Management of Paediatric Femoral Shaft Fracture by Surface Traction and Thigh Brace Immobilization

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Abstract

Background: Management of paediatric femoral shaft fracture by surface traction and thigh brace immobilization is a very easy way to treat paediatric femoral shaft fracture in pre school age. Femoral shaft fractures are one of the most common major pediatric injuries managed by the orthopedic surgeons. Management is influenced by associated injuries or multiple traumas, fracture personality, age, family issues and cost. In addition,child abuse should be considered in a young child with femoral fracture. Nonsurgical management,usually with early spica cast application is preferred in younger children. Surgery is common for the school going age child and for patients with high energy trauma. In the older child,traction followed by casting,external fixation, flexible intramedullary nails and plate fixation have specific indications. Skeletally mature teenagers are treated with rigid intramedullary fixation.Potential complications of treatment include shortening,angular and rotational deformity, delayed union,non union,compartment syndrome, over growth,infection,skin problems and scarring. Risk of surgical management includes refracture and external fixator or plate removal, osteonecrosis after rigid antegrades intramedullary nail fixationand soft tissue irritation caused by the ends of flexible nails.

Objective*:* To evaluate the outcome of traction and bracing in pediatric femoral shaft fracture.

Methods: In our study we have selected the pre school age (1 to 5 years). Naturally bone heals early in this age and surgery is rarely required. Usually orthopedic surgeons apply surface traction for 3 to 4 weeks followed by hip spica for another 6 to 8 weeks. But this is very difficult to maintain and annoying for both the patients and their parents. In our study, we have applied surface traction for 3 to 4 weeks followed by thigh brace immobilization for another 3 to 4 weeks. After that patients were allowed to walk with support. Patients were advised to follow up at 2,4,8 and 12 weeks with x-rays. They were encouraged to bear weight in the fractured limb. Brace was removed after achieving radiological union.

Result: Out of 14 patients, 2 patients missed follow up, remaining 12 patients were found excellent.

Conclusion: This is a very easier, cheap and comfortable way to manage paediatric femoral shaft fracture specially in pre school age which can be applied from the higher centre to the root level of our health service with very minimum to no complication.

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Introduction

In preschool children there is wide consensus regarding treatment of fracture shaft of femur by traction and spica casting. However, there is debate about the duration of treatment. Spica cast is cumbersome and often is dealt with complications. So, we replace the cast with brace and encourage early ambulation.

Objective: To evaluate the outcome of traction and bracing in pediatric femoral shaft fracture.

Methods

This was a prospective study conducted in National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka from January 2016 to December 2017 with 14 patients between 1 to 5 years were studied, male 9 and female 5. Patients were given brace after 3 weeks of traction. The brace was kept for another 3 weeks. Patients were ambulated with support after 1 month. After 1-month patients were discharged and asked to follow up at 2,4,8 and 12 weeks with x-rays. Patients were encouraged to bear weight in the affected limb. Brace was removed after achieving radiological union.

Results

Total number of patients was 14, 2 patients missed follow up. The remaining 12 patients were found excellent, no complication was found.

Case no 1

Figure 1. X-ray shows long spiral fracture of left femur initially after injury in a 4 years old male patient.

Figure 2. After 2 weeks of injury. Appearance of callus in same patients.

Figure 3. After 2 months of injury, x-ray shows the fracture is united.

Case no 2

Figure 4, Initial x-ray of fracture shaft of femur in a 3 years old girl.

Figure 5. After 2 months of injury x-ray shows the fracture is united.

Case no 3

Figure 5. X-ray shows long oblique fracture of shaft of right femur. Initial after injury in a 5 years old male patient.

Figure 6. 2 weeks later x-ray shows the appearance of callus.

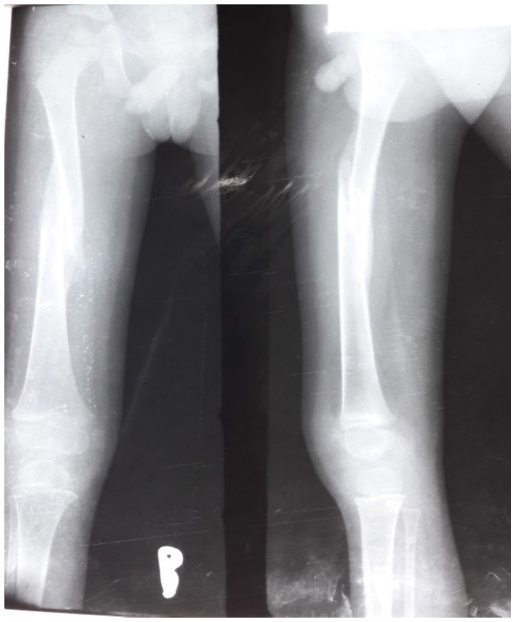

Figure 7. After 4 weeks of injury the fracture is uniting .

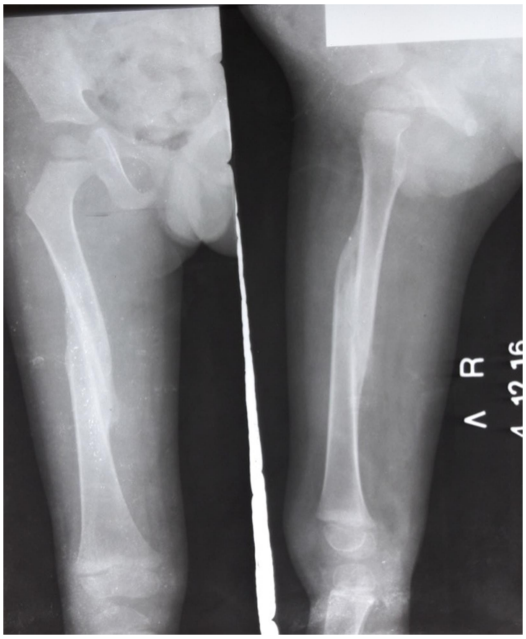

Figure 8. After 2 months, x-ray shows the fracture is united.

Conclusion

Regarding all the factors according to our experience, surface traction followed by application of thigh brace may be a better option for treatment of femoral shaft femur in paediatric age group. We can easily avoid the hazards and cost of surgery. At the same time we can provide this treatment opportunity at the root level of our country.

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