

# Bilateral Femoroacetabular Impingement Syndrome: A Case Report

## *Bilateral Femoroasetabular Sıkışma Sendromlu Olgu Sunumu*

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### Abstract

Femoroacetabular impingement (FAI) is an abnormal contact of the acetabulum with the femur, particularly during flexion and hip rotation, caused by anatomical abnormalities in the femur head and acetabulum, and may result in labral and cartilage damage in the hips. According to the graphical features of the pelvis AP, three types of FAI were defined: cam, pincer and, mix type. Moreover, the mix is the most common type, where typically patients complain of pain in the hip and groin. With symptomatic treatment in the initial phase, the patient's complaints are relieved. However, if the severity of the impingement progresses, the patient may be referred for surgery. Arthroscopic or open surgery corrects the deformity of the femur head and acetabulum.

### Öz

Femoroasetabular sıkışma (FAS) femur başı ve asetabulumdaki anatomik anormalliklerin neden olduğu, kalçanın özellikle fleksiyon ve rotasyon hareketleri sırasında olan femurla asetabulumun anormal temasıdır ve kalçada labral ve kartilaj hasarına kadar ilerleyebilir. Pelvis AP grafide görünümüne göre 3 tip FAS tanımlanmıştır; cam, pincer ve miks tip. En sık görülen miks tiptir. Genellikle hastalarda kalça ve kasıkta ağrı yakınması bulunur. Başlangıç evresinde semptomatik tedavi ile hastanın şikayetleri gerilerken, sıkışma ilerlerse hasta cerrahiye yönlendirilir. Artroskopik ya da açık cerrahi ile femur başı ve asetabulumdaki deformite düzeltilir.

### Keywords

Femoroacetabular impingement, hip pain, young male

### Anahtar Kelimeler

Femoroasetabüler impingement, kalça ağrısı, genç erişkin

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### Introduction

Femoroacetabular impingement (FAI) is an abnormal contact of the acetabulum with the femur head, particularly during flexion and rotation movements of the hip, and may progress to labral and cartilage damage in the hips (1). In 1991, Ganz et al. (2) described the malunion of femur neck fracture and the deterioration of the relationship between acetabulum and femur neck, leading to the development of post-traumatized accelerated osteoarthritis.

According to pelvis anteroposterior (AP) graphical features, 3 types of FAI were defined; cam, pincer and, mixt type. The mixt type is the most common. The cam-type is the result of the larger proximal femur than the acetabulum volume. Non-global femur head or an increase

in femur head diameter is an abnormality in the femur head-neck assembly. It is more common in young men. The reason for the impingement is simply abnormal acetabulum. Abnormal deep or retrovert acetabulum overhanging on the femur head results in pincer-type impingement and is more common in middle-aged women (3).

Herein, we present a case of bilateral mixt type hip impingement syndrome, who has a trauma and surgery story, applied with an increase in pain by long walking.

### Case Report

A 51-year-old male patient was admitted to our clinic with bilateral hip pain that lasted for 1 year and increased in the last 2 months. The patient applied to the neurosurgical department 7 months ago with the same complaints and lumbar Magnetic Resonance Imaging (MRI) was seen. In lumbar MRI, congenital spinal stenosis due to protrusion and pedicle shortening at L4-L5, L5-S1 level was observed and bilateral laminectomy operation was performed. Transforaminal epidural steroid injections and prolotherapy injections were applied to the lower back muscles 2 times as the patient had no reduction in pain after the operation. Therefore he applied to our clinic. The patient's pain is mechanical and increases with prolonged walking and sitting. The patient had pain that started in both groins and spread to the middle of the thigh, and occasionally he felt numb. The rheumatological questioning of the patient who did not describe the night pain and morning stiffness was normal. The patient had an out-vehicle traffic accident 2 years ago and was followed up for a short time in the hospital by conservative treatment due to ecchymosis around the left hip and he was informed that he fell on his left hip 1 year ago without fracture.

On physical examination, palpation of both hips was painful. The range of motion of the lumbar spine and bilateral hips were normal but painful during flexion and internal rotation movements of the hips. The straight leg raise test was negative. Bilateral hip flexion, abduction, external rotation (FABER) and flexion, adduction, internal rotation (FADIR), and anterior impingement tests were positive. Neurological examination was normal.

Pelvis radiography showed bilateral femoral neck thickening, hump deformity and supraacetabular

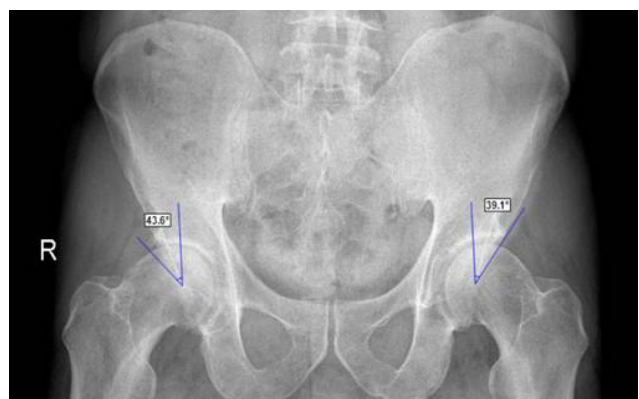
sclerosis and bone spurs (Figure 1). The lateral center-edge angle was  $43.6^\circ$  on the right and  $39.1^\circ$  on the left (Figure 2). The bilateral hip MRI revealed the diffuse bone marrow edema at the right femur, the localized bone marrow edema of anterior superiorly at the left femur, effusion and bilateral chondral lesions (Figure 3). The alpha angle, which measures the degree of sphericity at the femoral head neck junction, were  $55^\circ$  on right and  $68^\circ$  on left side (Figure 4).

Bilateral mixt type FAI syndrome was diagnosed based on clinical and radiological findings. Non-steroidal anti-inflammatory drug therapy and 15 sessions of physical therapy consisting of hot package, short wave diathermy and interference currents were given. The exercise program including strengthening of the hip circumference and gluteal muscles and cor stabilization was planned. It was suggested to organize activities of daily living.

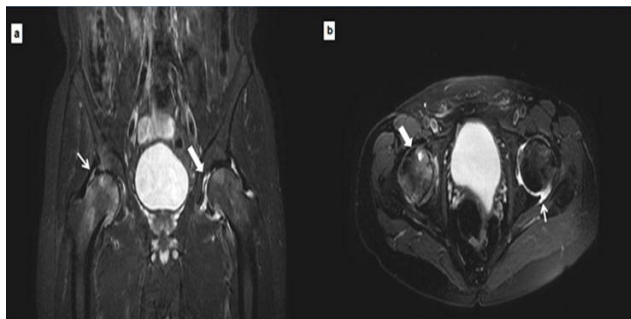
At the end of the treatment, the patient's visual analog scale (VAS) score decreased from 90 to 40.



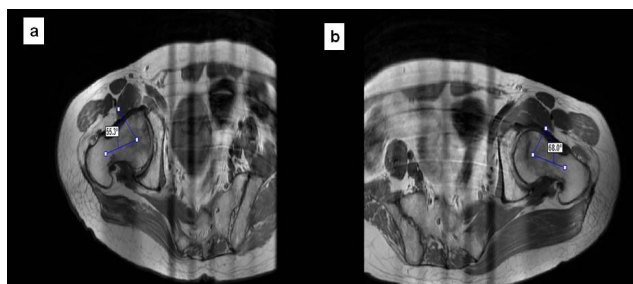
**Figure 1.** Thickening of the bilateral femur neck, hump deformity, and supraacetabular sclerosis



**Figure 2.** The lateral center-edge angle was  $43.6^\circ$  on the right and  $39.1^\circ$  on the left



**Figure 3.** a) diffuse bone marrow edema at the femur head (thin arrow), cartilage damage in acetabulum (thick arrow) b) increase in synovial fluid in left hip joint space (thin arrow), subchondral cysts on femur (thick arrow)



**Figure 4.** The alpha angle was 55° on right (a) and left to 68°(b)

In the physical examination, FABER and FADIR test was negative. The patient was discharged with the recommendation to continue exercising and restricting activities of daily living. Written informed consent was obtained from the patient.

## Discussion

The FAI, which is frequently emphasized in the etiology of hip pain is frequently missed or is misdiagnosed in clinical practice.

In our case, the patient's pain was considered to be due to spinal stenosis and there was a failed surgical story. Studies on FAI syndrome in the field of physical medicine and rehabilitation are very inadequate. With the increased awareness of this syndrome, many patients will not have been diagnosed and treated wrongly.

FAI syndrome is especially the cause between the ages of 25-50 of early osteoarthritis in physically active persons (4). The estimated prevalence ranges between 10% and 15. Patients often suffer from the groin or hip pain. Pain can also spread to the anterior

thigh. Hip pain increases in activities requiring flexion and internal rotation. Pain increases during sitting, driving, and squatting. In patients with cartilage or labral damage, mechanical symptoms such as clicks may occur. In our patient, a 51-year-old man, the pain was spreading to both groin and thigh center, and his pain increased when he walked for a long time. The pathogenesis of FAI includes pediatric hip diseases, and high-impact athletic activities during growth and genetic factors. The reasons arising from the proximal femur are osteonecrosis of the femoral head, malunion in the femoral neck, and femoral osteotomies. Reasons arising from acetabulum are acetabular retroversion, coxa profunda, periacetabular osteotomies, and femoral head epiphysis displacement as well as childhood diseases such as Legg-Calve Perthes. In addition to these factors, the FAI can be found in adolescent people who are interested in high-impact sports as football, basketball, hockey (5). In our case, posttraumatic etiology was considered primarily because of an out-vehicle traffic accident and a fall on the left hip history. But later, congenital etiology was suggested because bilateral hip involvement was present even though the patient had a one-sided hip trauma story. However, congenital etiology is also considered due to bilateral mixt type findings on radiography and hip MRI.

The first step should be standardized AP pelvis radiographs. The 45° Dunn lateral view and frog-leg lateral hip radiograph best demonstrate the cam deformity at the femoral head-neck junction, whereas frog-leg lateral hip radiographs. The alpha angle, that measures the degree of sphericity at femoral head-neck junction, is assessed on these lateral radiographs. First, the femoral neck axis is defined then next a circle is fit to the femoral head.

The alpha angle is the angle between the femoral neck axis and the line from the center of the circle to the point where the bony contour first appears outside the best-fit circle. In cam-type impingement,  $\alpha$ -angle is above 55°. In our case, too, there were cam-type impingement findings where the  $\alpha$ -angle was 55° on the right and 68° on the left. In pincer deformity, the lateral center edge angle (LCEA) is measured. When the LCAE is over 35°, which indicates pincer deformity.

In our patient, too, there was also a combination of pincer-type impingement findings as LCEA angle was 43.6° on the right and 39.1° on the left.

In the treatment of early stage of the disease, avoiding the aggravating activity, use of anti-inflammatory drugs, physical therapy modalities are usually enough. Clinical practice guidelines for non-arthritis hip joint pain published by the American Physical Therapy Association and recommends (a) patient education (b) manual therapy (c) cardio-respiratory endurance exercises (d) neuromuscular re-education. If therapeutic exercises aggravate the symptoms, it should be stopped (6). Pelvic and core muscle strengthening can be done (7). Although the patient had serious impingement and osteoarthritis in the hip, his pain was reduced with physical therapy and nonsteroidal anti-inflammatory drugs (VAS 90 to 40).

Conservative treatment should be tried for 8-12 weeks before referring patients to surgeons. Surgical treatment includes femoral osteochondroplasty, labrum repair, and reverse periacetabular osteotomy (8).

As a result, in patients with hip and groin pain FAI syndrome should be kept in mind.

Our case has a history of surgical lumbar stenosis and our patient had not to benefit. Hip pain may be mostly due to a hip sprain or pain reflected by the stenosis, or both. In our case, congenital etiology is more likely, since both congenital spinal stenosis due to pedicle shortness and bilateral cam-type deformities are seen together in the patient.

#### **Ethics**

**Informed Consent:** A written informed consent was obtained from the patient.

**Peer-review:** Externally peer-reviewed.

#### **Authorship Contributions**

Concept: L.C., Ö.E.D., Design: L.C., Ö.E.D., Supervision: L.C., Ö.E.D., Fundings: L.C., Ö.E.D., Materials: L.C., Ö.E.D., Data Collection or Processing: L.C., Ö.E.D., Analysis or Interpretation: L.C., Ö.E.D., Literature Search: L.C., Ö.E.D., Critical Review: L.C., Ö.E.D., Writing: L.C., Ö.E.D.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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