



OUTCOME OF PAEDIATRIC SHAFT FEMUR FRACTURES MANAGED WITH HIP SPICA: A PROSPECTIVE STUDY

Orthopaedics

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ABSTRACT

Various modalities of treatment are used for the treatment of paediatric femoral fractures. The treatment method chosen depends up on the age of the patient and fracture pattern. In children less than 6 months old, Pavlik harness is recommended, children 6 months to 6 years are managed with spica cast, children aged 6 to 14 years are managed with elastic nailing or biological plating and children aged more than 14 years are managed with standard interlocking nailing. Our study included 26 children with unilateral shaft femur fractures. These fractures were managed with spica casting. Mean duration of skin traction was for 10.64 days. Mean duration of fracture union was 8.2 weeks. At the last follow up of year, we observed 2 patients had shortening of more than 1.5 cm. All the fractures united and no case of non-union was observed. Conservative management of paediatric femur fractures using traction followed by spica cast is a safe and effective method with very low risk of complication and no need of re-surgery for implant removal. If used properly it can be extended to children of 10 years of age particularly in child population of our region who usually have small frame.

KEYWORDS

INTRODUCTION

Femur fracture is a fairly common injury in children, constituting around 1.6% of all the paediatric fractures.¹ Various modalities of treatment are used for the treatment of these fractures. The treatment method chosen depends up on the age of the patient and fracture pattern. In children less than 6 months old, Pavlik harness is recommended, children 6 months to 6 years are managed with spica cast, children aged 6 to 14 years are managed with elastic nailing or biological plating and children aged more than 14 years are managed with standard interlocking nailing.² Conservative management has long been used with good success in these fractures.³ The trend has recently changed, and the Orthopaedicians have drifted to the surgical methods, due to the advent of newer and better implants. However, the risk of infection is always there and 2nd surgery for implant removal is needed. Since children have very good fracture healing potential skin traction followed by spica cast gives good results and should not be excluded as a viable option for treatment in older children.⁴ We believe the treatment guidelines for fracture shaft of femur in children as based on western literature, where the children are of big frame, our children being smaller in size can be managed by spica cast even up to extended age of 10 years.⁵ In our study, we tried to study the outcome of the conservative management of the femur fractures in paediatric age group using spica casting.

Materials and methods

Our study included 26 children with unilateral shaft femur fractures, who attended the emergency of the hospital from August 2018 to December 2019. The study was carried out in the department of Orthopaedics Government Medical College Jammu Hospital. Children with shaft femur fractures aged more than 6 months and less than 10 years were included in our study. Children less than 6 months or more than 10 years of age, open fractures, polytrauma patients and pathological fractures were excluded from our study. Children with undisplaced or minimally displaced fractures were managed with immediate spica cast. In children with displaced fractures and a shortening of more than 2 cm, the injured limb was initially put on skin traction. After 2 to 3 weeks, when the fracture had become sticky, spica cast was applied. Acceptability of the alignment was checked under C-arm guidance. The parents were explained about the possible complications of the cast and advised about the follow up protocol. Regular follow up was done 2,4,8,12 weeks and 1 year. The spica was removed after 12 weeks. Clinical examination was done following spica removal, to look for any shortening and malalignment.

Results

Our study included 26 children with unilateral shaft femur fractures. The average age in the study group was 5.34 years, ranging from 1 year to 10 years. The study included 18 males and 8 females with a ratio of 2.25 in favour of males. 17 patients had right side fractures while as 9 patients had left side involvement. Mean duration of skin traction was for 10.64 days. Mean duration of fracture union was 8.2 weeks. At the

last follow up of year, we observed 2 patients had shortening of more than 1.5 cm. All the fractures united and no case of non-union was observed.

DISCUSSION

Management of fracture shaft femur in children is based on age with conservative management for children less than 5 years, surgery for more than 11 years. Treatment for 6-11 age group is controversial.¹ These guidelines are from western literature where body frame of children is usually big, we believe in Asian setting the age group for spica cast can be increased as our children are usually of small frame and stature.

More recently trend is to treat such fractures surgically by plating or nailing. Surgical fixation of femoral fractures is not without risk of complications. Complications such as infection, growth plate disturbances and implant failure have been reported.⁶ More-ever another surgery for implant removal is often needed. Spica cast has been used successfully for paediatric femur fractures and is proven to be very effective and safe by literature.

Results of present study are comparable with other similar studies. Jamaluddin et al in his prospective study treated 24 children aged 3 months to 10 years having fracture shaft of femur by early spica cast. The average hospital stay in the Jamaluddin study was 3.5 days. The average hospital stay in present study was 13.5 days. Shortening was seen in all patients, average 15 mm at the time of fracture union in the Jamaluddin study. Shortening was noted in 43 (82.6%) of our patients, with average of 1.2 cm.⁷ Shortening in all patients and short hospital stay in his study may be due to early spica cast application, where as we applied cast after preliminary skin traction in our patients. We applied early spica cast in those patients only who were less than one year or had relatively undisplaced fracture. However, a shortening of up to 2 cm is expected and usually has no clinical impact on a growing child. Angulation was within acceptable limits in all his patients, we observed the same in our study.

CONCLUSION

Conservative management of paediatric femur fractures using traction followed by spica cast is a safe and effective method with very low risk of complication and no need of re-surgery for implant removal. If used properly it can be extended to children of 10 years of age particularly in child population of our region who usually have small frame.

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