



Functional and radiological outcome of precontoured LC-DCP in pediatric subtrochanteric femoral fractures

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Abstract

Introduction: Subtrochanteric femoral fracture in a pediatric population is rare entity and constitute about 4% of all pediatric femoral fractures. Literature regarding management of these fractures is still debatable. We in this study evaluated the outcome of precontoured LC-DCP for the management of subtrochanteric femoral fractures in pediatric population.

Results: 18 patients were included in our study of which 12 were boys & 6 were girls with mean age \pm SD of 8.6 ± 2.0 years. Left side was involved in 10 patients whereas right side was involved in 8 patients. The mean time to union was 9.2 ± 1.4 weeks. Hip range of motion at final follow up was comparable with their contralateral hips with no residual deformity in any plane. There were no cases of infection or implant failure in our study.

Conclusion: Precontoured LC-DCP is a dependable implant for internal fixation of paediatric subtrochanteric femoral fractures.

Keywords: precontoured, LC-DCP, subtrochanteric

Introduction

Pediatric subtrochanteric femoral fractures are rare, constituting about 4% of all pediatric femoral fractures ^[1]. Conservative management often fails as strong muscular forces acting on the smaller proximal metaphyseal fragment tend to displace it making these fractures inherently unstable ^[2].

Literature regarding management of these fractures is still debatable ^[3, 4].

Management options include traction, hip spica, internal fixation, and external fixation and is often influenced by age, weight and economic status of family ^[5, 6].

The aim of this study was to evaluate the outcome of precontoured LC-DCP for the management of subtrochanteric femoral fractures in pediatric population.

Material and Methods

This prospective interventional study was done in Govt. Medical College Anantnag J&K India from June 2018 to Nov 2020 after seeking IEC approval. 18 patients meeting the inclusion criteria were included in the study.

Inclusion Criteria

All sexes.

Age group 6 to 12 years.

Isolated subtrochanteric fractures.

Exclusion Criteria.

Pathological fractures.

Obesity.

Subtrochanteric fracture in a polytrauma patient.

All the pediatric patients with subtrochanteric femur fractures presenting to the accident & emergency department of our institute were admitted stabilized and evaluated. Patients were put on skin traction and all the baseline investigations were done & patients shifted our ward. On the day of surgery patients were given a bolus dose of i.v antibiotic (cefuroxime) half an hour before the surgery. The surgery was done in supine position using vastus lateralis splitting approach. Fracture was fixed using a precontoured LC-DCP. Precontouring of palate was done to accommodate for trochanteric flare. In spiral fractures lag screw was used before applying LC-DCP. Wound was closed in layers over suction drain. Patients were given intravenous antibiotics for 2 days followed by oral antibiotics for further 5 days. On 2nd post-operative day patients were discharged and called for regular follow up till fracture union.

Results

Out of total 18 patients included in our study 12 were boys & 6 were girls with mean age \pm SD of 8.6 ± 2.0 years. Left side was involved in 10 patients whereas right side was involved in 8 patients. Simple fall was responsible for the fracture in 14 patients while 4 patients had road traffic accident as the mode of trauma. 13 patients had spiral fractures, 4 patients had oblique fractures while only 1 patient had transverse fracture. The mean time to union was 9.2 ± 1.4 weeks. All the fractures united uneventfully with no cases of limb length discrepancy (LLD) or residual deformity in sagittal/coronal plane. Clinically all the patients had hip range of motion at final follow up comparable with their contralateral hips. There were no cases of infection or

implant failure in our study.



Fig 1: Preoperative X ray



Fig 2: 2 weeks follow up AP view Lateral view X rays.



Fig 3: 8 weeks follow up AP view Lateral view X rays.

Discussion

Pediatric subtrochanteric fractures can be difficult to manage due to the inherent instability as a result of muscular attachment of the smaller proximal metaphyseal fragment as well as limited remodelling potential of the proximal femur [2, 7, 8]. Hence anatomical reduction is essential to achieve union without any LLD or coronal/sagittal plane deformity. Age of the patient plays an important role in deciding the type of treatment to be adopted. Treatment for children between the ages of 6-12 years is the most controversial [9]. Various modalities of treatment are available in this age group, each having its own pros and cons [9]. Advantages of spica cast include its easy application and low cost [10]. Martinez *et al* [11]. Reported excessive shortening and angular deformity as complications in their 50% of patients treated with spica casting. In treating the pediatric subtrochanteric fracture with flexible intramedullary nailing (FIN) the major drawback is that it provides less stability due to the lack of rotational control and often has to be augmented with spica cast in older children [7]. Shital *et al* [5]. Reported a complication rate of 22% in their study on 36 patients treated with FIN, while Li *et al* [12]. Reported complications in 48% of patients. In our study we encountered no complications with the use of precontoured LC-DCP. Our results were comparable with the studies reported by Ward *et al* [13] and Kregor *et al* [14].

Conclusion

Precontoured LC-DCP is a dependable implant for internal fixation of paediatric subtrochanteric femoral fractures with impeccable results provided optimal reduction of the fracture is done before applying the plate.

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