KALÇA EKLEMİNDEN KURŞUN ÇEKİRDEĞİ ÇIKARILMASININ KLINİK VE FONKSİYONEL SONUÇLARI: ÜÇ OLGUNUN 5 YILLIK TAKİBİ

Clinical and Functional Outcomes of Bullet Removal from Hip Joint: Five Year Follow-Up of 3 Cases

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ÖZET

Amaç: Bu çalışmanın amacı kalça ekleminden kurşunlanma yaralanması nedeniyle tedavi edilen 3 hastanın klinik takibini değerlendirmektir.


Bulgular: Cerrahiden 5 yıl sonra hasta 1’de ileri osteoartrit gelişti. Bu hasta total kalça protezi önerildi. Hasta 2 ve 3’te takibinin ikinci yılında osteoartrite iliskin bulguları saptanmadı.

Sonuç: Kalça ekleminden kurşunlanma nedeniyle ameliyatın ilk aşamasında femoral ve asetabular kişkırdak hasarı gözlemlendi. Tüm hasta 5 yıl sonra osteoartrit devam etti. Hasta 1’de kemik disi ameliyatı, hasta 2 ve 3’te ise total kalça protezi önerildi.

Anahtar Kelimeler: Kursunlama; Kalça eklemi; Kişkırdak hasarı.

ABSTRACT

Aim: We aimed to evaluate clinical prognosis of 3 patients; that treated for a bullet injury in hip joint.

Material and Methods: Three patients were operated for arthroscopic removal of bullet from hip joint in our clinic. All patients were followed with clinical examination on every six months after surgery. In second year of follow up period x-ray and MRI investigations were applied for all patients.

Results: After 5 years of first surgery, Patient 1 had advanced hip osteoarthritis. Total hip replacement surgery was offered to patient 1. For patient 2 and 3; we have observed no signs of osteoarthritis on follow-up of two years.

Discussion: We conclude that prognosis of the patient that had gunshot injury with a bullet in hip joint is directly correlated with primal injury of femoral or acetabular cartilage.

Keywords: Bullet; hip joint; chondral injury.
INTRODUCTION

Low-velocity gunshot wound has been encountered with increasing frequency. Foreign materials in the soft tissue caused by gunshot wound can be managed with antibiotic treatment and superficial debridement (1). However, it is suggested to remove foreign materials sucked into joint to prevent joint arthropathy, cartilage damage and septic arthritis (2). Bullet-induced synovitis (3) and cartilage damage leading hip osteoarthritis are the main causes of poor long term results.

Not long ago, arthrotomy was a technique used to remove intra-articular foreign materials. Nowadays, arthroscopic methods are opted for intra-articular foreign body removal. Arthroscopic methods for intra-articular foreign material removal are described for knee, hip, ankle and shoulder (1,4). Currently, most of the bullets can be removed with hip arthroscopy and arthrotomy is usually needed for subsequent cartilage repair (4, 5, 6).

There is no study in literature that evaluates long term results of bullet injury removal from hip joint thus we aimed to evaluate clinical prognosis of 3 patients; that treated for a bullet in hip joint.

MATERIALS AND METHODS

From October 2010 to August 2011; three patients were operated for arthroscopic removal of bullet from hip joint in our clinic. All patients included in the study followed prospectively after receiving their consent to participate. After arthroscopic removal of the bullet; all patients were followed between six months intervals prospectively.

Patients were all referred to emergency room and wound debridement, tetanus prophylaxis and antibiotic treatment were initially administered. All patients were operated a few days after the gunshot wound. Hip arthroscopy was performed using the supine position with the extremity in traction on a fracture table with general anesthesia. Traction weight of 30 kg was applied to the hip joint of the patient. Hip joint was visualized by making anterior and anterolateral portals.

All the projectiles were found to be related with the joint. All the chondral damage dimensions were measured with an arthroscopic gauge. All chondral injuries were treated with debridement during bullet removal surgery. Following the debridement the joint was washed out and the procedure was terminated. Limited mobilization with double crutches was permitted for six weeks. Then full weight bearing was initiated for all patients.

Patient 1 was a male patient aged 32 years old with low-velocity gunshot wound. On physical examination; entry wound was placed 1 cm lateral to femoral artery, 10 cm distal and 5 cm medial to spina iliaca anterior superior. Neurovascular condition was intact. 4x2 cm chondral injury on superior portion of femoral head cartilage and 1x2 cm on acetabular cartilage was observed during arthroscopic examination (Figure 1).

Figure 1. Patient 1; Preoperative images and arthroscopic view of bullet removal

Patient 2 was a male patient aged 43 years old with low-velocity pistol wound. On physical examination; projectile entry point was placed 5 cm distal to greater trochanter and neurovascular condition was intact. On arthroscopic examination; 1x1cm chondral injury was observed on supero-lateral portion of femoral head (Figure 2).
In second year of follow up period, patient 1 appealed to hospital with groin pain. Patient had full range of motion but hip pain especially with weight bearing. MR images were taken and the path traversed by the projectile through the femoral neck and 4x2 cm chondral defect on the femoral head were apparent. No signs of osteoarthritis were detected. Patient was re-operated on March 2013. He was put on surgery table in lateral decubitus position with general anesthesia and safe surgical dislocation of the hip was applied. Dissolved cartilage was removed and microfracture was applied to subchondral bone. Acellular collagen scaffold was implanted on chondral defect area and fixed with fibrin glue (Figure 4).

No complication was observed post-operatively. Passive motions were allowed after two days and weight bearing was prohibited for six weeks. After 5 years of first surgery; patient applied to hospital with groin pain and limitation of hip movements again. On plain radiographs advanced hip osteoarthritis was detected (Figure 5). Patient had night pain and limitation of daily movements. Total hip replacement surgery was offered to patient.

For patient 2 and 3; we have observed no signs of osteoarthritis on follow-up of two years (Figure 6). Clinical examination showed full range of motion and no pain for these patients. Even patient 3 had bladder injury and penetration of joint through quadrilateral facet of acetabulum; we didn’t observe any infection of hip or wound.
DISCUSSION

Gunshot wounds to the hip joint account for 2% of all extremity gunshot wounds and 4% of lower-extremity gunshot wounds (5, 7). Considering this frequency, it is important to reveal prognosis of hip joint penetration with a bullet even if it’s removed with a minimal invasive technique as hip arthroscopy like we performed. To our knowledge, there is no published report describing the prognosis of hip joint after arthroscopic removal of a bullet.

Hip arthroscopy has recently become popular to treat much pathology regarding the hip joint. Hip arthroscopy was first described by Burman in 1931 (8). Arthroscopic technique for the extraction of the bullet from the hip joint was applied for a number of cases in the literature (9, 10, 11, 12). In the case report by Singleton et al, it was noted that a gunshot wound entered the abdomen, traversed the rectum and ended up in the weight-bearing dome of acetabulum, and the bullet was extracted with an arthroscopically assisted technique. They noted that this procedure can be performed safely, quickly and with minimal complications (4). Cory et al reported on the arthroscopic removal of a 44 caliber bullet from the femoral head by using debridement of the articular surface (5). In our cases, debridement was required both on femoral head and acetabular side of the hip joint.

When left in the joint, the bullet may cause complications such as deep infection, lead intoxication, synovitis and traumatic arthritis in long term (1, 2, 3). Thus the projectile imbedded in the hip joint is required to be removed and the joint to be irrigated. Even the bullet is removed; osteoarthritis of hip is still a serious threat for these patients as we see in this study.

This study demonstrated that chondral injury dimensions are clearly related with occurrence of osteoarthritis on long term follow-up. We observed serious osteoarthritis in one of three patients which larger chondral injury was observed during initial arthroscopy. We conclude that prognosis of the patient that had gunshot injury with a bullet in hip joint is directly correlated with primal injury of femoral or acetabular cartilage.

Compliance with Ethical Standards
There is no funding support in this study. Authors participate in this study declared that there is no conflict of interest.

All procedures performed in studies involving human participant swore in accordance with ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.
REFERENCES


