*Olgu Sunumu / Case Report*

Turk J Hip Surg 2025;5(1):245-248
https://doi.org/10.5505/TJHS.2025.92486

*Türkiye Kalça Cerrahisi Dergisi*
*Turk J Hip Surg*

# Pneumoscrotum As A Complication After Hip Arthroscopy: A Case Report

## *Kalça Artroskopisi Komplikasyonu: Pnömoskrotum, Olgu Sunumu*

**Ozgur Aydin[1], Emre Acar[2], Onur Hapa[2], Selahaddin Aydemir[3]**

*[1]Department of Orthopaedic Surgery, Silvan Dr. Yusuf Azizoglu State Hospital- 21640 DIYARBAKIR / TURKEY*

*[2]Department of Orthopaedic Surgery, Faculty of Medicine Dokuz Eylul University- 35330 IZMIR / TURKEY*

*[3]Kastamonu Research and Training Hospital, Department of Orthopaedic Surgery*

**Geliş / Received***:* 03.02.2025 **Kabul / Accepted:** 05.04.2025 **Online Yayın / Published Online:** 15.04.2025

Cite as: Aydin O., Acar E., Hapa O., Aydemir S. Complication After Hip Arthroscopy: Pneumoscrotum
Turk J Hip Surg 2025;5(1):245-248

**ABSTRACT**

*Pneumoscrotum is a very rare condition that results in swelling of the scrotum, whose aetiology can be attributed to air collection from the lungs or retroperitoneal structures, surgical interventions and gas-producing infectious organisms. We are reporting a case of pneumoscrotum that developed in a 28-year-old male patient after undergoing hip arthroscopy. 5 days after the hip arthroscopy, the patient was admitted following swelling in the left scrotum. Air was detected in the retroperitoneum, left anterior abdominal wall, left groin, and left scrotum. The patient was diagnosed with a left pneumoscrotum. This is the only reported pneumoscrotum reported in literature seen after hip arthroscopy.*

***Keywords:*** *Pneumoscrotum, Hip Arthroscopy, Complication*

**ÖZET**

*Pnömoskrotum, etiyolojisi akciğerlerden veya retroperitoneal yapılardan hava toplanması, cerrahi müdahaleler ve gaz üreten enfeksiyöz organizmalara atfedilebilen, skrotumun şişmesiyle sonuçlanan çok nadir bir durumdur. Kalça artroskopisi geçiren 28 yaşında bir erkek hastada gelişen bir pnömoskrotum vakasını bildiriyoruz. Kalça artroskopisinden 5 gün sonra, hasta sol skrotumda şişlik nedeniyle hastaneye yatırıldı. Retroperitonda, sol ön karın duvarında, sol kasıkta ve sol skrotumda hava tespit edildi. Hastaya sol pnömoskrotum tanısı konuldu. Bu, literatürde kalça artroskopisinden sonra görülen tek pnömoskrotumdur.*

***Anahtar Kelimeler:*** *Pnömoskrotum, Kalça artroskopisi, Komplikasyon*

**Sorumlu Yazar / Corresponding Author:**
Dr. Ozgur Aydin dr.ozguraydin92@gmail.com

**Aydin O.** 0000-0003-1920-1243
**Acar E.** 0000-0003-0177-8343
**Hapa O.** 0000-0001-8154-658X
**Aydemir S.** 0000-0002-4201-8239

## INTRODUCTION

Pneumoscrotum is a term describing the condition in which there is gas accumulation in the scrotum. Although it has innocent causes, it can also be a sign of situations that may result in serious morbidity and death(1). The most common causes of pneumoscrotum are traumatic causes such as pneumothorax and iatrogenic causes such as perforation following gastrointestinal interventions. Air originating from the abdominal cavity can spread through defects in the peritoneum by fascial diffusion. It can also be seen in serious clinical conditions such as Fournier's Gangrene. For this reason, conditions with potential morbidity and mortality risks should be investigated in patients presenting with pneumoscrotum (2). When complications after hip arthroscopy were examined in existing literature, even after subcutaneous emphysema was considered, there was no reported case of pneumoscrotum in published studies. We think that one of the main reasons for this is that cases are not reported. For this reason, we are reporting this case of pneumoscrotum that developed after hip arthroscopy.

## CASE REPORT

A 28-year-old male patient presented with a snapping sensation in his left hip when bending and standing and pain with flexion and internal rotation of his hip. The patient was diagnosed with femoroacetabular impingement (FAI) and internal snapping hip and due to no cessation of the patient's complaints following 6 months of physical rehabilitation, the decision of surgical intervention was given. This was the patient's first hip arthroscopy procedure. The surgery was performed using a traction table in the supine position under general anaesthesia. Anterior lateral, distal anterolateral and midanterior portals were utilised. A domestically produced pump was used as an arthroscopy pump (Doratek). Although there was no excessive bleeding during the procedure, the pump pressure, which was kept at 40 mmHg, was occasionally increased to 60 mmHg due to poor visualisation. Cam resection and iliopsoas tenotomy were performed. The surgery lasted 2.5 hours, and 12 litres of saline was used. No other problems were encountered during the procedure and the patient was discharged one day after surgery following instructions for postoperative physical therapy. On the 5th postoperative day the patient was admitted to the emergency department after experiencing scrotal swelling. After a detailed history the patient stated that he noticed the swelling right after the surgery, and thought it was temporary but due to the swelling not getting better he went to the hospital. The physical examination of the patient demonstrated swelling and crepitation of the scrotum, crepitation of the upper inner half of the left thigh, the left groin and the lower anterior wall of the left abdomen. There was no temperature increase or redness of the testicles, nor was there an open wound on the scrotum. No findings suggestive of infectious processes or abnormal conditions were detected at the portal sites. Superficial soft tissue ultrasound and lower abdomen and thigh tomography were performed. Air collection was observed in the superomedial thigh, left inguinal region, left hemiscrotum, left retroperitoneal region, left iliacus and around the left psoas muscle (Figure 1). After consulting Urology and General Surgery it was concluded that the accumulated gas was due to the hip arthroscopy procedure and a decision of conservative management was reached. The patient was discharged on the same day. During the patient's follow-up, the swelling gradually decreased and at the follow-up 1 week later, it was observed that the swelling had completely resolved and the crepitations had disappeared.

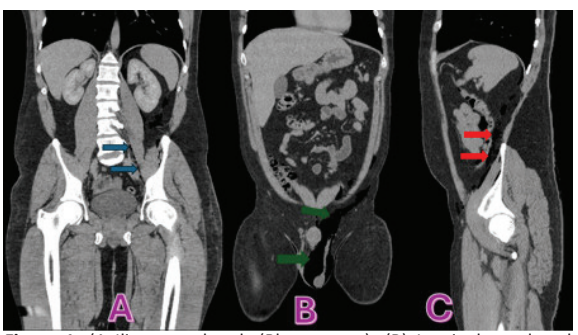


**Figure 1.** (A Iliopsoas sheath (Blue arrows), (B) Inguinal canal and scrotum (Green arrows), (C) Retroperitoneal region (Red arrows)

## DISCUSSION

The collection of gas in the scrotum is a rare condition with underlying etiologies that can cause serious morbidity and mortality. It can be caused by Fournier's gangrene, serious thoracic injuries, and in

cases of abdominal surgery with perforation (2). Gas accumulation can occur due to serious conditions, but it can also be seen after arthroscopy, which is relatively innocent. There are many publications in literature regarding complications developing after hip arthroscopy. In a meta-analysis published by Alexander et al. in 2015, 8189 hip arthroscopy cases within 53 studies were examined. FAI and labral pathologies were reported as the 2 most common arthroscopy indications. Osteochondroplasty and labrum repair were also reported as the most frequently performed surgical procedures. The frequency of minor complications was 7.9% with iatrogenic chondrolabral damage and temporary nerve damage being the most common two reasons. The frequency of major complications was 0.45% and fluid leakage outside the joint was the most commonly reported cause with fluid leakage into the abdomen and the thorax seen in 11 and 1 patient, respectively. Hip arthroscopy is increasingly preferred by surgeons compared to open surgery in the treatment of intra-articular and extra-articular pathologies (3). Potential complications related to arthroscopic procedures can be classified as intraoperative, early postoperative and late postoperative complications. Intraoperative complications include iatrogenic labrum and cartilage damage, damage to neurovascular structures, injuries secondary to traction, inadequate bone remodelling, fluid extravasation, and hypothermia. Early postoperative complications include infection, deep vein thrombosis, and instability. Late postoperative complications consist of avascular necrosis of the femoral head, adhesions, heterotopic ossification, femoral neck fracture, trochanteric bursitis and iliopsoas tendinitis (4). There are a number of publications reporting extra-articular fluid and gas extravasation in the current literature. However, there is only one case in literature reporting pneumoscrotum after arthroscopy, which was published in 1982 by Henderson et al. in which free air was detected in the right thigh, groin, scrotum and abdomen after knee arthroscopy (5). There are many cases in literature reporting subcutaneous air after knee arthroscopy (6), after shoulder arthroscopy (7), and after elbow arthroscopy (8). In the case where subcutaneous air accumulation was seen the source of the air was postulated to be air leakage due to loose connections in the pump (6). However, there is no reported case of pneumoscrotum developing after hip arthroscopy in literature. The pathoanatomy of extra-articular fluid extravasation that develops after hip arthroscopy is thought to be related to the fluid following the tract of the iliopsoas tendon sheath due to iliopsoas tenotomy or directly through the extended hip capsulotomy with high pump pressure and prolonged surgical time (9). Similarly, we postulated in our patient, that due to the iliopsoas tenotomy, the air entered the fascial sheath and moved along the sheath to the retroperitoneal area through the muscle due to the high infusion pressure, causing air accumulation in the retroperitoneal region. Due to its high diffusion ability gas from the cavities diffused into the inguinal canal, which served as a passageway between intra-extra abdominal structures, and caused gas diffusion through the superficial external ring, which is the end border of the inguinal canal into the spermatic cord and scrotal area and pneoscrotum (10). We think that the source of this air is the pump continuing to give positive pressure even after the saline bag is finished and pumping high-pressured air into the hip joint instead.

## CONCLUSION

We believe that it is important to closely monitor the change of saline-filled wash bags during hip arthroscopy to ensure that the pump is turned off during the change to prevent this complication.

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