

## Original Article

# Assessment of functional outcomes in late presenting elderly patients with unstable distal radius fractures by cast application: A prospective study

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## ABSTRACT

**Aim:** We will evaluate the functional outcomes in elderly patients with unstable distal end radius fractures who were not willing for operative treatment and were managed conservatively with cast application.

**Background:** Despite 200 years of medical literature proving the complexity and non-solved problems in treating distal radius fractures, in no other fracture, intra-articular mal-union, and metaphyseal mal-alignment is so broadly accepted.

**Materials and Methods:** 30 elderly patients with unstable distal radius fractures with mean age of 57.1 years were managed conservatively and observed for an average period of 6 months, and functional and radiological outcomes were assessed.

**Results:** Patient related wrist evaluation system showed all groups had minimal functional disability. Radiological assessment by Sarmiento *et al.* modification of Lidstrom's scoring showed that 33.3% patients in Group 1A had poor radiographic scores, 50% patients in Group 1B had good radiographic scores whereas, in Group 2, 53.3% patients had fair radiographic scores. Functional results were not found to be correlated with radiological outcomes.

**Conclusion:** In elderly patients, patients having low functional demands or patients presenting to us late and not willing for any surgical treatment, mal-alignment, and articular incongruence can be accepted, as radiological outcomes in this study does not correlate with the functional outcomes.

**Keywords:** Colles, conservative, distal radius, elderly, low demand, patient related wrist evaluation

## INTRODUCTION

Despite 200 years of medical literature proving the complexity and non-solved problems in treating distal radius fractures, in no other fracture, intra-articular mal-union, and metaphyseal mal-alignment is so broadly accepted.<sup>1</sup>

Fractures of the distal radius are the most common of all orthopedic injuries accounting for nearly 20% of all fractures presenting to accident and emergency department.<sup>2</sup> The age distribution for injuries to the distal radius is typically bimodal with peaks in the 5-14 years age group and in elderly patients older than 60. Most distal radius fractures occur in elderly females with a male-to-female ratio of 1:4. Considering the complexity and heterogeneity of the fracture and considering the importance of the soft tissues, it is clear

there is no tailor-made answer to the question how to treat a fracture of the distal radius. The surgeon will have to read the fracture and soft tissues and will then have to make up a treatment plan. Not only anatomical and biomechanical facts should be taken into account in this plan, but also the specific demands and needs of the patient should have a place in the plan since we are not treating X-rays, but patients.

Very good clinical outcomes have been documented in elderly patients with unstable distal radius fractures who were treated non-operatively even if the fracture was allowed to heal with mal-alignment of the distal end of the radius.<sup>3</sup> It has been demonstrated that mal-alignment does not necessarily correlate with functional outcome following distal radial fractures in elderly patients.<sup>4</sup>

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## MATERIALS AND METHODS

Thirty elderly patients with unstable distal radius fractures were enrolled in the study between August 2012 and October 2013, with mean age of 57.1 years. These patients were managed conservatively and observed for an average period of 6 months. The patients were grouped into 3 groups on the basis of their time of presentation to us after the injury. The patients in Group 1A presented within 0-7 days, Group 1B between 8 and 14 days, and Group 2 presented between 14 and 21 days of injury. Injuries older than 21 days were excluded from this study. Both, Group 1A and Group 1B, had 6 patients each, Group 2 had 15 patients. These patients were managed conservatively and observed for an average period of 6 months.

Fractures were classified unstable on the basis of Lafontaine *et al.* criteria<sup>5</sup> if three criteria were present the fracture was labeled as unstable.

The patients with unstable distal radius fractures were advised surgical intervention and those patients were not willing for it was given conservative treatment pelvic organ prolapse cast were applied after closed manual reduction under image intensifier.

Cast immobilization was done for 6 weeks. Immediate post reduction standard radiographs were taken for assessment of maximal correctable reduction of these unstable fractures. The patients were then followed up for assessment of any complications especially cast complications and after 6 weeks and again after check X-rays, casts were removed which was followed by forearm brace application for 2-3 weeks and supervised physiotherapy along with hot fomentation. The patients were assessed at 6 weeks, 3 months, and at 6 months intervals by patient related wrist evaluation (PRWE) system (Hindi Version)<sup>6</sup> and radiological scoring by the Sarmiento *et al.* modification of Lidstrom's scoring.<sup>7</sup>

## OBSERVATION AND RESULTS

The patients in all groups had a minimal functional disability as per PRWE subjective evaluation system at the end of 6 months. 33.3% patients in Group 1A had poor radiographic scores, 50% patients in Group 1B had good radiographic scores whereas, in Group 2, 53.3% patients had fair radiographic scores. The patients in all groups had minimal functional disability as per PRWE scores. Mean final PRWE score in an excellent radiological group of patients were slightly worse (PRWE- 16.5) as compared to patients in the poor radiological group (PRWE-14.5). (Tables 1-3)

Mal-union was noted in 22.2% cases. 18.5% had a prominence of ulnar styloid. 59.2% patients had no treatment related complications

## DISCUSSION

The patients in all groups had minimal functional disability as per PRWE scores. Whatever radiological scores patients had, their functional outcomes were found satisfactory. McQueen and Casper reported no correlations between radiographic

data and functional data.<sup>8</sup> Young and Rayan also reported no statistical correlation between radiographic outcomes and functional outcomes in a study on 25 sedentary, low-demand patients older than 60 years (mean 72 years) with displaced distal radius fractures and assessed by radiographic parameters, subjective and objective evaluation.<sup>9</sup>

Anzarut *et al.* reported that acceptable radiographic reduction was not associated with better generic physical or mental health status, lesser degrees of upper-extremity disability, or greater satisfaction with outcomes than was an unacceptable reduction. Overall 44 of 74 patients (59%) reported being satisfied or very satisfied with their functional status at 6 months. Overall 47 patients (64%) were considered to have an acceptable radiographic reduction.<sup>4</sup>

Our study had few limitations. All patients came from one tertiary care academic institution, and the results of the patient population and treatment preferences of this institution may not be generalized to other patients in this age group although age groups were comparable to other studies.<sup>4,9,10</sup> We observed patients over 6 months, which is perhaps not enough time to unmask major effects of certain potential complications of distal radius fracture, including posttraumatic arthritis, inter-carpal instability, and pseudosubluxation, which may occur as a result of long-standing major mal-alignment. However, similar studies used comparable follow-up period.<sup>4,11</sup>

## CONCLUSION

It is important to restore the anatomic alignment of the distal radius as normal as possible by any means, since

**Table 1: PRWE scores**

Groups	PRWE score (6 weeks)	PRWE score (3 months)	Final PRWE score (6 months)
Group 1A	48.5	30.1	16.5
Group 1B	39.8	24	13
Group 2	40.7	26	15.6

PRWE: Patient related wrist evaluation

**Table 2: Final functional and radiological outcomes**

Groups	Final outcome (6 months)	Radiological outcomes			
		Excellent	Good	Fair	Poor
Group 1A	16.5	16.7	33.3	16.7	33.3
Group 1B	13	16.6	50	16.7	16.7
Group 2	15.6	6.7	26.7	53.3	13.3

**Table 3: Final mean PRWE scores and radiological groups**

Radiological groups	Number of cases	Final mean PRWE scores
Excellent	3	16.5
Good	9	13.7
Fair	10	16.4
Poor	5	14.5

PRWE: Patient related wrist evaluation

anatomical restoration is a prerogative for the good functional outcome, especially in the young active patient. In elderly patients, patients having low functional demands or patients presenting to us late and not willing for any surgical treatment, mal-alignment, and articular incongruence can be accepted, as radiological outcomes in this study does not correlate with the functional outcomes. For all other patients, anatomical restoration of the articular surface and the metaphyseal area must be the goal of treatment. Our study concludes that elderly patients with unstable distal radius fractures who were managed conservatively had satisfactory functional outcomes.

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Nil

## PEER REVIEW

Double blinded externally peer reviewed.

## CONFLICTS OF INTEREST

Nil

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