

Functional and Radiological Results of Surgical Treatment of Fractures of the Distal end of the Radius (about 55 Cases)

Daoudi.M

Department of Traumatology - Orthopedics, Avicenna Military Hospital. Marrakech. Morocco.

***Corresponding Author:** Daoudi.M, Department of Traumatology - Orthopedics, Avicenna Military Hospital. Marrakech. Morocco.

Received Date: February 21, 2025; **Accepted Date:** February 28, 2025; **Published Date:** March 07, 2025

Citation: Daoudi.M, (2025), Functional and Radiological Results of Surgical Treatment of Fractures of the Distal end of the Radius (about 55 Cases), *J. Clinical Orthopedics and Trauma Care*, 7(2); DOI:10.31579/2694-0248/124

Copyright: © 2025, Daoudi.M. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract

Objectives

Fractures of the distal end of radius are the most frequently occurring upper skeletal injuries managed by orthopaedic surgeons. The incidence of complications after surgical treatment still remains high. The objective of our study was to assess functional and radiological results of DRF.

Methods:

Retrospective study of 55 patients of distal end radius fractures were treated with percutaneous pinning, external fixation and volar locking plate fixation. CASTAING classification was used. Functional outcomes were assessed using Demerit Point System of Gartland and Werley (modified).

Results:

Excellent to good results were obtained in most fractures treated by open reduction and internal fixation with volar plate and KAPANDJI pinning. Reduction was well-maintained, complications were less and functional parameters showed a significant improvement during the follow-up period

Keywords: fractures; distal end of radius ; volar plate ; kapandji pinning; reduction

Introduction

Fractures of the distal radius are a common clinical problem affecting skeletally mature people. [1] The young sustain this injury as a result of significant local trauma. The elderly have predisposing risks of disuse or postmenopausal osteoporosis[2]. The most common trauma mechanism is a fall onto the hand, in hyperextension. Classification systems have been developed with the aim of allowing surgeons to classify fractures into different and clinically useful groupings[3]. The final choice of treatment method will be influenced by many considerations including the nature of the fracture, bone stock and fragility, the presence of local complications (compound injury and nerve injury) or other injuries, the patient's general medical condition, the expected functional loading (activity demands),[4] and patient motivation. In our study, we have included closed reduction with

plaster cast; percutaneous pinning; external fixation with external fixator using the principle of ligamentotaxis; and internal fixation with plates, pins, and screws, depending on the type of fracture and patients general condition

The aims are as follows:

1. To study the outcomes different treatment modalities of fractures of distal end of radius
2. To study the complications of different treatment modalities

Guidelines for acceptable closed reduction as given by [5] include: Radial inclination; Radial length; Radial Tilt; Articular incongruity

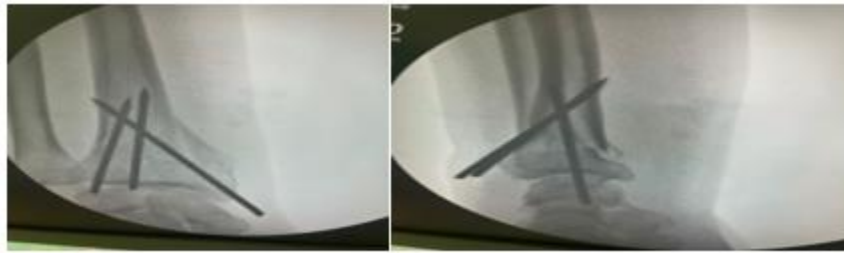


Figure 1: wrist X-Rays percutaneous pinning



Figure-2: Wrist X-Rays : Volar plate

Materials and Methods

This prospective study was conducted over a period from Janvier 2016 to December 2018 and the detailed analysis of different modalities of treatment of fractures of the distal end radius was carried out. On arrival of patient, detail history regarding age, sex, mode of injury, days since injury,

associated injuries were noted carefully. The patients were assessed clinically and radiologically. The fracture pattern was noted and the fractures were classified according to CASTAING classification system. Radiological assessment was done in terms residual dorsal tilt, radial shortening and loss of radial inclination and the results were graded according to of Lindstrom criteria modified:

Outcome	Loss of palmar tilt	Radial shortening	Loss of radial deviation
Excellent	<0°	<3 mm	<4°
Good	1-10°	3-6 mm	5-9°
Fair	11-14°	7-11 mm	10-14°
Poor	>15°	>12 mm	>15°

Functional evaluation of the patients was done at last follow-up according to the demerit point system of Gartland and Werley

common fracture in our study, according to CASTAING classification was colles followed by fractures with volar displacement

Observations and results:

Anatomical Evaluation:

In our study of 55 patients, 40 were males and 15 were females. The fractures were most common among 21–40 and 41–60 years of age group. The youngest patient was 18 years old and the eldest was 68 years old. The most

Anatomical evaluation results according to Sarmiento’s modification of Lindstrom criteria were obtained

Modalities	cases	Good results
percutaneous pinning	28	82%
open reduction and plate fixation	12	80%
External fixation	4	66%

In our study, assessment of functional outcome by Demerit’s Point System of Gartland and Werley with Sarmiento et al. modification revealed excellent results with open reduction and plate fixation and percutaneous pinning

modalities (80%), followed by ligamentotaxis by external fixator application (66%)

Complications

The most common complications encountered in our series were stiffness and pain in the wrist joint after removal of external fixator because of lack of wrist movements for prolonged time. We observed Plaster sores in two patients, pin tract infections in five patients, which were superficial and got treated by oral antibiotics. The presence of deformity in one patients

Conclusion:

The fractures of the distal end of radius despite being the commonest upper extremity fractures continue to pose a therapeutic challenge. In this study the open reduction and internal fixation with plate and screws and percutaneous pinning gave a restored radiological outcome compared to the ligamentotaxis but the functional outcome remained the same in all the three treatment groups.

References

1. Park JH, Hagopian J, Ilyas AM (2010). Variable-angle locking screw volar plating of distal radius fractures. *Hand Clin* 2010;26: 373–380
2. Margaliot Z, Haase SC, Kotsis SV, Kim HM, Chung KC (2005). A meta-analysis of outcomes of external fixation versus plate osteosynthesis for unstable distal radius fractures. *J Hand Surg* 2005; 30:1185–1199.
3. Jose A, Suranigi SM, Deniese PN, Babu AT, Rengasamy K, Najimudeen S (2017). Unstable distal radius fractures treated by volar locking anatomical plates. *J Clin Diagn Res JCDR* ;11:RC04–8.
4. Duramaz A, Bilgili MG, Karaali E, Bayram B, Ziroglu N, Kural C (2018). Volar locking plate versus K-wire-supported external fixation in the treatment of AO/ASIF type C distal radius fractures: a comparison of functional and radiological outcomes. *Ulus Travma Ve Acil Cerrahi Derg Turk J Trauma Emerg Surg TJTES* ;24:255–62.
5. Yamashita K, Zenke Y, Sakai A, Oshige T, Moritani S, Maehara T (2015). Comparison of functional outcome between early and delayed internal fixation using volar locking plate for distal radius fractures. *J UOEH* ;37:111–19..
6. Aim F, Klouche S, Frison A, Bauer T, Hardy P (2017). Efficacy of vitamin C in preventing complex regional pain syndrome after wrist fracture: a systematic review and meta-analysis. *Orthop Traumatol Surg Res OTSR* ;103:465–70.
7. Chevreau M, Romand X, Gaudin P, Juvin R, Baillet A (2017). Bisphosphonates for treatment of complex regional pain syndrome type 1: a systematic literature review and meta-analysis of randomized controlled trials versus placebo. *Jt Bone Spine Rev Rhum* ;84:393–9.
8. Bentohami A, de Burlet K, de Korte N, van den Bekerom MPJ, Goslings JC, Schep NWL(2014). Complications following volar locking plate fixation for distal radial fractures: a systematic review. *J Hand Surg Eur Vol* ;39:745–54.
9. Soong M, Earp BE, Bishop G, Leung A, Blazar P (2011). Volar locking plate implant prominence and flexor tendon rupture. *J Bone Joint Surg Am* ;93:328–35.
10. Batra S, Gupta A (2002). The effect of fracture-related factors on the functional outcome at 1 year in distal radius fractures. *Injury* 2002;33:499–502.



This work is licensed under Creative Commons Attribution 4.0 License

To Submit Your Article Click Here:

Submit Manuscript

DOI:10.31579/2694-0248/124

Ready to submit your research? Choose Auctores and benefit from:

- fast, convenient online submission
- rigorous peer review by experienced research in your field
- rapid publication on acceptance
- authors retain copyrights
- unique DOI for all articles
- immediate, unrestricted online access

At Auctores, research is always in progress.

Learn more <https://auctoresonline.org/journals/journal-of-thoracic-disease-and-cardiothoracic-surgery>