

**CLINICAL OUTCOME OF FRACTURES OF PROXIMAL HUMERUS TREATED BY
CONSERVATIVE AND OPERATIVE PROCEDURES****DR.G.KISHORE ROY¹ AND DR.K.R.V.KARTHIK²**¹*Prof & HOD, ASRAM Medical College,*²*Resident in Orthopaedics***ABSTRACT**

Proximal humerus fractures are on the rise due to osteoporosis by virtue of aging population besides rapid mode of transportation. Fractures of the proximal humerus have exponential increase after 40 years. For most undisplaced and minimally displaced fractures of the proximal humerus non-surgical management is preferred because fracture occurs in a metaphyseal bone and healing time is short. Displaced fractures in osteopenic bone, the techniques of internal fixation, with less disruptive soft tissue dissection, and minimal fixation with k wires. To study the clinical outcome of fractures of proximal humerus according to Neer's classification treated by conservative (POP slab) and surgical procedures (k wiring, cancellous screws & plating). Depending upon the patient's age, functional needs and radiological classification of fracture it was decided whether to treat the fracture conservatively and surgically. From this sample study, we conclude that the results of both conservative and surgical methods of treatment are satisfactory with appropriate patient selection and treatment procedure. That is :-Undisplaced fractures of the proximal humerus and undisplaced tuberosity fractures can be satisfactorily treated conservatively with J slab and gives good results.-Displaced greater tuberosity fractures can be preferably fixed internally with cancellous screws after open reduction.

KEY WORDS: Treatment of Proximal Humerus Fractures, Neer's Classification**DR.G.KISHORE ROY**

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INTRODUCTION

Proximal humerus fractures are on the rise due to osteoporosis by virtue of aging population besides rapid mode of transportation and fast life style of living. Their incidence is about 4-5%¹ of all fractures and 30-40% of all humeral fractures. Fractures of the proximal humerus follow a unimodal elderly distribution curve with a low incidence under the age of 40 years and an exponential increase thereafter². There are marked gender differences, with approximately 70% to 80% of fractures occurring in women. Fractures in adolescents and younger adults are less frequent but usually produced by high-energy trauma, mainly from road traffic accidents, sports injuries, fall from height, or gunshot wounds. In three quarters of all patients, the injury is due to low-energy domestic falls, and the risk of fracture is increased in sedentary individuals with low bone mineral density. External force generated by the intrinsic shoulder musculature, and the quality of the proximal humeral bone stock, determines the initial fracture configuration and consequent fracture displacement. For most undisplaced and minimally displaced fractures of the proximal humerus non-surgical management is preferred because fracture occurs in a metaphyseal bone and healing time is short. Displaced fractures in osteopenic bone, techniques of internal fixation, with less disruptive soft tissue dissection, and minimal fixation with wire and non-absorbable sutures have been successful with a low complication rate. AO type locking compression plates are also being used, but they require more soft tissue stripping and may lead to infection and marked stiffness of shoulder. Severely comminuted, displaced neglected fractures in elderly patients may sometimes need shoulder arthroplasty. Most studies claim reasonably satisfactory results by both conservative and operative methods. However some of these cases are prone for morbidity and undesirable sequelae such as malunion, Avascular necrosis of humeral head, non union, and marked stiffness of shoulder. Therefore, the successful treatment of a proximal humerus fractures demands knowledge of anatomy, surgical indications, appropriate techniques and suitability of implants available at present.

MATERIALS AND METHODS OF STUDY

The present study consists of the patients admitted to orthopaedic department of ASRAM Hospital between MAY 2012 and SEPTEMBER 2014. A total of 1336 fracture cases were treated in Department of Orthopaedics, Alluri Sitarama Raju Academy of Medical Sciences, Eluru during this period. Of these 382 were upper limb fractures. The Humeral bone fractures were 89(23.2%) and proximal humeral fractures were 35. An ethical committee clearance was obtained by the ethical committee in our institute and a written informed consent was taken from all the patients who participated in the study. After excluding the patients who come under exclusion criteria, 30 patients were selected for detailed

study. Surgical treatment in our study was limited to adults and all pediatric fractures were subjected to conservative treatment and hence pediatric proximal humeral fractures were not considered for our study. Among the 30 patients, 20(66.6%) were males and 10(33.3%) were females. Most common age of these fracture are 40-60yrs. The usual mechanism of injury was Road traffic accidents (66.6%). Right sided Humeral fractures were more compared to left side.

Inclusion criteria

1. All closed proximal humeral fractures.
2. 20 years of age and above.
3. Both Males and Female

Exclusion criteria

1. Pathological fractures.
2. Open fractures.
3. Age less than 20 years.

All patients on admission were clinically assessed and stabilized hemodynamically. Radiographs of shoulder were taken in two planes, namely anteroposterior and lateral views. Preliminary J-Slab was applied to the fractured limb and immobilized to relieve pain and discomfort. Depending upon the patient's general condition, age, profession and radiological classification of fracture it was decided whether to treat the fracture conservatively or surgically. In patients with undisplaced fracture or minimally displaced fracture a conservative line of treatment was adopted. i.e. out of 30 patients 18 patients have undergone conservative treatment with J slab. Gentle exercises were started after 6 weeks. Clinical and radiological union were evaluated by Neer's scoring system every 6 weeks for the first 6 months and then 1 year after surgery. In patients with fragments displaced > 1cm or angulated >45degree, good bone quality and with no co-morbid conditions surgical fixation was done. out of 30 patients, 12 patients have undergone surgical fixation. 6 patients by percutaneous k wires, 3 patients by cancellous screws and 3 patients by plating proximal humerus through delto pectoral approach. Our goal of internal fixation was stable reduction allowing early motion. Check X rays were taken on 2nd post operative day and discharged following suture removal after 10 days. Patients were advised follow up every 6 weeks for the first 6 months and then 1 year after surgery. They were taught shoulder mobilisation exercises in every visit. Clinical and radiological union results were evaluated by Neer's shoulder scoring system.

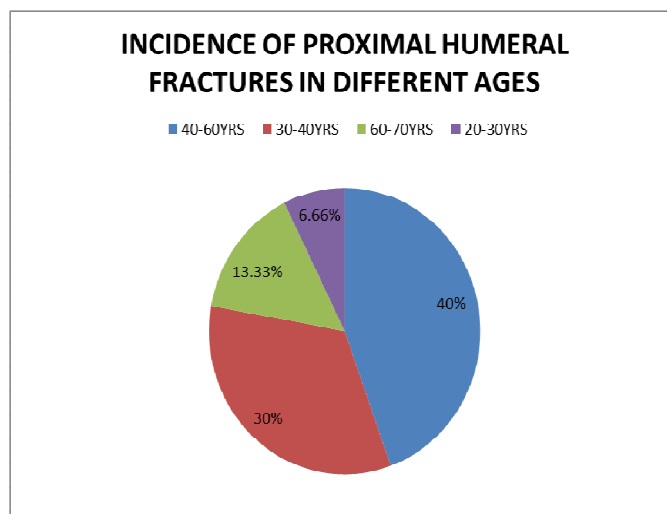
RESULTS

We have treated 30 patients of proximal humerus fractures either conservatively or surgically and assessed the outcome using Neer's shoulder scoring system. Out of 30 patients 18 were treated conservatively with j slab, 6 were treated with percutaneous k wires, 3 were treated with cancellous screws and 3 were treated with plating. Most common age group of patients in this study was 40-60 years with average age being 50 years compared to 45 years in Gerber.C et al¹⁷ study. In this study there is

significant male dominance with ratio of 2:1. Gerber C etal¹⁷ (1.35:1), Sameer Agarwal etal¹⁸ (1.7:1), GN Kiran kumar etal¹⁹ and Chandan kumar etal study²¹ also reported male dominance. But according to Court-Brown etal⁵ (1:2.3), Kenneth J.koval⁹ (0.5:1) and Shang LP etal study¹⁹ there is female dominance. Most common type of fractures in this study was 2 part fractures (17 out of 30 patients) followed by undisplaced fractures (8 out of 30 patients). In Dolfi Hersovici²³ (20 out of 40 patients), MA Fazal etal²² (13 out of 27 patients) and Shang LP etal study¹⁹ also most commonly reported type was 2 part fractures, where as Neer² (43out of 117 patients) Chandan kumar etal²¹ and Francesco Muncibi etal²⁴ (31 out of 41 patients) reported most common type was 3 part fractures, followed by 2 part fractures. Majority (18) of the patients in our study i.e) 60% were treated

conservatively and the rest surgically (K wires, cancellous screws, plating). MA Fazal etal²², GN Kiran kumar etal¹⁹ and Francesco Muncibi etal²⁴ studies have treated all the patients by Philos locking plate and percutaneous K wire respectively. 30% out of 30 patients in this study had evidence of osteoporosis. MA Fazal etal²² also reported osteoporosis was one of the common cause for increasing incidence of proximal humerus fractures. Most common complication encountered in this study was Stiffness of shoulder which was present in 9 out of 30 patients. Other complications were Malunion (4), pin tract infection (2) and Delayed union (1) where as in Ramchander Siwach²⁵ and Chandan kumar etal²¹ study there was no case of shoulder stiffness and the most common complication in their study was melanin.

OBSERVATIONS



2. TYPE OF FRACTURE:(NEER'S DISPLACED FRACTURE)

TYPE	2 PART	3 PART	4 PART	ARTICULAR SURFACE
Anatomical neck	-	-	-	-
Surgical neck	11	4	-	-
Greater tuberosity	5	-	-	-
Lesser tuberosity	-	-	-	-
Fracture dislocation	1	1	-	-

3. MANAGEMENT

MODE OF TREATMENT	NO OF PATIENTS
CONSERVATIVE	18
SURGICAL	12
a) Percutaneous k wires	6
b) Cancellous screws	3
c) ORIF with plating	3

4.FRACTURE UNION: Average time for union in present study is **16 WEEKS**.

5. COMPLICATIONS

COMPLICATIONS	NO OF PATIENTS	PERCAENTAGE
Stiffness of shoulder	09	30%
Malunion	04	13.33%
Delayed union	01	3.33%
Non union	00	0%
Pin tract infection	02	6.66%

DISCUSSION

Proximal humerus fracture is the second most common site of fracture in upper limb after distal radius. Fractures occur mainly due to low energy trauma in osteoporotic elderly individuals. Treatment is a challenging affair due to associated co morbidities in this age group of patients. Younger individuals sustain proximal humerus fractures due to motor vehicle accidents or sports injuries. Treatments of proximal humerus fractures still remain a matter of controversy. The present series is a prospective study undertaken in the department of Orthopaedic surgery at ASRAM Medical College between May 2012 and September 2014. 30 patients with proximal humerus fractures were selected for this evaluation; out of which 18 patients were treated conservatively due to stable fracture configuration and 12 patients were subjected to surgical stabilization. The conservative method of treatment included simple arm pouch immobilization to J slab application and many fractures healed with the above said conservative procedures. Ring et al reported excellent clinical results with low rate of complications in elderly patients treated with conservative methods when compared to ORIF, pinning and joint replacement. Among the 12 patients treated surgically, 6 were treated with closed reduction and percutaneous pinning 3 patients by cancellous screws and 3 patients by locking plate. In our study carefully selected and treated both by conservative and operative means, resulted in satisfactory outcome. Soft tissue healing was obtained in all the patients and bony union secured with reasonable

range of shoulder movements. The above observations matched with the results of Richard Hawkings et al series²⁶. Final outcome in this study was Excellent in 14 out of 30 cases (46.66%) Satisfactory in 13 out of 30 cases (43.33%) and poor in 3 out of 30 cases (10%), where as in Richard J Hawkins²⁶ study and GN Kiran kumar etal study¹⁹ final outcome was Excellent in 8 out of 15 cases (53.3%) and 25 out of 49 cases(51.1%) respectively.

CONCLUSION

From this sample study, we conclude that the results of both conservative and surgical methods of treatment are satisfactory with appropriate patient selection and treatment procedure. That is-Undisplaced fractures of the proximal humerus and undisplaced tuberosity fractures can be satisfactorily treated conservatively with J slab and gives good results-Displaced greater tuberosity fractures can be preferably fixed internally with cancellous screws after open reduction.-Young adults with displaced 2 part surgical neck fractures, if stable after closed reduction can be treated conservatively with J slab. If unstable it is ideal to do internal fixation(closed or open) with k wires or plating-Displaced 3 part fractures need anatomical reduction and internal fixation with k wiring or plating depending upon the bone quality.- Rehabilitation also plays an important role in the management of these fractures.

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