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Case Report

A case report of salter harris Type II fracture of distal femur left knee

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Abstract

Physeal fractures account for 15% to 30% of all bony injuries in children. Type II Salter Harris represent the most common type of fractures characterized by fracture along the physis into the metaphysis without crossing into the growing epiphyseal region of the bone. Type II Salter Harris fractures are usually managed by closed reduction and usually must be monitored for complications such as growth arrest. Here the authors present an uncommon case of Salter Harris Type 2 fracture of the distal femur in an adolescent resulting from fall and was managed by open reduction and internal fixation. A 14-year-old boy was bought to casualty with an alleged history of fall while trying to jump over a gate. He had a visible deformity on his left knee, skin was intact with significant swelling. X rays confirmed the diagnosis of Type II Salter Harris fracture of the distal femur of left knee. Closed reduction was attempted twice but fracture was found to be displacing and was highly unstable. Open reduction attempted and was achieved by varus and hyperextension. Final fixation was then done by placing medial distal femur osteotomy plate. He was on regular follow up post operatively. Follow up x rays were taken at 6, 12, 24 and 30 weeks. Implant was removed six months from the primary injury. Knee range of motion was good.

Keywords: Salter Harris Type 2 Fracture, Distal femur.

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1. Introduction

Physeal fractures account for 15% to 30% of all bony injuries in children.[1] The physis is weak during a child's growth spurt increasing its propensity to fractures whenever exposed to high traumatic forces which results from falls or collisions.[1] The Salter Harris classification system classifies fractures of the growth plate into five different categories.[2] Distal Femoral Physeal fractures are common fractures in the pediatric population that result from direct trauma in children with open physes.[3] Type II Salter Harris represent the most common type of fractures characterized by fracture along the physis into the metaphysis without crossing into the growing epiphyseal region of the bone.[4] Type II Salter Harris fractures are usually managed by closed reduction and usually must be monitored for complications such as growth arrest. Here the authors present an uncommon case of Salter Harris Type 2 fracture of the distal femur in an adolescent resulting from fall and was managed by open reduction and internal fixation.

2. Case Report

A 14 year old boy was bought by his parents to our hospital emergency room with complaints of pain, swelling and inability to move his left knee on 05th March 2023 around 8pm. He had an alleged history of fall while trying to jump over a gate. On examination he had a visible deformity on his left knee, skin was intact with significant swelling. The distal neurovascular status was intact. He was subjected to radiological examination (X ray Left knee – Anteroposterior and Lateral views) were taken. X rays confirmed the diagnosis of Type II Salter Harris fracture of the distal femur of left knee (**Figure 1**).

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Figure 1: X ray Knee AP and Lateral view showing Salter Harris Type 2 fracture of distal femur.

Patient was evaluated and was advised surgery. After Physician, Pre anesthetic clearance and informed consent from parents and assent from patient, he was taken for surgery on 06th March 2023. Under general anesthesia, patient was kept in supine position. Check IITV image was taken and once again it was confirmed to be Salter Harris Type II fracture pattern. Closed reduction was attempted twice but fracture was found to be displacing and was highly unstable. Hence it was decided to open reduce and fix the fracture. Parts painted and draped. Tourniquet inflated. Surface markings were done. An anteromedial approximate 7-10cm skin incision given over anterior aspect of left knee. Superficial dissection done. Vastus medialis was found to be torn. The distal fracture fragment was found to be lateral and posterior with intact periosteum over the posterior cortex. Bone was soft. Open reduction attempted and was achieved by varus and hyperextension. In order to hold the reduction a 2mm K wire was passed from medial to lateral aspect and temporary reduction was achieved and maintained. Final fixation was then done by placing medial distal femur osteotomy plate placed over anteromedial aspect of distal femur and fixed with seven locking and one cortical screws. Sufficient IITV images were taken to avoid penetration of screws into the growth plate. There was a dysfunction of the locking mechanism intraoperatively and hence parents of the boy was counselled about prominence of the hardware post-operatively. Final IITV image satisfactory. Thorough wash given and wound was closed in layers. Implant used was Synthes- Tomofix (Medial distal femur osteotomy plate). Post-operative X rays of left knee was taken and was satisfactory (**Figure 2**).

Figure 2: X rays of Knee AP and Lateral view showing post operative plate fixation

Post-operative period was uneventful. Toe touch weight bearing as pain tolerated with walker assisted ambulation done. He was discharged two days post-surgery. He was on regular follow up post operatively. Follow up x rays were taken at 6, 12, 24 and 30 weeks. Bone union, presence of any deformity was assessed along with range of motion in every follow up visits. Six month follow up x rays revealed complete bony union, absence of any deformity with full knee range of motion. Patient and attendants wanted the implant to be removed. Hence implant was removed six months from the primary injury (**Figure 3**). Knee range of motion was good post operatively and he was discharged from the hospital the next day after surgery.

Figure 3: X ray Knee AP and Lateral view (Full bone union and post implant removal status)

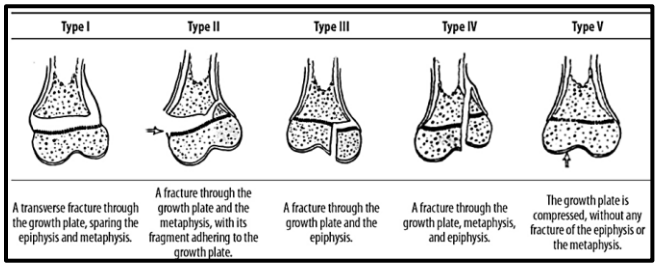

Figure 4; Salter-Harris Classification (from "Caffeys pediatric diagnostic imaging," Mosby Elsevier, 2007

3. Discussion

Salter Harris Type 2 fractures are the most common and they require clinical approach in management. Growth alterations are common in Type II Salter Harris fractures and in distal femur area it is almost 58%.[5-6] The most common complication following Type II Salter Harris fractures in distal femur is limb length discrepancy or angular deformity which results from Physeal arrest. Hence it becomes very important to counsel the parents regarding the poor prognosis associated with this fracture pattern.

4. Source of Funding

None.

5. Conflict of Interest

None.

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