

# Traumatic hip fracture-dislocation in soccer: a case report

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## ABSTRACT

Uncommon in soccer, the world's most popular sport, the acetabular fractures with hip dislocation are injuries with high incidence of long-term serious sequelae. Prompt attending with accurate diagnosis and reduction and fixation are important to produce a stable and congruent joint for returning to the usual sports practice prior the injury.

## INTRODUCTION

Soccer, which is the most played collective sport in the world, has shown in epidemiological studies occurrence between 10 and 35 acute traumatic injuries per 1000 hours of game with higher incidence in ankles and knees<sup>(1)</sup>. Fractures represent from 4% to 9% of these injuries and hip fracture-dislocation as described in this case report is fortunately rare<sup>(2-3)</sup>.

Dislocations are usually orthopedic emergencies which require precise and early diagnosis<sup>(4)</sup>. Suitable action decreases the deleterial effects caused by trauma and consequent articular incongruence which is established and should occur in a hospital environment by the resources available for a good diagnosis and accurate therapeutic procedure, especially in those in which anesthesia and surgery procedures are needed<sup>(3-4)</sup>.

Hip traumatic dislocation is a serious orthopedic injury which may cause permanent incapacity<sup>(5)</sup>. It is usually a consequence of high energy trauma, and is more frequently related with accidents caused by motor vehicles. Its condition worsens when associated with acetabular or femoral head fracture<sup>(4-5)</sup>.

This kind of trauma occurred in the sports practice has few reports in the international literature<sup>(3-5)</sup>. Its diagnosis should be reminded and the physician should also be prepared for initial care required by the severity of the situation until the definite treatment can be performed<sup>(6-7)</sup>.

Despite not being very relevant for physical activity practice, the case report here presented, due to its rareness, becomes important and worth releasing.

**Keywords:** Soccer. Hip. Fracture and deslocation.

## CASE REPORT

A 35-year old male patient has been admitted to emergency care unit complaining about left hip pain and total functional failure. He has reported that during a field soccer game while disputing for an aerial ball and when returning to the ground, felt as he described as a 'shock' in the left hip, spreading to the entire lower extremity and subsequent fall, laid on the ground in severe pain in the whole affected extremity. He also reported not having suffered any direct trauma by shock against the other players or against the goal poles. He was not able to be precise about his chest position in relation to the lower extremities or hips and knees at the moment he touched the very irregular surface ground.

He mentioned to have played non-professional competitive soccer field once a week, for 20 years, as well as to have regular physical conditioning: aerobic training (running) two to four times per week, stretching and localized endurance trainings, with special attention given to the lower extremities three times per week and specific soccer technical training, (individual for instructions, and collective one to three times per week).

He did not report any personal or family alteration history which could have been related with or a predisposition for his current clinic situation.

The patient was brought on a stretcher in right lateral decubitus with left hip in flexion attitude of approximately 45°, adduction of 20° and internal rotation of 30°. During examination, any try of hip movement was extremely painful and impossible to be performed. Neurological or vascular alterations have not been observed. There were not any other relevant findings in the physical examination.

Radiological examination showed diagnostic of left hip posterior dislocation associated with fracture of posterior acetabular wall (figure 1).



**Figure 1** – Antero-posterior hip X-ray showing fracture-dislocation of the left hip

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The patient was taken to the surgical unit and was submitted to anesthesia by epidural block which allowed closed reduction of the thigh-femoral dislocation through application of Allis maneuver, a procedure performed in the first six hours after trauma. Afterwards, he was tested for stability with no reoccurrence of the injury, even when the hip was placed in flexion above 100° associated with adduction<sup>(8-9)</sup>. Skeletal traction in distal femur was installed and was kept until the definite therapeutic procedure was taken<sup>(9)</sup>.

In the immediate post-surgery, the patient was submitted to a tomography (figure 2) which allowed better study of the intra-articular bone fragment resultant from the posterior acetabular fracture of the wall to determine the joint stability and to plan for the definite surgical treatment<sup>(8)</sup>.



**Figure 2** – Tomography showing intra-articular bone fragment, derived from the acetabulum

Since we were not able to identify in the traumatic mechanism how a high energy would explain the occurrence of fracture of the posterior acetabular wall, associated pathologies which would act as predisposition for the occurrence of the injury were researched and discarded<sup>(9)</sup>.

The patient was then submitted to surgery: small intra-articular bone fragments were removed and the collocation of the fragments of the main bone of the acetabular posterior wall in its original location was performed using the bone synthesis principle with compression bolt between the fragments and support with plaque specific for acetabular fractures (figure 3).



**Figure 3** – Antero-posterior hip X-ray after synthesis of the acetabular posterior bone fragment

Passive mobilization of left lower extremity exercises with the aid of balance beam were initiated in the immediate post-surgery. Such mobilization became active and associated with isometric exercises as soon as the pain ceased, always according to medical prescription and under supervision.

During the infirmary follow-up the patient was kept with clutches and without load for eight weeks when he was authorized partial touch on the ground still with the aid of two clutches for four weeks. He gradually and progressively started to use load until reaching total load fifteen days after definite surgical procedure.

Physical examination six months after surgery showed that the movement arch of the left hip was normal and painless. Clinic signals by complementary examinations for complementary sequelae have not been evidenced, which enabled the patient to be discharged for physical conditioning activity. Yet, he should avoid exercises which result in excessive overload in the operated hip. He was not allowed to perform any sportive activity, regardless its nature.

## DISCUSSION

Despite being rare to find posterior dislocation of the hip during soccer practice as well as having apparent less energy amount in the trauma, it does not mean that it is less serious or does not need to be seen as an orthopedic emergency to be fast and efficiently solved.

One of the found difficulties was the understanding about the sports gesture which had caused the injury. In the presented case, we tried to stimulate the patient to the most to describe the whole sequence of traumatic events which caused the injury, trying hence, to better understand the way it has occurred.

Since we did not get answers to these questions, we searched for explanation in the studies by Judet and Letournel who related the position of the lower extremity at the moment of the trauma with the kind of resultant injury<sup>(10)</sup>. Such analysis enabled us to deduct that the fracture-dislocation occurred when the lower extremity was in internal rotation and maximal adduction, a position which is not common in landing after jumps in sports, increased by the irregular nature of the ground<sup>(9-10)</sup>. Perhaps this is the mechanic explanation for the injury, representing a technical mistake when performing the sports gesture.

The neurological and vascular examinations should be carefully performed in the patient's initial physical examination when he was admitted in the emergency room, since it considerably improves prognostic<sup>(5,9)</sup>. The neural injuries which may occur to patients with posterior hip fracture-dislocation many times are not diagnosed due to intense pain<sup>(9,11)</sup>. Vascular injuries are relatively rare; however, they should always be remembered and the perfusion carefully evaluated<sup>(4,9,11)</sup>.

The diagnosis and technical knowledge for fast time reduction in the emergency room may make the difference concerning the future of the traumatized joint<sup>(3,9)</sup>. Reductions higher than 12 hours are usually associated with fairly unfavorable prognostics, compromising both the sportive performance and daily activities<sup>(4,12)</sup>.

The treatment principles for posterior hip dislocation should be followed in trauma with any origin<sup>(3,8)</sup>. There are many maneuvers for the reduction of posterior hip dislocation. We consider the maneuver described by Allis less traumatic and technically easy, besides being previously familiarized with it<sup>(8-9)</sup>.

Once the dislocation is solved, complementary examinations which allow better research by image of the bone fragments origin, enable suitable surgical planning with the purpose to give back to the joint normal conditions for its function with no sequelae<sup>(8)</sup>. These procedures become essential in athletes and should be performed by registered professionals who follow suitable techniques in order to provide the athletes return to their activities in the same level previous to the injury or at least very close to it<sup>(3,10-11)</sup>.

Depending on the severity of the injury as well as the treatment nature, a change in the sport and even the practice of regular physical activity for good health, with orientation from a certified physical educator, should be discussed with the patient within the rehabilitation program to which he has been submitted<sup>(3-4,12-13)</sup>.

## CONCLUSION

Despite being a serious and rare situation in soccer practice, traumatic posterior hip fracture-dislocation when suitably diagnosed and treated presents good results with functional recovery of the joint without sequelae.

Since it is an injury which occurs with individuals who regularly practice the sport, it is desirable that equal or close performance to what they had prior to the injury is recovered, allowing return to the sport or even adaptation to an activity compatible with this new situation, with no compromising of the traumatized joint.

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