



Recurrent traumatic hip dislocation in a child: Case Report

Çocukta tekrarlayan travmatik kalça çıkığı: Olgu sunumu

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Çocukluk çağında, tekrarlayan travmatik kalça çıkığı ile çok nadir olarak karşılaşmaktadır. Bu yazıda konservatif yöntemle tedavi edilen bir hastanın klinik ve radyolojik sonuçları sunuldu. Son kontrolünde altı yaşında olan kız çocuğuna, ilk kez iki yaşında sağ posterior travmatik kalça çıkığı tanısı ile kapalı redüksiyon ve pelvipedal alçılama uygulandı. Hasta dört yaşındayken hafif bir travma ile sağ kalçadaki çıkıkta nüks görüldü. Hastaya tekrar kapalı redüksiyon ve takiben üç hafta süreyle pelvipedal alçılama uygulandı; ardından üç hafta süreyle yük verme kısıtlandı. Hastanın izlemi sırasında gözlenen kalça eklem kapsülü posteriorunda gevşekliliği düşündüren karşı tarafa göre artmış iç rotasyon hareket genişliğinin son kontrolde kaybolduğu gözlemlendi. Ayrıca, manyetik rezonans görüntüleme ile yapılan değerlendirmede avasküler nekroz gelişmediği görüldü. Hastanın klinik muayene bulguları normaldi ve herhangi bir şikayeti yoktu. Dikkat çekici nokta hastanın ailesinde birçok bireyde gelişimsel kalça displazisi olmasıydı.

Anahtar sözcükler: Çocuk; kalça çıkığı/televatı/komplikasyon.

Recurrent traumatic hip dislocation is rarely seen in childhood. We presented a case of traumatic hip dislocation which was treated by conservative methods. A two-year-old girl was treated with closed reduction and a hip spica cast for posterior traumatic dislocation in the right hip. Two years later, a recurrent dislocation occurred following a minor trauma on the same side. She was again treated with closed reduction and immobilization with a hip spica cast for three weeks followed by a three-week load bearing restriction. Early follow-up examinations showed an increased internal rotation of the hip compared to the left side, suggesting increased posterior capsular laxity. It then disappeared on her final follow-up at age six and magnetic resonance imaging showed no evidence for avascular necrosis or capsular laxity. She was asymptomatic and her physical examination was within normal limits. Of note, several members in her family had developmental dysplasia of the hip.

Key words: Child; hip dislocation/therapy/complications.

Traumatic hip dislocation is an uncommon pathology in children; and it has been reported that only 5% of such dislocations occur in children less than 14 years of age. ^[1,2] The prognosis in children differs from the dislocations in adults in terms of the mechanism of occurrence and the severity of the injury. Although the recurrence of such dislocations is more frequent than in the adults, they are referred to as "very rare" in case reports in the literature.

Traumatic hip dislocations usually develop following small traumas with low-energy in children

under 10 years of age while it occurs in children over 10 years old after high-energy traffic accidents or sports-related activities. ^[3] Although boys are more frequently affected than girls (78% and 66 % respectively), there are also some studies reporting that it is more frequent in girls among children less than 5 years old. ^[3] As in the adults, posterior dislocations are 5 to 10 times more common than anterior dislocations. A very exceptional condition is the formation of luxatio erecta femoris, the femoral head being dislocated to the inferior. Compared to adults,

concomitant fracture with dislocation is uncommon particularly in children less than 6 years old, which may be as a result of the anatomical characteristics changing based on the age or the severity of the trauma. [4] This case report presents a girl who developed recurrent traumatic hip dislocation and also had developmental hip dislocation history in her family.

Case report

The two-years old girl was referred to the emergency service due to her complaints of pain in the right hip and restricted motion of range following a fall from a significant height. Physical examination revealed shortness in the right lower extremity as well as flexion, adduction and internal rotation deformity in the right hip. No pathological finding was found during the circulatory system and neurological examinations. The radiographic evaluations disclosed posterior traumatic hip dislocation (Figure 1a). The patient who underwent closed reduction by Bigelow maneuver under sedation two hours after the injury had concentric reduction in the post-reductive views. The vertebral gaps in both hips were at an equal distance (Figure 1b). The peldipedal cast covered the entire lower extremity on the right, and only the hip on the left. However, it was found out that the cast was removed by her family on the second day after the reduction, she was allowed to walk, and she had no pain, limping and restriction in the range of motion following the cast

removal. The patient did not show up for further follow-up.

Two years later, she was again referred to the emergency service when she suffered a recurrence of pain in her right hip and restriction in the range of motion resulting from a simple fall while she was walking. The radiographic views taken after physical examination showed recurrence in the right posterior traumatic hip dislocation (Figure 2a). The hip was closely re-reduced under sedation two hours after the trauma, and the post-reduction views showed that there was a concentric reduction and no asymmetry in the gaps between the hip joints (Figure 2b). The patient was treated using a peldipedal cast, which was removed three weeks later, and the patient walked with the aid of using a crutch without putting weight on the dislocated side for a period of three weeks.

Due to the recurrence of dislocation, conventional arthrography was planned under general anesthesia after taking her parents' approval; but they didn't permit it. During the physical examination at the beginning of the post-reductive third month, an internal rotation with 90 degrees was observed, which made us consider posterior capsular laxity in the right hip. There was a difference of 45 degrees of internal rotation between the two hips (Figure 3). Later on, no pathological finding was found to indicate avascular necrosis, capsular extension, osteochondral lesion, soft tissue interposition, diversion or



Figure 1. (a) Traumatic dislocation in the right hip is evident in the antero-posterior radiography of the patient, which was taken when she was two years old. (b) The antero-posterior pelvis radiography following the reduction in the first occurrence of dislocation.

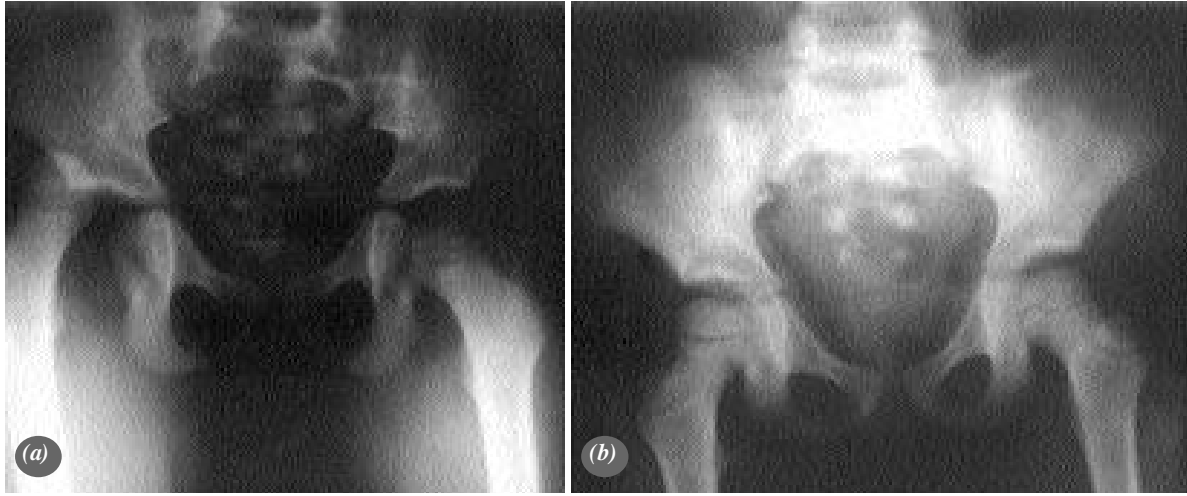


Figure 2. (a) Hastanın dört yaşında tekrarlayan travmatik sağ kalça çukluğu gösteren ön-arka radyografisi. (b) İkinci çukluktan redüksiyonundan sonraki ön-arka pelvis radyografisi.

tearing of the labrum during the analysis of the magnetic resonance imaging views taken from the patient having no symptoms when she was five years old.

During the physical examination conducted two years and six months after the last dislocation when the patient was six years old, it was observed that the over-activity of the internal rotation in the right hip and the difference of internal rotation between the two hips had disappeared, and no symptom was found (Figure 4a, b). There was no finding suggesting hyperlaxity during the physical examination. Her genetic history revealed that her mother, grandmother, five aunts and sister of her grandmother had bilateral developmental dysplasia of the hip. It was confirmed radiographically in her mother.



Figure 3. It is evident that the right hip could have an internal rotation (42°) up to 90 degrees in a view taken two months after the reduction of the recurrent dislocation.

Discussion

The hip is a stable joint which cannot be compared to any joint such as the shoulder joint with its frequent recurrent dislocations due to its characteristics of bone and soft tissue support. Therefore, recurrence is uncommon in dislocations. The publications related to the recurrence of hip dislocations in children are usually case reports, and very unusual.^[3-5]

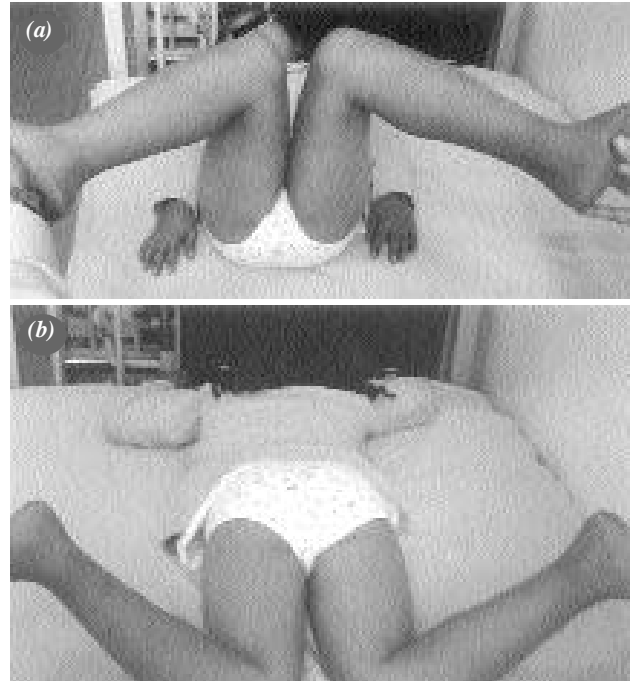


Figure 4. It is evident that there was no difference between the internal rotations of the two hips in views taken when she was lying (a) on her back and (b) face downward.

Complications that may develop following traumatic hip dislocations in children are avascular necrosis, traumatic arthritis, heterotopic ossification, sciatic nerve paralysis, coxa magna, premature epiphyseal fusion and recurrence.^[5-7]

In the development of avascular necrosis, the most significant factors include the time until reduction not exceeding 24 hours, severe trauma in children over six years old and concomitant fracture. It has been reported that avascular necrosis may develop up to 58% of the patients. Although it was stated that avascular necrosis might develop mostly within the first three years, it is generally accepted that these children should have regular follow-ups until their growth is complete.^[5,6] It has been informed that neurological damage occurs in the form of neuropraxi affecting the sciatic nerve is usually restored spontaneously and that its incidence is around 20%.^[5-7]

It should be noticed that acute dislocations might redevelop in children after the reduction of the traumatic hip dislocations. Therefore, very good quality radiography and further evaluation by computed tomography are suggested if there is any suspicion regarding the reduction. The major cause of recurrent acute dislocations is soft tissue interposition or osteocondral fragments.^[5]

According to Ahmadi and Harkess^[8], recurrent hip dislocations can result from a trauma, ligamentous laxity or intentional dislocations accompanying paralytic diseases or habitual dislocations. There is no pain in the latter two; the children reduce their hip themselves without any need of reduction by manipulation. It has been reported that capsular plication or bone block type surgeries can be used in recurrent dislocations, and innominate osteotomy in intentional dislocations while in habitual dislocations usually psychological problems are involved and there is no need for surgical repair.^[8]

Even though there are several proposals about the cause recurrence in traumatic hip dislocations in children, it is difficult to reach a conclusion since the number of case reports published is very small. The recurrence is more frequent in patients under eight years old.

It has been stressed that the immobilization time after the first reduction is significant. And, it has

been claimed that the immobilization time is kept short so that capsular structures do not get restored appropriately in case of any delay in the first reduction. However, it is not easy to reach such a conclusion since the method and period of immobilization are variable in the studies published.

The posterior capsule becomes detached from the edge of the acetabulum so as to maintain evagination, crumpling or labrum in the posterior capsule in patients who underwent surgery due to recurrence. Extension or plastic deformation is possible along with the tear in the capsule. Labral tears looking like bucket handle, condral lesions at in the head of the femur and acetabulum, and fractures of acetabulum rims can be seen.^[9] It has been proposed that soft tissue is responsible for the recurrence of hip dislocations in children. If concentric reduction is achieved after the reduction of the hip dislocation, immobilization using pelvipedal cast or skin traction followed by pelvipedal cast is suggested in children less than 10 years old while vertebral traction is recommended for follow-up in children over 10 years old.

It is usually recommended to allow walking without weight bearing for three months after a three weeks immobilization.^[4,5,9] It has been reported that successful outcomes were achieved by surgery or conservative treatment in recurrent cases. But, what is important is to define the pathology involved in the recurrence. It is not proper to have the same approach for a case with weakened capsule and another one with crumpling, labral or capsular (56) tearing. Arthrography or artrotomography are required in order to best determine the pathology. Some authors state that they apply only closed reduction and immobilization in recurrence while others recommend capsular plication and labrum repair through surgical intervention when pathology was found in the capsule and labrum by the arthrography taken after the closed reduction.^[5,8,9] Although she had a recurrent dislocation, we couldn't perform arthrography or artrotomography because of the non-consent of her parents. However, during the follow up examination we carried out two years and six months after the latest dislocation we noticed that the laxity of the over internal rotation, which was previously present and looking like a posterior capsular pathology had disappeared, no symptoms were

found, and no finding related to avascular necrosis was present. We haven't seen any information on inherent hip displasia among family members in the reports, which we reviewed concerning the traumatic hip dislocations.

In conclusion, the recurrence of traumatic hip dislocation is usually a complication of traumatic dislocations in children less than 7-8 years old. Such a complication may develop as a result of improper treatment and short immobilization period or it may develop even when these circumstances are absent. For second dislocations, it is again possible to treat them by closed reduction and immobilization, but it is better to conduct further analyses to examine the pathology of soft tissue and bone, and then schedule a treatment regimen according to the pathology discovered. For dislocations recurring three or more times, the treatment of the underlying predisposant factors should be addressed.

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