

# **Operative versus non-operative treatment for two-part proximal humerus fracture**


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RESEARCH ARTICLE

# Operative versus non-operative treatment for 2-part proximal humerus fracture: A multicenter randomized controlled trial

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## Abstract

### Background

Although increasingly used, the benefit of surgical treatment of displaced 2-part proximal humerus fractures has not been proven. This trial evaluates the clinical effectiveness of surgery with locking plate compared with non-operative treatment for these fractures.

### Methods and findings

The NITEP group conducted a superiority, assessor-blinded, multicenter randomized trial in 6 hospitals in Finland, Estonia, Sweden, and Denmark. Eighty-eight patients aged 60 years or older with displaced (more than 1 cm or 45 degrees) 2-part surgical or anatomical neck proximal humerus fracture were randomly assigned in a 1:1 ratio to undergo either operative treatment with a locking plate or non-operative treatment. The mean age of patients was 72 years in the non-operative group and 73 years in the operative group, with a female sex distribution of 95% and 87%, respectively. Patients were recruited between February 2011 and April 2016. The primary outcome measure was Disabilities of Arm, Shoulder, and Hand (DASH) score at 2-year follow-up. Secondary outcomes included Constant–Murley score, the visual analogue scale for pain, the quality of life questionnaire 15D, EuroQol Group's 5-dimension self-reported questionnaire EQ-5D, the Oxford Shoulder Score, and complications. The mean DASH score (0 best, 100 worst) at 2 years was 18.5 points for the operative treatment group and 17.4 points for the non-operative group (mean difference 1.1 [95% CI –7.8 to 9.4],  $p = 0.81$ ). At 2 years, there were no statistically or clinically significant between-group differences in any of the outcome measures. All 3 complications resulting in secondary surgery occurred in the operative group. The lack of blinding in patient-reported outcome assessment is a limitation of the study. Our assessor physiotherapists were, however, blinded.

The results of this trial have been published in the *PLOS Medicine* journal.  
Credit: *PLOS Medicine*

The results of a recent nordic collaboration study showed that there is no difference in functional results between operative and non-operative treatment in persons aged 60 or more with displaced proximal humerus fractures.

Proximal humerus fractures are more common in [older persons](#) than in [younger adults](#). This fracture usually occurs as a result of falling, usually at home, directly on to the shoulder. In the proximal humerus, the bone is more fragile than lower in the forearm. The healing potential in the proximal humerus is, however, better than lower in the forearm.

In the study, published in *Plos Medicine*, only fractures with a significant displacement between bone fragments were included. Traditionally, humerus [fractures](#) have been operatively treated using a metal plate and screws. In the non-operative treatment group, patients used a collar and cuff sling for three weeks and underwent instructed physiotherapy.

The trial included 88 patients who were followed for two years, and was conducted as a multinational, multicenter study in six trauma centers.

The findings of the study are novel and challenge current treatment protocols. "Moreover, the result had a [positive impact](#) on both the lives of the patients as well as on the economic cost of treatment," says Aare Märtson, Professor in Orthopedics at the University of Tartu Institute of Clinical Medicine.

Abandoning those procedures that offer no benefit to the patient could result in savings of up to one million euros per year. Furthermore, patient recovery will be as successful as previously but without the surgery-related pain and complications.

The leading center was Tampere University Hospital, Finland. Other centers included Jyväskylä Central Hospital, Finland; Karolinska Hospital, Stockholm; Uppsala University Hospital in Sweden; Viborg Hospital in Denmark; and Tartu University Hospital in Estonia.

The next step for the NITEP study group is to assess whether older adults would benefit from surgery after distal radius fracture.

**More information:** Antti P. Launonen et al. Operative versus non-operative treatment for 2-part proximal humerus fracture: A multicenter randomized controlled trial, *PLOS Medicine* (2019). [DOI: 10.1371/journal.pmed.1002855](https://doi.org/10.1371/journal.pmed.1002855)

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