

Comparison of surgical and conservative management of extra articular distal radius fractures

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Abstract

Background: Fractures of the distal radius still create doubt in the minds of young orthopaedic surgeons. There has been a recent change of trend to prefer surgical management for most of the fractures. However this is one fracture that fails to follow that trend. **Material and Methods:** We at our institute have conducted a prospective study to compare the outcome of surgical and conservative management of AO 23 A type distal radius fractures spanning over a period of three years. **Results:** A total of 342 patients admitted in our institute between Jan '14 to June '17 have been evaluated and the outcome assessed at the end of nine months, two and three years. **Conclusion:** Evaluation of results reveals no significant difference in the outcome of surgical and conservative management at the end of three years, though initial results show superiority of surgery over conservative management.

Key Words: Colle's fracture, Ellis plate, Open reduction.

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INTRODUCTION

Distal radius injuries are one of the commonly encountered fractures in orthopaedics¹. Two third of these fractures require intervention in the form of manipulation or open reduction. These are more frequent in old age and are due to trivial trauma². Kirschner wire fixation, dorsal and volar plates, and external fixation, are all part of management of these fractures^{3,4}. The dilemma surrounding its management is well known. Inadequate treatment will adversely affect the functioning of the

wrist. Orthopaedic surgeons are often challenged in their decision making ability in this regard. Treatment is influenced by the quality of bone⁵. In view of the challenges posted by this notorious fracture, we at our institute have conducted a study to evaluate /compare the effectiveness of surgical and conservative management of these extra articular distal radius fractures. The study was intended to draw conclusions regarding the choice to be made while dealing with these displaced extra articular distal radius fractures. A total of 342 cases of extra articular distal radius fractures have been included in our study spanning over a period of three years i.e. from Jan 2014 to June 2017. Factors like age, sex, socio economic status and occupation were taken into consideration and conclusions were drawn.

MATERIAL AND METHODS

A prospective study was conducted at our institute for a period of three years i.e. from Jan 2014 to June 2017. A total of 342 patients with extra articular distal radius fractures who attended our institute and satisfied the criteria were included the study. Patients below the age of

15 were excluded from the study as it a universal practice to treat them conservatively. Patients who sustained intra articular fracture and those with comminution were excluded from the study. AO 23 A (1, 2 and 3) type of distal radius fractures were included in the study.

Inclusion Criteria

- Patients ≥ 15 years
- Extra-articular AO 23 A (1,2 and 3) type radius fractures

Exclusion Criteria

- Open fractures
- Multiple trauma
- Other fractures of the affected limb
- Patients with poor wrist function prior to management
- Patients with metabolic disorders, connective tissue problems etc.

Mode of treatment - two treatment modalities considered for treating this AO 23 A type distal radius fractures are conservative and surgical. Conservative management included standard below elbow pop/fibre optic cast application with or without manipulation. Manipulation was performed either by intra articular injection of 1% xylocaine (10 – 20ml) or under general anaesthesia. Following manipulation checked under c arm, below elbow cast was applied using POP or fibre optic material based on the affordability of the patient. Operative management was carried out under anaesthesia (either brachial block or general). Surgical management included closed manipulation and percutaneous k wire fixation or open reduction and internal fixation using T plate or ellis plate. Ellis plate was rarely used in our study. Manipulation and external fixation was used in some patients. Patients above 15 years of age with extra articular distal radius fracture were included in the study. Preliminary immobilization of the fracture with doubtful vasculature following trauma was achieved by manipulative reduction under intra articular anaesthesia. A splint was provided for all cases. Surgical intervention was carried out after PAC. On an average surgery was performed between 3rd to 5th day following trauma. Post operative rehabilitation: For conservatively managed cases period of immobilization was between 4-8 weeks (on an average around 5 weeks). During this period patients were asked to perform active movements of the fingers, elbow and shoulder of the involved side. This is useful in maintaining circulation of the affected forearm and in preventing shoulder hand syndrome. Following removal of the cast active movements of the wrist and elbow were carried out to restore functioning of the wrist. Stress ball followed by hand grip strengtheners were used to improve the patients hand grip. Patients treated surgically were Immobilized till suture removal (tenth

post operative day) and some splint was given following suture removal. External fixator was retained for around 4-6 weeks. 149 of the total cases were operated and 193 of the cases were treated conservatively. 36% of the male patients and 49% of the female patients were operated. Follow up: the maximum follow up period was three and a half years. Average follow up period was around 20 months. Follow up included serial radiological images taken on day one, 1 week, 2 weeks, 6 weeks, 3,6, 12 months and at the end of 2 years. Clinical /Functional evaluation of the patients was done using Disability Arm Shoulder Hand Score (DASH), Patient-Rated Wrist Evaluation score (PRWE), quality of life, pain, range of motion, radiological parameters and complications. Based on the function at the wrist, of the fingers and pain relief patients were graded into four categories as excellent, good, fair and poor. Assessment of the patients was carried at the end of 9 months, 24 months and three years post management (conservative and surgical).

RESULTS

Total number of patients included in the study is 342. Around 18 patients were lost in the follow up and were excluded from the study (14 conservative and 4 surgical). 149 (43.5%) of the total patients were males and 193 (56.5%) were females. 42 cases (12.23%) were in the age group of 16 – 30 years. 47 of the case (13.75%) age between 31-40 years. 56 cases were of the age group 41 – 50 years. 71 of the case between 51 – 60 years. 297 of the patients are above 60 years. 55.8% of the cases involved the right side, while 44.2% were of the left side. Socio economic stratification of the patients is as follows – 35 cases were of affluent society, 68 cases belonged to higher middle class and 93 cases belonged to lower middle class. The bulk of cases i.e. 146 cases (42.69%) were poor. Grading of the results – ‘Excellent’ was awarded to patients with more than 90% of movements at wrist, full hand grip and no pain. Patients with 75% to 90% of movements at wrist, good hand grip and minimal discomfort were ranked as ‘good’. Patients with 40% to 75% of wrist function, inability to clinch fist and bearable pain were rated to have ‘fair’ outcome. Poor outcome was considered when the function of the wrist was less than 40%, minimal finger movement and unbearable pain. Outcome assessment done at the end of nine months a) for conservative management showed that % of the patients had excellent result, % good outcome, % did fair and % had poor outcome. b) For surgical management showed that % of the patients had excellent result, % good outcome, % did fair and % had poor outcome. Outcome assessment done at the end of 24 months a) for conservative management showed that % of the patients had excellent result, % good outcome, % did fair and %

had poor outcome. b) For surgical management showed that % of the patients had excellent result, % good outcome, % did fair and % had poor outcome. Outcome assessment done at the end of three years a) for conservative management showed that % of the patients had excellent result, % good outcome, % did fair and % had poor outcome. b) For surgical management showed that % of the patients had excellent result, % good outcome, % did fair and % had poor outcome

DISCUSSION

Functional reduction is elemental for treating extra articular distal radius fractures. Restoration of length, alignment and rotation are essential to attain functional reduction. Forearm functions as a single articular unit. Improper reduction of these fractures will adversely affect wrist function. Both surgery and conservative management aim to restore the function. Age, bone quality, severity of injury, fracture pattern and co morbidities all effect the choice of treatment. The treatment includes closed reduction and casting in minimally displaced fractures to open reduction and internal fixation in more complex fractures. Surgery allows early rehabilitation of the patient⁶ There is no uniformly accepted treatment for these fractures.^{7,8} Radiological reduction may be an indicator of outcome.⁹ Radiocarpal articulation also is a useful determinant of the result¹⁰. Long term results of both surgical and conservative management show no significant difference^{11,12}. Diaz-Garcia *et al.* Meta analysis showed no significant difference in the outcome of surgical or conservative management irrespective of the radiological picture. In fact complication rate was high among the surgically treated group. Arora *et al* compared the outcome following surgery and conservative management and found no significant difference. Various studies conducted in the recent past reveal that surgical treatment is no superior to conservative management in the long run.

CONCLUSION

Management of AO 23 A type radius fractures involves conservative and surgical options. Initial evaluation of the outcome at the end of one year swings the pendulum in favour of surgical management. With time i.e. at the end of three years this superiority is obscure and irrelevant as the outcome of both surgery and conservative

management is no different in the long run. Cost and complications related to surgery may sound as an unnecessary burden levied on to the patient by the surgeon in the guile of advancement.

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