

Effect of the Orthopaedic Treatment of Fractures of the Distal Radius on Upper-Limb Disability



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INTRODUCTION

Distal radius fractures (DRF) are a common injury, being a major cause of disability of the upper extremity. The aim of this prospective study is to assess the possible association between objective physical variables such as wrist range of movement (ROM), radiological parameters, and upper extremity disability (measured by the DASH questionnaire), after conservative treatment of DRF.

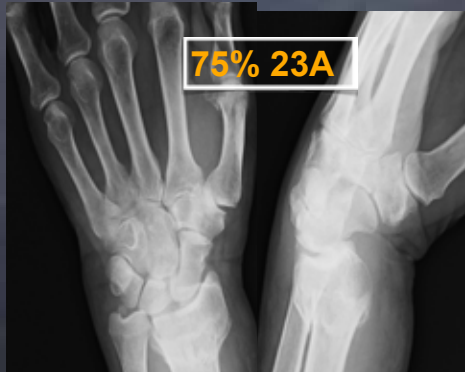
PATIENTS AND METHODS

44 patients with non-operatively managed DRF were enrolled in a prospective cohort study from July 2007 until September 2009.

Inclusion criteria: unilateral DRF in skeletally mature patients, treated non-operatively with closed reduction and cast. Patients who sustained a previous fracture of the wrist, or bilateral wrist fracture, or with dementia, were excluded.

After the closed reduction and immobilization of the fracture in the A&E department we asked the patients to complete the DASH questionnaire, referring to their baseline pre-fracture state.

All fractures were classified according to the AO classification.

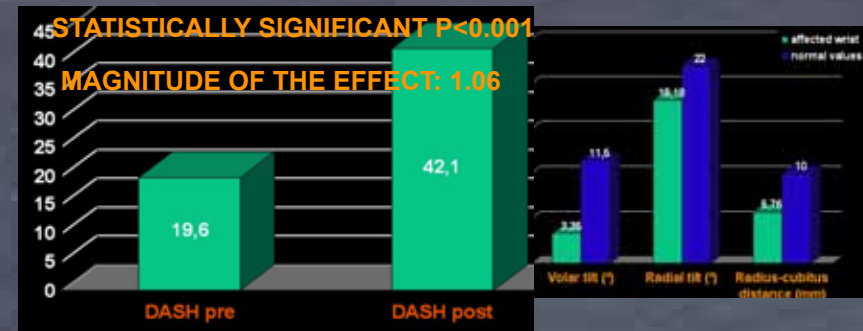


After one year, 36 patients were still available for follow-up purposes. We assessed the following objective physical variables: ROM of both wrists: flexion/extension arch and pronation/supination arch. We recorded the following radiologic parameters: radial angulation, volar angulation and radial shortening. The patient-perceived results were measured by the DASH questionnaire, while pain was measured using the VAS scale.

Statistical analysis was performed using the SPSS 15.0.

RESULTS

Average follow up: 13,39 months (range 12.3-16.43). Mean age: 62.5 years (18-91). 75% of the fractures were 23A and 24,1% 23B. ROM for flexion/extension of the involved wrist: 103.6° and non-involved wrist: 131.2°. ROM for pronation/supination involved wrist: 145.7° and non-involved wrist: 173.8°. Post-fracture VAS score: 3.5.



We didn't find any significant statistical correlation between the loss of ROM, neither with radiological malalignment nor with patient-perceived outcomes. But we found a significant association between items 24-28 of the DASH (except item 26) questionnaire and the VAS score.

DISCUSSION

There are few published studies that have looked for a relationship between the radiological and functional outcomes of treatment of fracture of the distal radius based on analysis of patient-perceived results (and even fewer studies in which the DASH questionnaire was administered at the time of fracture)

Many studies indicate that radiological malalignment, particularly when due to shortening of the radius, leads to a poor functional result.

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As reported by other authors, we did not find range of movement or radiological malalignment to be predictive of upper-limb disability, particularly in elderly patients, who have a lower functional demand.

This fact should lead the specialist to reflect on whether it is a good idea to base the results of a treatment exclusively on objective physical parameters.

Other authors have published studies in which they have attempted to investigate which patients characteristics and which factors could affect the outcome of treatment of extra-articular fracture of the distal radius, including the existence of third-party financial compensation, educational level, and the existence of concomitant diseases.

It is planned to continue with further studies of this type in order to determine which items of the DASH questionnaire are most affected by fracture of the distal radius. This could help to adapt treatment to the pre-fracture functional demands of the patient on arrival at the emergency department.

CONCLUSIONS

- Orthopaedic treatment for DRF leads to a statistically significant increase in upper-limb disability after 1 year of follow-up
- Neither the loss of range of movement nor radiological malalignment reflects this increase in disability
- Pain measured using the VAS is a very relevant factor at the time of answering quality of life questionnaires
- Further studies with larger samples and longer follow-up are required to determine the presence of a relationship between disability and physical-radiological parameters.

