

**FUNCTIONAL OUTCOME AND EXPERIENCES CONCERNING
DAILY LIFE AFTER MALUNION OF THE DISTAL RADIUS
AND CORRECTIVE OSTEOTOMY**

AKADEMISK AVHANDLING

Som för avläggande av medicine doktorexamen vid Sahlgrenska akademien,
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av

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Avhandlingen baseras på följande delarbeten

- Andreasson I, Kjellby-Wendt G, Fagevik Olsén M, Karlsson J, Carlsson G.
I. (2019). Life has become troublesome – my wrist bothers me around the clock: an interview study relating to daily life with a malunited distal radius fracture.
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II. (2020). Functional outcome after corrective osteotomy for malunion of the distal radius: a randomised, controlled, double-blind trial.
International Orthopaedics. doi:10.1007/s00264-020-04605-x
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III. Daily life one year after corrective osteotomy for malunion of a distal radius fracture: an interview study.
In manuscript.
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**SAHLGRENKA AKADEMIN
INSTITUTIONEN FÖR KLINISKA VETENSKAPER**



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Abstract

BACKGROUND. Distal radius fractures are common injuries that occur at all ages. The commonest complication is that the fracture heals in malunion. This can negatively affect function and the ability to perform activities.

A malunion can be corrected surgically, with the aim of restoring the anatomy of the wrist as effectively as possible, to subsequently reduce pain and regain functional ability. The fracture is re-created and the ratio between the fragment of the distal radius and the carpal bones and between the radius and the ulna is corrected. A common surgical approach is open-wedge osteotomy with volar plating. To increase stability at the osteotomy site, the osteotomy gap is often filled with a graft. The void can also be left open.

AIM. To explore patients' experiences of how a malunited, symptomatic, distal radius fracture affects their ability to perform activities in daily life, before and one year after corrective osteotomy. The aim was also to evaluate whether the use of a graft or no graft influences functional outcome after corrective osteotomy, during the first postoperative year, and to evaluate radiographic and functional outcome in the long term.

METHODS. In Studies I and III, interviews were conducted. The interviews were analysed using qualitative content analysis. In Study II, patients were randomly allocated to receive a bone-substitute or no graft. Functional outcome was assessed and PROMs were filled in preoperatively and three, six and 12 months postoperatively. In Study IV, patients were assessed radiographically and with respect to functional outcome and PROMs three to 10 years after corrective osteotomy for malunion of the distal radius.

RESULTS. A symptomatic malunion of the distal radius affects broad areas of daily life. It affects body function/structure, activity, participation and environmental factors as well as personal factors (Study I). Function and the ability to perform activities improve and there are no differences with respect to functional outcome or the ability to perform activities, during the first postoperative year, regardless of whether or not a graft is used (Study II). One year post-operatively, patients experience a decrease of symptoms. They also report of improvements in activities, participation and environmental factors as well as personal factors (Study III). The radiographic and functional improvements, as well as improvements in the ability to perform activities, are maintained in the long term, although the patients may experience some residual pain (Study IV).

CONCLUSIONS. A symptomatic malunion of a distal radius fracture may have a negative impact on body function/structure, activity and participation, as well as environmental factors and personal factors. During the first year after corrective open-wedge distal radius osteotomy, where cortical contact is maintained and volar plates are used, there was no difference in pain, functional outcome or the ability to perform activities, regardless of whether or not a bone substitute was used to fill the void. A year after surgery, the majority of the patients experienced an improvement in their ability to perform activities and that the everyday life functions again. In the long term, function and the ability to perform activities are restored to a high degree. Patients may experience some residual pain, but they still deem it worthwhile to have undergone surgery.

Keywords: Distal radius fracture. Malunion. Corrective osteotomy. Functional outcome. Activities of daily life. Interviews. First post-operative year. Long term.