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Dr. Rahul Kadam
Chief Investigator and Guide, Professor & Head of Unit, Unit 3, Dept. of Orthopedics, MGM Medical College and Hospital, Kamothe, Navi Mumbai, Maharashtra, India

Dr. Ananya Sharma
Department of Orthopaedics, MGM Medical College, Navi Mumbai, Maharashtra, India

Dr. Ashok Ghodke
Department of Orthopaedics, MGM Medical College, Navi Mumbai, Maharashtra, India

Dr. Abhay Chhalani
Department of Orthopaedics, MGM Medical College, Navi Mumbai, Maharashtra, India

Dr. Akshay Shah
Department of Orthopaedics, MGM Medical College, Navi Mumbai, Maharashtra, India

Dr. Ankit Aggarwal
Department of Orthopaedics, MGM Medical College, Navi Mumbai, Maharashtra, India

Dr. Sachin Pandey
Department of Orthopaedics, MGM Medical College, Navi Mumbai, Maharashtra, India

Corresponding Author:
Dr. Ananya Sharma
Department of Orthopaedics, MGM Medical College, Navi Mumbai, Maharashtra, India

Functional outcome of closed reduction and k-wiring with modified Kapandji technique for distal radial fractures

Dr. Rahul Kadam, Dr. Ananya Sharma, Dr. Ashok Ghodke, Dr. Abhay Chhalani, Dr. Akshay Shah, Dr. Ankit Aggarwal and Dr. Sachin Pandey

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Abstract
Kirschner wire osteosynthesis is a widely accepted method for reduction of distal radial fractures. The present study aims to assess the Functional outcome of Closed Reduction and K-Wiring with the Modified Kapandji Technique for Distal Radial Fractures.

Keywords: Closed reduction, k-wiring, Kapandji technique, distal radial fractures

Introduction
Fractures of the distal radius amount to 16% of all fractures treated in the Orthopaedic casualty [1] These fractures are increasingly common in the emergency due to greater vehicular traffic on road and rapid industrialization. They range from simple extra-articular to highly comminuted intra-articular fractures [1, 2].
In the distal end radius fractures which present with displacement, some loss of the reduction initially obtained will occur unless the case is adequately managed [3]. Clinical guidelines from the American Academy of Orthopaedic Surgeons (AAOS) moderately recommend an anatomically stable surgical fixation, instead of cast fixation, to be followed by early wrist motion for treatment of patients with displaced distal radius fractures [4].
Despite multiple types of osteosynthesis devices which are available today to aid the trauma surgeons in surgical fixation, Kirschner wires have their own place in treating fractures of the distal extremity of the radius and still account as one of the most common method for fracture fixation, combined with plaster-cast immobilization [5].
A key method of operative fixation is percutaneous pinning, which involves the insertion of Kirschner- (K-) wires through the skin to immobilize the fracture. The K wires can be inserted through multiple approach methods [6].
The surgical method described in the present study is a modification of the intrafocal fixation method that was described by Adalbert I. Kapandji [7].
This method combines intrafocal and interfocal fixation by using one or two extra Kirschner wires either intrafocal or through the styloid process or by using non threaded wires [8, 9] for fractures of the distal radius.
This method has several advantages. It allows early range of motion and is preferred in elderly patients with reduced bone quality. [10] The review of literature shows that the Modified Kapandji technique is effective, simple and has fewer complications [11].

Materials and Methods
Source of data: Patients admitted in the orthopaedic ward in MGM Medical College and Hospital, Navi Mumbai.

Study duration: August 2017 to August 2018

Sample size: 30 patients who underwent closed reduction and K- wiring with modified Kapandji's technique for distal radius fractures.

The study was conducted from August 2017 to August 2018, on 30 patients satisfying the inclusion and exclusion criteria as follows -

Inclusion criteria

1. All patients with fractures of the distal radius who were treated with percutaneous pinning in our hospital
2. Fracture not older than 2 weeks
3. Displaced fracture in cast
4. Patient willing for proposed surgery
5. They were able to understand the informed consent

Exclusion criteria

1. Bilateral distal radius fractures
2. Open or multiple fractures
3. Underlying bone pathology

Medical problems that could severely hinder fracture healing and self-care ability, such as end stage kidney disease, malignant tumours, osteomalacia and neurodegenerative disorders.

Parameter for evaluation

The patients were assessed using Mayo's modified wrist score.

Categories	Score	Findings
Pain (25 points)	25	No pain
	20	Mild pain with vigorous activities
	20	Pain only with weather changes
	15	Moderate pain with vigorous activities
	10	Mild pain with daily activities
	5	Moderate pain with daily activities
	0	Pain at rest
Satisfaction (25 points)	25	Very satisfied
	20	Moderately satisfied
	10	No satisfied, but working
	0	No satisfied, unable to work
Range of motion (25 points)	25	100% percentage of normal
	15	75–99% percentage of normal
	10	50–74% percentage of normal
	5	25–49% percentage of normal
	0	0–24% percentage of normal
Grip strength (25 points)	15	75–99% percentage of normal
	10	50–74% percentage of normal
	5	25–49% percentage of normal
	0	0–24% percentage of normal
Final result (total points)	90–100	Excellent
	80–89	Good
	65–79	Fair
	<65	Poor

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