

Clinical and Radiological Evaluation in Intra-Articular Distal Radial Fracture: Operative Treatment with Open Reduction Internal Fixation using K-Wire and Bone Graft Compared with Non-operative Treatment using Casting in Women Above 50 Years Old in Soeharso Orthopaedic Hospital Surakarta

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ABSTRACT

Introduction. The incidence of distal radius fractures is increasing together with the average age of population. Intra-articular incongruity is the most probable cause of unsatisfactory outcome of distal radius fractures. There is much debate regarding the optimal treatment of displaced, unstable distal radius fractures in the elderly. The purpose of this retrospective study was to compare outcome for elderly patients with intra-articular distal radial fracture who were treated with or without surgical intervention.

Materials and methods. This cross sectional study examined patients over the age of fifty years old who were treated with or without surgery for intra-articular distal radial fracture. Patients who underwent non-operative treatment were treated with closed reduction and below elbow cast for six weeks. Patients who underwent surgery were treated with criss-cross K-wire and bone graft. Baseline radiographs with Scheck's score and functional scores with Mayo wrist score were obtained prior to treatment. Outcomes at fixed time points were compared between groups with standard statistical methods.

Results. There are 27 patients intra-articular distal radial fracture between January to July 2011. 17 patients were treated conservatively with closed reduction and below elbow cast and 10 patients were treated operatively with criss-cross k-wire and bone graft. There is no significance differences between two groups in term of Scheck's score and Mayo wrist score.

Conclusions. Both non-operative treatment with closed reduction and below elbow cast and operative treatment using criss-cross K-wire and bone graft provides good results in terms of radiological dan functional outcome in women patients older than 50 years old with intra-articular distal radius fracture.

Keywords: intra-articular distal radial fracture, non operative and operative treatment, clinical outcome, radiological outcome

Evaluasi Klinis dan Radiologis Fraktur Distal Radius Intra-artikuler: Pengobatan Operatif dan Non-operatif pada Wanita Usia di atas 50 Tahun di Rumah Sakit Orthopaedi Soeharso, Surakarta

ABSTRAK

Latar Belakang. Angka kejadian fraktur radius distal meningkat dengan bertambahnya usia. Inkongruen permukaan intra artikular merupakan penyebab hasil terapi yang tidak memuaskan. Terapi terbaik untuk penatalaksanaan fraktur radius distal intraartikular pada usia tua masih diperdebatkan. Penelitian ini bertujuan membandingkan hasil terapi fraktur radius distal intraartikular pada pasien usia tua yang dilakukan tindakan operatif dengan tindakan non-operatif.

Bahan dan cara kerja. Dilakukan penelitian terhadap pasien wanita usia di atas 50 tahun dengan fraktur radius distal intraartikular yang dilakukan tindakan operasi dengan *K-wire* dan cangkok tulang atau tindakan non-operatif dengan reduksi tertutup dan *below elbow cast* selama 6 minggu. Hasil radiologis dinilai dengan menggunakan *Scheck's score* dan hasil klinis dinilai dengan menggunakan *Mayo wrist score*. Hasil kedua kelompok dibandingkan dan diuji secara statistik.

Hasil. Didapatkan 27 pasien fraktur radius distal intraartikular antara bulan Januari hingga Juli 2011. Tujuh belas pasien dilakukan tindakan non operatif dengan reduksi tertutup dan *below elbow cast* sedangkan 10 pasien dilakukan tindakan operatif dengan *criss-cross K-wire* dan cangkok tulang. Tidak didapatkan perbedaan bermakna antara kedua kelompok baik pada hasil evaluasi radiologis dengan menggunakan *Scheck's score* maupun hasil evaluasi klinis menggunakan *Mayo wrist score*.

Simpulan. Terapi non-operatif maupun operatif sama baiknya dalam penatalaksanaan fraktur radius distal intraartikular pada wanita di atas usia 50 tahun.

Kata kunci: fraktur radius distal intraartikular, tindakan operatif dan non-operatif, hasil radiologis, hasil klinis

Introduction

Distal radius fracture is a kind of fracture that often occurs in approximately one-sixth of the whole fracture incidents.^{1,2} Nevertheless, there has been no agreement on the best procedures for the distal radius fracture. A study in 1985 in America and Northern Europe had shown that females with age more than 50 years have a 15% increasing risk of getting distal radius fracture compared to males on the same age.²

In the past, most of distal radius fractures on the elderly were treated conservatively by plaster cast only due to the consideration of low functional demand. However, some studies suggested more aggressive fixation, with result in achieving anatomic position, and minimizing functional disturbance, with an expectation that it could fasten recovery time so that the patients could return to their previous activity

level.

Materials and methods

We carried out a research to female patients aged above 50 years old, who visited the emergency unit of Prof. Dr. R. Soeharso Orthopaedic Hospital between January and July 2011 with intra-articular distal radius fracture.

They received either K-wire surgery and bone graft or non-operative care by closed reduction and below elbow cast for 6 weeks. The results of the therapy were measured by radiological Scheck's score, whereas the clinical results were measured by using Mayo wrist score.

The radiological result measured in Scheck's scoring system included radial inclination, radial length, and volar tilt, which are measured by the assigned score. The criteria of the radiologic result according to

the Scheck's scoring system were excellent (0 to 1 point), good (2 to 3 points), and poor (above than 3 points).

The criteria in Mayo wrist score included pain intensity (25 points), functional status (25 points), range of motion (25 points), and grip strength (25 points).

The results of the two groups were compared and tested statistically using independent t-test.

Results

From 27 intra-articular distal radius fracture patients, 17 patients received non-operative therapy by closed reduction and below elbow cast, whereas 10 patients received operative therapy by open reduction, criss-cross K-wire, and bone graft.

The ages of the patients ranged from 50 years to 81 years old. The fractures occurred most frequently in patients aged 50 to 55 years old. The average age of the patients who received non-operative treatment was 61.71 years and 56.6 years for those treated operatively. The age distribution of the patients was shown in figure 1.

The Scheck's scores from 17 patients in non-operative group were good in 7 patients and excellent in 10 patients while those of 10 patients in operative group were good in 7 patients and excellent in 3 patients. The detailed score was shown in table 1.

Statistically, there was no significant difference between non-operative and operative group. ($p > 0.05$)

The Mayo wrist scores of non-operative group were excellent in 10 patients, good in 3 patients, fair in 2 patients, and poor in 2 patients. The Mayo wrist scores in the operative group were excellent in 7 patients, fair in 2 patients, and poor in 1 patient. The detailed score was

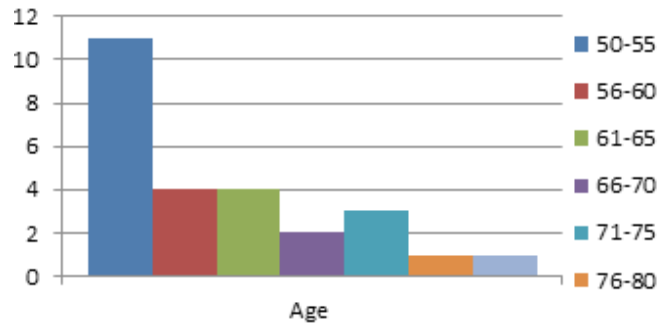


Figure 1. Age distribution of the patient

shown in table 1.

Discussions

Intra-articular distal radius fracture in patients who received either non-operative or operative therapy showed good radiological and functional outcome.

The measurement of functional outcome might involve various methods, such as Mayo wrist score, Disabilities of the Arm, Shoulder and Hand (DASH) score, and Gartland and Werley point system. In this study, the functional outcome was performed using Mayo wrist score.

We found similar result with Egol, *et al.*, and Khan, *et al.* who concluded no difference in DASH score existed between group treated with conservative and operative treatment.^{3,4}

Conclusions

We concluded that either non-operative or operative therapy of intra-articular distal radius fracture had similar result in patients aged above 50 years old.

Table 1. Radiological and functional outcomes in each group

Outcome	Non-operative group		Operative group	
	Value	Score	Value	Score
<i>Radiological outcome</i>				
Radial length	9.41	1	8.30	1
Radial inclination	21.12	0	19.40	0
Volar tilt	4.47	1	5.30	1
<i>Functional outcome</i>				
Pain Intensity		21		22
Functional Status		22		22
Range of motion	120	25	122	25
Grip Strength	83.981	15	84.5	15

References

1. Ruch DS. Fracture of the distal radius and ulna. In : Bucholz, Robert W, Heckman, James D, Court-Brown, Charles M, editors. Rockwood & Wilkins' fractures in adult. 6th ed. Lippincott Williams & Wilkins. 2006. p.910-961.
2. Canale ST, Beaty JH. Campbell's operative orthopaedics. 11th ed. Mosby Elsevier Philadelphia, Pennsylvania, 2008.
3. Egol KA, Walsh M, Romo-Cardoso S, Dorsky S, Paksima N. Distal radius fracture in elderly : operative compared with non-operative treatment. J Bone Joint Surg(Am). 2010; 92:1851-1857.
4. Khan JA, Mahara DP. Management of Colles' fracture by conservative vs open reduction bone grafting and internal fixation with K-wire. J Nepal Health Res Counc. 2008 ; 6(12) : 16-21.