclusions and Implications for practice

The authors concluded that subacromial decompression does not provide clinically important improvements in pain, function, health-related quality of life or work participation, when compared to placebo surgery or other non-surgical interventions. Additionally, most participants – independent of treatment option – reported pain and functional impairment for up to one year, but symptoms tended to improve after two years of follow-up. Adverse events rates were 1% lower in the people treated with surgery. The risk of serious adverse events is likely less than 1%. The authors consider that further research is unlikely to change the conclusions of the systematic review.

Implications for the 45-year-old painter

The age of the patient (45 years) is in the same range as the study population. Trials were conducted in settings similar to the patient (high-income countries). Based on the results of the systematic review, subacromial decompression surgery is not recommended for the treatment of impingement syndrome without full-thickness rotator cuff tears. The benefits are limited in comparison to other treatments.[1,2]
However, his work as a painter means that he frequently has to raise his arm. The actions (painting and sanding) probably exceed the minimum workload in accordance with Dutch guidelines D024 (subacromial pain syndrome, www.beroepsziekten.nl/registratierichtlijnen). This means that continuing to work as a painter could maintain or increase his shoulder complaints. For advice to the worker and his employer, the physician must check with the painter:

- How does the worker view his work?

- Does the working person have control over his activities, for example to limit the overhand work? And is that control used wisely?
- Is there a fear of losing the job if that adjustment is allowed to be made?
- Are there financial consequences for the worker when he no longer does overhand work?

Additional measures to consider are referring the patient for rehabilitation in a specialized center.[1] The patient should be informed that in most cases, shoulder pain and impaired function are likely to improve over time, irrespectively of the chosen treatment.[2]

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Cochrane news

New Cochrane Corners section in the Cochrane Insurance Medicine website

CIM and Cochrane Work have recently created a new Cochrane Corners section on their website. The objective is to compile and disseminate all the Corners that have been published in the last years. There you will find a collection of Corners from 2017 on-wards and in different languages (English, Dutch, French and German).

Cochrane Insurance Medicine and Cochrane Work

Cochrane Insurance Medicine (CIM) and Cochrane Work would like to keep you up to date with developments within Cochrane and evidence-based medicine in the field of insurance medicine and occupational health. CIM and Cochrane Work have been supporting each other for almost three years and conducted various collaborative projects, such as joint workshops and presentations at Cochrane Colloquiums, International Commission on Occupational Health (ICOH) or European Union of Medicine in Assurance and Social Security (EUMASS) meetings. We recognize that even though you may have seen a Cochrane Review before, you may not know exactly what Cochrane is. Cochrane is an independent international not-for-profit organization, dedicated to making up-to-date, accurate information about the effects of healthcare readily available worldwide. It produces and disseminates systematic reviews of healthcare interventions and promotes the search for evidence in the form of clinical trials and other studies of interventions. Within the Cochrane Library, you can search for systematic reviews and randomized controlled trials of intervention studies, and to a lesser degree also diagnostic studies. Within Cochrane Insurance Medicine and Cochrane Work, we aim to promote evidence-based best practices in insurance medicine and occupational health and to facilitate the production and dissemination of systematic reviews that support health and social care decisions on sick leave certification, disability evaluation, and return to work interventions.
Cochrane Insurance Medicine: http://insuremed.cochrane.org/
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