

# Clinical profile of patients with displaced proximal humeral fracture attending tertiary care hospital

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## Abstract

Most fractures of proximal humerus occur through osteoporotic bones in older patients. High energy trauma may result in such fractures at any age. Most common mechanism is a simple fall on the arm. Strong muscular contraction is the proposed mechanism for greater Tuberosity fractures. This is seen in cases of electric shock or seizure. Once the fragments separate muscle forces contribute to their displacement. The shaft is generally drawn anteriorly and medially by the pectoralis major. Once the patient is fit for surgery, will under goes open reduction and internal fixation with proximal humerus interlocking system(PHILOS)plate and screws under brachial plexus block or general anesthesia, Patient will be placed in Beach chair. All the patients were approached by Deltopectoral approach, cephalic vein is dissected and retracted, internervous plane between deltoid and biceps tendon. Once fracture site is exposed, fracture is reduced provisionally with K wires and checked in fluoroscopy. And final fixation done with PHILOS plate and position is confirmed in fluoroscopy. The mode of injury commonly observed in our series was road traffic accidents accounting for 23 (76%), 7 (24%) patients had a history of fall. These observations was found to be consistent with the studies in literature which revealed 19 (45%) road traffic accidents, 20(50%) history of fall.

**Keywords:** Displaced proximal humeral fracture, philos, road traffic accidents

## Introduction

Humerus is the longest and largest bone of the upper limb. It comprises of upper extremity also known as proximal humerus, shaft and lower extremity. The proximal humerus is uniquely adapted to allow for the large range of motion of the shoulder which is ball and socket type of joint <sup>[1]</sup>.

Most fractures of proximal humerus occur through osteoporotic bones in older patients. High energy trauma may result in such fractures at any age. Most common mechanism is a simple fall on the arm. Strong muscular contraction is the proposed mechanism for greater Tuberosity fractures. This is seen in cases of electric shock or seizure. Once the fragments separate muscle forces contribute to their displacement. The shaft is generally drawn anteriorly and medially by the pectoralis major. Greater tuberosity may be pulled posteriorly by infraspinatus and superiorly by supraspinatus. The subscapularis tends to retract medially an isolated lesser tuberosity fracture or to rotate internally a head segment to which only the lesser tuberosity remains attached <sup>[2, 3]</sup>.

Most of proximal humerus fractures occur as a result of fall usually in elderly with osteoporotic bones. In young patients, it results from high energy trauma <sup>[4]</sup>.

On examination there may be extensive ecchymosis and swelling seen but lacerations and open fractures are rare. There may be anterior bulge below the corocoid in cases of anterior dislocation. There may be posterior bulge and anterior sulcus seen in case of posterior dislocation <sup>[5, 6]</sup>.

On palpation there will be tenderness around the shoulder and movements may be associated with creptations.

Sensation as lateral aspect of shoulder will give the information about integrity of axillary nerve.

### Methodology

The proposed study is a prospective study included 30 cases presenting with proximal humeral fractures which were evaluated clinically and radio logically. The fractures were classified by using Neer's classification.

### Inclusion criteria

- **Age group:** >18 years.
- **Gender:** Male and female patients.
- Displaced two part, three part and four part fracture of proximal humerus.
- Displaced proximal humerus fractures with an angulation of articular surface of more than 45 degrees, and displacement between the major fracture fragments more than 1 cm or a fracture with valgus impaction (for great or tuberosity it is 5mm displacement and 25 degrees of angulation).
- Patients who are willing to participate in the study.

### Exclusion criteria

- Children and adolescent patients <18 yrs.
- Compound fractures.
- Undisplaced fractures.
- Pathological fractures.
- Fractures which are previously managed conservatively.
- Fractures associated with neurovascular deficits.
- Patients not willing for surgery.
- Routine investigations will be carried out in order to get fitness for surgery.
- Consent of the patient will be taken.

Once the patient is fit for surgery, will under goes open reduction and internal fixation with proximal humerus interlocking system(PHILOS)plate and screws under brachial plexus block or general anesthesia, Patient will be placed in Beach chair. All the patients were approached by Deltopectoral approach, cephalic vein is dissected and retracted, inter nervous plane between deltoid and biceps tendon. Once fracture site is exposed, fracture is reduced provisionally with K wires and checked in fluoroscopy. And final fixation done with PHILOS plate and position is confirmed in fluoroscopy.

### Results

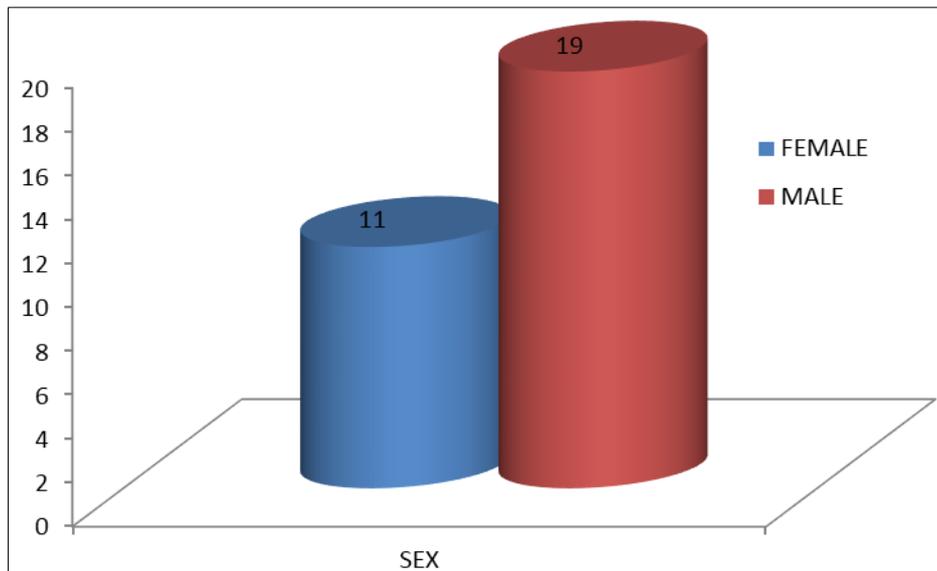
In our series of thirty patients 3 are in the age group of 21-30(10%) 8 are in the age group of

31-40(27%), 6 are in the age group of 41-50(20%) 7 are in the age group of 51-60 (23%) and SIX are in the age group of 61-70(20%). The youngest patient is 25years and oldest is 65 years, the average age is 46.6 years.

**Table 1:** Age distribution

Age	No of patients	Percentage
20-30	3	10
31-40	8	27
41-50	6	20
51-60	7	23
61-70	6	20
Total	30	100

In our study 19(63%) are male patients and 11(37%) are female patients. The ratio of Male to Female is M: F=1.7:1. The incidence is more in males is due to most cases in our study are young patients sustained fracture due to RTA.



**Fig 1:** Sex Distribution

The most common mode of injury observed in our series was road traffic accident. It accounted for 23 patients (76%). The next common cause was history of fall accounting for 7 patients (24%).

**Table 2:** Mode of injury

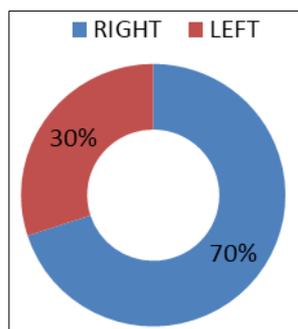
<b>RTA</b>	23	76%
<b>Fall</b>	7	24%

In our study series the most common type of fracture observed was 2 part fracture accounting for 11 of 20 patients (55%).The next common being 3 part fracture accounting for 7 of 20 patients (35%). In one patient it is 4 part fracture (5%). The fracture dislocation was observed in one patient (5%).

**Table 3:** Type of Fracture

Two part	13	43%
Three part	11	37%
Four part	06	20%

In our present study fracture occurred on right side in 21(70%) patients and on left side in 9(30%) patients.

**Fig 2:** Side affected

Apart from neurovascular injury (exclusion criteria) the following injuries are associated in our patients

**Table 4:** Associated injury

Injury	No of patients
Distal end radius fracture	2
Olecronon fracture	1
Subtrochanteric fracture	1

## Discussion

The average age incidence in our series of 30 patients analyzed, ranging between 25 to 70 years was 46.6 years, which is consistent with the age incidence in studies done by Kenneth A. Egol *et al.*,<sup>[7]</sup> (61 years) and the average age incidence in C. Gerber *et al.*,<sup>[8]</sup> study was 44.9 years. In our series 17 out of 30 Patients were below the age of 50 years and hence the average age incidence was 46.6 years in our series.

Regarding sex incidence study of literature reveals predominance of proximal humeral fractures in females in an elderly age group. Studies also reveal that male to female ratio being 1:0.8, in our series the male to female ratio is 2.3:1. The reason for high incidence of males in our series being that the majority of the cases, 17 out 30 were within the age of 50years and 11 among them were less than 40 years of age and all are males. These fractures of proximal humerus have bimodal presentation with adolescents and younger middle age who are more prone for high velocity injuries most common among males forming one group and later these fractures are seen in elderly patients (>50 years) in which cases they are osteoporosis related and most often seen in females.

The mode of injury commonly observed in our series was road traffic accidents accounting for 23 (76%), 7 (24%) patients had a history of fall. These observations was found to be consistent with the studies in literature which revealed 19 (45%) road traffic accidents, 20(50%) history of fall. In another study 12 (75%) had road traffic accident and 04 (25%) had history of fall in a series of 16 cases studied. The high incidence of RTA is more in our study because 11 of 30 patients are below 40 years. The most common mode of injury in young

patients is RTA and in elderly it is DOMESTIC FALL, which is consistent with world literature.

The study of type of fracture in our series revealed 13 (43%) were 2 part fractures, 11 (37%) were 3 part fractures, 6 (20%) was a 4 part fracture. In studies done by Rizwan Shahid *et al.*,<sup>[9]</sup> in a series of 50 patients studied 11 (22%) were part fractures, 21 (42%) were 3 part fractures and 18 (36%) were 4 part fractures. In another study by MA Fazal *et al.*,<sup>[10]</sup> of 27 cases 13 (48%) were 2 part fractures, 12 (44.5%) were 3 part fractures and 2 (7.5%) were 4part fractures indicating that the incidence of type of fracture is nearly consistent with the studies in literature.

## Conclusion

The common mode of injury in these fractures is fall on shoulder in elderly and RTA in young population, anatomical reduction is an essential and determines the outcome in surgical treatment of these fractures, open reduction and internal fixation with Proximal Humerus Interlocking System (Philos) Plate has given good results and it is the implant of choice now a days.

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