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### CASE REPORT

## Complete popliteal artery rupture one month after arthroscopic partial meniscectomy<sup>☆</sup>

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#### PALABRAS CLAVE

Artroscopia de  
rodilla;  
Complicación;  
Arteria poplítea

**Abstract** A patient suffered a complete popliteal artery injury one month after a partial arthroscopic meniscectomy. The patient complained of progressive and severe distal pain. A complete lesion of the popliteal artery was found. Distal vascular flow was barely supported by two geniculate arteries. Vascular repair was performed using open vascular surgery.

Although the popliteal neurovascular bundle is close to the posterior capsule of the knee and is obviously potentially vulnerable, injuries in arthroscopy of the knee are very rare.

To avoid catastrophic consequences, the possibility of vascular injuries following arthroscopy of the knee, even several weeks after the surgery must not be ruled out.

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#### Rotura completa de arteria poplítea de un mes de evolución, tras meniscectomía parcial artroscópica

**Resumen** Comunicamos una sección completa de arteria poplítea en relación a una meniscectomía parcial artroscópica realizada un mes antes. El paciente presentaba dolor distal progresivo e incapacitante. Se encontró rotura contenida de arteria poplítea y situación de isquemia subaguda al conservar flujo distal a través de dos ramas geniculadas. La lesión fue reparada mediante cirugía vascular abierta.

La artroscopia es una técnica mínimamente invasiva, con bajas tasas de morbilidad. El paquete neurovascular poplíteo está próximo a la capsula articular posterior y es potencialmente vulnerable.

Las lesiones vasculares tras artroscopia de rodilla son infrecuentes. No se ha encontrado en la literatura ningún caso de rotura completa de arteria poplítea de presentación subaguda como el que se presenta.

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Para evitar consecuencias catastróficas, es esencial tener presente la posibilidad de una lesión vascular tras artroscopia de rodilla, incluso en casos con varias semanas desde la intervención. © 2011 SECOT. Publicado por Elsevier España, S.L. Todos los derechos reservados.

## Introduction

Arthroscopic meniscectomy is one of the most common procedures in orthopaedic surgery. Iatrogenic lesions following arthroscopic procedures are infrequent in the literature, ranging from 0.6 to 6%.<sup>1</sup>

Those in which the popliteal artery is damaged are mostly lesions with acute clinical consequences. In post-traumatic pseudoaneurysms, rupture is generally not complete, as it was in this case. We have not encountered any case of a complete section of the popliteal artery following arthroscopy causing a sub-acute clinical condition lasting for one month.

## Case report

We present the case of a 39-year-old male who came to the Emergency Room due to pain in the left leg lasting for one month, following an arthroscopic partial external meniscectomy performed using out-patient surgery at another centre. The patient complained of gradually poorer analgesic control that did not respond to the painkilling treatment prescribed by his surgeon at the post-surgery review visit. He presented continuous distal pain of ischaemic type in the left leg. During the physical examination, the patient presented scarring from two previous standard portals without appreciation of any posterolateral surgical scars. A mass measuring 5 cm × 8 cm on the surface was observed in the popliteal hollow, with paresis and non-palpable distal pulses.

The eco-Doppler study revealed the absence of popliteal flow. Computed tomography showed a pseudoaneurysm occupying the popliteal region (Fig. 1) and the distal trajectory of the popliteal artery was not identified.

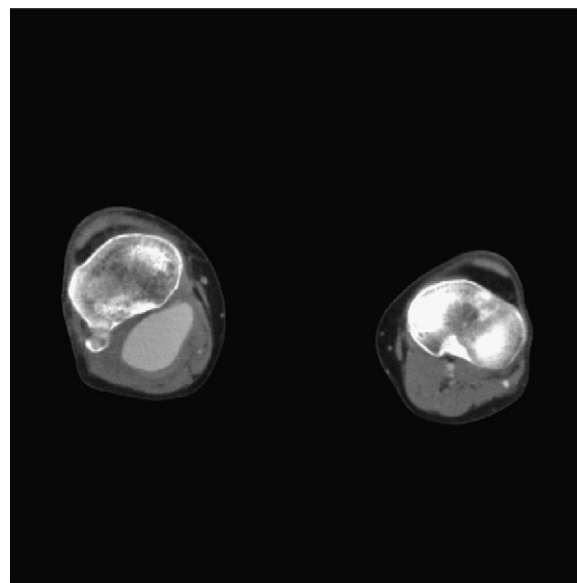
An arteriography was performed and showed a popliteal obstruction in its second portion with arterial dilatation distal to the obstruction, compatible with a pseudoaneurysm and distal bypass using genicular branches to the anterior y posterior tibial arteries (Fig. 2).

A posterior approach was used for the dissection of the neurovascular package. The complete section of the popliteal artery was observed with a haematoma contained in a fibrous sac. This fibrous sac formed around a haematic collection contained in the popliteal hollow was resected and revascularization was achieved through a prosthetic graft of expanded polytetrafluoroethylene (PTFE).

During the immediate post-operative period, pain ceased and distal pulses were recovered.

## Discussion

The incidence of neurovascular complications published in arthroscopic knee surgery is 0.6%.<sup>2</sup> In a survey of the



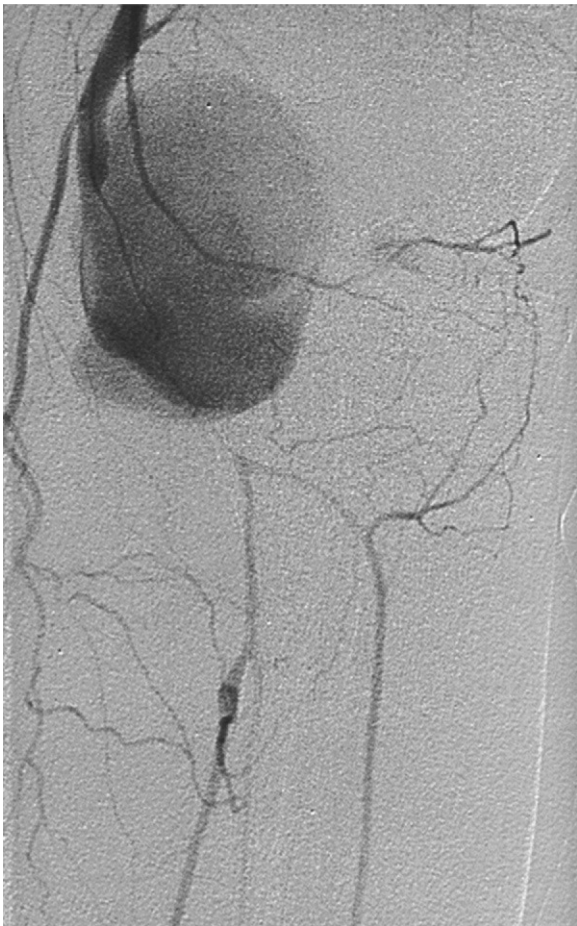
**Figure 1** Axial slice of a computed tomography. Image of the popliteal fossa in appearance compatible with pseudoaneurysm.

Arthroscopy Association of North America (AANA)<sup>3</sup> conducted on 118,590 arthroscopies, six cases of penetrating trauma were recorded in the popliteal artery. Four of these patients required amputation. This rate of complications seems to be underestimated, among other reasons because of the legal implications of acknowledging a serious complication in a procedure perceived by the patient as innocuous and due to the variability in the criteria used to define surgical complications in publications.<sup>4</sup>

In arthroscopic knee surgery, several vascular complications have been described in connection with lesions to the popliteal artery. Beck et al.<sup>5</sup> described a case of pseudoaneurysm of the popliteal artery. In 1987, Jeffries et al.<sup>4</sup> reported two cases of acute arterial trauma following external meniscectomy that required open surgical repair. Subsequently, Tawes et al.<sup>6</sup> published five cases of lesions in the popliteal artery, three of them with the formation of pseudoaneurysms. In 1997, González-Fajardo and Carpintero-Mediavilla<sup>7</sup> presented a case of traumatic lesion of the popliteal artery secondary to arthroscopic meniscectomy.

No cases have been found of a contained complete section of the popliteal artery following arthroscopic meniscectomy. Both these characteristics constitute the main distinguishing features of the case reported here.

During arteriography, repair by means of endovascular surgery was not considered. Open surgery was performed



**Figure 2** Arteriography. Pseudoaneurysm and distal bypass through genicular branches to anterior and posterior tibial arteries.

for the placement of a vascular prosthesis; the saphenous vein was not used as it was considered of unsuitable quality.

Anatomically, in the proximal portion of the popliteal hollow, the artery is slightly medial to the midline together with the popliteal vein and medial to the tibial nerve. At the level of the joint interline, the artery heads slightly lateral, remaining close to the posterior horn of the external meniscus.<sup>5</sup> Due to the anatomical location described, all forced external rotation of the knee must be avoided during the arthroscopic resection of the posterior horn of the external meniscus, as it is in this position that the popliteal artery and the inferomedial geniculate branch come close to the articular capsule.<sup>8</sup> This proximity of the arteries to the capsule might have more relevance and harmful consequences in the event of meniscal sutures, and not only of simple meniscectomies as in the case at hand.

Lesions to the artery in the popliteal hollow are not normally perceived during surgery, so it is often initially confused with a deep vein thrombosis.<sup>9</sup> The key symptom is the onset of an unusual pain after an arthroscopic procedure.<sup>10</sup>

In order to avoid catastrophic consequences, it is essential to bear in mind the possibility of a vascular lesion following knee arthroscopy, even in cases where several weeks have elapsed since the surgery.

## Ethical responsibilities

**Protection of human and animal subjects.** The authors will declare that the procedures followed were in accordance with the regulations of the responsible Clinical Research Ethics Committee and in accordance with those of the World Medical Association and the Helsinki Declaration.

**Confidentiality of Data.** The authors will declare that they have followed the protocols of their work centre on the publication of patient data and that all the patients included in the study have received sufficient information and have given their informed consent in writing to participate in that study.

**Right to privacy and informed consent.** The authors must have obtained the informed consent of the patients and/or subjects mentioned in the article. The author for correspondence must be in possession of this document.

## Level of evidence

Level of evidence IV.

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