



A RARE CASE REPORT OF SUBTROCHANTERIC PAEDIATRIC FEMUR FRACTURE TREATED [VIA] PHILOS PLATING AND REVIEW OF LITERATURE

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Abstract

Hip fractures are rare in paediatric age group and as an incidence of less than one percent of all paediatric fractures. Even though this fractures are uncommon among this age group, care must be given In such cases, there is no standard protocol for surgical management. This is a case report of twelve year old boy diagnosed to have subtrochanteric right femur fracture with history of slip and fall injury from twelve feet height. He landed on his left lower limb and subsequently was unable to ambulate due to great pain around the left hip. Patient initially treated conservatively by analgesic and skin traction, followed by planned for surgical repair. Since there is no definitive protocol for the treatment of managing paediatric hip fracture we went through various treatment option modalities like tens nailing, rigid intramedullary nailing and compression plating, but all this treatment option has its own demerits. So we went through various literature in search of different treatment modalities and found out PHILOS plating being used for paediatric hip fractures and has been providing good outcome with minimal complication rate. The fracture was treated using precontoured long PHILOS plating via MIPPO Technique, at the end of six month follow up the patient showed good clinical and radiological outcome with good range of movements, no limb length discrepancy and functional daily activities were achieved.

Categories: Pediatrics, Orthopedics, Trauma

Keywords: paediatric hip fracture, subtrochanteric fracture, mippo technique, philos plating, paediatric femur fracture

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DOI: 10.48047/ecb/2023.12.si5a.0570

Introduction

Hip fractures are rare in the paediatric age group they contribute to only about 1% of all bony injuries in children. Hip fracture is classified based on Russell Taylor classification. Among all paediatric hip fractures, subtrochanteric fractures remain the least common, accounting for only 4-17% of paediatric age group [1-3]. Paediatric subtrochanteric femur fracture is a unique injury in which the proximal fragment is flexed, abducted and externally rotated, secondary to the actions of ilio-psoas, abductor group and external rotator muscles respectively. Subtrochanteric femur fractures tend to be associated with complex fracture patterns. It is challenging to achieve and maintain reduction in such injuries by non-operative methods [4]. Hence we opted for surgical correction to achieve good anatomical reduction, stable fixation and better functional outcome with good range of motion.

Case Presentation

A 13 years old boy presented to our emergency department following a slip and fall from twelve feet height of a newly constructed building. He landed on his left lower limb and subsequently was unable to ambulate due to great pain around the left hip. There was no associated history of Loss of consciousness, Blurring of vision, ENT bleeding or Projectile vomiting. Patient didn't have any medical comorbidities. Clinically, his vital signs were stable. Secondary survey revealed swelling and marked tenderness over the left hip with limited range of movement. Abrasion over anterior aspects of leg. Distal pulse felt. Sensation intact

On radiographic investigation : x-ray of bilateral hip with pelvis shows complex subtrochanteric fracture of the left femur



Initial line of management:

Initially skin traction was given with 3 kg weight till anaesthetic fitness obtained.

Operative procedure:

Under sterile aseptic precaution, using spinal and epidural anaesthesia, patient was in supine position. Using MIPPO technique, around 5 cm incision was made proximal and distally. After exposing the structures and identifying the fracture site, a ten hold proximal humeral internal locking system (PHILOS) plate was fixed with the locking screw. Vancomycin powder instilled and wound was closed in layers, sterile dressing done.



Post operative protocol:

Patient was advised for strict bed rest for two weeks. Routine serial dressing was done. Initially non weight bearing walking was advised for six weeks after which patient was advised for partial weight bearing walking using crutches, further followed by full weight bearing walking. Patient was followed up with regular clinical and radiographical assessment of alignment, hip range of movements(including knee),duration of healing, any postoperative infection, discrepancy of limb length. Patient improved functionally based on Harris hip score.

Discussion

Fractures that occurs within 1 or 2 cm distal to the lesser trochanter are called as subtrochanteric fracture of femur [5]. The incidence of this fracture is rare in case of paediatric age group [6]. The surgeons face a difficult situation in treating the subtrochanteric fractures due to strong deforming forces at the fracture site, tenuous blood supply, and the immense load bearing forces exerted through the peri trochanteric region. The common complications which occurs in untreated subtrochanteric fracture are malunion, non-union, infection and mortality. The surgical option for implants are a flexible intramedullary nailing (TENS), rigid intramedullary nail, compression plating. In Flexible intramedullary nailing, many surgeons used this technique for treating subtrochanteric fracture in paediatric age group [7]. But the major drawback found to be are, provides less stability due to the lack of rotational control, unable to achieve compression and

satisfactory reduction in multi fragmental and unstable injuries, malunion, plaster complication [8]. In plate fixation, The disadvantages of traditional open plating include more extensive soft tissue dissection, greater blood loss and potential damage to the periosteal blood flow [9]. Theoretically these disadvantages increase the risk of infection, delayed union, non-union [10]. Traditional plates are not anatomically precontoured and they have to be bent intraoperatively to adapt the anatomy of the proximal femur. Rigid nailing potentially carries the risk of avascular necrosis of the femoral head in those who have not reached skeletal maturity [11-17]. Hence the standard locking techniques are more difficult in securing the shorter proximal fragment. Nail toggling is another potential complication due to the wider medullary canal in proximal femur [18]. With this rationale, as a literature support we planned for PHILOS plating. PHILOS plates are precontoured to proximal humerus in adults and this precontoured design was found to adequately fit to the anatomy of the paediatric proximal femur [19]. Broad proximal end of the PHILOS plate provides a stronger grip at the proximal femur. The proximal holes of the PHILOS plate allow locking screws at angle of 130 degrees, which is on par with the femoral neck/shaft angle. In addition, multiple locking screws options in the proximal plate allows better catch of the proximal fragment, easier screw insertion into the femoral neck, resulting in a stronger angular stability compared to compression plate [20]. After six months of follow up Harris hip score is 89 showing good functional outcome.



Conclusions

Being an unusual injury, we faced difficulty in selecting the suitable implant for the above patient. None of the proximal femur anatomical locking plates for adult population are not in suitable size for paediatric proximal femur. Hence we chose PHILOS plating with the use of MIPPO technique which allows less soft tissue dissection and periosteal stripping, therefore reducing the damage of the vascularity and smaller surgical scars and provides better anatomical reduction and good functional outcome

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