

## Original ARTICLE

### Evaluation of cases of Humerous fractures - A clinical study

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#### ABSTRACT

**Background:** Fractures of the proximal humerus account for 5% of injuries to the appendicular skeleton. The present study was conducted to evaluate cases of humerous fractures in adults. **Materials & Methods:** The present study was conducted on 74 cases of humerous fractures of both genders. A thorough clinical examination was performed in all patients. X rays such as PA view and CT scan was done. The reason of fractures and type of fractures were recorded. **Results:** Out of 74 patients, males were 40 and females were 34. The mode of injury was road traffic accident seen in 38, fall in 24 and violence in 12. The difference was significant ( $P < 0.05$ ). The mode of fixation was cancellous screw seen in 38, K wire in 20, plating in 12 and interlocking nail in 4. The difference was significant ( $P < 0.05$ ). **Conclusion:** Humerous fractures are commonly seen in all age groups. In present study there was male predominance and most common mode of injury was road traffic accidents.

**Key words:** Fracture, Humerous, Violence

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#### INTRODUCTION

Fractures of the proximal humerus account for 5% of injuries to the appendicular skeleton. Most are stable, minimally-displaced osteoporotic fractures in the elderly, and are the result of low energy falls. Most patients with these injuries will regain a functional shoulder without operation. Surgery should only be considered in approximately 20% of patients, either because they require better shoulder function or because their fracture is more complex. An ever expanding range of reconstructive options has become available to treat these injuries, each with its advantages and disadvantages. The proximal part of humerus is divided into 4 parts head, greater tuberosity, lesser tuberosity and proximal shaft. The epiphyseal scar (Codman) formed by fusion of 3 ossification centers (head-6 months, greater tuberosity-3 years and lesser tuberosity-5 years) is a weakened area susceptible to fractures by outside force. The most common mechanism of fracture is by fall on outstretched pronated upper extremity. Other mechanisms being direct blow over greater tuberosity, anterior or posterior dislocations of shoulder and avulsion fractures by external rotators. Earlier conservative treatment was more commonly followed, as even great degree of malunion and restricted mobility doesn't produce much disability. Moreover because it occurs in osteoporotic and neglected older

patients surgical management was avoided. The present study was conducted to evaluate cases of humerous fractures in adults.

#### MATERIALS & METHODS

The present study was conducted in the department of Orthopaedics. It consisted of 74 cases of humerous fractures of both genders. All patients were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee. Data such as name, age, gender etc. was recorded. A thorough clinical examination was performed in all patients. X rays such as PA view and CT scan was done. The reason of fractures and type of fractures were recorded. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

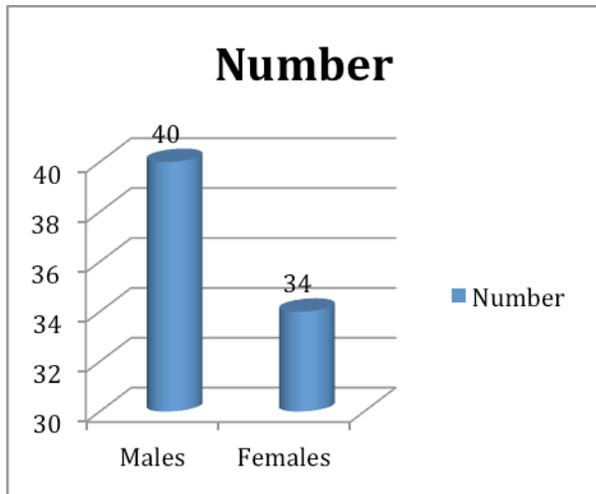
#### RESULTS

**Table I Distribution of patients**

Gender	Males	Females
Number	40	34

Table I, graph I shows that out of 74 patients, males were 40 and females were 34.

**Graph I Distribution of patients**

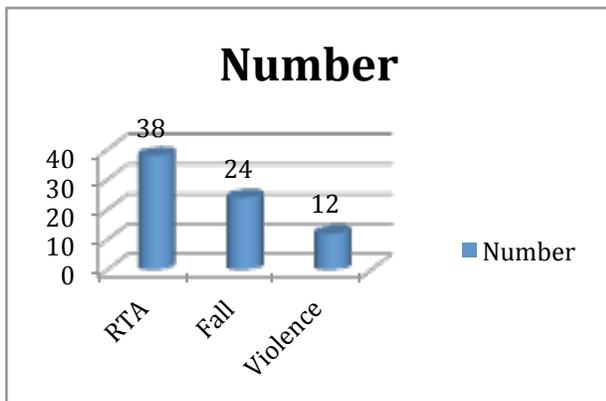


**Table II Mode of injury**

Mode	Number	P value
RTA	38	0.05
Fall	24	
Violence	12	

Table II, graph II shows that mode of injury was road traffic accident seen in 38, fall in 24 and violence in 12. The difference was significant ( $P < 0.05$ ).

**Graph II Mode of injury**

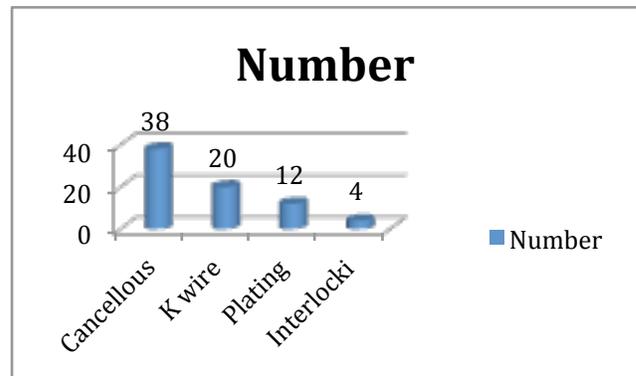


**Table III Mode of fixation**

Mode	Number	P value
Cancellous screw	38	0.01
K wire	20	
Plating	12	
Interlocking nail	4	

Table III, graph III shows that mode of fixation was cancellous screw seen in 38, K wire in 20, plating in 12 and interlocking nail in 4. The difference was significant ( $P < 0.05$ ).

**Graph III Mode of fixation**



**DISCUSSION**

The rotator cuff and shoulder girdle muscles due to their inherent pull create balanced forces on proximal humerus which get disrupted when one or several parts of proximal humerus get fractured.<sup>5</sup> Surgery is performed to preserve articular surface congruency, alignment and vascularity of the humeral head. The basic principle is to achieve an anatomical reduction and restore the medial calcar support. Displaced 3-part proximal humeral fractures quite satisfactorily treated with ORIF and K-wiring in young patients, elderly or infirm with poor bone quality or extensive comminution.<sup>6</sup> Percutaneous fixation is a method of indirect reduction and minimal stable fixation most commonly used to treat 2-part fractures, isolated greater tuberosity fractures or surgical neck fractures.<sup>7</sup>

Early plating provides advantage of anatomical reconstruction of fracture fragments but the disadvantage of extensive soft tissue dissection and lack of proper holding in osteoporotic bone. The proximal humerus internal locking system (PHILOS) is a better option to deal with the problem of screw loosening and secondary screw displacement. It acts as an internal splint and has superior anchorage, particularly in osteoporotic bone, as compared to conventional plates. Implants providing angular stability have lower risk of screw loosening than conventional plates.<sup>8</sup> The present study was conducted to evaluate cases of humerus fractures in adults.

In this study, out of 74 patients, males were 40 and females were 34. Robinson et al<sup>9</sup> conducted a study in which thirty six patients treated operatively and followed up. Average follow-up was 2.5 years. Patients were followed post-operatively at 2 weeks, 6 weeks, 10 weeks and then at 3-month intervals. Radiographs were assessed for fracture healing, changes in fracture alignment, and loose or broken hardware. The patients were functionally assessed with Neer’s point system. No fracture showed X-ray evidence of fracture malalignment. Out of 14 cases treated with cannulated cancellous screw 77% had good to excellent results. All 14 cases of plating had good to excellent results. Half (50%) cases treated with K-wires had poor results. Young patients had excellent end results as compared to old. In patients with early mobilization post operative results were good to excellent.

We found that mode of injury was road traffic accident seen in 38, fall in 24 and violence in 12. The mode of fixation was cancellous screw seen in 38, K wire in 20, plating in 12 and interlocking nail in 4. Jaberg et al<sup>10</sup> reported eight cases in young patients. In five the diagnosis was made at presentation: three had minimal internal fixation using a superior subacromial approach, one had a closed reduction and one a primary prosthetic replacement. All five patients regained excellent function with no avascular necrosis at two years. In three the injury was initially unrecognised; two developed a painless bony ankylosis and one is awaiting hemiarthroplasty.

Vascular injuries are rare, but more likely in the presence of a fracture-dislocation. Signs of

distal ischaemia may be absent, due to the rich collateral circulation, but a large expanding hematoma, pulsatile external bleeding, unexplained hypotension, delayed anemia and associated nerve trunk or plexus injury should increase the level of suspicion.<sup>11</sup> Digital subtraction angiography is the benchmark of assessment, but Doppler assessment of the pulse and single-injection angiography may be more appropriate in the emergency setting. Vascular injuries can be treated with endarterectomy for intimal tears, and resection with end-to-end anastomosis or grafting for more major lacerations, or embolisation for false aneurysms. Most nerve injuries are direct injuries to the brachial plexus or traction injuries to the axillary nerve, and are more likely in the presence of a fracture-dislocation.<sup>12</sup> Most injuries are closed and are best treated non-operatively, though early exploration may be beneficial in younger individuals.

## CONCLUSION

Authors found that humerus fractures are commonly seen in all age groups. In present study there was male predominance and most common mode of injury was road traffic accidents.

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