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Study of Results of Proximal Humerus Plating in Proximal Humerus Fracture

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ABSTRACT

The purpose of the study is to evaluate and to assess the result of proximal humerus plating in terms of functional and clinical outcomes.

We observe the result of proximal humerus plating in parameters lile Age, Sex, Side of injury, Clinical and Radiological union time and varies immediate/late post op complications

KEYWORDS :

INTRODUCTION

Proximal humerus is relatively less exposed to trauma and account for 4–5% of all the fractures. But proximal humerus fractures are the most common fracture of the shoulder girdle. It is the 3rd most common fracture in elderly. Male to female ratio is 1:2[1]. These fractures are seen in patients of all ages, but they occur more commonly in elderly patients, after the cancellous bone of the humeral neck has been weakened by osteoporosis[2]. Road traffic accidents lead to fractures even in the younger age group. Treatment varies depending on the patient's age & bone quality, surgical team, patient's expectations. The surgery should be carried out as soon as the patients' general condition permits. A delay of several days makes reduction more difficult and a significant delay results in absorption of bone, making secure internal fixation impossible.

As these fractures affect the day-to-day human activities and variable management protocols for these fractures are available with each one having their own supporters and contradictors, we have studied the open reduction and internal fixation of these fractures and evaluated the results in terms of functional as well as clinical outcomes.

AIMS AND OBJECTIVES

- To study the occurrence, mechanism of injury and displacement of various types of fractures.
- To study results of plating as a modality of fixation in proximal humerus fractures.
- To assess the result of proximal humerus plating in terms of functional & clinical outcomes.

Mechanism of injury

1. Fall on outstretched hand
2. Excessive rotation of arm
3. Direct blow over shoulder
4. Metastatic disease with trivial injury
5. Fracture dislocation in electric shock or convulsive episode.

CLASSIFICATION

NEER'S CLASSIFICATION[3,4,5]

1)Minimal displaced fractures
2)Two-part fracture
3)Three-part fracture
4)Four-part fracture

AO CLASSIFICATION

A : Extra-articular unifocal fracture

A1 Extra-articular unifocal tuberosity fracture
A2 Extra-articular unifocal impacted metaphyseal fracture
A3 Extra-articular unifocal non-impacted metaphyseal fracture

B : Extra-articular bifocal fracture

B1 Extra-articular bifocal fracture with metaphyseal impaction
B2 Extra-articular bifocal fracture without metaphyseal impaction
B3 Extra-articular bifocal fracture with GH dislocation

C : Articular fracture

C1 Slightly displaced
C2 Impacted and significantly displaced
C3 Dislocated

METHOD OF COLLECTION OF DATA

- By interview
- By follow up at intervals of 1, 2, 4 and 6 months
- By clinical examination
- By analysing case papers

Selection Criteria:

A: Inclusion criteria:

-- Proximal humerus fractures [Neer's classification: 2, 3 & 4 part]
-- All patients more than 18 years including both sex.
-- All close fractures
--All patients with minimum 6 month follow up.

B: Exclusion Criteria:

-- Medically unfit patients
-- Patients with open physis
-- Shaft humerus fractures with proximal extension
-- Neer's one part fracture
-- Open fractures

Neurovascular injuries

On admission, patient was first examined thoroughly in Primary survey for vital data and other major associated injuries in head, thorax, abdomen or spine along with appendicular injuries and then classified according to neer classification by:

- Anteroposterior (AP) view
- Axillary view

CT scan was done as and when required provided socioeconomic status of the patients permited.

Implants available:

Locking plate:

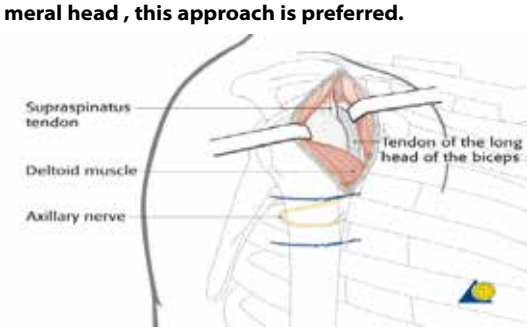
LPHP-locking proximal humerus plate, PHILOS-proximal humerus internal locking osteosynthesis system)

DEFINITIVE MANAGEMENT AND SURGICAL TECHNIQUE FOR humerus PLATING:

Anaesthesia : Regional anaesthesia/general anaesthesia.
Position: supine on ***radiolucent table***

AO PRINCIPLES FOR INTERNAL FIXATION WERE STRICTLY ADHERED TO:
1. Anatomical reduction
2. Stable fixation
3. Preservation of blood supply
4. Early mobilization

APPROACHES[6]:
DELTOPECTORAL: In case of the dislocation of the humeral head , this approach is preferred.



Deltoid split approach: This approach is preferred for fractures without dislocation.

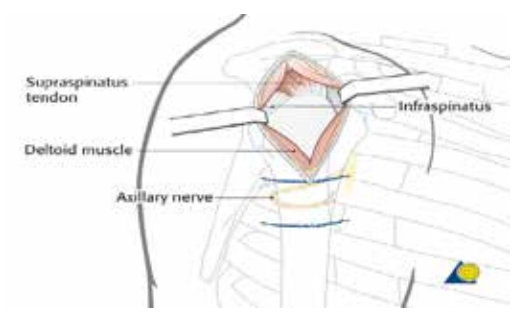


PLATE PLACEMENT:
In our institute we fix the fracture with PHILOS.

1. Plate should be positioned at least 5 mm distal to the upper end of greater tuberosity
2. Plate should be in line with the shaft of humerus.
3. Plate should be at least 2 mm posterior to the bicipital groove thus sparing the long head of biceps.

SCREW INSERTION
- Proximally 4 mm locking cancellous multidirectional screws are applied, and distally simple or locking cortical screws are applied. Atleast three bicortical screws are applied distally.
- Reduction is checked and confirmed under IITV.

CLOSURE:
- Subcutaneous and skin suturing done to provide good closer of surgical wound.
- Radiologically fracture is considered to be united , when the fracture at surgical or anatomical neck becomes fuzzy and then finally disappears and in metaphysial region visible bridging callus is seen in atleast three cortices in anteroposterior and axial view. Clinically fracture is considered to be united, when patient is completely pain free on lifting weight .
- Follow up: patient is asked to come for follow up at 12 to 15 days for stitch removal and then at 1,2,3 and 6 months and then at 1 year from the date of surgery for final follow up. At each follow up patient is assessed clinically and radiologically as per the constant shoulder score[7].

OBSERVATION AND DISCUSSION
In our study the frequency distribution of age it can be concluded that maximum concentration of patients was seen in the age group 35-45.There are 8 subjects in each group with a total of 52% patients between 25-45 yrs of age.

-There are 22(73.3%) males having fracture of humerus in comparison to only 8 females. As a result male preponderance is seen in this study with majority belonging to labourer community.

- left sided fractures without dislocation are common.

- neer part 4 fracture with headsplit were commoner than the rest.

- In our study, all the fractures united. Clinical union always preceded radiological union. This is because, this is cancellos bone where usually union is not a problem but malunion is commonly seen.

- In our study, 52% patients had good to excellent results.

On further evaluating the results of our study, it is observed that 2 part fractures have better outcome than the four part fracture. This could be due to the fact that 4 part fracture is a more complex fracture and its fixation is relatively more difficult than 2 part fractures.

SUMMARY AND CONCLUSION
There is a paradigm shift in proximal humeral fracture epidemiology, with reduction in average age group and increase in frequency of high grade fractures.

Male preponderance is due to the pre-dominant outdoor activity and active professional behaviour. In our society, female patients are mainly involved in household activities.

As there is a substantial increase in the number motor vehicles; there is increased frequency of road traffic accidents in younger active population, which has lead to complex patterns of fracture.

Associated injuries may affect the functional outcome despite satisfactory shoulder function.

Though radiological outcome does not always correlate with the clinical outcome, most of the radiological results are comparable with the clinical results.

Varus collapse is associated with restriction of range of motion and poor functional results.

In conclusion there is an increase in proximal humerus fractrures with complex fracture becoming more common due to hugh velocity trauma which require good understanding of the fracture geometry and also requires high level of technical expertise. PHILOS plate for proximal humerus is a good implant providing adequate stability and provides good results if the anatomy can be reconstructed as close to normal as possible.




3) 55 y f, h/o fall, 1.5 yr f/up

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