

# Traumatic Hip Dislocation in Pediatric with Incarcerated Fragments: Case Series

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## **Abstract**

Two instances were mentioned. The first was a 9-year-old Saudi girl who suffered a right posterior hip dislocation as a result of a car accident. Initial reduction with skeletal traction (2 kg) was performed, but a post-reduction CT revealed imprisoned pieces in the right hip joint, necessitating immediate surgery. In the second case, a 9-year-old Saudi girl was transferred to the ER from another hospital with left hip pain following a reduction of posterior hip dislocation. X-rays and CT revealed an imprisoned fragment in the left hip joint. The Kocher-Langenbeck method was used to remove two portions of femoral head cartilage and tendon, measuring 2 mm and 3 cm, respectively. Postoperative MRI revealed no lingering loose bodies, and a broomstick cast with 45-degree hip abduction was used to prevent re-dislocation. The patient was recommended to remain on bed rest for 6 weeks before beginning physiotherapy. There were no

neurovascular problems observed. This case emphasizes the need of early diagnosis, modern imaging, and a multidisciplinary approach in addressing children hip dislocations, as well as the efficacy of surgical and conservative postoperative treatment.

**Keywords**

Hip dislocation, Pediatric age, Incarcerated fragments, Management, Complications, Post-operative.

**Introduction**

Traumatic hip injuries refer to a wide range of conditions caused by direct or indirect blows to the hip joint. (1, 2) These injuries can result in serious complications and long-term consequences. The hip joint, which operates as a ball-and-socket joint, is essential for bearing our weight and allowing us to move. (3) This makes it prone to several sorts of trauma, including fractures, dislocations, and soft tissue injuries. (4) It is important to highlight that severe hip injuries are rather common in children. (5) The way these injuries arise varies greatly between children and adults, owing to their developmental stages and activity levels. Hip dislocations in children are commonly caused by high-impact situations such as car accidents or falls from heights. (6, 7) Braun ME et al. (8) discovered in 2023 that, while these dislocations are very uncommon in children, they can result in significant complications such as avascular necrosis and long-term joint disorders if not treated promptly and effectively. Children's hips differ from adults in that they have growth plates and softer surrounding tissues, necessitating a unique approach to diagnosing and treating these injuries. Healthcare practitioners must have a thorough understanding of traumatic hip injuries, especially dislocations in young patients (9, 10). Early diagnosis and suitable therapy options are critical for reducing the risk of long-term complications and ensuring optimal recovery for young patients.

**Case 1**

9-year-old Saudi girl, a medically free MVA victim, arrived with right posterior hip dislocation. Reduction was achieved using skeletal traction 2kg, and CT was performed after reduction. The patient had Incarcerated fragments, pt was admitted to intensive care unit due to bilateral lung contusion, multiple rib fracture, and left lung foreign body, patient underwent emergency operation for removal of foreign body, after stabilization and observation in ICU, the patient prepared for emergency surgery, Kocher-langenbeck approach utilized traction without surgical hip dislocation resulted in good visualization for joint, lose body removed it was two fragments, the first was 2m A broomstick cast with 45 degree hip abduction was used to prevent post-op dislocation.

**Imaging**

Figure 1 depicts an X-ray pelvis AP view before and after the reduction of the right hip posterior dislocation, with successful reduction of the displaced hip joint.

Figure 2 depicts the CT scan of the Kocher-Langenbeck method employed in this patient, as well as the removal of two fragments from the joint (first 3 cm, second 2 mm). CT scans revealed imprisoned fragments at the right hip joint following reduction, but post-surgery films revealed no free fragments. Additionally, the patient had a non-displaced fracture of the posterior wall.



Figure 1.a: X-ray of AP pelvis showing Rt hip posterior dislocation



Figure 1.b: X-ray of AP pelvis showing Rt hip post reduction, with successful reduction



Figure1.c: X-ray of AP pelvis showing Rt hip post reduction, with successful reduction



Figure 2.a: Intra-operative photo for Kocher - langenbeck approach used for this case



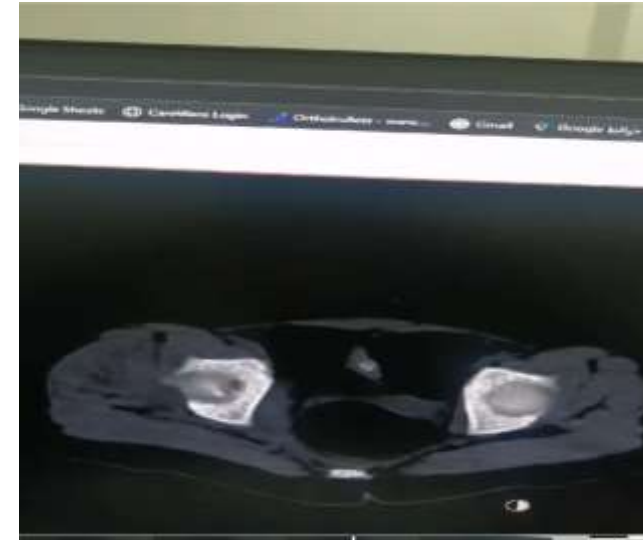
Figure 2.b: Picture showing 2 fragments (first 3 cm, second 2mm) removed from the joint



Pelvis CT Sagittal view post reduction showing Rt hip incarcerated fragments



Pelvis CT coronal view post reduction showing Rt hip incarcerated fragments



Pelvis CT axial view post reduction showing Rt hip incarcerated fragments

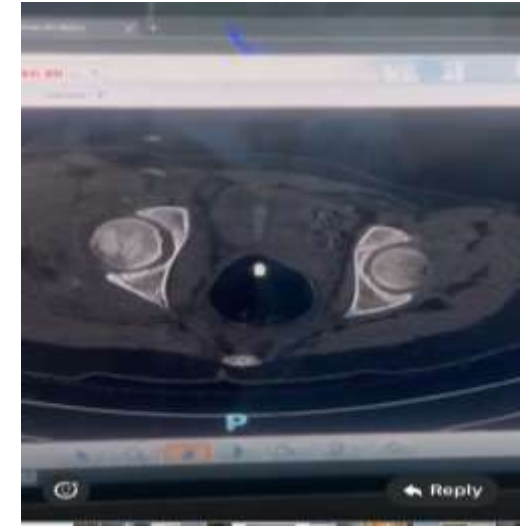
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Pelvis CT coronal view post-operative showing Rt hip free of incarcerated fragments



Pelvis CT sagittal view post-operative showing Rt hip free of incarcerated fragments



Pelvis CT axial view post-operative showing Rt hip free of incarcerated fragments

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### **The outcome**

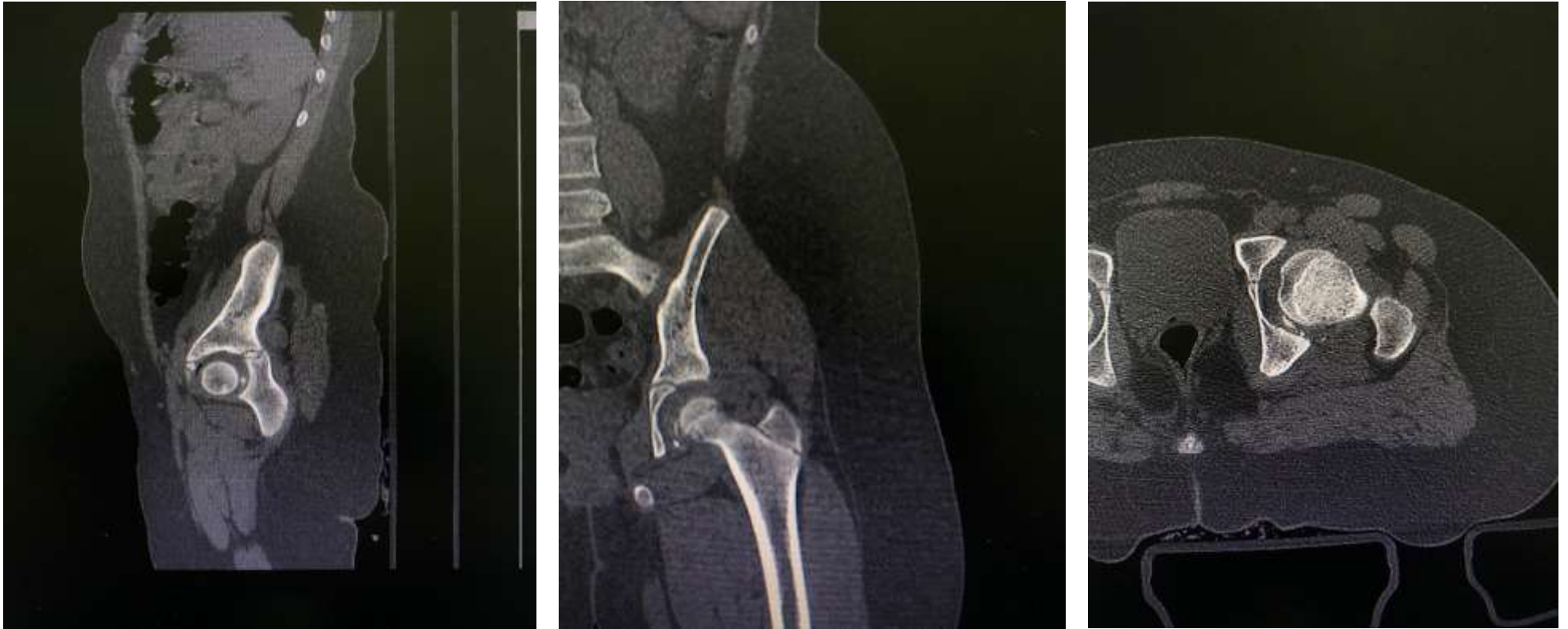
Distal Neurovascular Intact post-operation. To prevent dislocation a broomstick cast with hip abduction in 45 degree was applied to the patient, with bed rest for 6 weeks then physiotherapy and OPD follow-up.

### **Case 2**

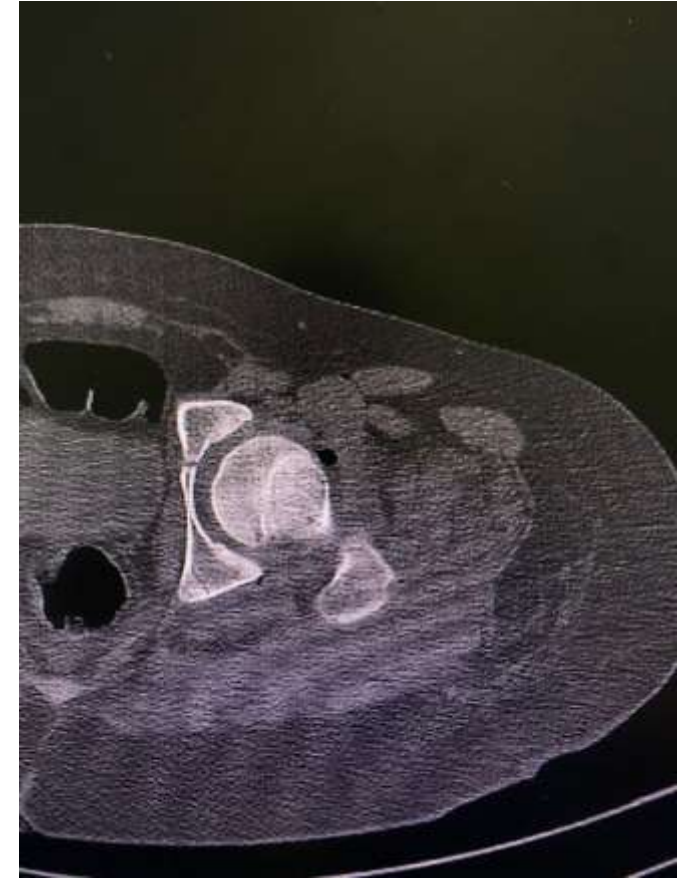
A 9 Years Old Saudi Girl a medical Victim of RTA came to the ER complaining of LT hip pain referred from another hospital after a reduction of posterior hip dislocation, X-ray and CT done showed an LT hip joint incarcerated fragment.



X-ray at presentation AP and Abduction view shows both hip joints normal with no dislocation



Pre-operative CT done shows sagittal, coronal, axial pelvis views with Lt hip incarcerated fragment



Post-operative CT done shows sagittal, coronal, axial pelvis views with Lt hip free of incarcerated fragment

### **Imaging and management**

Same like the previous case with all reported X-Ray findings and CT pre and post-operation are attached.

### **Discussion**

This case report details the effective treatment of a 9-year-old Saudi girl who suffered a right posterior hip dislocation in a motor vehicle accident (MVA). The case emphasizes the significance of prompt diagnosis, adequate imaging, and a multidisciplinary approach to complex orthopedic injuries in juvenile patients. The patient first presented with a right hip posterior dislocation, which was mitigated by applying skeletal traction (2 kg). However, post-reduction MRI revealed imprisoned pieces within the joint, necessitating an emergency surgical procedure.

The second instance included a 9-year-old Saudi girl who was injured in an MVA and presented to the emergency room with left hip pain. She was referred from another hospital following an attempt to reduce a left hip posterior hip dislocation. Imaging studies, such as X-rays and CT scans, indicated an imprisoned fragment inside the left hip joint. This instance underscores the need of sophisticated imaging in locating imprisoned fragments that may not be seen on initial X-rays. The existence of such pieces frequently requires surgical intervention to restore joint integrity and prevent long-term problems.

Both cases demonstrate the successful therapy of two pediatric patients who suffered posterior hip dislocations as a result of motor vehicle accidents. Both instances highlight the significance of timely diagnosis, proper imaging, and a multidisciplinary approach to treating complicated orthopedic injuries in children. Posterior hip dislocations in young children are uncommon but significant injuries that require prompt treatment to avoid consequences such as avascular necrosis, post-traumatic arthritis, and long-term functional impairment. Furthermore, both examples demonstrate the difficulties associated with pediatric hip dislocations, including the danger of missing or improperly treated imprisoned fragments. If not treated immediately, incarcerated pieces can cause joint instability, cartilage degradation, and early-onset osteoarthritis. In both cases, CT imaging was used to locate the fragments and guide surgical decisions.

The Kocher-Langenbeck method enabled clear imaging of the hip joint. This method has been extensively studied for its efficacy in treating posterior hip dislocations and acetabular fractures, particularly those with imprisoned fragments. (11, 12) The Kocher-Langenbeck method is especially useful in juvenile situations because it lowers soft tissue injury and the danger of avascular necrosis, which is a typical consequence of hip dislocations. (13) During surgery, two fragments were removed: a 2 mm fragment and a bigger 3 cm portion of femoral head cartilage and tendon.

Postoperative imaging indicated that the loose bodies had been completely removed and that the joint space was clear, indicating a good outcome. Postoperative CT confirmed the lack of loose fragments and the joint's stability, which is critical for ensuring long-term joint function and avoiding problems like avascular necrosis or post-traumatic arthritis. (14, 15) In pediatric patients, early diagnosis and removal of intra-articular fragments are critical for preventing long-term joint injury and degenerative changes. (16) The patient's postoperative treatment regimen included using a broomstick with both hips abducted 45 degrees. Broomstick casts are frequently used in pediatric hip dislocations to avoid re-dislocation and enhance healing by keeping the joint stable. (17, 18) The patient was instructed to continue on bed rest for 6 weeks, followed by physiotherapy and regular

outpatient follow-ups to assess her recovery. This strategy is compatible with current guidelines for handling pediatric hip dislocations, which emphasize the importance of watchful monitoring and progressive rehabilitation to achieve the greatest results. (19, 20) Prolonged immobilization and restricted weight-bearing are especially critical in children to promote adequate healing of the hip joint and surrounding soft tissues. (21) The patient's distal neurovascular condition remained intact after surgery, indicating a satisfactory outcome. Neurovascular problems are a known danger in hip dislocations, especially in posterior dislocations where the sciatic nerve is susceptible to damage. (22, 23) The lack of such problems in this case demonstrates the success of the surgical and postoperative care measures. Early reduction and careful handling of soft tissues during surgery are crucial for reducing the risk of nerve damage. (24)

### **Conclusions and recommendations**

In conclusion, these examples show that a combination of skin traction, sophisticated imaging, and surgical intervention can effectively manage infant hip dislocation with imprisoned fragments. The Kocher-Langenbeck procedure proved to be a successful surgical technique, and using a broomstick cast postoperatively helped to avoid problems. This case demonstrates the value of a multidisciplinary approach, prompt intervention, and meticulous postoperative care in attaining positive outcomes in juvenile orthopedic trauma. The combination of modern imaging, surgical competence, and postoperative treatment resulted in a favorable outcome for this young patient.

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