

Evaluation of pediatric patients with traumatic hip dislocation

Travmatik kalça çıkığı nedeniyle tedavi edilen çocuk hastaların değerlendirilmesi

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Amaç: Travmatik kalça çıkığı nedeniyle tedavi edilen çocuk hastalar değerlendirildi.

Çalışma planı: 1991-2005 yılları arasında, beş çocuk hastada (ort. yaş 9; dağılım 7-13) travmatik kalça çıkığına rastlandı. Hastaların hepsi erkekti. Dördü sağ, biri sol kalçada meydana gelen çıkıkların hepsi posterior yerleşimliydi. Çıkık nedenleri iki olguda oynarken düşme, üç olguda yüksekten düşme veya araç içi trafik kazası idi. Bir hastada ek olarak asetabulum posterior dudak avulsiyon kırığı vardı. Erken radyolojik izlem düz grafiler ve bilgisayarlı tomografi ile yapıldı. Fonksiyonel değerlendirmede Harris kalça skorlama sistemi kullanıldı. İzlemi yeterli olan dört olguda ortalama takip süresi 44 aydı (dağılım 19-64 ay).

Sonuçlar: Hastaların tamamına genel anestezi altında kapalı redüksiyon uygulandı. Redüksiyon zamanı travmadan sonra ortalama 6.4 saattir (dağılım 2-16 saat). Harris kalça skorlamasına göre fonksiyonel sonuçlar tüm olgularda çok iyi bulundu (ort. skor 92; dağılım 84-96). Asetabulum posterior dudak avulsiyon kırığı olan olguda, kapalı redüksiyonu takiben yapılan erken BT kontrolünde kırık fragman için cerrahi tedaviye gerek görülmedi. Kırk ay sonraki kontrolde hastanın herhangi bir yakınması yoktu, eklem hareket açıklığı tamdı ve Harris kalça skoru 92 idi. Erken dönemde redüksiyon uygulanan hastalarda hiçbir komplikasyon görülmezken, 16. saatte redüksiyon uygulanan bir olguda 18. ay sonunda femur başı avasküler nekrozu gelişti. Bu hastanın Harris kalça skoru 84 idi.

Çıkarımlar: Çocuklarda travmatik kalça çıkığının erken redüksiyonu tedavi sonrası dönem açısından önem taşımaktadır.

Anahtar sözcükler: Çocuk; kalça çıkığı/tedavi.

Objectives: We evaluated pediatric patients who were treated for traumatic dislocation of the hip.

Methods: Traumatic dislocation of the hip was detected in five children (all boys; mean age 9 years; range 7 to 13 years) between 1991 and 2005. Dislocations occurred in the right hip in four cases, and in the left hip in one, all of which had posterior localization. Etiology was fall during play in two children, and fall from height or car crash in three. One patient had posterior wall avulsion fracture of the acetabulum. Early radiologic follow-ups included conventional radiographs and computed tomography. Functional results were assessed with the Harris hip scoring system. Four patients had a sufficient follow-up period with a mean of 44 months (range 19 to 64 months).

Results: All the patients were treated with closed reduction under general anesthesia after a mean of 6.4 hours (range 2 to 16 hours) following trauma. Functional results were excellent in all the patients, with a mean Harris hip score of 92 (range 84 to 96). Based on early postoperative radiologic control with computed tomography, no surgical intervention was considered for posterior wall avulsion fracture of the acetabulum in one patient. At 40-month follow-up, he had no complaints, had a full range of motion and a hip score of 92. While no complications were observed in patients undergoing early reduction, one patient whose dislocation was reduced 16 hours after trauma developed avascular necrosis of the femur head 18 months after treatment, at which time his hip score was 84.

Conclusion: Early reduction is of particular importance for the follow-up course of traumatic hip dislocations in childhood.

Key words: Child; hip dislocation/therapy.

Traumatic hip dislocation in children are unusual.^[1,2,3,5,7] The cases, which have been under 14 years old, are less %5 of adults.^[3,5] Previous studies reported from one center were consisted of few cases, and large case groups were reported from multicenter studies.^[1,2,3] In this study, 5 patients were evaluated and reviewed who underwent traumatic hip dislocation and have seen in 15 years in one center.

Materials and methods

Five patients younger than 14 years old and underwent traumatic hip dislocation were evaluated between 1991 and 2005 years. The average patient age at the time of injury was 9 (7-13 ranged) years old and all of them were male. Four patients sustained right hip and 1 patient sustained left hip dislocation. The trauma mechanism, fall while playing outdoor at two patients, whom ages were 7 and 8 years old, was minor trauma and fall from height and motor vehicle accident at three patients, whom ages were 7, 10 and 13 years old, were major trauma.

In this study the patients age, gender, mechanism of injury, direction of reduction, amount of time between dislocation and reduction, treatment protocol after reduction and documented complications were evaluated. Early radiologic review made by direct radiography and computerized tomography. The patients whom were suspected from complication, late reduced or major traumatized evaluated with MRI. Harris-Scoring system used for functional evaluation. In this scoring system 90-100 ranged points were excellent, 80-90 ranged points were good, 70-80 ranged points were fair and under 70 points were bad.

One child had posterior wall fracture as an associated injury. This patient's trauma mechanism was fall from height. This patient was 13 years old.

The average following time after injury was 44 months (19-64 months ranged). One patient whom underwent traumatic hip dislocation before 2 months is interested out from this study because of short following time.

Results

Definitive closed reduction was performed all of the patients in general anesthesia. Consantrically reduced and stable joint was aimed with closed reduction. There have not been any complication in

operations of all patients. The average reduction time was 6.4 hours (2-16 ranged hours) after injury. All of the patients were evaluated with fluoroscopically after reduction in operating room. Skeletal traction from supracondylar femur was performed all of the patients. In postoperative period concentric reduction evaluated with CT. After skeletal traction about 4 weeks, partial weight bearing performed.

Functional evaluation made by Harris Scoring system. The average point was 92 (84-96) and was evaluated as excellent.

In early CT controls there was not any fracture fragment in hip joint and also weightbearing surface was not involved by the fracture line after the closed reduction of the cases which had acetabulum posterior wall fracture so that surgery is not needed.

There has not seen any problem on fortieth control of this patient. His range of motion was full and in direct radiographs, fracture was united (Figure-1). Functional Harris Hip score was 92.

Another patient came to emergency room at sixteenth hour after trauma, has seen hip pain at the end of the first year. At this control the patient's radiographs were normal. Because of the pain complaints have not relieved, MRI controls made in eighteen months and it has shown us avascular

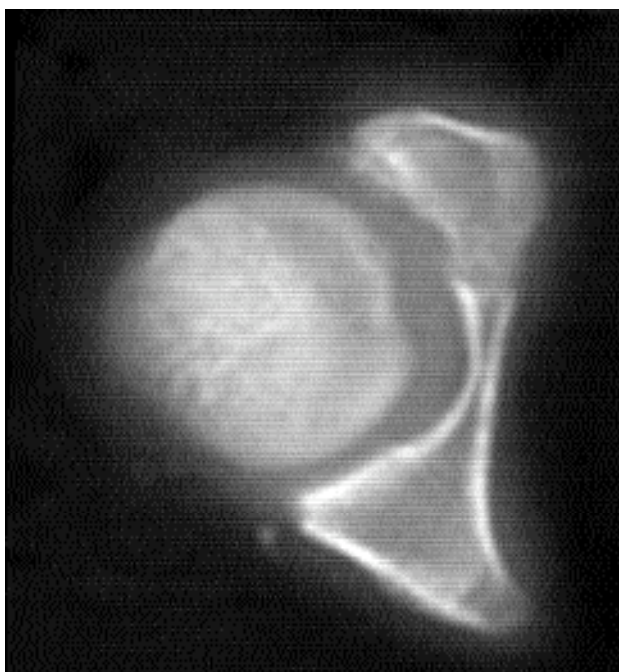


Figure 1. The CT Scan of the patient after closed reduction, with acetabulum posterior wall fracture

necrosis of the femoral head. Avascular area was involving under the %50 of the femoral epiphysis and in Salter-Thompson Classification was Class A. The patient followed about avascular necrosis (Figure-2, Figure-3). The patient's Harris Hip Score was 84 at that time and he was evaluated as good. It has seen that another three patient had not any pain



Figure 2. The patient's first coming radiography, complicated with avascular necrosis

on examination and in daily activities. The patients whom early operated have not any avascular necrosis or joint degeneration in MRI and radiographies. In addition there has not been any proximal femoral deformity because of physeal damage.

Discussion

Traumatic hip dislocation is unusual in children.^[1-5,7] The cases which have been under fourteen years old, are less than %5 of adults.^[3,5] In addition in the child group traumatic hip dislocation becoming with minor trauma association with femoral head and acetabulum fracture are more rare, and low complication rates than adult group.^[2,5] Males affected four times more than females.

Like adults, posterior dislocation is 5-10 times higher than anterior dislocation at the children group (5-7). In addition inferior dislocation have seen more rare. It is named as luxatio erecta femoris.^[5]

In the literature, the patients evaluated in two groups.^[2,3] The first group existed from the children between 2-8 years old had minor trauma like cycle or roller skate accident and the other group existed from the children between 9-15 years old had major trauma like motor vehicle accident. In adults, major trauma is a rule. In our study, because of the patient number's insufficiency, forming group like this is not necessiated.

In the literature, the treatment concept is closed reduction as soon as possible in general anesthesia. If the hip joint is unstable or there is neglected reduction, open reduction is recommended.^[1-12]

Rehabilitation techniques after reduction is differentiated in the literature.^[1-4,6] Hamilton et al, suggested that resting time was important and rest time had been 3-8 weeks.^[3] Thus, it is thought that synovial irritation is improved and soft tissue relief is been easier. As a result, the prognosis is been better. Recently same opinions determined in the literatures.

According to Schlickewei et al, reduction time is more important than postoperatif rest about prognosis.^[6] If reduction time became earlier, avascular necrosis incident is been lower. This opinion accepted in high ratio.^[1,2,3,6,7] In our study the patients are not allowed weightbearing about one month.

The complications of traumatic hip dislocation in children are femoral head avascular necrosis, myosi-

tis ossificans, posttraumatic osteoarthritis, premature physal arrest, sciatic nerve damage, recurrent hip instability and neglected femoral shaft fracture.^[1,2,3]

Avascular necrosis is very important complication and different ratios are reported in the literature (%5-58).^[3] This complication is about with reduction time and violence of trauma. If reduction is delayed,vascular supply of femoral head is damaged. In addition the patient's age is important too. If patient's age is older, avascular necrosis rate increases. In our study it is attended that one patient has seen avascular necrosis was the latest reduced (sixteenth hour) and was oldest.

There is not any reported rate about myositis ossifications in children.However in the adult group,the rate is reported as %2.8.^[2]

The rate of posttraumatic osteoarthritis is examined adequately in child group.The cause of could not make this evaluation in children is, not to be adequate patient number which is followed sufficient time.^[2,3]

Age of patient while trauma is more important for premature physal arrest.The results of patients before twelve years old are worse.^[12] Longitudinal growth disturbance becomes after physal damage and metaphyseal width increases. Shrinking and angulation form at femoral neck. If physal plate's medial portion was damaged, varus angulation deformity is formed and if physal plate's lateral portion was damaged,valgus angulation deformity is formed. Deformity probability is more rare at older children than youngsters. Some authors think that, coxa magna deformity is more visible when physal damage becomes. Cause of this is thought as reactive hiperemia^[2]

Although recurrent dislocation is seen in child group more than adults, this complication is unusual.^[1,2,3,5] The causes of this are capsular rupture or capsular failure.^[2] It is suitable that patients underwent capsular rupture are evaluated with arthrography and if a capsular rupture was found,it is treated

with operative repair.^[2,4] Acute redislocation can be explained with unstable hip which reduction is not obtained because of a labral rupture or an osteoarticular fragment in hip joint.^[9] It is suitable to evaluate the patients with CT if suspected,and to treat with open reduction.^[2,4,12]

As a result;traumatic hip dislocation in children is unusual and generally causes with minor trauma. However complication rates are low than adults,the time of reduction is important.

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