

Original Research

Evaluation of Functional Outcome of Distal End of Radius Fractures Treated with Buttress Plating at a Tertiary Care Centre

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ABSTRACT

Background: Fractures of the distal end of the radius are among the most common orthopaedic injuries, and treatment of these fractures has changed over the course of time. Plating allows direct restoration of the anatomy, stable internal fixation, a decreased period of immobilization, and early return of wrist function. Hence; the present study was conducted for assessing functional outcome of distal end of radius fractures treated with buttress plating.

Materials & Methods: A total of 60 patients with presence of distal end of radius fracture were enrolled. The diagnosis was mainly based on clinical examination and was supported by radiological examination. All the patients were managed with buttress plating. Initially radiographs of the distal radius should consist of good posteroanterior and lateral views. The surgery was carried out under general anesthesia or brachial block after thorough preparation of the part. Follow-up was done and assessment of patients was done using demerit-point system of Gartland and Werley. Analysis was done using SPSS software.

Results: Mean age of the patients was 52.3 years. Majority proportion of patients were males. Right side involvement occurred in 80 percent of the patients. Mean operative time was 78.1 minutes. In 70 percent of the patients, etiology of injury was road traffic accident. Excellent and good results were seen in 40 percent and 45 percent of the patients respectively.

Conclusion: Managing distal end of radius fractures with buttress plating is an excellent option.

Key words: Distal End Radius, Plating, Buttress.

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INTRODUCTION

Fractures of the distal end of the radius are among the most common orthopaedic injuries, and treatment of these fractures has changed over the course of time. Many fractures of the distal radius are in fact relatively uncomplicated and are effectively treated by closed reduction and casting. However, fractures that are either unstable and/or involve the articular surfaces can jeopardize the integrity of the articular congruence and/or the kinematics of these articulations. The goal of the treating physician should then be to restore the functional anatomy by a method that does not compromise hand function.¹⁻³ Current trends toward

ORIF are thought to be related to surgeon's belief that ORIF and locked volar plating are associated with lower complication rates, better function, and better satisfaction than percutaneous or external fixation; however, these have not been completely substantiated in the literature.⁴ Treatment options range from closed reduction and immobilization to open reduction with plates and screws; options are differentiated based on their ability to reinforce and stabilize the three columns of the distal radius and ulna. Plating allows direct restoration of the anatomy, stable internal fixation, a decreased period of immobilization, and early return of wrist function. Buttress plates reduce and stabilize

vertical shear intra-articular fractures through an antiglide effect, whereas conventional and locking plates address metaphyseal comminution and/or preserve articular congruity/reduction. With conventional and locking plates, intra-articular fractures are directly reduced; with buttress plates, the plate itself helps reduce the intra-articular fracture. Complications associated with plating include tendon irritation or rupture and the need for plate removal.^{5, 6}Hence; the present study was conducted for assessing functional outcome of distal end of radius fractures treated with buttress plating.

MATERIALS & METHODS

The present study was conducted for assessing functional outcome of distal end of radius fractures treated with buttress plating. A total of 60 patients with presence of distal end of radius fracture were enrolled. The diagnosis was mainly based on clinical examination and was supported by radiological examination. All the patients with managed with

buttress plating. In all the cases routine investigation like complete blood count, urine routine and microscopic examination, X-ray examination, blood sugar level, serum creatinine and blood urea were carried out. Initially radiographs of the distal radius should consist of good posteroanterior and lateral views. The surgery was carried out under general anesthesia or brachial block after thorough preparation of the part. Follow-up was done and assessment of patients was done using demerit-point system of Gartland and Werley. Analysis was done using SPSS software.

RESULTS

The mean age of the patients was 52.3 years. Majority proportion of patients were males. Right side involvement occurred in 80 percent of the patients. Mean operative time was 78.1 minutes. In 70 percent of the patients, the etiology of injury was road traffic accident. Excellent and good results were seen in 40 percent and 45 percent of the patients respectively.

Table 1: Operative time

Operative time (mins)	Number
Mean	78.1
SD	13.9

Table 2: Functional outcome

Outcome	Number	Percentage
Excellent	24	40
Good	27	45
Poor	9	15
Total	60	100

DISCUSSION

Distal radius fractures are one of the most commonly treated fractures in the United States. The highest rates are seen among the elderly, second only to hip fractures. With the increasing aging population these numbers are projected to continue to increase. Distal radius fractures include a spectrum of injury patterns encountered by general practitioners and orthopedists alike. The use of locked volar plates has increased significantly and is now the predominant method for fixation of displaced distal radius fractures. The locked volar plate offers significant biomechanical advantages and is associated with good clinical outcomes and high patient satisfaction. Historically, dorsally applied plates such as the oblique T plate, for distal radius fractures were performed with the use of thicker non-contoured implants in an area with little soft tissue coverage. While the use of the dorsal buttress plate made good biomechanical sense, the associated extensor tendon complications tempered the use of this technique.⁷⁻¹⁰

Hence, the present study was conducted for assessing functional outcome of distal end of radius fractures treated with buttress plating. The mean age of the patients was 52.3 years. Majority proportion of patients were males. Right side involvement occurred in 80 percent of the patients. Mean operative time was 78.1 minutes. In 70 percent of the patients, the etiology of injury was road traffic accident. Excellent and good results were seen in 40 percent and 45 percent of the patients respectively. Siddalingamurthy G et al compared the radiological and functional outcome of trinary surgical treatment (percutaneous pinning, ligamentotaxis and plate and screw fixation) for distal end radius intraarticular fractures. Patients were randomly assigned to be treated by ligamentotaxis and plate and screw fixation, percutaneous pinning, (n = 30) each who were operated. The excellent scores were in 13 patients accounting 14.4%, good scores 47.8% in 43 patients and fair and the poor scores 25.6% and 12.2% functionally were seen in 23 and 11 patients respectively, The Cramer s V value was not found significant, the values noted are 0.84. A significant

association between groups and Volar tilt, Radial angle and Radial shortening. Cramer's V was found to be significant (P- value 0.0001) radiologically. The outcome with respect to radiology and the function was measured using werley and gartland scoring and the lidstrom scoring system.¹¹Khan et al compared the functional results of treatment of these fractures with a T plate and K-wires. A total of 30 patients were included and randomized into two groups of 15 patients each. Group-A patients were treated with Krischner's wires and Group-B patients were treated with a T-Plate with open reduction. Informed consent was taken. Post operative follow up was done for 12 weeks for the outcome parameters (Green and O'Brien score). Mean age of patients in Group-A and B was 36.13 ± 9.81 and 44.73 ± 7.86 years respectively. In Group-A there were 10 male and 5 female patients and in Group-B there were 8 male and seven female patients respectively. In Group-A nine patients presented with Fernandez type-II and six patients presented with Fernandez type-III fracture. While in Group-B 10 patients presented with Fernandez type-II and five patients presented with Fernandez type-III fracture. Among Group-A patient's final outcome was excellent in 86.67% patients while in Group-B only 53.33% patients had excellent outcome at three months follow up. Percutaneous Kirschner's wires appeared to be more effective as compared to T-Plate fixation in terms of functional outcome for treating intra-articular distal radius fractures.¹²

CONCLUSION

Managing distal end of radius fractures with buttress plating is an excellent option.

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