To Study the Outcome/Analysis of Fracture Distal End Radius Managed with Antegrade K/L-Wire Fixation

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ABSTRACT

Introduction: The treatment options for fracture lower end radius range from closed reduction and cast application to interlock nailing to the application of external fixators. Despite the advancements in treatment, close reduction and immobilization in the cast still prevail the standard reliable method for the management of minimally displaced intra-articular and extra-articular distal end radius fractures. The gold standard for the treatment of distal end radius fractures remains to be Volar Locking Plate Osteosynthesis. In this study focused on the alternative modality for the treatment of fracture distal end radius managed with antegrade k-wire fixation.

Methods: This will be a prospective interventional study conducted on 30 patients between the age group of 18 to 60 years. In this modality, the distal end radius fracture is fixed with 2-3 k/l wires in the antegrade direction. Detailed clinical, radiological and functional assessment was done and after fulfilling the inclusion and exclusion criteria patients were selected. Data was spread on the master chart and analyzed

Expected Results: Results will be assessed after the study has been completed. Treatment with Intramedullary L-wire fixation is a cost-effective alternative which can also be performed in rural health setups. they are less invasive and overall provide better compliance for the patient. The results will be calculated with the help of SPSS software version 26.

Conclusion: Treatment with Intramedullary L-wire fixation is a cost-effective alternative which can also be performed in rural health setups. they are less invasive and overall provide better compliance for the patient.

Key Words: Fracture, Radius, K-Wire, Fixation

INTRODUCTION

Abraham Colle's first described distal end radius fractures and wrist fractures in the year 1814 about 200 years ago in terms of the carpal extremity of radial fractures but still, a percentage of unsatisfactory results in the management of lower end of radius fractures seems to be higher, with increased injury-related morbidities.¹⁻³ As stated by Colles⁴ that wrist gains good functional freedom with or without intervention in all range of movements and can also be pain-free. The treatment methods for distal end radius fracture ranges from closed reduction and cast application to interlock nailing to external fixators. Despite the progress in managing distal end radius fractures, the primary closed reduction and

casting immobilization is the profound standard non-surgical method for managing all extra-articular fractures which are stable and all minimally displaced intraarticular fractures. Such management modality for all intraarticular unstable fractures is liable for failure. Despite all such different management modality by various methods has shown promising results but volar locking plate osteosynthesis still holds the gold standard method in treating distal end radius fractures.⁵⁻⁸

An alternative to volar plating that is antegrade intramedullary k wiring, has the advantage of decreasing the risk of tendon injury as well as screw penetration into the joint, that are the biggest issues related to volar plating.^{9,10} The procedure used for intramedullary k wire fixation also reduces the

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risk of injury to pronator quadratus. antegrade k wire fixation also can improve wrist strength and function, distal radioulnar joint stability, and metalwork soft-tissue cover. The Kirschner-wire (K-wire) retrograde fastener is either extrafocal-bicortical^{9,11} or intrafocal-unicortical.¹²

MATERIALS AND METHODS

Study design: An interventional prospective study

Setting: The study would be conducted on patients of fracture distal end radius being treated by operative methods in Orthopaedic Department at Acharya Vinoba Bhave Rural Hospital Sawangi Wardha under Jawaharlal Nehru Medical College Sawangi, Wardha during May 2019 to April 2021.

Participants: Adults from the age group 8 to 60 years were included in the study belonging to any sex.

Study size: A sample size of the study will be 30.

Inclusion criteria

- Adults from 18 years and above
- Fractures reporting within 3 weeks of injury
- Patients willing to participate in the study
- Dorsal angulations greater than 10 degrees or radial height shortening of more than or equal to 5mm

Exclusion criteria

- Compound fractures
- Fractures older than 3 weeks
- Fractures involving intraarticular surface of wrist joint
- Neurovascular involvement
- High-velocity trauma with multiple small pieces
- Patients not willing to participate in the study

EXPECTED RESULTS

The expected outcome of this study is to establish an alternative modality for the treatment of fracture distal end radius. The fracture is managed with antegrade k/L wire fixation and is compared with standard management methods like plating and cast applications as it is a cost-effective and relatively easy procedure for fracture reduction and treatment.

DISCUSSION

Minimally displaced or undisplaced displaced fractures of distal end radius managed conservatively show good results but as of now for severely undisplaced and Intraarticular fractures the best possible treatment or the gold standard of treatment is controversial. External fixation, percutaneous pin insertion followed by cast application and plating are favourable in reducing wrist pain and arthritis and in preventing

malunion¹³. In the bone is not osteoporotic or fracture is not severely comminuted then relatively cheap techniques like percutaneous pinning in trans styloid manner or Kapandji technique can be used³. But as the pin insertion is in very close proximate to the wrist joint articulation can cause many complications related to the articular surface of wrist joint with possibility of other complications such as nerve injuries, skin irritations, tendon rupture can happen.¹⁴⁻¹⁷ To avoid these complications and to find an alternative way to treat distal end radius fractures antegrade k-wire fixation was done. The complication rates with percutaneous pinning and cast application were found to be 42%¹⁸, those with Kapandji procedure were 20% and trans styloid pinning was 10%¹⁹ and trans styloid pin insertion accompanied by cast application were 33%.²⁰ The soft tissue complication rates in our study are expected to be lower than these alternatives. Presence of systemic disorders like hypertension²¹, diabetes²² also plays a key role in fracture healing and treatment of these underlying entities needs to be addressed properly. Few of the other related studies on bone and joint disorders are available.²³

CONCLUSION

Will be done on completion of the study and data analysis.

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