CASE REPORT

EXTENSIVE SUBCUTANEOUS EMPHYSEMA COMPLICATING ARTHROSCOPY OF KNEE

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INTRODUCTION
Complications following arthroscopy of the knee are rare. Infections, haemarthrosis, synovial entrapment and damage to the articular surface have been described (Carson, 1979; Lindenbaum, 1981). This article presents a case of extensive subcutaneous emphysema following surgical knee arthroscopy which posed differential diagnosis problems with anaerobic infections.

CASE REPORT
A knee arthroscopy was performed on a 34-year-old male patient with the diagnosis of torn medial meniscus who suffered from pain and recurrent joint effusions. The arthroscopy was performed under general anaesthesia without a pneumatic tourniquet application to the thigh. The knee was irrigated with a saline solution under gravitation and the diagnosis of a tear in the anterior horn of the medial meniscus was confirmed. It was decided to perform an arthroscopic partial meniscectomy. The saline was drained off the knee which was insufflated with carbon dioxide gas and a partial meniscectomy was carried out uneventfully. Twelve hours later the patient complained of pain in the thigh and abdomen of the operated side. Upon examination subcutaneous crepitus was noticed over the thigh, abdomen and up to the chest wall. Body temperature was 38°C. Complete blood analysis including ESR, blood count, clotting tests and urine analysis were normal. X-ray revealed air in the subcutaneous tissue of the thigh, abdomen and lower chest wall (Fig. 1) and the diagnosis of subcutaneous emphysema was confirmed. The patient was treated with compressive elastic bandage on the lower limb and bed rest. Repeated blood analyses were normal and blood cultures were negative. The possibility of anaerobic infection with gas gangrene was dismissed and the complication was attributed to leakage of carbon dioxide gas during the arthroscopy into the subcutaneous tissues. The gas was dissolved within 48 hours and the subsequent rehabilitation and convalescence period, were uneventful.

DISCUSSION
Surgical arthroscopy of the knee using pneumatic insufflation of gas is a well established procedure associated with few complications, of which infection is the most dangerous one (Casscells, 1980; Gillquist et al, 1978; Ikeuchi, 1979).

Fortunately it occurs in only about 0.5 to 1.1% of the patients (Jackson and Dandy, 1976). Subcutaneous emphysema (and pneumoscrotum) following arthroscopy was described only once in the literature (Henderson and Hopson, 1982).

Although our case is similar to this described by Henderson and Hopson, it differs in its extension that was detected up to the lower chest wall of the same side (Fig. 1).

Fig. 1: Arteroposterior radiography showing air within subcutaneous tissue in the left chest wall (arrow).

This situation demands urgent measures in the differential diagnosis with anaerobic infection with gas gangrene especially the Clostridium species where body temperature remains low. Accurate physical examination and thorough laboratory analyses will help in making the correct diagnosis.

This complication of subcutaneous emphysema following knee arthroscopy is probably rare since it is the second case reported in the literature. Nevertheless, it must be recognised by all orthopaedic surgeons practising arthroscopy in order to prevent unjustified severe treatment in the misdiagnosis of anaerobic infection.

References
Casscells, S. W., 1980 "The place of arthroscopy in the diagnosis and treatment of internal derangement of the knee: an analysis of 1,000 cases". Clinical Orthopaedics and Related Research 151: 135.