

TRAUMATIC BILATERAL POSTERIOR HIP DISLOCATION IN CHILDREN. A 12-YEAR FOLLOW-UP CASE REPORT

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Background. Bilateral traumatic hip dislocation in children is a very rare orthopedic emergency. Few case reports are available in literature.

Clinical case. A 4-year-old male child case with a trivial mechanism of injury is presented. Closed reduction in emergency department was achieved after 24 hours of injury, he was placed on Buck's skin traction for 4 days and during 4 weeks in a spica cast. There was not either clinical sign nor images of early or late complications during follow up until he reached skeletal maturity.

Discussion. Hip dislocation in children is a rare emergency with an incidence of 0.8 cases per million per year, its treatment should not be delayed to minimize late complications such as osteonecrosis, recurrent dislocations, osteoarthritis, neurological lesions, coxa magna and heterotopic ossification. The reported incidence for hip osteonecrosis is 36.4% for late (>6 hours) and 8.2% after early (<6 hours) reduction. After 12 years of follow-up no complication was found although the reduction was made 24 hours later.

Conclusions. After immediate reduction a 4 to 6 weeks immobilization period is an effective treatment. Close monitoring to timely identify and treat any further complication is mandatory.

Keywords: bilateral hip dislocation; traumatic hip dislocation; children hip dislocation.

ТРАВМАТИЧЕСКИЙ ДВУСТОРОННИЙ ЗАДНИЙ ВЫВИХ БЕДРА У ДЕТЕЙ. ОПИСАНИЕ КЛИНИЧЕСКОГО СЛУЧАЯ С 12-ЛЕТНИМ НАБЛЮДЕНИЕМ

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Обоснование. Двусторонний травматический вывих бедра у детей — очень редкое неотложное состояние в ортопедии. В литературе описаны единичные случаи.

Клиническое наблюдение. Представлен клинический случай двустороннего травматического вывиха бедра у 4-летнего ребенка мужского пола с обычным механизмом травмы. Через 24 ч после травмы в отделении неотложной помощи выполнено закрытое устранение вывиха с последующим наложением гипсовой повязки по Бюкку в течение 4 сут и иммобилизацией кокситной гипсовой повязкой в течение 4 нед. В ходе последующего наблюдения до наступления костной зрелости клинических или рентгенологических признаков ранних или поздних осложнений выявлено не было.

Обсуждение. Заболеваемость вывихом бедра у детей составляет 0,8 случая на 1 млн в год. Для минимизации риска таких поздних осложнений, как остеонекроз, повторные вывихи, остеоартрит, неврологические нарушения, *coxa magna* и гетеротопическая оссификация, лечение необходимо начинать своевременно. По данным литературы, частота остеонекроза тазобедренного сустава составляет 36,4 % при отсроченном (>6 ч) и 8,2 % при раннем (<6 ч) устранении вывиха. В течение 12-летнего периода наблюдения не было отмечено никаких осложнений, несмотря на то что вывих был устранен через 24 ч.

Заключение. Иммобилизация в течение 4–6 нед. после устранения является эффективной тактикой лечения данных вывихов. Для своевременного обнаружения и лечения любых последующих осложнений необходимо постоянное наблюдение.

Ключевые слова: двусторонний вывих бедра; травматический вывих бедра; вывих бедра у детей.

Traumatic hip dislocation in childhood is an infrequent lesion that represents less than 5% of dislocations in children, with a predominance in male child [1, 2]. According to their presentation it can be anterior or posterior, unilateral or bilateral. Although treatment timing and its impact on the prognosis still controversial, it is well known that they should be diagnosed and treated immediately due to the poor prognosis reported in cases after late reductions and an increased incidence for the development of complications such as avascular necrosis, *coxa magna*, heterotopic ossification, recurrent dislocation, or osteoarthritis. These complications may be of early or late presentation so these patients should undergo close and prolonged surveillance.

We present a very unusual case of a male child with simultaneous posterior traumatic dislocation of both hips by a low energy mechanism resolved with a late closed reduction after 24 hours of injury with close follow-up until he reached skeletal maturity, without developing any complications.

Clinical case

A 4-year-old male child with no relevant clinical history, arrived to the emergency department 24 hours after suffering a fall from a mule wagon in a farm with pain, deformity and functional limitation of both hips. According to the parents the delay was related to lack of access to immediate specialized medical attention within the origin town and also lack of economic resources for emergency transfer.

On clinical examination both hips were in adduction and internal rotation, both knees flexed, presenting on the left knee abrasion and ecchymosis, with a palpable bulge in both gluteal regions. No clinical data of distal neurovascular compromise was found.

X-ray were obtained, they revealed incongruence of both coxofemoral joints, with posterior displacement of both femoral heads, without solutions of bone continuity (Fig. 1).

Traumatic bilateral hip dislocation was diagnosed after 24 hours of injury.

Closed reduction maneuvers were performed in the emergency area, with maneuvers of flexion of both hips at 90° with traction and external rotation, after evidence of reduction in new X-ray, both extremities were left with Buck's skin traction with one kilogram weight each for four days, the fourth day bilateral traction is removed and spica cast is placed with hips abducted at 15° and knees with 15° flexion. The child was released six days after admission and was evaluated in the outpatient clinic four weeks later where the spica is removed. Full mobility arches of both hips were found, at that moment physiotherapy was started and full weight bearing two weeks later.

After 12 months, he was asymptomatic, without limitation of mobility arcs, performing daily activities and play without limitations (Fig. 2).

On follow-up of 12 years after the injury, at the age of 16 years-old presented independent march, without limping; full mobility arcs, a pelvic radiography was obtained and did not revealed any abnormalities.

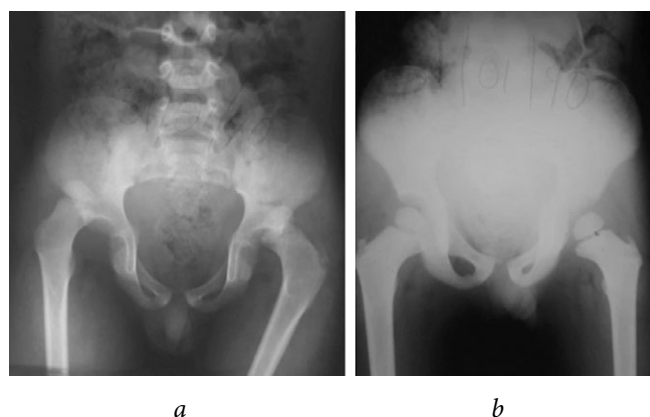


Fig. 1. Initial X-ray. Anteroposterior pelvis showing bilateral posterior hip dislocation (a); immediate postreduction X-ray. Pelvis with reestablishment of both coxofemoral joints (b)



Fig. 2. Pelvis X-ray after 12 months of follow up (a); last X-ray control. Pelvis after 12 years of follow up with skeletal maturity achieved (b)

Discussion

Hip dislocation in children is a rare emergency with an incidence of 0.8 cases per million per year, its treatment should not be delayed to minimize late complications; the most frequent of these, osteonecrosis has an incidence of 3 to 15%, increasing by 20 times when the reduction is not made within the first 6 hours [3, 4]. Other late complications reported are recurrent dislocations, osteoarthritis, neurological lesions in 5% of children; coxa magna in 26% and heterotopic ossification. However, in children bilateral hip dislocations in previously healthy hips are even more infrequent injuries, there is no report of their incidence, and there are few case reports. Moreover, there is currently no reported case with follow-up to skeletal maturity. A search was carried out on the Pubmed platform introducing the words: <bilateral>, <traumatic>, <hip>, <dislocation> and <children>, we obtained 13 results of which only five publications corresponded to reports of cases of true traumatic bilateral hip dislocations in pediatric age written in English language [5–9], although only four presented simultaneous bilateral injury.

In the presented case a trivial mechanism was responsible for dislocating both hips, it is recognized that the force required for this injury increases with age, in children aged less than 10 years a low energy force is sufficient due to the laxity of the structures surrounding the acetabulum, this also contributes to a lower incidence of associated fractures. In all the cases reviewed by Mehlman & cols, dislocations were posterior, however, there are reports in the literature of unilateral anterior dislocations with also low energy mechanisms [10].

Because of the long distance from the community of origin to the hospital and other economic issues, there was an interval of 24 hours from injury to reduction. There is a controversy regarding the reduction time, in the series performed by Mehlman et al., they report an increase in the risk of avascular necrosis of 20 times in patients in whom the reduction is made in a time greater than 6 hours after injury, however, in the work done by Bunell & Webster, no late complications were identified in a 5 year old girl with a delay of 5 weeks in the reduction of a previously healthy hip. In a meta-

analysis comparing the time of reduction with the development of avascular necrosis of the femoral head in mixed adult and pediatric population, an incidence of 36.4% versus 8.2% was reported for late (>6 hours) and early (<6 hours) reductions respectively; This translates into a probability ratio of 7.44 for avascular necrosis in patients with a time interval greater than 6 hours between hip dislocation and reduction [11].

The failure after three attempts of closed reduction forces to perform an open approach in those patients with contracture generally due to an inadvertent dislocation for more than three weeks, a tenotomy of the adductor longus muscle and the lengthening of the psoas muscle should be considered, as well as the fixation with a K-wire. Another option in case of failure is the open reduction by posterior approach to avoid further devascularization of the femoral head, this variant is useful in patients with more than 6 weeks after injury [12].

After reduction the patient must be immobilized. Similarly, there is no consensus regarding immobilization time after open or closed reduction, it is recommended 3 to 4 weeks in children under 10 years and 6 to 12 weeks in adolescents and adults. In our case, the spica cast was removed after 4 weeks and full weight bearing was started after 2 weeks more, because by that time it is expected soft tissues healing according to the recommendation given by Glass & Powell [13].

In the subsequent evaluations, the patient showed asymptomatic and there was no sign of avascular necrosis, *coxa magna*, heterotopic ossification, recurrent dislocation, or osteoarthritis on imaging, although the reduction was made 24 hours later. This is similar to other reports of bilateral hip dislocation, however, on a search in another platform we found a case of a 14-year-old teenager with bilateral hip dislocation by a high energy mechanism, reduced after 22 hours of the injury. They report avascular necrosis and secondary osteoarthritis after 4 years and 11 months of follow-up [14].

Bilateral traumatic hip dislocation in children is a very rare orthopedic injury, although its timely treatment does not guarantee a progression free of complications. Some associated poor prognostic factors are older children, high energy mechanism of injury, association to fractures and delayed reductions.

Conclusions

Immediate reduction is a priority. According to the available literature closed reduction and 4 to 6 weeks immobilization period appears to be an effective treatment. Parents should be informed of these risks and how important is the close monitoring to timely identify and treat any further complication.

Additional information

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Author contributions

I. Soto-Juárez: intellectual concept and preparation of the entire research project.

R. Martínez-Pérez: writing and revision, and intellectual concept.

All authors made a significant contribution to the research and preparation of the article, read and approved the final version before publication.

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