



**Karolinska
Institutet**

Karolinska Institutet, Institutionen för kliniska vetenskaper, Danderyds sjukhus,
Enheten för ortopedi.

Fractures of the distal radius: Epidemiology, treatment and outcome assessment

AKADEMISK AVHANDLING

som för avläggande av medicine doktorsexamen vid Karolinska Institutet offentligen försvaras i Aulan,
Danderyds sjukhus

Fredagen den 31 maj 2013, kl 09.00
av Maria Wilcke

Huvudhandledare:

Doc. Per Adolphson
Karolinska Institutet,
Institutionen för kliniska vetenskaper,
Danderyds sjukhus

Bihandledare:

Med. Dr. Hassan Abbaszadegan
Karolinska Institutet,
Institutionen för kliniska vetenskaper,
Danderyds sjukhus

Fakultetsopponent:

Adj. Prof. Magnus Tägil
Lunds Universitet,
Institutionen för kliniska vetenskaper i Lund,
Avdelningen för ortopedi

Betygsnämnd:

Adj. Prof. Hans Mallmin
Uppsala Universitet,
Institutionen för kirurgiska vetenskaper,
Sektionen för ortopedi

Doc. Jan Tidermark
Karolinska Institutet,
Institutionen för klinisk forskning och utbildning,
Södersjukhuset,
Enheten för Ortopedi

Doc. Per Wretenberg
Karolinska Institutet,
Institutionen för molekylär medicin och kirurgi,
Enheten för Ortopedi

Stockholm 2013

Abstract

This thesis aims to increase scientific knowledge of the most common fracture, namely the distal radius. Our understanding of this fracture is still limited, but every year in Sweden over 20,000 patients suffer from this injury. The fracture may cause persistent pain and disability for the patients, not to mention substantial costs to society. Improvement in treatment will benefit a large group of patients. Specifically, the incidence and trends in surgical treatment were investigated, outcome measurements were evaluated and the most common surgical treatment techniques were compared.

In Paper I, patient-rated outcome after a fracture of the distal radius was investigated in relation to radiological results, grip strength and range of movement (ROM). A retrospective assessment was conducted in 78 patients with a healed fracture of the distal radius. The Disability of the Arm, Shoulder and Hand (DASH) questionnaire was used to measure self-reported disability. Radiological malunion, reduced grip strength and wrist extension were each associated with a worse self-rated outcome.

To obtain a wrist-specific patient rating questionnaire in Swedish, a translation of the Patient Rated Wrist Evaluation (PRWE) questionnaire was done in Paper II. The Swedish PRWE score was validated in 99 patients recovering from a fracture of the distal radius. The Swedish version of the PRWE questionnaire was valid, reliable and responsive to change.

Paper III presents a comparison between open reduction and volar locked plating versus closed reduction and external fixation. 63 patients, 20-70 years of age, with a dorsally displaced extra-articular or non-comminuted intra-articular fracture were randomized to either method and followed during 1 year for patient-rated outcome, grip strength, ROM and radiology. Recovery was faster in the volar plate group but after 1 year outcome was similar in the two groups.

In Paper IV, surgical treatment methods and incidence for fractures of the distal radius were investigated between 2004 and 2010 in a registry analysis of 42,583 patients in Stockholm County. The overall incidence rate was 31 per 10,000 person-years and showed a bimodal distribution. We found that the incidence rate in postmenopausal women has decreased during the past few decades and that a shift in surgical treatment from external fixation to plate fixation has occurred.

In conclusion: Malunion results in poorer patient-rated outcome. The Swedish PRWE outcome questionnaire proved to be a valid instrument. Wrist function recovers more rapidly after volar plating than after external fixation. The use of plating has increased substantially at the expense of external fixation. The incidence rate of distal radius fractures has decreased in postmenopausal women.