



Comparison of Upper Limb Function after Management of Intraarticular Distal Radius Metaphyseal Fracture between Operative and Non-Operative Procedure with Clinical Assessment of the QuickDASH Score

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ABSTRACT

Introduction: Distal radius fracture is the most common fracture in an orthopedic emergency involving the upper limb. Management of patients with distal radius metaphyseal fractures greatly affects the function of the upper limb during recovery. Then the right choice of type of procedure will affect the function of the upper limb. This study aimed to compare the function of the upper limb in intraarticular distal radius metaphyseal fracture between operative and non-operative procedures with the clinical assessment of the QuickDASH score at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia. **Methods:** This study was an analytic observational study with a retrospective cohort approach. A total of 55 research subjects consisting of 38 subjects belonging to the operative group and 17 subjects belonging to the non-operative group, participated in this study. Data analysis was carried out using univariate and bivariate to find out the differences between operative and non-operative procedures related to post-fracture upper limb performance. **Results:** Operative procedure are proven to improve upper limb performance better than non-operative procedure based on the QuickDASH score. Operative procedures provide improved upper limb performance 2.65 times better than non-operative procedure. **Conclusion:** Operative procedure that are better in maintaining upper limb performance after intraarticular radius distal metaphyseal fractures based on the QuickDASH score compared to non-operative procedure at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia.

1. Introduction

Distal radius fracture is the most common fracture in an orthopedic emergency involving the upper limb. This fracture can occur in all age groups, from children and adolescents to the elderly. Age groups at high risk for experiencing distal radius fractures are young adults and the elderly. In young adults, fractures are caused by high-energy trauma associated with sports activities. Whereas in the elderly, more fractures are caused by trauma due to low energy and osteoporosis. Non-displaced fractures are usually installed cast, and Non-displaced fractures are usually reduced and

installed cast. Unstable fractures are the most common cases of surgery, especially if the fracture is impossible to reduce or maintain in a reduced position. A study comparing the management of distal radius fractures treated by operative and non-operative methods showed outcomes equally good, and no significant difference was found between the two groups.¹⁻⁴

This is a challenge to be able to determine the appropriate management method. In young patients with good bone quality in distal radius metaphyseal fractures with proper management, satisfactory

results of post-operative upper limb function were obtained. Management of patients with distal radius metaphyseal fractures greatly affects the function of the upper limb during recovery. Then the right choice of type of procedure will affect the function of the upper limb.⁵⁻⁹ This study aimed to compare the function of the upper limb in intra-articular distal radius metaphyseal fracture between operative and non-operative procedures with the clinical assessment of the QuickDASH score at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia.

2. Methods

This study was an observational study with a retrospective cohort approach and used primary data obtained from direct telephone or online interviews and secondary data obtained from medical data from the medical record installation of Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia. A total of 55 research subjects consisting of 38 subjects belonging to the operative action group and 17 subjects belonging to the non-operative action group, participated in this study. The research subjects met the inclusion criteria in the form of patients with long intra-articular fractures of the distal radius post-operative and non-operative procedure for more than 6 months who were treated at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia. and were willing to participate in the study marked by signing informed consent. This study was approved by the medical and health research ethics committee at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia.

This study observed data in the form of sociodemographics and upper limb function performance in intra-articular radius distal metaphyseal fractures between operative and non-operative procedures with a clinical assessment of the QuickDASH score. The QuickDASH score contains 11 summary questions from DASH that have been developed and validated. The QuickDASH score range is the same as DASH, namely 0 (abnormal) to 100 (normal). The QuickDASH score has the same precision as the DASH for assessing upper limb function. The data obtained in this study were processed descriptively and analytically based on the number of cases obtained according to the variables studied. Variable analysis using bivariate analysis with the Chi-square test and Fischer test as alternatives. The research results are presented in tabular form, which is then explained in narrative form. Data processing was carried out using the SPSS 20 program, with a p-value <0.05.

3. Results

Table 1 shows the baseline characteristics of the research subjects. The majority of research subjects were aged 14-25 years and were male. Table 2 shows a comparison of the improvement in upper limb performance based on operative and non-operative QuickDASH. Operative procedures are proven to improve upper limb performance better than non-operative procedures based on the QuickDASH score. Operative procedures provide improved upper limb performance 2.65 times better than non-operative procedures.

Table 1. Baseline characteristics of research subjects.

	Procedure		Total
	Operative	Non-Operative	
Age			
1-13 years	10	4	14
14-25 years	15	7	22
26-44 years	8	3	11
45-60 years	5	3	8
Gender			Total
Male	30	11	41
Female	8	6	14

Table 2. Comparison of upper limb performance improvement based on QuickDASH operative and non-operative procedure.

QuickDASH score	Procedure			p-value*
	Operative	Non-operative	RR (95%CI)	
>35	35	10	2,65(1,01-6,92)	0,01
≤35	3	7		

*Fischer test, $p < 0,05$.

4. Discussion

This study shows that operative procedures can improve upper limb performance better than non-operative procedures. Several studies have shown that operative procedures provide more precise performance regarding the fracture repair process. The operative procedure helps to bring the fractured parts closer together more precisely than the non-operative procedure. Installation of interventional tools in operative procedures to keep the fracture immobile is believed to be very helpful in the fracture healing process. Non-operative procedures, such as placing casts, are not able to ensure immobilization of the fractured bone, so the healing process will be less than optimal and will certainly lead to a decrease in the performance of the part related to the fractured bone.¹⁰⁻¹³

This is in line with research on outcomes in patients with operative management compared with non-operative by retrospective analysis. In this study, it was found that patients who underwent operative procedures required only a few further operations compared to patients who were treated with non-operative procedures. In another study that reviewed the effectiveness and safety of conservative and operative management, results were obtained which stated that operative therapy had significant results radiologically, although there was no significant difference in outcome functional and complications in both methods. Different results were obtained from other studies that focused on the clinical and radiological evaluation of intra-articular distal radius fractures with operative and non-operative procedures, where there were no significant differences between the two groups.^{14,15}

5. Conclusion

Operative procedure that are better in maintaining upper limb performance after intraarticular radius distal metaphyseal fractures based on the QuickDASH score compared to non-operative procedure at Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia.

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