



FUNCTIONAL OUTCOME OF TYPE II SUPRACONDYLAR HUMERUS FRACTURE TREATED CONSERVATIVELY

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INTRODUCTION

Supracondylar fracture of humerus accounts for 60% of all fractures about the elbow in children and represents 3% of all fractures in children^[2]. The rate of occurrence increases steadily in the 1st 5 years of life to peak at 5-7 years.^[3] The main cause for this fracture is fall on outstretched hand and indirect injury to elbow. It is a fracture of lower end of the humerus involving the thin portion of humerus through coronoid or olecranon fossae, or just above the fossae or through metaphysis of the humerus.

This may be flexion type or extension type. Extension more common than flexion type. These fractures are classified using the modified Gartland classification^[4]. This staging system is based on the lateral radiograph and widely used for extension type^[5].

Type I: Undisplaced.

Type II: Displaced with angulation, but maintain with an intact posterior cortex.

Type III: Completely displaced and lack meaningful cortical contact, but have a periosteal hinge (either medial/ lateral) intact.

The current literatures recommend operative method (closed reduction and pinning) for type II supracondylar fractures of humerus. But some surgeons still prefer conservative method for type II supracondylar fractures of humerus. We present results of 40 cases of type II supracondylar fractures treated with closed reduction and above elbow POP immobilization. The purpose of this study is to evaluate the outcome of conservative treatment in management of type II supracondylar fracture of humerus.

MATERIALS & METHODS

This is a single cohort study (observational) study among 40 patients with Gartland type II supracondylar humerus fracture and were treated by closed manipulative reduction and above elbow POP immobilization at Govt. Medical college, Thrissur from 25-10-2018 to 24-10-2019

All patients below 18 years of age with Gartland type II supracondylar humerus fracture treated conservatively by closed reduction and above elbow slab attending the Orthopaedics Department, Govt. Medical College Thrissur were included in the study.

Exclusion criteria included Patients with type I or type III supracondylar fracture, Patients with head injury and polytraumatized patients, Patient initially treated conservatively, later demand surgical fixation, Patients presenting with type II supracondylar humerus fracture with age more than 18 years, Patients presenting with type II supracondylar humerus fracture more than 1 weeks

The data were obtained for all study patients as per the proforma. Age, Sex, Nature of Trauma, Side of fracture, any associated injuries. Any pain, swelling, and loss of functions noted. On examination any tenderness, deformity, swelling, distal vascularity, neurological deficit and associated other injuries also noted. X rays both AP and Lateral views taken. After proper history taking, clinical examination, radiological work up, and informed written consent from the parents, patient taken up for closed reduction and above elbow pop slab application. Post reduction, distal vascularity and neurological status re-assessed. Post procedure check xray taken to assess acceptable reduction.

Patients were advised to active finger movement and limb elevation. Patient was given instruction regarding symptoms of compartment syndrome and warned to consult orthopaedician if symptoms develop. Discharged on same day itself. After 1 week pop slab is inspected, and converted to pop above elbow cast without losing reduction. Patients were followed in OPD on 1 week, 4 week, 6 week, 3 months, and 6 months.

OBSERVATION & RESULTS

40 Cases of type II supracondylar fracture humerus treated conservatively with closed reduction and above elbow pop immobilization were studied and analysed. Among 40 cases 31(77%) patients were males and 9(23%) were Females.

In our study age of patients ranged from minimum 5 years to 16 years. Maximum number of patients belong to 7-10 years group. Mean age is 9.2 years. Considering side of involvement, 21 (52%) Fractures were on the right side and 19(48%) fractures were on the left side

Out of 40 cases, 31(77%) patient had loss in range of movement 0-5°, 7(18%) had loss of movement between 6-10°, 2 (5%) patient had loss of movement between 11-15°. None of them had more than 15° loss of movement in ipsilateral elbow joint, compared to uninjured elbow.

Table: Restriction Of Movement

Result	Loss of movement	No. of cases	Percentage
Excellent	0-5°	31	77
Good	6-10°	7	18
Fair	11-15°	2	5
Poor	>15°	0	0

Table: Functional Outcome Using Flynn's Criteria^[1]

FLYNN'S CRITERIA	FREQUENCY	PERCENTAGE
EXCELLENT	29	72%
GOOD	9	23%
FAIR	2	5%
POOR	0	0%
TOTAL	40	100%

DISCUSSION

This was done among 40 patients, meeting inclusion and exclusion criteria over a period of 12 months. Functional outcomes were measured by using Flynn's criteria^[1], the result of study were compared with similar study conducted by other authors.

Pretorius JL, Rollinson P, Rasool MN retrospectively reviewed 53 patients with Gartland type II fractures that were treated by closed reduction (Blount's technique) and immobilization in a collar and cuff and above-elbow plaster backslab between December 2011 and May 2012. The mean age was 6.6 years. The mean follow-up time was 12 weeks. Flynn's criteria^[1] were used to assess functional and cosmetic outcome. The median loss of motion was 10 degrees and the median change in carrying angle was 4 degrees. Fifty-one patients (96.2%) had satisfactory results, with 87% graded as excellent or good according to the Flynn's criteria^[1]. A range of motion of 100 degrees was achieved in 92.5% of patients at 12 weeks.^[6]

Pirone et al^[7]. reviewed the results of numerous methods of treatment at a mean of 4.6 years. In the group treated with closed reduction and backslab in flexion, they found 80% satisfactory results.

Urlus et al. treated patients with reduction in theatre and Dunlop traction for an average of 18 days followed by plaster cast for an average of 16 days; they achieved 97% acceptable results with regard to change in carrying angle^[8].

In our study functional outcome was measured using Flynn's criteria^[1]. According to these we found 29 patients (72%) had excellent functional outcome and 9 patients (23%) had good functional outcome. 2 patients (5%) had fair outcome. Most of the patients (72%) had excellent functional outcome following conservative management.

CONCLUSION

The following conclusions are drawn from this study:

- Supracondylar fracture of the humerus is a very common problem of pediatric age group and The main cause for this fracture is fall on outstretched hand.
- A thorough history with a detailed clinical examination is a must, including examination of neurovascular status of limb.
- Incidence is higher in boys. Right sided injury is more common than left side.
- In Gartland type II supracondylar humerus fracture vascular and neurological complications are rare.
- At six months of followup after closed reduction and pop immobilization, most of the patient had excellent and good functional outcome.
- Closed reduction and above elbow pop immobilization is associated with less incidence of complication.

So from our study, Closed manipulative reduction and above elbow pop immobilization is a safe and good treatment for Gartland type II supracondylar humerus fracture in patient with age less than 18 years.

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