

A Study Of T& Y Supracondylar Fractures Of Humerus

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ABSTRACT:

Background: Distal humerus fractures in adults are uncommon injuries and difficult to manage. Open reduction has better results than a closed method to treat the supracondylar humerus fracture. The aim of this study to evaluate the role of internal fixation in the treatment of intercondylar fractures of the humerus. **Material & Methods:** In a study of 30 cases of intercondylar fractures of humerus, male (12) and female (18) patients of different age group treated with open reduction and internal fixation with 4mm cancellous screw and stable fixation achieved by using two plates or multiple cancellous, cortical screws or K wires. Postoperative mobilization was started depending on fracture stability and pain in patients. **Results:** Most of the patients (86.7%) were between the age group of 21-50 years. Type of injury in 16(53.3%) cases was fall on point of elbow, 9(30%) cases were RTA and other due to road accidents. 14 cases (46.6%) belong to Muller's et al classification C2 and next were 10 cases (33.3%) C3. Hardware pain in 3(10%) patients were the complications of this study. 22 (73.3%) patients had range of motion (ROM) between 120-130 degrees. According to Cassebaum's scale 22 patients (73.3%) had 'Excellent' to 'Good' results, 8 patients (26.7%) had 'Fair' results and none of the patients had 'Poor'. **Conclusion:** Although it was a small prospective study with short follow-up, but compare our findings with the results of other authors, we concluded that operative treatment of the intercondylar fracture of the distal part of humerus in adults has much better results than closed treatment.

Key words: Supracondylar humerus fracture, operative reduction, internal fixation, trans-olecranon approach.

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INTRODUCTION:

Intercondylar fractures of the humerus remained one of the most difficult of all fractures to manage.¹ Intercondylar fractures represent one of the most complicated and challenging fractures in the upper extremity.² The treatment of severely comminuted fractures of the elbow long has been a subject of controversy. Recommendations for treatment have ranged widely, from essentially no treatment to operative reduction and extensive internal fixation, the problem of management has been made more difficult by the fact that the fracture is relatively uncommon, which prevents the individual surgeon from accumulating sufficient personal experience to critically evaluate the results of treatment.³ Many Orthopaedic surgeons stress on preserving the architecture of any joint for its normal restoration of

function. The recent trend has been immediate open reduction and stable internal fixation, and early postoperative active range of motion.⁴ The fabrication of new implants, however, has increased the reliability of operative stabilization, while placing additional demands upon the surgeon's expertise.

Injuries of the elbow lead to chronic pain and permanent restriction of motion limit use of the hand in most activities. Positioning of hand to grip and apprehension is dominated by freedom of motion at the elbow. Basic daily activities from eating to personal hygiene require a wide range of positions and movements at the elbow in both flexion and extension and forearm rotation. Any restricted motion of the neck, shoulder or wrist magnifies impairment of the elbow. More complex tasks, at the work place or

recreation, require even greater functional demands. An attempt has been made in this study to evaluate the role of internal fixation in the treatment of intercondylar fractures of the humerus.

MATERIAL AND METHODS:

This is a prospective study of 30 consecutive cases of intercondylar fractures of humerus treated by open reduction and internal fixation over two and half years i.e. May 2012 to April 2015 in the Orthopaedics Department, Shadhan Institute of Medical Science, Hyderabad. These included 24 fresh cases and 6 old cases by noting the age, sex, social status, the nature of violence and the duration of injuries, information regarding medical problems and any local problems, in relation to bone and joints. A thorough general examination and local examination was performed. Radiological examination of the part and routine investigation were carried out.

Operative Technique:

Anesthesia and position: General anesthesia was given, brachial block, regional anesthesia can also be used. The tourniquet was applied as far proximal on the arm as possible. The patient was then placed in the lateral decubitus position with shoulder at 90 degrees of abduction and flexion, the elbow at 90 degrees of flexion over bolsters.

Exposure: A straight posterior Campbell incision was used with a slight radial deviation across the tip of the olecranon. The ulnar nerve was then identified and tagged with a vessel loop. Olecranon osteotomy was done for adequate exposure of the distal condyles, because direct visualization of the articular surface is necessary for an exact anatomic reduction.^{5,6}

Reduction and stable fixation of the condyles: Condyles were reduced and provisionally fixed with K wires or a bone holding forceps and then fixed with lag screw. Condyles were reduced and drilled from the capitallum into the trochlea with a 4 mm cancellous screw.

The condyles to the humeral shaft: Anatomically reattached the condyles to the

humeral shaft temporarily with crossed K wires. Stable fixation was achieved by using two plates or sometimes only one plate or multiple cancellous, cortical screws or simply K wires. The ulnar or medial plate was placed along the medial surface of the distal humerus, and the radial or lateral plate was placed along the posterior surface of the distal humerus, or lateral border of the humerus.

Postoperatively: The patient was placed into a bulky cotton padding and POP splint, and elevated for 24-48 hours. After 48 hours, suction drain removed and dressing changed. Depending on fracture stability, active and active assisted range of motion was started, both flexion/ extension and supination/ pronation.

Follow-up: All cases were followed-up every 4 weeks following discharge. They were educated regarding physiotherapy. During review pain, swelling, disability, complication and rate of union were assessed. Radiological examination was done regularly to assess the progress of union of osteotomy and fracture site.

RESULTS:

In the past two and half year starting from September 2012 to February 2015, 30 cases of intercondylar fractures of the humerus were treated in the orthopedics department of the Shadhan Institute of Medical Science. The majority of patients 26(86.7%) belongs to the age group between 21-50 years (Table-1). There were 12 males and 18 females (Table-2). In this study, 53.3% of supracondylar humerus fractures in right side and 46.6% in left side (Table-3). Fall down was the most common mode of injury (53.3%) and the next common mode was RTA (30%) (Table-4). 14 cases (46.6%) belong to Muller's et al classification C2 and next were 10 cases (33.3%) C3 (Table 5). Infection (deep) in 1 (3.3%) patients, hypertrophic ossification at 1 (3.3%), non union of fracture in 1(3.3%), non union of osteotomy in 1(3.3%), delayed union of osteotomy in 1 (3.3%) and hardware pain in 3(10%) patients were the complications of this study (Table-6). In this study 22(73.3%) patients had range of motion (ROM) between 120-130 degrees

(Table-7). Depend on Cassebaum's scale 22 patients (73.3%) had 'Excellent' to 'Good' results, 8 patients (26.7%) had 'Fair' results and none of the patients had 'Poor' results (Table-8).

Table-1: Age Incidence

Age in years	No. of cases	Percentage
10-20	6.6%	
21-30	20%	
31-40	40%	
41-50	26.6%	

Table -2: Sex incidence

Sex	No. of cases	Percentage
Male	12	40%
Female	18	60%

Table -3: Side Incidence

Side	No. of cases	Percentage
Right	16	53.3%
Left	14	46.6%

Table-4: Nature of injury

Type of Injury	No. of cases	Percentage
RTA with moderate to severe violence	9	30%
Fall from scooter/ auto	5	16.7%
Fall on point of elbow from height/ slipped and fell down	16	53.3%

Table -5: Type of fracture -Incidence - Muller's et al classification

Type of fracture	No. of cases	Percentage
C1	6	20%
C2	14	46.6%
C3	10	33.3%

Table -6: Complications

Complication	No. of patients	Percentage
Infection (deep)	1	3.3%
Hypertrophic ossification	1	3.3%
Non union of fracture	1	3.3%
Non union of osteotomy	1	3.3%
Delayed union of osteotomy	1	3.3%
Hardware pain	3	10%

DISCUSSION:

Fractures of the distal humerus are difficult to treat both by the nature of the injury. The management of intercondylar and comminuted intraarticular distal humerus fractures has been controversial. Advocates of closed treatment felt that operative treatment was technically difficult thought with complications and inconsistent results. Advocates of operative management stressed the importance of anatomic restoration of the elbow joint for stability and function. Operative treatment has better results than closed methods.^{1,7} Without proper management of this kind of injury leads to prolonged morbidity and even permanent stiffness of an elbow causing lot of disability.

In this study fractures were common in the age group of between 21-50 years. According to Krishnamurthy et al² fractures were common in the age group between 21-60 years. Our findings also compare with the other study done by Jupiter et al³, Gabel et al⁸, Henley et al⁹ and Wang et al.¹⁰ In this study, about 40% male and 60% female sex distribution. Findings differ in another study by Henley about 52% male and 48% female incidence and Wang study showed 60% male and 40% female incidence. Although in this series females sustained more number of cases than males, but in general trauma was more common in male. In our series 53.3% injury due to fall and 30% RTA. Gabel et al accounted 100% cases of direct fall and Henley study showed 61% cases road traffic accident and 39% injury due to direct fall. In our study, 53.3% of fractures in right side and

46.6% in left side. This finding also comparable with other studies done by Krishnamurthy et al², Jupiter et al³, Gabel et al⁸, Henley et al.⁹

The results were graded according to Cassebaum's scale. 22 (73.3%) patients had 'excellent' to 'good' results while 8 (26.7%) patients had fair results. Although this is a small prospective study with a short follow up, but the concept of open reduction and internal fixation of intercondylar fractures of the humerus is valuable, in restoring articular surface and early rehabilitation decreasing morbidity.

Table -7: Total ROM at Elbow joint

ROM in degrees	No. of Patients	Percentage
120-130	22	73.3%
90-120	8	26.7%
Total	30	

Table -8: Grading of results

Grade	No. of Patients	Percentage
Excellent	12	40%
Good	10	33.3%
Fair	8	26.7%
Poor	None	

CONCLUSION:

The results of our study compare with the results of other authors, we concluded that operative treatment of the intercondylar fracture of the distal end of the humerus in adults has much better functional and anatomical results as compared to closed treatment. So we suggest that, in favorable condition and experienced hands operative treatment of these fractures gives good to excellent results.

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