



# Open anterior dislocation of the hip in child of 7-years-old: A case report and literature review

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## ABSTRACT

Traumatic hip dislocation is a rare injury in children, and an open dislocation is exceptional. We report the case of a 7 year old patient who presented an open anterior dislocation of the left hip following trauma by accident of the public highway. The patient received treatment under general anesthesia: articular toilet, debridement and reduction. Then, He was put under traction for 6 weeks and antibiotic. The short term evolution is marked by the occurrence of post-traumatic septic arthritis and osteonecrosis of the femoral head after two months.

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## 1. Introduction

Traumatic dislocation of the hip is a rare disease in children, only single cases or short series of cases observed over long periods have reported.<sup>1,2</sup> It occurs 25 times more frequently in adults than in children.<sup>2</sup> It is estimated that traumatic dislocations child's hip represent 2–5% of all dislocations.<sup>1</sup> The dislocation of the hip in children under 5–6 years may occur during trivial trauma, this being due to the low articular congruence due to the cartilaginous part of the acetabulum and ligamentous laxity<sup>3</sup>; whereas after 6 years, they are secondary to violent trauma. Dislocations of the hip are mostly closed, the most common complication being avascular osteonecrosis.<sup>2</sup> Beside them, there are open dislocations of the hip, which are even rarer following a violent trauma<sup>4–9</sup>; the skin effraction occurs from within outwards, tearing of soft tissue and skin by the femoral head with the risk of occurrence of post-traumatic septic arthritis.<sup>7</sup> It is a therapeutic emergency order to prevent the occurrence of these complications. We report our first case of open anterior dislocation of the left hip with cutaway of the greater trochanter following an accident of the public highway in a child of 7 years. Il s'agit du premier cas de luxation ouverte traumatique de la hanche observée dans notre service. Nous rapportons

ce cas exceptionnel afin de faire une revue de la littérature sur les luxations traumatiques ouvertes de la hanche chez l'enfant.

## 2. Case report

E. is a 7 year old boy without special medical history admitted to emergency about 1 hour after being severely hit by a taxi. Clinical examination had revealed an externalization of the left femoral head through a wound of the left groin fold (Fig. 1). The left leg was in flexion, abduction and external rotation. There was no vascular injury or sensorimotor disorder. The rest of the physical examination was normal. The radiograph of the pelvis had highlighted an ischial anterior dislocation with fracture of the greater trochanter (Fig. 2). We concluded an open anterior dislocation of the left hip with fracture of the greater trochanter. The child was taken care of urgently within 2 hours after the accident. We proceeded to a toilet with extraction of terrestrial debris, a reduction of dislocation, and muscle repair and skin closure under general anesthesia. Nous n'avons pas poser de drain. The patient was then placed under traction during 6 weeks. Evolution was complicated suppuration linked to post-traumatic septic arthritis after 1 month of evolution. The radiograph showed a consolidation of the fracture of the greater trochanter, and signs of osteoarthritis of the hip (Fig. 3). We conducted an arthrotomy and hip lavage, the analysis of pus revealed *Staphylococcus aureus*. Evolution was favorable with lincomycin. However, the removal of traction, we observed a

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**Fig. 1.** Clinical appearance of the patient at admission.



**Fig. 3.** Osteoarthritis of the left hip with geodes of the femoral head and trochanteric.



**Fig. 2.** Initial X-ray showing dislocation of the left hip with tearing of the greater trochanter.

subluxation requiring a second reduction under general anesthesia and immobilization with hip spica for 3 weeks more. At 2 months of evolution, we observed the occurrence of necrosis of the femoral head (Fig. 4).

### 3. Discussion

Traumatic dislocation of the hip in children are a rare entity that

can occur following trauma or trivial high energy, this energy is proportional to the child's age.<sup>3</sup> Indeed, the authors<sup>1,3</sup> shall agree on the fact that the dislocations of the hip are, most often, following a trivial trauma (fall from a height, for example) in children under 6 years; while among older, trauma is more violent (during a football match, a traffic accident). Our patient was 7 years old and was the victim of a traffic accident. Conversely, the open dislocations are most often anterior.<sup>3</sup> The occurrence mechanism of the anterior hip dislocation was described in 1950 by Nilloff and Petrie<sup>10</sup>: it occurs as a result of violent trauma involving lower limb external rotation forced while it is in abduction with knee flexed. The open anterior dislocation of the hip are even rarer, the mechanism is the same and the necessarily more violent trauma.<sup>3–9</sup> The literature reports few rare pediatric cases of anterior dislocations open hip,<sup>4–9</sup> we found only one case of open posterior dislocation of the hip observed in children 6 years.<sup>3</sup> Traumatic dislocation of the hip in children may be isolated or associated with other injuries including a fracture of femur<sup>11</sup> or the acetabulum,<sup>12</sup> femoral vascular injury<sup>4,13</sup> injury sciatic nerve<sup>14</sup> or a fracture of the greater trochanter as also seen in our patient. The dislocation of the hip is an orthopedic emergency to be reduced as quickly as possible, especially when open. This approach allows to minimize the risk of developing complications including osteonecrosis of the femoral head and the post-traumatic septic arthritis. All authors agree on the high risk of developing post-traumatic septic arthritis should be minimized by an immediate reduction, a toilet with debridement and antibiotic broad spectrum.<sup>9</sup> Despite all these precautions, our patient had suppuration linked to post-traumatic septic arthritis. The isolated germ culture was *Staphylococcus aureus*. The infection was successfully treated with lincomycin after arthrotomy and joint lavage. This complication was observed by other authors.<sup>5,7</sup> Renato<sup>5</sup> was also isolated *Staphylococcus aureus*, while Garcia<sup>7</sup> had isolated multi-microflora made of *Escherichia coli*, *Pseudomonas aeruginosa* and *Enterococcus Fascii*. Avascular necrosis of the



Fig. 4. Osteonecrosis of the left femoral head at 2 months of evolution.

femoral head is the most common complication; it is favored by several factors: the violence of the trauma, the degree of displacement and the delay of reduction.<sup>2</sup> For Hougaard et al.,<sup>13</sup> 52.9% of avascular necrosis of the femoral head had occurred when that time reduction of dislocation was more than 6 hours against 4.8% for a period of less than 6 hours. Avascular osteonecrosis of the femoral head may occur within 2–12 months or even 24–36 months evolution and occurs mainly in older children (older than 6 years).<sup>2</sup> In our patient, who was 7 years old, it occurred after 2 months of evolution, despite early reduction (2 hours after the trauma). We think that the importance of displacement, with a concomitant rupture of the ciconflex arteries, inevitably leads to osteonecrosis of the femoral head. Whatever the time of care. He will be regularly monitored in the coming months. The risk of occurrence coxa magna has also been reported by some authors.<sup>2</sup> The type and duration of immobilization are variable according to the authors.

#### 4. Conclusion

Traumatic dislocation open hip is a rare, a few cases have been reported in the literature. Two complications are to be expected: post-traumatic septic arthritis and osteonecrosis of the femoral head.

The authors declare no conflict of interest.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jcot.2019.04.025>.

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