

Case Report

Early Subcutaneous Emphysema Following Arthroscopy: A Case Report

M.G. Di Salvatore¹, R. Pezzella^{2*}, V. Calvisi²

¹AORN S. Giuseppe Moscati Avellino, UOC Orthopedics and Traumatology, Italy

²Department of Clinical Medicine, Public Health, Life Sciences and the Environment, Graduate School in Orthopedics and Traumatology, University of L'Aquila, Italy

***Corresponding author:** R. Pezzella, Department of Clinical Medicine, Public Health, Life Sciences and the Environment, Graduate School in Orthopedics and Traumatology, University of L'Aquila, Italy. Email: raffaelepezzella008@gmail.com

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Abstract

We report a rare presentation of early subcutaneous emphysema of the thigh following arthroscopy with a fluid medium and arthroscopy pump, which was managed conservatively. This rare clinical condition must be recognized by all orthopaedic surgeons practicing arthroscopic surgery.

Case Report

Arthroscopy of the knee joint is associated with a relatively low rate of complications, fewer than 2% [1-3]. We report an unusual and rare presentation of early subcutaneous emphysema of the thigh following arthroscopy with a fluid medium. This complication has been previously reported with carbon dioxide insufflation.

A 53-year-old female patient underwent arthroscopy of the left knee for a degenerative medial meniscal tear and arthroscopy debridement as a day-surgery procedure. It was performed under spinal anesthesia with tourniquet. The knee was irrigated with saline by arthroscopic pump. A partial medial meniscectomy was performed with an electric shaver under suction. After the procedure the fluid was drained out completely, no stitches were applied; dry dressings, and pressure bandage was given. The dressing was debulked at 48 h and knee exercises were started immediately post-surgery. Postoperatively the patient noticed swelling and tightness around the left thigh. The patient felt crackling-like sensation on rubbing his thigh. Clinical examination of the knee and thigh did not reveal any evidence of infection or effusion in the knee. Painless knee movements ranged from 0° to 110°. The anterolateral portal site was red, and a swab was taken from this wound. Blood tests were within normal limits.

Radiography (Figure 1) showed air in the subcutaneous tissue of the thigh and within the knee joint. Blood culture was negative.



Figure 1: Radiography showed air in the subcutaneous tissue of the thigh and within the knee joint.

We also performed an MRI that confirmed the presence of air and exclude the infection (Figure 2).

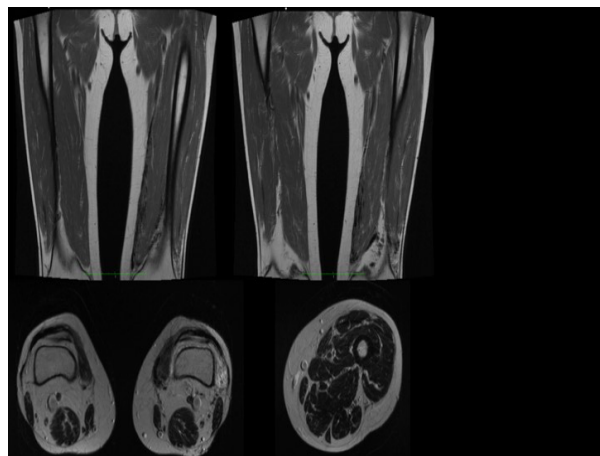


Figure 2: An MRI that confirmed the presence of air and exclude the infection.

Subcutaneous emphysema following arthroscopy has been reported in the literature when carbon dioxide was used to distend the joint with subsequent escape of the gas into the subcutaneous plane [4-8].

This complication was described for the shoulder arthroscopy [9-11]. Also reported are cases in which foot-operated saline pumps with loose junctions between bag and inflow tubing lead to air being pumped into the knee [12]. Hamilton [13] and Saleh [14] have described a similar mechanism of surgical emphysema in their case reports due to a chronic scar over the knee joint. Fernyhough [15] reported a mechanism resulting in “tension pneumoarthrosis” complicating a case of knee arthroscopy in which the portal had been used twice previously for an arthroscopy and twice for an arthrotomy. They stated that the dense scar tissue around the recurrent entry portal was a causative factor; their patient underwent arthroscopic irrigation in which the air was expelled and deep cultures taken, and the patient was put on intravenous antibiotics.

It is vital when faced with this clinical scenario to rule out infection due to gas gangrene forming organism [14]. It is also vital to be aware of this unusual presentation, as potentially serious consequences such as extension to the neck with breathing difficulties, pneumoperitoneum and pneumomediastinum have been reported in the literature [7,9-11,16].

Deshmukh decreed this complication with Saline whit gravity alone [17].

In the present case the knee was irrigated with saline by arthroscopic pump. We believe that this unusual occurrence was related to dysfunction of the arthroscopic pump that was not required for more time and that maybe inflow air in the knee. This mechanism was described from Calvisi [11] for the arthroscopy of shoulder.

The sheer stress on the wound due to absence of stitches and early knee mobilization exercises may have contributed. This exposed the subcutaneous tissue to the outside air that entered into the wound with every knee flexion and remained trapped in extension. The patient in our case report did not undergo any procedure and also made a full and uneventful recovery.

References

1. Committee on Complications of Arthroscopy Association of North America (1985) Complications of arthroscopy and arthroscopic surgery: results of a national survey. *Arthroscopy* 1: 214-220.
2. Sherman OH, Fox JM, Synder SJ, Del Pizzo W, Friedman MJ, et al. (1986) Arthroscopy -- “no problem surgery”. An analysis of complications in two thousand six hundred and forty cases. *J Bone Joint SurgAm* 68: 256-265.
3. Noble J, lilango B, Obeid M (1998) Complications of arthroscopy of the knee. *The Knee* 5: 1-8.
4. Habegger R, Siebenmann R, Kieser CH (1989) Lethal air embolism during arthroscopy: a case report. *J Bone Joint Surg Br* 71: 314-316.
5. Gruenwald JM (1990) Fatal air embolism during arthroscopy. *J Bone Joint Surg Br* 72: 929.
6. Casscells SW (1980) The place of arthroscopy in the diagnosis and treatment of internal degeneration of the knee: an analysis of 1000 cases. *Clinical Orthopaedic and Related Research* 151: 135.
7. Gillquist J, Hagberg G, Oretop N (1978) Therapeutic arthroscopy of knee. *Injury* 10: 128.
8. Ikeuchi H (1979) Meniscus surgery using the Watanabe arthroscope. *Orthopaedic Clinics of North America* 10: 629.
9. Lau KY (1993) Pneumomediastinum caused by subcutaneous emphysema in the shoulder. A rare complication of arthroscopy. *Chest* 103: 1606-1607.
10. Lee HC, Dewan N, Crosby L (1992) Subcutaneous emphysema, pneumomediastinum, and potentially life-threatening tension pneumothorax. Pulmonary complications from arthroscopic shoulder decompression. *Chest* 101: 1265-1267.
11. Calvisi V, Lupporelli S, Rossetti S (2007) Subcutaneous emphysema and pneumomediastinum following shoulder arthroscopy with brachial plexus block: a case report and review of the literature. *Arch Orthop Trauma Surg* 129: 349-352.
12. Henderson CE, Hopson CN (1982) Pneumomediastinum as a complication of arthroscopy. A case report. *J Bone Joint SurgAm* 64: 1238-1240.
13. Hamilton S, Towers MJ (1989) Pneumomediastinum due to a sucking wound of the knee. *AJR Am J Roentgenol* 152: 1131-1132.
14. Saleh M, Bollen SR (1984) Sucking wound of the knee: not gas gangrene. *BMJ* 289: 1348.
15. Fernyhough J, Razza BE (1992) Tension pneumoarthrosis complicating arthroscopy of the knee. *Am J Sports Med* 20: 479-480.
16. Lotman DB (1987) Pneumoperitoneum and acidosis during arthroscopy with CO₂. *Arthroscopy* 3: 185-186.
17. NV Deshmukh, MM Shah (2002) Extensive subcutaneous emphysema following arthroscopy: a case report. *Knee Surg Sports Traumatol Arthrosc* 10: 119-121.