



CLINICAL STUDY OF SURGICAL MANAGEMENT OF MONTEGGIA FRACTURE DISLOCATION IN ADULTS

Dr P. Archana Babu

Assistant Professor, Dept of Orthopaedics, Kurnool Medical College

Dr K. Laalasa*

Orthopaedics Resident, Kurnool Medical College *Corresponding Author

Dr K. Suman kumar

Orthopaedics Resident, Kurnool Medical College

Dr. C. Venkappa

Orthopaedics Resident, Kurnool Medical College

Dr. Chandan S

Orthopaedics Resident, Kurnool Medical College

ABSTRACT Monteggia fracture dislocation is among the most widely recognized by orthopaedic surgeons largely because of notoriously poor results associated with treatment of these injuries in adults. The accepted management for Monteggia fracture dislocation is open reduction and internal fixation using various types of compression plating for ulna and closed reduction of radial head. The present study is regarding surgical management of Monteggia fracture dislocation in adults and to study the advantages and complications of surgical management.

It is a prospective study which was carried out from September 2018 to February 2020 at Government General Hospital, Kurnool. In this study period 20 cases of Monteggia fracture dislocation in adults were treated by open reduction and internal fixation using AO 3.5mm dynamic Compression Plate of ulna with closed reduction of radial head.

In our series, majority of the patients were males, middle aged, with road traffic accidents being the commonest mode of injury. Most of the cases were type-I

fracture-dislocation according to Bado's classification. Upper limb was immobilized in 110-120 degrees of flexion of the elbow with forearm in supination to prevent radial head redislocation. Excellent or full range of mobility of elbow and wrist joints was present in 13 patients (65%), 6(30%) satisfactory results, 1 (5%) unsatisfactory results, with no cases of failure.

KEYWORDS : Monteggia fracture dislocation in adults, Dynamic Compression Plate, Open reduction and internal fixation of ulna fracture, closed reduction of radial head.

INTRODUCTION

"Giovanni Battista Monteggia" of Milan in 1814 published his classical description of the fracture that is associated with his name Monteggia fracture¹

Monteggia-dislocations are rare injuries that comprise less than five percent of all forearm fractures. These fractures have variety of complications that are unique to this lesion including error in diagnosis, redislocation of radial head and radioulnar synostosis.

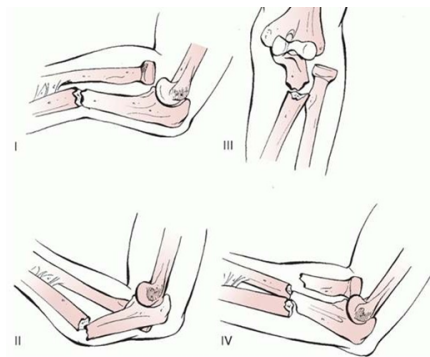
In the past, closed reduction and plaster cast application was the treatment for Monteggia lesions and treatment of radial head dislocation has been controversial. Bohler stated that all Monteggia fracture could be treated nonoperatively².

However various studies conducted on Monteggia lesions showed that results were poor if conservative management is opted. With various complications like malunion or nonunion of ulna, recurrent radial head dislocation and posterior interosseous nerve palsy. So keeping this in consideration it has become important to intervene surgically. Careful diagnosis and prompt, adequate treatment are recommended for this potentially treacherous injury. The active mobilization after the surgery will restore the patient to normal function as early as possible. Active movements not only prevent the tissue from fracture disease but also greatly influence the quality and rapidity of fracture union.

Goal of treatment of Monteggia fracture is anatomic reduction of radial head together with reduction and fixation of ulna.

Open reduction and internal fixation of ulna with dynamic compression plate and screws not only prevents malunion or nonunion but achieves rapid union of fracture site.

Bado classified Monteggia lesions into four distinct categories.



- Type-I - Fracture of the ulnar diaphysis at any level with anterior angulation at the fracture site and an associated anterior dislocation of the radial head
- Type-II - Fracture of the ulnar diaphysis with posterior angulation at the fracture site and a posterolateral dislocation of the radial head.
- Type-III- Fracture of the ulnar metaphysis with a lateral or anterolateral dislocation of the radial head.
- Type-IV - Fracture of the proximal third of both the radius and ulna at the same level with an anterior dislocation of the radial head

AIM OF THE STUDY

The aim of this study is to evaluate the surgical management of Monteggia fracture dislocation.

OBJECTIVES OF THE STUDY

- 1) To study the functional outcome of Monteggia fracture-dislocation in adults by surgical management.
- 2) To know the advantages and complications of surgical procedure done for Monteggia fracture-dislocation in adults.

MATERIAL AND METHODS

The present study consists of 20 cases of Monteggia fracture

dislocation in adults treated by 3.5mm Dynamic compression plate and screws in the department of Orthopaedics, Government General Hospital, Kurnool, during the study period (September 2018 to February 2020)

INSTRUMENTS AND IMPLANTS USED:

Six holed Narrow 3.5mm DCP of varying length, 3.5mm universal drill guide/DCP drill guide , 3.5 mm drill sleeve system , Drill bits of 2.5 mm

Inclusion criteria:

All male and female patients between the age group 21-70 years presenting with various types of fracture dislocation.

Exclusion criteria:

- 1) Patients less than 21 yrs and more than 70 yrs. of age.
- 2) Pregnant women.
- 3) Patients who are unfit for surgery

RESULTS :

The present study consists of 20 cases of Monteggia fracture dislocations in adults treated by Closed reduction of radial head with open reduction and internal fixation of ulna by Dynamic compression plate and screws.

All the cases were simple fracture dislocations

1. AGE INCIDENCE

The age of these patients ranged from 21-70 years with fracture dislocation being most common in 2nd and 3rd decade and average of 35.9 years

In this series 7 (35%) patients were between 21-30years, 8(40%) patients between 31-40 years, 3 (15%) between 41-50 years, 1(5%) patient between 51-60 years and patients above 60 years were 1 (5%)

2. SEX INCIDENCE

Out of 20 patients 11 (55%) were male and 9 (45%) were female showing male preponderance with ratio M:F - 1.2:1.

3.SIDE OF INVOLVEMENT

In this series, Monteggia fracture-dislocations on right side of the patient in 12 (60%) and left side of patients in 8 (40%) cases.

4.MODE OF INJURY

In the present study there were 11 (55%) patients with road traffic accidents, 8(40%) Patients with fall and 1(5%) patient with assault.

5. TYPE OF FRACTURE

In the present study, 14 (70%) of the cases were of type I Bado's classification, 4(20%) of cases type III, 2 (10%) type IV and none in type II

6. DURATION OF FRACTURE UNION:

The fracture was considered united when clinically there was no tenderness and no subjective complaints, radiologically when the fracture line was not visible.

Fractures, which healed 6 months later without, an additional operative procedure was considered as delayed union. Fractures which did not unite after six months or that needed additional operative procedure to unite was considered as nonunion.

In the present study, 15 (75%) patients had sound union in less than 4 months, 5 (25%) had union between 4-6 months and no patient developed nonunion

7.RANGE OF MOTION

TABLE - 1

Range of motion	No. Of cases	Percentage
Excellent	13	65
Good	6	30
Fair	1	05

8. FUNCTIONAL OUTCOME

Based on Anderson et al, scoring system (1975), the functional outcome is evaluated into

TABLE - 2

Results	Union	Flexion/ extension at elbow joint	Supination & pronation
Excellent	Present	<10° loss	<25% loss
Satisfactory	Present	<20° loss	<50% loss
Unsatisfactory	Present	>20° loss	>50% loss
Failure	Non union with / without loss of motion		

TABLE - 3

Results	No. Of cases	Percentage
Excellent	13	65
Satisfactory	6	30
Unsatisfactory	1	05
Failure	0	0

9. COMPLICATIONS

Intraoperative complications:

There were no cases of intra operative complications.

Postoperative complications:

Superficial infection: Three patients developed superficial infection and treated by IV antibiotics

DISCUSSION

Monteggia fracture-dislocations in adults is a treacherous condition to treat. Fracture dislocations have been known as one of the difficult fractures known to Orthopaedicians since the results of treatment of these fractures are notoriously poor and have been associated with various complications. Although historically Monteggia injuries have been treated by closed manipulations and casting, closed methods are now considered to be satisfactory only in paediatric patients. Bado and Evans all used closed reduction and casting, but Speed and Boyd found that this method did not produce optimum results in adults. Most recent authors like Anderson, Boyd et al and Reckling recommend open reduction and compression plate fixation of ulna and closed reduction of radial head. These fractures have been called "Fracture of Necessity", implying that it is mandatory to treat them by open reduction and internal fixation of ulna with closed reduction of radial head in fresh cases. This is achieved by open reduction and internal fixation of ulna with dynamic compression plate and screws.

The present study was conducted to evaluate functional outcome of Monteggia fracture dislocation by surgical treatment using 3.5mm dynamic compression plates and screws.

CONCLUSION

The present study was undertaken to evaluate the type of Monteggia fracture - dislocation and functional outcome after closed reduction of radial head and open reduction and internal fixation of ulna and its complications.

From the present study it is concluded that the technique of early closed reduction of radial head and open reduction and internal fixation of ulna using minimum of six holed AO 3.5mm dynamic compression plate is a simple and effective means of treating Monteggia fracture dislocation in adults with excellent functional outcome. The commonest type of Monteggia fracture dislocation in adults according to Bado's classification is type-1.

REFERENCES

1. Rountt, Chip M.L., "Forearm fractures". Chapter-14, Orthopaedic trauma protocols, Sigvard T. Hansen, Jr. and Marc F. Swionkowski, 1993 : 117-119pp.
2. Shew-Ping Chow, Frankie Leung, "Fractures of shafts of radius and ulna", Chapter-31, Rockwood and Green's Fracture in adults, Vol-I, 7th Edn, Edt. Robert W. Bucholz , Charles M. Court-brown, James D. Heckman and Paul TornettaIII; Lippincott Williams and Wilkins, Philadelphia, 2010-900-885-888.
3. Andrew H, Crenshaw Jr Edward A.Perez, "Fractures of shoulder girdle, arm and forearm". Chapter-54, Campbell's operative orthopaedics, Vol.3, 11th Edn, Canale S. Terry, James H. Beaty, Mosby, 2008 : 3420- 3424.
4. Kenneth A. Egol, Kenneth J.Koval, Joseph D.Zuckerman, "Fractures of Radius and Ulna shaft" Chapter-21, Handbook of fractures, 4th edition, Kenneth A.Egol, Kenneth J.Koval, Joseph D.Zuckerman,Lippincott Williams and wilkins, 2010 : 262-265.
5. Michael W Chapman,Bruce A. Mallin and T David Sisk, : "Fractures and dislocations of the elbow and forearm". Chapter-34, operative orthopaedics, Vol.1, 3nd Edn, Chapman, Michael W ,Lippincott Company, Philadelphia, 2001 : 497-501.
6. Anderson, Lewis D, et al. Compression plate fixation in acute diaphyseal fractures of the radius and ulna. J Bone Joint Surg Am, 1975; 57-A (3): 287-303.
7. Kloen P, et al. Bilateral Monteggia fractures. Am J Orthop, 2003;32 (2) : 98-100.
8. Concari G, et al. Proximal forearm fractures : Our clinical experience Acta Biomed Ateneo Parmense, 2003;73 (5-6) : 75-84. ta Biomed Ateneo Parmense, 2003;73 (5-6) : 75-84.
9. A. Benjamin. Injuries of the forearm. Chapter-23 in Watson - Jones; Fractures and joint injuries, by F.N. Wilson, Vol.II, 6th Edn, Churchill Livingstone, 1982 : 675-678pp.