



OPERATIVE RESULTS OF DIAPHYSEAL FRACTURE OF FOREARM IN PEDIATRIC PATIENTS TREATED WITH INTRAMEDULLARY NAILING.

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KEYWORDS :

INTRODUCTION:

Diaphyseal fractures of the forearm account for 6% to 10% of all pediatric fractures¹. Unlike both-bone forearm fractures in adults, which are generally treated by open reduction and osteosynthesis with plate and screw fixation, 90% of pediatric forearm fractures are successfully treated conservatively by closed reduction and casting.

Closed reduction and casting was done in most of the paediatric diaphyseal fractures of the forearm⁵. Operative treatment is indicated for irreducible, unstable or open fractures and those which redisplace in a cast⁶.

There are several advantages of nailing in this kind of fractures such as maintenance of reduction, minimally invasive and relatively easy application, protection of bone alignment, and rapid bone healing^{1,2,3,7,8}. We try to study the functional outcome of both bone forearm fractures treated with nailing in pediatric and adolescent individuals.

MATERIAL AND METHODS:

We include 20 patients in this study for the period of 2017 to 2018 at our institute. Youngest was 5 years and oldest was 17 years age.

All the patients had been given emergency medical treatment and radiologically confirmed the diagnosis.

After proper preoperative assessment, they were operated upon and fracture was fixed with intramedullary nail in both bones.

Surgical technique:

Ulna nailing was done using physeal sparing entry point for younger children and standard tip entry for elder individual. Reduction done using closed manipulation and traction.

Radius nailing done using physeal sparing entry for those having non fused physis and standard lister tubercle entry for fused physis. Reduction was done using longitudinal traction and closed manipulation. In some of the cases manipulation was done using percutaneous k wire to achieve reduction and if required mini open at fracture site.

Post operative management: Plaster slab was continued for 3-4 weeks followed by physiotherapy to gain movements.

Radiograph were taken to confirm the union at 4 weeks and 8 weeks. Than after followed up every 3 months upto 6 months. Final functional outcome was measured at 6 month as per prince at al criteria⁹.

RESULTS:

Maximum number of patients were from age group of 9-12 years. Majority of patients in our study were males. Injury due to fall down while playing was most common mode of fracture. All the fracture were closed fracture in our study. Mini open reduction done in four patients. Radiologically union was confirmed with an average of 8 weeks.

Range of movement at final follow up was taken and is listed below:

Range of movement	Wrist flexion	Wrist extension
Full to < 5 degree loss (EXCELLENT)	17	16
5-10 degree loss (GOOD)	2	2
10-15 degree loss (FAIR)	1	2
> 15 degree loss (POOR)	0	0

Range of movement	supination	pronation
Full Range to <10 degree loss	17	15
10- 20 degree loss	2	3
20-30 degree loss	1	2
30-40 degree loss	0	0
>40 degrees loss	0	0

Outcomes according to Price criteria⁹ were excellent in 16 (80%) patients and good in three (15%) patients.

Two patients had nail impingement and removal was done after 12 months. One patient developed olecranon bursitis. Non union, mal union or delayed union was not seen in any of the cases.

DISCUSSION:

Most of the pediatric patients having forearm fracture treated conservatively. Although mid shaft diaphyseal or more proximal fractures which are less known to remodel require anatomical reduction and surgical fixation¹⁰.

Daruwalla JS¹¹ recommended if angulation is >10 degrees in mid shaft or proximal forearm fracture, than operative intervention should be considered because limited remodeling potential can affect forearm motion.

In a cadaver study, it was demonstrated that 10 degrees of angulation in 1/3 mid-diaphyseal forearm fractures did not restrict forearm rotational movements, whereas angulations exceeding 20 degrees were associated with at least 30% loss in forearm supination and pronation¹².

In order to minimize angular deformity and achieve normal forearm rotation, operative intervention is being popular.

We conclude that operative fixation of pediatric forearm fractures is effective. Flexible intramedullary nailing is preferred fixation method for pediatric forearm fractures. Titanium nails are better than square nails but they are costly. Rush nail can also be used for this purpose. Irrespective of implant operative fixation gives excellent outcome.





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