



## COMPARISON OF DISTAL THIRD FOREARM FRACTURES IN CHILDREN TREATED WITH ABOVE ELBOW VERSES BELOW ELBOW CAST.

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## INTRODUCTION

About 75% of forearm fractures in children are distal one third of forearm fracture<sup>1</sup> some fracture may included radius, Ulna or both radius & ulna involving metaphyseal, physeal or intracarticular.<sup>2</sup> Closed reduction and plaster casting, closed reduction and percutaneous k-wiring are the version modalities for the treatment of distal one third forearm fracture in children. Closed reduction and immobilization of the these fracture are the most common means of management of these fracture in children.<sup>3</sup>

In the management of the fracture above elbow cast has been used to immobilize the elbow joint to prevent re displacement of the fragments of the fracture.

Some orthopedic surgeon used the short arm

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**ABSTRACT:** In childhood most common fractures are closed fracture of the distal third of the forearm in children, after closed reduction of the forearm fractures of distal third were immobilized with long arm cast and by some orthopedic surgeon with short arm cast.

**Objectives:** To compare the result of above elbow cast with below elbow cast in the treatment of distal third forearm fractures in children. **Study Design:** Randomized study. **Setting:** Department of orthopedics, Allied Hospital, Faisalabad. **Period:** One year 14-Sep, 2015 to 15-Aug, 2016. **Material & Methods:** 180 Cases fulfilling the inclusion / exclusion criteria were included in the study. **Results:** In group A 38.89% (35) in our study and group B 45.56% (n=41) were between 1-6 years of age while. In group A 61.11% (n=55) and group B 54.44% (n=49) were 7-12 years of age of the children mean  $\pm$  sd  $7.66 \pm 2.54$  and  $7.38 \pm 2.46$  years respectively, In group A 58.89 % (n=53) in group B 62.22% (n=56) were male while group –A 41-11% (N37) and in group B 37.78% were females below elbow cast compared with above elbow cast in treating distal one third forearm fracture in children shows that group A 23.33% (n=21) and group B 30% (n=27) and re displacement shows no significant difference between their two groups. **Conclusion:** We concluded there is no significant difference in outcome of above elbow cast with below elbow cast after reduction treating the fracture of children in distal on third forearm fractures.

**Key words:** Above Elbow Cast, Below Elbow Cast, Children, Comparison, Distal One Third Forearm.

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cast with equally results. Reducing the supination and pronation movements at the wrist joint with well molded short cast can reduce the chances of redislplacement.<sup>4,5</sup>

Common complication after reduction of these fractures is re displacement. Displacement after closed reduction and application of cast is to increase due residual angulation of radial fracture & ulnar plastic deformity. Re-manipulation needed after re displacement in many cases.<sup>6,7</sup>

In children fracture of the distal one third of the forearm are immobilized after closed reduction with above elbow plaster cast, although some orthopedic surgeon use the below elbow plaster cast to immobilize the forearm. In determining the outcome, there exists a contradiction. Children under went manipulation and casting above

elbow cast 71, and 8 below elbow casts. Below elbow plaster 38% and in above elbow cast 4.21% needs remanipulation after re displacement in cast radiologically assessment. (Fraser moodce JA et. Al<sup>7</sup>)

19.6% of children in above elbow cast group needs re manipulation after redisplacement compared with 26.4% in the below elbow cast group P-value (=0.381) Rehman et al.,<sup>8</sup>

**MATERIALS AND METHODS**

**OBJECTIVE**

The outcome of below elbow cast & above elbow cast immobilization after reduction in treatment of distal one third forearm fractures in children.

**Study Design**

Randomized

**Duration of Study**

One years 14-Sep, 2015 to 15-Aug, 2016.

**Setting**

Department of Orthopedics Allied Hospital, Faisalabad.

**Inclusion Criteria**

- Both female & male
- 1-12 years of age
- ON X-ray fracture of distal one third radius / Ulna

**Exclusive Criteria**

- ON X-Rays
- Plastic Deformities
- Green Stick fracture
- Intra articular fractures
- Epiphyseal injuries
- And pathological fractures

A total of 180 cases were included in our study compare the result of above elbow cast with below elbow cast in the management of distal one third forearm fracture in children those totally the inclusion & exclusion criteria regarding to age distribution.

**RESULTS**

In group A 38.89% (n=35) in group B 45.56%

(n=41) were between 1-6 years while in group A 61.11% (n=55) and in group B 54.44% (n=49) were between 7-12 year of age group, mean + sd 7.66 ± 2.54 and 7.38 ± 2.46 years respectively (Table-I) regarding to gender distribution of the patients group A 58.89% (n=53) and group-A 41.11% (n=37) and in group B 37.78% (n=34) were females (Table-II).

Outcome of results of above elbow & below elbow plaster cast in the treatment of distal one third forearm fracture in children shows in group –A 23.33% (n=21) and in group B 30% (n=27) had group B 70% (n=63) had no re displacement, regarding P value (0.312) there is no significant difference in two groups (Table-III).

Re displacement stratification was done in these groups. 9 Cases in group A & 12 causes in group B between age 1-6 years, P Value was 0.72 while in group A 12 cases & 15 cases of group-B for re displacement were between age group 7-12 years and P-value was 0.30 (Table-IV).

Re displacement stratification was done in the two group regarding to gender. In group A 11 patients and in group B 15 patients for re displacement were male, P value was 0.45. On the other hand in group A 16 patients & in group B 12 patients for re displacement were females, + value was 0.49. (Table-V)

Age (in Years)	Group-A (n=90)		Group-B (n=90)	
	No. of Patients	%	No. of Patients	%
1-6	35	38.89	41	45.56
7-12	55	61.11	49	54.44
Total	90	100	90	100
Mean±sd	7.66±2.54		7.38±2.46	

**Table-I. Age distribution (n=180)**

Gender	Group-A (n=90)		Group-B (n=90)	
	No. of Patients	%	No. of Patients	%
Male	53	58.89	56	62.22
Female	37	41.11	34	37.78
Total	90	100	90	100

**Table-II. Gender distribution (n=180)**

Outcome	Group-A (n=90)		Group-B (n=90)	
	No. of Patients	%	No. of Patients	%
Yes	21	23.33	27	30
No	69	76.67	63	70
Total	90	100	90	100

**Table-III. Comparison of outcome of below the elbow cast with above the elbow cast in treating distal third forearm fracture in children (n=180)  
P value=0.312**

**Age: 1-6 Years**

Group	Re-displacement		P-Value
	Yes	No	
A	9	26	0.72
B	12	29	

**Age: 7-12 Years**

Group	Re-displacement		P-Value
	Yes	No	
A	12	43	0.30
B	15	34	

**Table-IV. Stratification for outcome in the two groups with regards to age (n=180)**

**Male**

Group	Re-displacement		P-Value
	Yes	No	
A	11	42	0.45
B	15	41	

**Female**

Group	Re-displacement		P-Value
	Yes	No	
A	16	21	0.49
B	12	22	

**Table-V. Stratification for outcome in the two groups with regards to gender (n=150)**

**DISCUSSION**

The most common fractures of childhood are the closed fractures of the distal one third of the forearm closed reduction of the fracture and immobilization with above elbow cast is the method of management, although by some orthopedic surgeons used to immobilize the fracture after the reduction of the fracture with elbow cast.

In our study in we planned to compare the results of above elbow plaster cast with below elbow plaster cast in managing the distal one third forearm fracture in children.

In our study in group A 38.89% (n=35), in group 45.46% (n=41) were 1-6 year, while in group A 61.11% (n=55) and group B 54.44% (n=49) were 7-12 years of age, mean  $\pm$  sd was  $7.66 \pm 2.54$  and  $7.38 \pm 2.46$  years respectively. In group A 58.89% (n=53) in group B 62.22% (n=56) were male, while in group A 41.11% (n=37) and in group B 37.78% (n=34) were females child patients.

Results of above elbow plaster cast with below elbow plaster cast regarding the management of distal one third forearm fracture in children shows that in group A 23.33% (n=21) and group B 30% (n=27) had re displacement, shows no significant difference in these groups.

Bohm ER and colleagues<sup>9</sup> concluded that above elbow cast and below elbow cast are similar in maintaining reduction of fracture and complication rates in distal one third of the forearm fracture in children.

Paneru SR<sup>10</sup> and others concluded that above elbow cast as well as below elbow cast management of the fracture in distal one third forearms in children complications rate and total cast was higher which could be reduced by below elbow cast treatment.

**CONCLUSION**

In our study we concluded that there is no significant difference in results treating the distal forearm fracture after reduction with above elbow cast and below elbow cast in children.


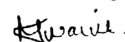


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