



Review article

Pseudoaneurysm after arthroscopic procedure in the knee[☆]



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ARTICLE INFO

Article history:

Received 20 March 2014

Accepted 28 April 2014

Available online 16 March 2015

Keywords:

Anterior cruciate ligament

Arteries

False aneurysm

Arthroscopy

Knee

Palavras-chave:

Ligamento cruzado anterior

Artérias

Falso aneurisma

Artroscopia

Joelho

ABSTRACT

The aim of this study was to review all cases of pseudoaneurysm in the literature, in predominantly arthroscopic procedures on the knee, and to report on a case of pseudoaneurysm that we treated. A bibliographic search was conducted for scientific articles published in Brazilian and foreign periodicals over the last 23 years. Forty-seven cases were found, in 40 articles. In addition to these 47 cases, there was the case that we treated, which was also included in the data. Among the operations that progressed with formation of a pseudoaneurysm, 60% were cases of meniscal injuries and 23%, anterior cruciate ligament injuries. In 46% of the cases, the artery affected with the popliteal, and in 21%, the inferomedial genicular artery. The commonest clinical symptom was pain (37%), followed by pulsating tumor (31%), edema of the calf (12%) and hemarthrosis (11%). The median time taken to make the diagnosis was 11 days, but it ranged from one day to 10 weeks after the procedure. Although rare, pseudoaneurysms are a risk that is inherent to arthroscopic surgery. All patients should be made aware of the vascular risks, even in small-scale procedures.

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Pseudoaneurisma após procedimento artroscópico no joelho

RESUMO

O objetivo deste estudo é revisar na literatura todos os casos de pseudoaneurisma em procedimentos predominantemente artroscópicos do joelho e relatar um caso de pseudoaneurisma tratado pelos autores. Foi feita uma pesquisa bibliográfica por meio de artigos científicos publicados em periódicos nacionais e internacionais nos últimos 23 anos. Foram levantados 47 casos, em 40 artigos. Somou-se aos 47 um caso dos autores deste estudo que foi incluído nos dados. Das cirurgias que cursaram com pseudoaneurisma, 60% se tratavam

[☆] Work developed at the Universidade Federal do Paraná, Curitiba, PR, Brazil.

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<http://dx.doi.org/10.1016/j.rboe.2015.03.001>

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de lesões meniscais e 23% de lesões do ligamento cruzado anterior. Em 46% dos casos a artéria acometida foi poplíteia e em 21% a artéria genicular inferomedial. O sintoma clínico mais comum foi dor (37%), seguido de tumor pulsátil (31%), edema de panturrilha (12%) e hemartrose (11%). A mediana do tempo para diagnóstico foi de 11 dias, mas variou de um dia até 10 semanas após o procedimento. Apesar de raro, o pseudoaneurisma é um risco inerente à cirurgia artroscópica. Todo paciente deve ser notificado dos riscos vasculares, mesmo em procedimentos de pequeno porte.

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Introduction

Knee arthroscopy is among the most commonly performed surgical procedures for treating sports injuries.¹ Arthroscopic reconstruction of the anterior cruciate ligament (ACL) alone accounts for 75,000 cases per year in the United States.²

Use of arthroscopy has grown because it entails less injury to soft tissues in order to perform the procedure. With precise guides and use of cameras, it is possible to increase the surgeon's efficacy and diminish the damage to the patient. However, direct viewing of the surrounding structures is no longer done routinely, which may lead to unexpected injuries. One example of this is the reports of pseudoaneurysms after arthroscopic procedures have been performed on the knee.^{3,4}

Pseudoaneurysms are caused by incomplete injury to the arterial wall, with extravasation of blood that is contained by the surrounding tissues. This blood accumulation is organized in a fibrous capsule with the presence of turbulent flow inside it⁵ (Fig. 1).

Over the course of the natural evolution of pseudoaneurysms, they may increase in size until they rupture or cause ulceration in the neighboring structures.^{3,5,6}

Because pseudoaneurysms are a rare complication, a high degree of suspicion is needed for an early diagnosis to be made.⁷ The literature of pseudoaneurysms subsequent to arthroscopic procedures on the knee is sparse and only a few reports exist.

The objective of this study was to review all the cases of pseudoaneurysm in the literature resulting from predominantly arthroscopic procedures on the knee (treatments relating to ACL, meniscal injuries, synovectomy and osteochondritis) and report on a case of pseudoaneurysm that we treated.

Method

A bibliographic survey was conducted among scientific articles published in Brazilian and foreign periodicals over the last 23 years, using the PubMed and Bireme databases. The survey was conducted in two stages on the PubMed website: firstly, using the terms *pseudoaneurysm* OR *false aneurysm* and *knee* OR *cruciate* OR *arthroscopy*; and secondly, using *pseudoaneurisma* OR *falso aneurisma* and *joelho* OR *cruzado* OR *artroscopia*. In the Bireme database, the terms were used separately. Ten combinations would be needed in order to have a similar search, as follows: *pseudoaneurysm knee*, *pseudoaneurysm*

cruciate, *pseudoaneurysm arthroscopy*, *false aneurysm knee*, *false aneurysm cruciate*, *false aneurysm arthroscopy*, *pseudoaneurisma joelho*, *pseudoaneurisma cruzado*, *pseudoaneurisma artroscopia*.

Reports on cases of pseudoaneurysm of the knee subsequent to predominantly arthroscopic procedures were selected (cases relating to ACL, meniscal injuries, synovectomy and osteochondritis). Some other articles were found through examining the reference lists of the articles selected. No prospective or retrospective studies on this subject were found, and not even any case series. The maximum number of cases reported per article was three.⁸ The review was checked up to June 24, 2011.

Articles in five languages were found: English (31), French (3), Portuguese (1), German (1) and Serbian (1). The points of interest in the article in Serbian were kindly translated into English for us so that they could be included in this study.⁹

For the purposes of the present study, it was not of interest to review the opinions of specialists but, rather, the case reports, given that there was no stronger evidence than this, on this subject, up to the time of this study.

Case report

Our patient was a 17-year-old male who presented a complete tear of the ACL subsequent to twisting his right knee while playing handball. Arthroscopic reconstruction of the ACL was performed using a graft from the flexor tendons of the knee.

Two and a half years later, he twisted his right knee again, and this led to a complaint of instability and recurrent episodes of joint effusion. He sought assistance at the orthopedics service of the Sports Traumatology and Arthroscopy Center, where a diagnosis of a new ACL injury was made. Surgical revision of the reconstruction was therefore scheduled. The graft used was from the tendon of the quadriceps muscle. Extensive repair to the femoral intercondylar area was also performed.

On the first postoperative day, the patient complained about joint effusion in the knee and about the presence of a pulsatile mass in the inferomedial region of the right knee that was causing pain and discomfort. An echo Doppler test confirmed the clinical diagnosis of pseudoaneurysm. The patient was sent to the vascular surgery department, where embolization of the pseudoaneurysm was performed. Arteriography showed that the pseudoaneurysm was in the inferomedial genicular artery. The patient then made a good recovery without any interurrences.

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