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## [Intervention Review]

# Surgery for shoulder osteoarthritis

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# ABSTRACT

#### Background

Surgical treatment including shoulder arthroplasty is a treatment option for patients with advanced osteoarthritis of the shoulder who have failed conservative treatment.

## Objectives

To determine the benefit and harm of surgery in patients with osteoarthritis of the shoulder confirmed on X-ray who do not respond to analgesics and NSAIDs.

#### Search methods

We searched: The Cochrane Central Register of Controlled Trials (CENTRAL), via *The Cochrane Library*; OVID MEDLINE; CINAHL (via EBSCOHost); OVID SPORTdiscus; EMBASE; and Science Citation Index (Web of Science).

#### **Selection criteria**

All randomized clinical trials (RCTs) or quasi-randomized trials including adults with osteoarthritis of the shoulder joint (<u>PICO- patients</u>) comparing surgical techniques (total shoulder arthroplasty, hemiarthroplasty, implant types and fixation- <u>intervention</u>) versus placebo or sham surgery, non-surgical modalities, no treatment, or comparison of one type of surgical technique to another (<u>comparison</u>) with patient-reported outcomes (pain, function, quality of life etc.) or revision rates (<u>outcomes</u>).

#### Data collection and analysis

We reviewed titles and abstracts for inclusion, extracted study and outcomes data and assessed the risk of bias of included studies. For categorical outcomes, we calculated the risk ratio (with 95% confidence interval (CI)) and for continuous outcomes, the mean difference (95% CI).

# Main results

Seven studies (238 patients) were included for analyses. None of the studies compared shoulder surgery to sham surgery, non-surgical modalities or placebo. Two studies compared hemiarthroplasty to total shoulder arthroplasty; three compared keeled and pegged humeral components; and one each compared navigation surgery to conventional and all-polyethylene to metal-backed implant. Two studies (88 patients) compared hemiarthroplasty to total shoulder arthroplasty. Patients who underwent hemiarthroplasty had statistically significantly worse functional scores on American Shoulder and Elbow Surgeons Shoulder Scale (100 point scale; higher = better) at 24 to 34 month follow-up compared to those who underwent total shoulder arthroplasty (mean difference, -10.05; 95% CI, -18.97 to -1.13;

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2 studies, 88 patients), but no statistically significant differences between hemiarthroplasty and TSA were noted for pain scores (mean difference, 7.8; 95% CI, -5.33 to 20.93; 1 study, 41 patients), quality of life on short-form 36 physical component summary (mean difference, 0.80; 95% CI, -6.63 to 8.23; 1 study, 41 patients) and adverse events (Risk ratio, 1.19; 95% CI, 0.37 to 3.81; 1 study, 41 patients), respectively. A non-statistically significant trend towards higher revision rate in hemiarthroplasty compared to total shoulder arthroplasty was noted (Risk ratio, 6.18; 95% CI, 0.77 to 49.52; 2 studies, 88 patients; P = 0.09).

#### **Authors' conclusions**

Total shoulder arthroplasty seems to offer an advantage in terms of shoulder function, with no other clinical benefits over hemiarthroplasty. More studies are needed to compare clinical outcomes of surgery using different components and techniques in patients with osteoarthritis of the shoulder. There is a need for studies comparing shoulder surgery to sham, placebo and other non-surgical treatment options.

# PLAIN LANGUAGE SUMMARY

## Surgery for Osteoarthritis of the Shoulder

This summary of a Cochrane review presents what we know from research about the effect of surgery on osteoarthritis of the shoulder.

#### The review shows that in people with osteoarthritis, total shoulder arthroplasty;

- may improve your pain compared with hemiarthroplasty

- probably does improve your shoulder physical function compared with hemiarthroplasty
- will probably lead to slightly less side effects such as fractures during surgery and infection, compared with hemiarthroplasty

We often do not have precise information about side effects and complications. This is particularly true for rare but serious side effects.

#### What is osteoarthritis and what are hemiarthroplasty surgery and total shoulder arthroplasty?

Osteoarthritis (OA) is a disease of the joints, such as the shoulder. When the joint loses cartilage, the bone grows to try and repair the damage. Instead of making things better, however, the bone grows abnormally and makes things worse. Osteoarthritis (OA) of the shoulder causes pain, stiffness and weakness in the shoulder joints. This can affect how well the shoulder moves and how well a person can do routine things at home or at work.

#### There are many types of surgery for OA of the shoulder. This review found results for two types of surgery.2

Shoulder hemiarthroplasty is the surgical replacement of only one part of the joint (the humeral head) with an artificial one. Total shoulder arthroplasty is the surgical replacement of parts of the joint with artificial ones. The choice of surgery is usually based on the condition of your shoulder joint.

#### Best estimate of what happens to people with osteoarthritis two years after the surgery:

# Pain:

- people who had total shoulder arthroplasty rated their pain to be 6 on a scale of 0 to 100.

- people who had hemiarthroplasty rated their pain to be 14 on a scale of 0 to 100.

- people who had total shoulder arthroplasty rated their pain to be 8 points better after the surgery. (Absolute difference: 8%). This may be a result of chance.

## **Physical Function:**

- people who had hemiarthroplasty rated their ability to be 65 on a scale of 0 to 100.

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- people who had total shoulder arthroplasty rated their ability to move their shoulder to be 77 on a scale of 0 to 100 after the surgery.
- people who had total shoulder arthroplasty rated their ability to move to be 12 points better after the surgery. (Absolute difference: 10%)

## Side effects:

- 24 people out of 100 who had hemiarthroplasty had side effects, like an infection.
- 20 people out of 100 who had total shoulder arthroplasty had side effects like an infection.
- 4 more people out of 100 had side effects with hemiarthroplasty (Absolute difference: 4%). This may be a result of chance.