



FUNCTIONAL OUTCOME OF DISTAL RADIUS FRACTURES WITH PERCUTANEOUS PINNING AND PLASTER IN POSTMENOPAUSAL WOMEN.

Orthopaedics

Dr. Rajnish Kumar Senior Resident, Department of Orthopaedics, ANMMCH, Gaya.

Dr. Rajesh Kumar Ranjan* Senior Resident, Department of Orthopaedics, PMCH, Patna. *Corresponding Author

Dr. S P Singh Professor, Department of Orthopaedics, ANMMCH, Gaya.

ABSTRACT

Fractures at the distal end of radius accounts for around 18 to 20 % of all skeletal fractures occurring in adults . Fractures around the distal radius account for around 19 % of all fractures in the postmenopausal aged females. **Aim And Objectives :** To determine the" functional outcome of Percutaneous pinning for distal radius fractures in post menopausal women' **Materials and Methods:** A prospective cohort study of "functional outcome of distal radius fractures with percutaneous k wire pinning and plaster application" is done in Gaya medical college hospital, Gaya. The present study is conducted on 20 patients who are diagnosed to have distal end of radius fracture and being admitted in Gaya medical college hospital, Bihar during one year period of July 2019 to July 2020. Detailed written Informed consent was obtained from all the patients. Study design: An prospective cohort observational study. The age group ranges between 45 to 65 years. **Results:** Distal radius fractures are more common injuries High velocity injuries are mostly encountered during road traffic accidents. Majority of the fractures are said to be extra -articular displaced with dorsal angulation in postmenopausal women typical of colle's However, higher degree of violence may produce intra articular displaced and comminuted fractures. **Conclusion:** The results of over study showed that proper reduction and positioning of k wire would provide a satisfactory outcome among the low demand groups.

KEYWORDS

INTRODUCTION

Fractures at the distal end of radius accounts for around 18 to 20 % of all skeletal fractures occurring in adults . Fractures around the distal radius account for around 19 % of all fractures in the postmenopausal aged females. Osteoporotic fractures are more common among the postmenopausal females due to the lack of osterogenic support. The fracture is most vulnerable at the distal end of radius where the trabecular bone is dominating and the cortical bone is thinner towards the radiocarpal joint. Many factors causing this risk are mineral changes in the bone, increased osteoblastic and osteoclastic turnover rates, underlying osteoporosis, long term steroid intake, underlying systemic disease etc. Distal radius fractures that occur in older postmenopausal women, five to six times more frequent in females than in males, and between the ages of 55– 85 years , with the peak incidence between 70 to 80 years. The distal radius fractures can occur in bimodal age groups (aged 17-25 years) involving in sports activities undergoing a relatively highenergy significant fall, and in geriatric persons (aged >50 years) with osteoporotic bone undergoing a simple low velocity fall, stress or a bump. Osteoporotic postmenopausal females with low mineral density have a greater incidence.

AIMS AND OBJECTIVES:

The main aim of my prospective study is to determine the" functional outcome of Percutaneous pinning for distal radius fractures in post menopausal women'.

MATERIALS AND METHODS:

A prospective cohort study of "functional outcome of distal radius fractures with percutaneous k wire pinning and plaster application" is done in Gaya medical college hospital, Gaya. The present study is conducted on 20 patients who are diagnosed to have distal end of radius fracture and being admitted in Gaya medical college hospital, Gaya Bihar during one year period of July 2019 to July 2020. Detailed written Informed consent was obtained from all the patients. Study design: An prospective cohort observational study. The age group ranges between 45 to 65 years .

INCLUSION CRITERIA:

1. Postmenopausal women

EXCLUSION CRITERIA

1. women in menstrual phase
2. children (0-14 yrs) and males
3. associated chronic co-morbidities.

This information was entered into a Microsoft Excel database for

statistical analysis 28 .

Operative Procedure

1 The principle step is near anatomical reduction of the fractured fragments by closed reduction. Anatomical reduction is obtained by traction and counter traction decreasing impaction and aligning distal fragments by flexing the distal fragment in anteroposterior direction reducing the angulation upto neutral position and mediolateral displacements. The position is checked under c- arm control for acceptable levels 29 .

Step 2 The final corrected position should have maintained radial length and radial inclination and this position is maintained before K wire application.

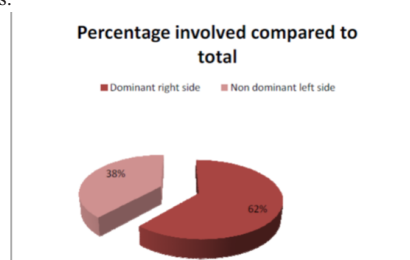
Step 3 After checking the position of reduction kuntshner wire of size 1.8 or 2 mm are inserted from lateral to medial starting from radial styloid process base crossing the fracture and holding the opposite cortex .with the assistant to maintain traction and reduction .

Step 4 Another k wire is inserted from the sigmoid notch starting dorsal cortex to the palmar cortex and to be sure that the kwire enters opposite intact volar cortex. And additional k – wires may be inserted from dorsal to volar to maintain stability.

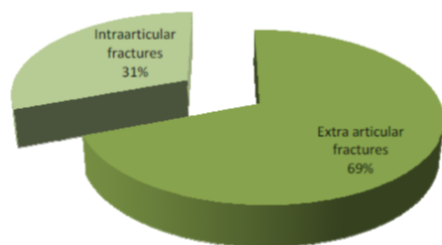
Step 5 The reduction is checked under c – arm and the k –wires are bent at around 90 degree with k wire bender and cut with k wire cutter. Pin site sterile dressings and good adequate padding done with and plaster is then applied 29 All steps are done under strict aseptic precautions and complete draping

RESULTS:

The results obtained from our study were analysed in many aspects with previous other similar observational studies and were postulated as follows.

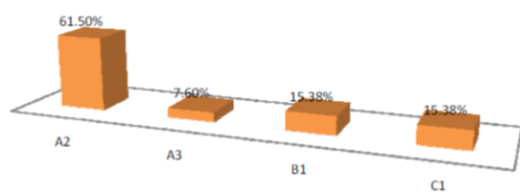


Articular surface involvement



Fracture pattern

Percentage involved compared to total sample



DISCUSSION

The results of our study is compared with the publications and literatures and were discussed below.

SIDE PREDOMINANTLY AFFECTED

Results of our study showed that only 8 postmenopausal women had sustained injury over the non dominant left wrist and the remaining 5 had sustained injury over the dominant right hand. In Uzzaman ks (2008), study results showed no difference in side of involvement. In Akhter Baig (2008) series of 33 patients, 18 patients had left side involvement and right side involved in among 15 patients. In RC Dirgha Raj (2011) series of 30 patients, 19 sustained left side and 11 had right sided fractures. In Cherian Jacob (2014) cohort study, 8 were right sided and 7 were left sided. All the above literatures showed mainly left side side involvement which is similar to the results of our study.

MECHANISM OF INJURY

Almost 13 postmenopausal women had self fall while doing household activities and no person had sustained violence by road traffic accidents in our study. In RC Dirgha Raj (2011) 25 patients had self fall and 4 with RTA. In Cherian Jacob (2014) study, 10 patients had sustained low velocity fall on household activities and 5 with high velocity RTA. In Akhter Baig (2008) series, self fall was mode of violence in 28 cases and remaining 5 cases had violence by RTA. In T.Azzopardi study, all the 57 patients had sustained injury by self fall. From the above study series showed that the major mode of violence is a low velocity fall the findings of which is consistent with our study.

FRACTURE CLASSIFICATION AND ARTICULAR INVOLVEMENT

In our study group, majority had sustained A 2 pattern of fracture. In Cherian Jacob (2014) cohort study of five pin technique, type A was found in 3 cases, type B in 3 cases and type C in 9 patients. In Akhter Baig (2008) series of 33 patients, all were AO classified type A extraarticular displaced unstable injuries. In RC Dirgha Raj (2011) series also all 30 cases were AO Type A fractures. In Uzzaman ks (2008) study, 23 were type A group and 17 were type C group fractures. In T.Azzopardi study of 57 patients all were type A extra articular fractures. In a nutshell, majority of the studies of percutaneous pinning have been done in type A injuries. Our study have also showed Type A Predominance particularly Type A2.2 (typical colles fractures).

FRACTURE HEALING TIME

The average period of union in 92 % if women were around 6 weeks and 8% around 8 weeks in my series. In T.Azzopardi study of 57

patients, the average period of fracture healing was 7 weeks. In RC Dirgha Raj (2011) series radiological union occurred by 6 weeks. In Akhter Baig (2008) series average fracture healing time was about 6 weeks. Hence to conclude most of the series results had a fracture union around 6 weeks similar to my study results.

SURGICAL AND PLASTER COMPLICATIONS

In my study one patient had reduced range of functional movements and In T.Azzopardi study, one case had pin site infection. In Akhter Baig (2008) series of 33 patients, 17 patients had pin site infection, algodystrophy, stiffness of joint, pressure sore as complications. In RC Dirgha Raj (2011) series of 30 cases, one had RSD and 2 had pin site septic loosening.

FUNCTIONAL OUTCOME

In our study excellent results were seen in 53.8%, good outcome in 38.4% and poor results in 7.7 % cases. In RC Dirgha Raj (2011) series, 93% had excellent and good functional outcome and 7 % cases fair outcome. In Akhter Baig (2008) series of 33 patients, showed excellent outcome in 21.2% cases, 75.8% with good and 3 % with fair outcome. In Cherian Jacob (2014) study on 10 sample cases, excellent outcome group included 33.33%, good results in 60 % people and fair outcome in 6.66% patients. Thus the overall success results in our study was 92.2 % with good and excellent functional outcome at the final follow up.

CONCLUSION

Distal radius fractures are more common injuries occurring in geriatric population particularly among the postmenopausal women with underlying osteoporosis. The mode of violence is mostly a low velocity fall during the household activities. High velocity injuries are mostly encountered during road traffic accidents. Majority of the fractures are said to be extra-articular displaced with dorsal angulation in postmenopausal women typical of Colles'.

However, higher degree of violence may produce intra articular displaced and comminuted fractures. The fracture union time on an average is found to be around 6 weeks. The anatomical reduction and radiological parameters are found to be obtained and maintained by crossed pinning providing a successful functional outcome and early range of motion in wrist joint. Percutaneous pinning with k-wires are just a minimally invasive day care procedure meeting the patients demands. Percutaneous pinning is a valuable procedure to prevent subsequent fracture secondary displacements with least complications.

REFERENCES:

1. Rayhack JM. The history and evolution of percutaneous pinning of displaced distal radius fractures. *Orthop Clin North Am* 2013; 24:287-300.
2. Uzzaman ks, Awal ka, Alam mk : closed reduction and percutaneous kirschner wire fixation combined with plaster cast versus conventional plaster cast immobilization in the treatment of Colles' fracture. *Dhaka med coll.* 2018; 17(2) : 98-105
3. Gupta R, Raheja A, Modi U. Colles fracture management by percutaneous crossed pin fixation versus plaster of Paris cast immobilization. *Orthopedics* 999; 22: 680-82.
4. Naidu SH, Capo JT, Moulton M, Ciccone W, Radin A, Hershey PA. Percutaneous pinning of distal radius fractures: a biomechanical study. *J Hand Surg* 2007; Vol 22-A:252-57.
5. Munson GO, Gainer BJ. Percutaneous pinning of distal radius fractures. *J Trauma* 2011; 21: 1032-5.
6. Cherian Jacob, Anoop, Nithin Thomas Functional and Radiological Outcomes of Distal Radius Fractures Treated with Closed Reduction and Percutaneous Five Pin Technique
7. Azzopardi T, Ehrendorfer S, Coulton T, et al: Unstable extraarticular fractures of the distal radius: a prospective, randomised study of immobilisation in a cast versus supplementary percutaneous pinning. *J Bone Joint Surg Br* 87:837-840, 2015
8. M. akhter baig, kashif ahmed, s. mujahid humail closed reduction and percutaneous kirschner wire fixation of displaced Colles fracture in adults.
9. Crawford AJ, David LH. Elbow and Forearm. In: Lesly J, editor. Outline of Fractures including Joint Injuries, 11th ed. Edinburgh: Churchill Livingstone; 2019. p.164-73
10. Mah ET, Atkinson RN. Percutaneous Kirschner wire stabilization following closed reduction of Colles' fractures. *J Hand Surg* 2020; 17-B :55-62.