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Case report

A 17-year-old judoka with acute hip pain

[1*]Mr Leon T B Meijer, MSc, [2]Dr Tom M van Raaij, MD, PhD, [1]Dr Johannes Zwerver, MD, PhD

***Corresponding author. Address at the end of text.**

Abstract

In this case report a dislocation of the hip received during a judo competition is described. This extremely uncommon condition requires special attention because a dislocated femoral head should be reduced within six hours to reduce the risk of avascular necrosis of the femoral head (AVNFH). Safe return to the pre-injury level of sports depends on the rehabilitation process, the athlete's fear of movement, and development of AVNFH or osteoarthritis (OA) of the hip joint. **Keywords:** hip, dislocation, judo, sports injuries, rehabilitation

***Mr Leon T B Meijer, PT**

Mr Merijer is working at the University Sports Medicine Centre UMCG Groningen as a sports physiotherapist. Currently he is working on his final master degree in Physical Therapy in Sports at the NPi / Avans in the Netherlands.

Dr Tom M van Raaij, MD, PhD

Dr van Raaij is an orthopaedic surgeon at the Martini Hospital in Groningen, Netherlands.
Email: t.vanraaij@mac.co

Dr Johannes Zwerver, MD, PhD

Dr Zwerver is working at the University Sports Medicine Centre, UMCG Groningen, Netherlands, as a sports medicine physician.
Email: j.zwerver@umcg.nl

Introduction

Judo is a modern martial art, combat and Olympic sport. Its objective is to throw or take down an opponent to the ground, immobilise or subdue an opponent by pinning them to the ground, or force an opponent to submit with an armlock or a choke. Acute injuries to the shoulder (16%), knee (16%) and hand (14%) [1,2] are common but severe hip injuries are rare in judo[1].

Case report

A 17-year-old female judoka, participating in the under-78 kilogram category in a judo competition at international level, experienced acute left hip pain while performing a left throwing technique (Harai Goshi) in training. The exact trauma mechanism was not clear. Because of the severe pain, obvious deformity, and the inability to stand on her left leg, she was transported to the Emergency Department of a nearby hospital. Clinical examination showed an abnormal position of the hip in which the upper leg was in flexed adduction and internal rotation without neurovascular deficits. Because of severe pain, a single anterior-posterior pelvic radiograph was done (Figure 1) showing a dislocated left femoral head.

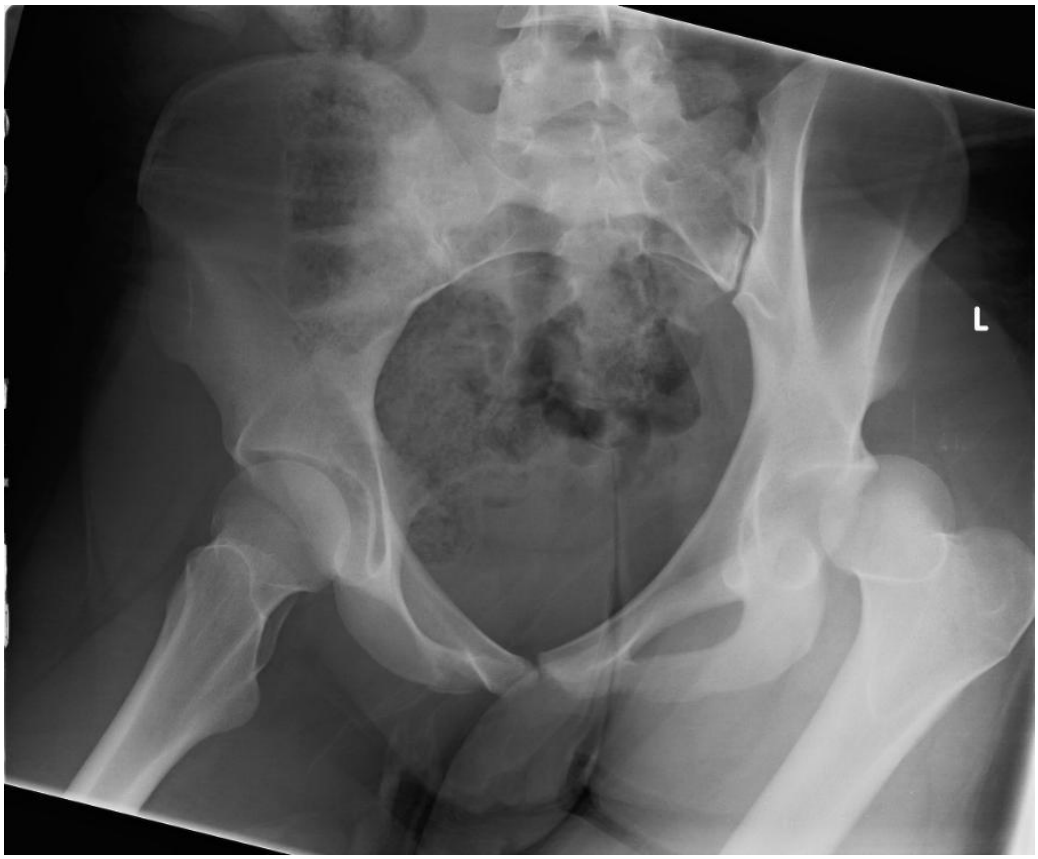

Figure 1: The conventional anterior-posterior X-ray image of the pelvis showing the posterior dislocation of the hip

Treatment

A closed reduction of the posterior dislocated hip, using the Bigelow manoeuvre, was performed two hours post- trauma under general anaesthesia.

Follow-up

After reduction, the patient experienced a tingling sensation in her left foot, which disappeared within 24 hours. A computed-tomography (CT) showed a normally positioned femoral head without fractures or loose bony fragments in the joint (Figure 2).

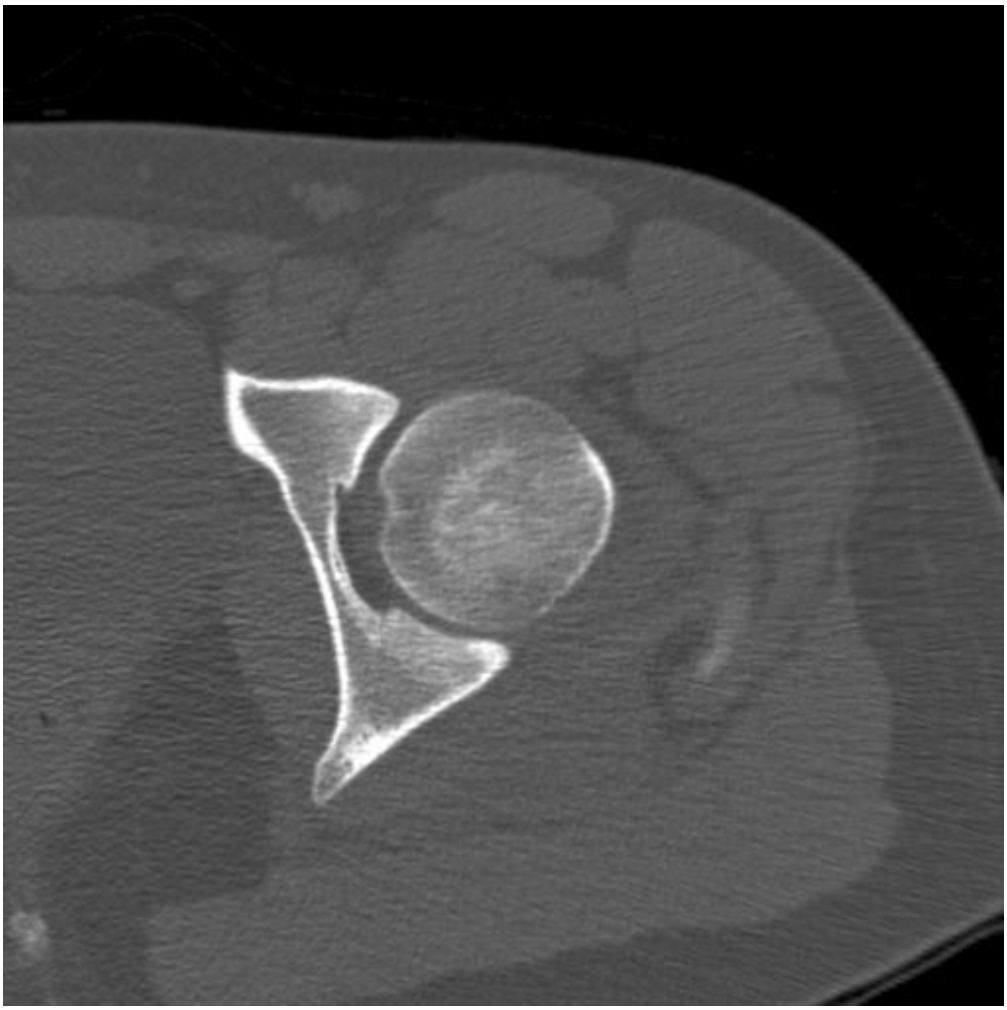

Figure 2: Computer tomography of the hip after closed reduction

She used crutches for walking during the first two weeks, with pain-guided load bearing. Physical therapy started in week two with gentle mobilising exercises. Gradually more intensive exercises, including balance training, coordination and strength were introduced using a protocolised sports rehabilitation method (Rehaboom)[3]. Four-and-a-half months after injury, the patient was able to start her judo specific training without any pain. She was still anxious about certain high intensity (judo specific) movements but this disappeared after some weeks of training. Six months after the injury radiologic examination showed no abnormalities of the hip or pelvis. The judoka resumed judo competition nearly seven months after her injury.

Discussion

The hip is a very stable joint, and hip dislocations are uncommon in judo. Only 2% - 5% of all hip dislocations occur during sports, mainly in 'high-impact' sports such as football, rugby, skiing, basketball and gymnastics[4]. Most of them occur in the posterior direction[4] in which the mechanism is often axial pressure on the flexed knee and hip, while the movement of the femur will be to adduction. When the hip is positioned in abduction during an accident, the accompanying injury of the femoral head can be seen. Understanding the trauma mechanism is essential in order to apply a controlled reversed force to reduce the femoral head. This patient could not recall the exact mechanism of the trauma in her injury. She most probably went in for a hip throw movement while her upper body was bent over, her left knee (the standing leg) was slightly flexed and then turned to the right side when her opponent fell on her hip.

Early recognition of hip dislocation and appropriate management are of utmost importance[5]. The incidence of AVNFH not only depends on the severity of the injury but also on the time to reduction. After reduction of a

low-energy hip dislocation within six hours of the injury, the risk for developing AVNFH is low [6]. The incidence of AVNFH dramatically increases if the time to reduction is more than six hours[6].

Anterior-posterior and lateral X-rays of the hip joint are necessary to assess the position of the femoral head. If a dislocation is diagnosed, a closed reduction procedure should be tried, which will be successful in about 85% of all cases[5]. The Bigelow Manoeuvre was used in this case, where the patient is in a supine position and the surgeon applies traction in the direction of the deformity while adducting and internally rotating the leg with an assistant applying counter pressure to the anterior superior iliac spine of the pelvis[11]. Soft tissue interposition can prevent closed reduction. This so-called 'buttonholing' phenomenon can be seen when the femoral head goes through the posterior capsular wall and/or lateral rotator muscles, which may lead to an even more fixed femoral head. Open surgical reduction is then needed to restore the hip's anatomical position.

In 10% of posterior hip dislocations the sciatic nerve is compressed, causing transient neuropraxia, which often disappears after a few hours[7]. After successful reduction of the hip, CT-examination is a valuable assessment tool to evaluate the congruency of the hip joint, and to check for any accompanying osseous lesions or fractures of femoral head and/or acetabular wall[8].

AVNFH may develop up to two years after femoral head dislocation. AVNFH results in (groin) pain and lower extremity functional deficits caused by the partial or total destruction of the femoral head which in turn leads to secondary OA of the hip. Magnetic resonance imaging (MRI) is a useful and sensitive technique to detect AVNFH at follow-up. After a relatively low-energy dislocation (without fracture), OA and AVNFH are not uncommon in 25% and 14% of patients[6] respectively.

No consensus exists about the optimal rehabilitation programme for athletes after a reduction of a traumatic hip dislocation. It is difficult to establish a prognostic profile with respect to outcome and timeline regarding a return to sport. Two weeks of unloaded walking with crutches has been recommended to avoid placing weight on the injured hip, followed by gradually increasing the load to full weight-bearing in the following six weeks[9,10]. Time to full return to sport also depends on the time interval between the hip dislocation and the reduction. It is extremely difficult to avoid this type of injury. Although there is no evidence available on how to prevent this specific injury, strengthening and balance exercises of the hip and thigh muscles seem to be important. Furthermore, a good warm-up session before a match and adequate judo technique are relevant preventive measures.

In conclusion, dislocations of the hip are rare in judo, and when they do occur, may even threaten the career of an athlete. Early recognition and appropriate management of this condition are important to prevent complications. Early reductions with individualised rehabilitation provide the basis for a successful return to sport.

Address for correspondence:

Mr Leon Meijer, Center for Sports Medicine, UMC Groningen, P.O. Box 30.001, 9700 RB Groningen, the Netherlands
Tel.: +31 50 3617700
Email: Meijer.ltb@gmail.com

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