



# International Journal of Orthopaedics Sciences

ISSN: 2395-1958  
IJOS 2019; 5(1): 57-58  
© 2019 IJOS  
www.orthopaper.com  
Received: 04-11-2018  
Accepted: 08-12-2018

**Dr. KN Ghorpade**  
Associate Professor, Department  
of Orthopaedics, Pravara Rural  
Hospital, Loni, Maharashtra,  
India

**Dr. Khyati Gupta**  
Junior Resident I, Department  
of Orthopaedics, Pravara Rural  
Hospital, Loni, Maharashtra,  
India

**Dr. Ranjan Kumar Gupta**  
Junior Resident III, Department  
of Orthopaedics, Pravara Rural  
Hospital, Loni, Maharashtra,  
India

**Dr. Sanket Kandarkar**  
Junior Resident II, Department  
of Orthopaedics, Pravara Rural  
Hospital, Loni, Maharashtra,  
India

**Dr. Nawaz Sharif**  
Junior Resident III, Department  
of Orthopaedics, Pravara Rural  
Hospital, Loni, Maharashtra,  
India

**Dr. Arvind Kadwad**  
Junior Resident I, Department  
of Orthopaedics, Pravara Rural  
Hospital, Loni, Maharashtra,  
India

## Correspondence

**Dr. Khyati Gupta**  
Junior Resident I, Department  
of Orthopaedics, Pravara Rural  
Hospital, Loni, Maharashtra,  
India

## Treatment of long bones diaphyseal fractures treated with closed enders nailing age between 7 to 14 years in rural population

**Dr. KN Ghorpade, Dr. Khyati Gupta, Dr. Ranjan Kumar Gupta, Dr. Sanket Kandarkar, Dr. Nawaz Sharif and Dr. Arvind Kadwad**

DOI: <https://doi.org/10.22271/ortho.2019.v5.i1b.12>

### Abstract

**Introduction:** Since last two decades there has been growing trends towards a more operative treatment in patient over 7 years of age for long bone fractures (Tibia, Femur, Humerus)

**Method:** Twenty patients (13 boys and 7 girls) aged between 7 to 14 of fractures of Tibia, Femur and Humerus treated with enders nail All patient underwent surgery in 7-8 days of injury

**Result:** All patients followed average 2-4 weeks radiological union in 8-10 weeks and full weight bearing possible after 2-3 weeks

**Results:**

Excellent	75%
Good	20%
Poor	5%

**Conclusion:** Enders nailing is effective form of treatment in long bone fractures (Diaphyseal) Tibia, Femur and Humerus in age between 7-14 years in Rural population.

**Keywords:** diaphyseal, enders nail, fracture, pediatric age

### Introduction

Since last two decades there has been a growing trends towards more operative treatment for long bone fractures in patient more than 7 years of age.

Enders nails are used for stabilisation of diaphyseal features of tibia, femur and humerus between age of 7-14 years. Operative treatment becomes necessary due to failure to obtain or maintain acceptable reduction of features by conservative method.

### Material and Method

Study was conducted on 20 patients from in-patients department of orthopaedics at Pravara Rural Hospital Loni between August 2015 to November 2017 with aim of studying the outcome of enders nailing in paediatric long bone diaphyseal fracture of tibia, femur and humerus between age of 7-14 years. Patient were excluded from study are severely comminuted fractures, compound fractures and fractures with 3 cm near the epiphysis.

All the patient were explained about surgical procedure and informed consent was taken.

20 patients (13 boys and 7 girls) were treated with enders nailing

Femur	8
Tibia	8
Humerus	4

Fractures were in middle 1/3rd, Proximal 1/3rd and distal 1/3rd of diaphysis.

All fractures were treated in supine position on radiolucent table.

Retrograde/ anterograde approach with suitable anaesthesia under C-arm control.

- Painting and drapping
- Entry point 2cm distal to integrate nailing
- Nails introduced after proper contouring through precisely marked entry point using C-arm both nails both sides introduced simultaneously upto the fracture site and ensuring

reduction of fracture with the help of C-arm nails review. Proximally or distally depending upon integrate or retrograde uncertain such that we get divergent configuration and tips 1 cm proximal or distal to epiphyses

**Post-Operative Protocol**

For Femur: Thomas splint x 4 weeks  
 For Tibia: Above knee slab- 3-4 weeks  
 For Humerus: U slab - 3-4 weeks

Partial weight bearing for tibia and femoral feature after 4 weeks with aid of X-rays taken at 4 weeks showing signs of union of fractures.

Duration of follow up was 12 weeks and removal of nails after 1 year.

**Results**

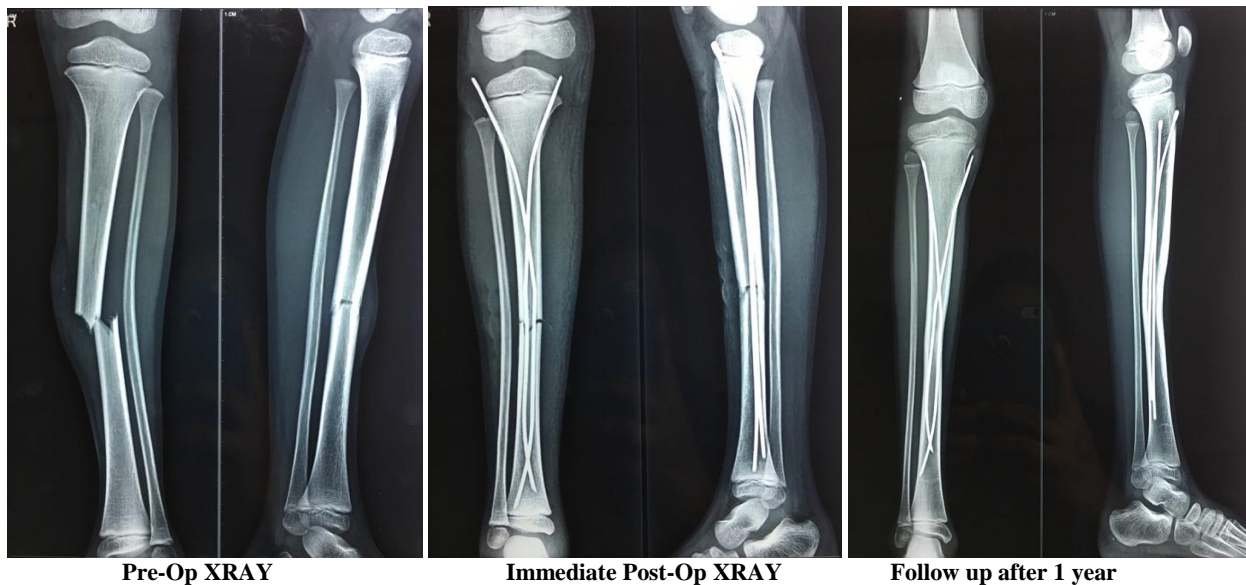
Total 20 patients followed radiological union in all cases (mean time of union was 10 weeks)

Results were concluded by Flynnetall scoring system

<b>Results:</b>	Excellent	75%
	Good	20%
	Poor	5%

These patient experienced pain at entry point may be due to irritation of tip of nail.

Two patient developed superficial infection but cured with antibiotics One patient had back out of nail No implant failure noted Observation with this study about tibia feature developed recurvatum deformity ranging between 2 to 5 but doesn't hamper function



**Discussion**

For long bone diaphyseal fractures in children has remained constant challenge of opting which method of treatment for definite management of fractures.

Conservative treatment was preferred in children and young adolescent till recent time to avoid prolonged immobilisation, bedridden position, stiffness of joints, sores, operative treatment has been gaining popularity with advent of c-arm and closed techniques which has following advantages.

1. Minimal Surgical Trauma
2. Allows early mobilisation
3. Maintain the length of bone
4. Enders nailing is not suitable for comminuted fractures, compound fracture and fractures within 3cm near epiphysis.

Enders nailing provided high rate of union with close reduction, shorter operative time hence less rate of infection and small incision for insertion of nail which is cosmetically more acceptable but radiation exposure is major disadvantages of his method.

Enders nails are 4.5 times cost effective than titanium nails and has proven that it gives equally good results in pediatric long bone fractures so most suitable for rural population.

**References**

1. Pankonich Am Goldflies ML, Pearsa RL. Closed enders nailing of femoral shaft fractures. J Bone joint surgery (AM). 1979; 61-A:222-232.

2. Minns RJ, Bremble GR, Campbell J. A bio mechanical study of Internal fixation of tibial shaft. J Biomechanics. 1997; 10:569-574.

3. Moehring D. Flexible Intramedullary fixation of femoral fracture, injury. 1981; 13:287-291.

4. Hall RF, Pankonich AM. Enders nailing of acute fractures of humerus. A study of closed fixation by intramedullary nailing without reaming J bone joint surgery. 1987; 69A:558-567.

5. Haber RL, Keller HW, Haber PM, Reim KE. flexible intramedullary nailing as fracture treatment in children. J Paediatric Orthop. 1996; 16:602-605.

6. Lee. SS, Mahar AT, Netan PO. Enders Nail fixation of paediatric femur fractures, Abiomechanical analysis. J Paediatric Orthop. 2001; 21:442-445.

7. Kolecka F, niedielski KR, Lipczyk, Flont. treatment of femoral, tibia and humeral shaft fractures in children with use of intramedullary nailing. Chir Narzadow Ruchu orthop POL. 2009; 74:139-44.

8. Ando K, Yami T. Ender nailing for tibial shaft fractures in children, J orthop sci. 2000; 5:271-22.

9. Soleimanpour J, Feize HM, Mohseni MA. comparison between enders and reamed interlocking nails in tibial shaft fractures Sandi med J. 2008; 2:1458-62.