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Pseudoaneurysm Of The Inferolateral Genicular Artery Following An Anterior Cruciate Ligament Reconstruction

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Faculty Disclosure Information

- Smith & Nephew



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Introduction

- Anterior cruciate ligament reconstruction (ACLR) is a very common orthopedic surgical procedure, with satisfactory outcomes in 75 -97% of the cases, but a complication rate ranging from 1 to 15%.
- **Vascular injuries following ACLR are rare**, with an incidence of 0.003%. Popliteal artery and some minor vessels, such as the geniculate arteries, can be injured during ACLR.
- The described arterial complications are penetrating injuries, arterial occlusions, avulsions, arteriovenous fistulae, but the most common complication is **pseudoaneurysm**.



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Introduction

- Pseudoaneurysm, or false aneurysm, result from an incomplete injury to the arterial wall, with extravasation of blood that is enclosed by the surrounding tissues, this blood accumulates in a fibrous capsule with the presence of turbulent flow within.
- Regardless of the amount of literature concerning frequent complications following ACLR, such as deep vein thrombosis (DVT), hemarthrosis, or infection, there are few case reports of arterial complications.

Purpose of the study

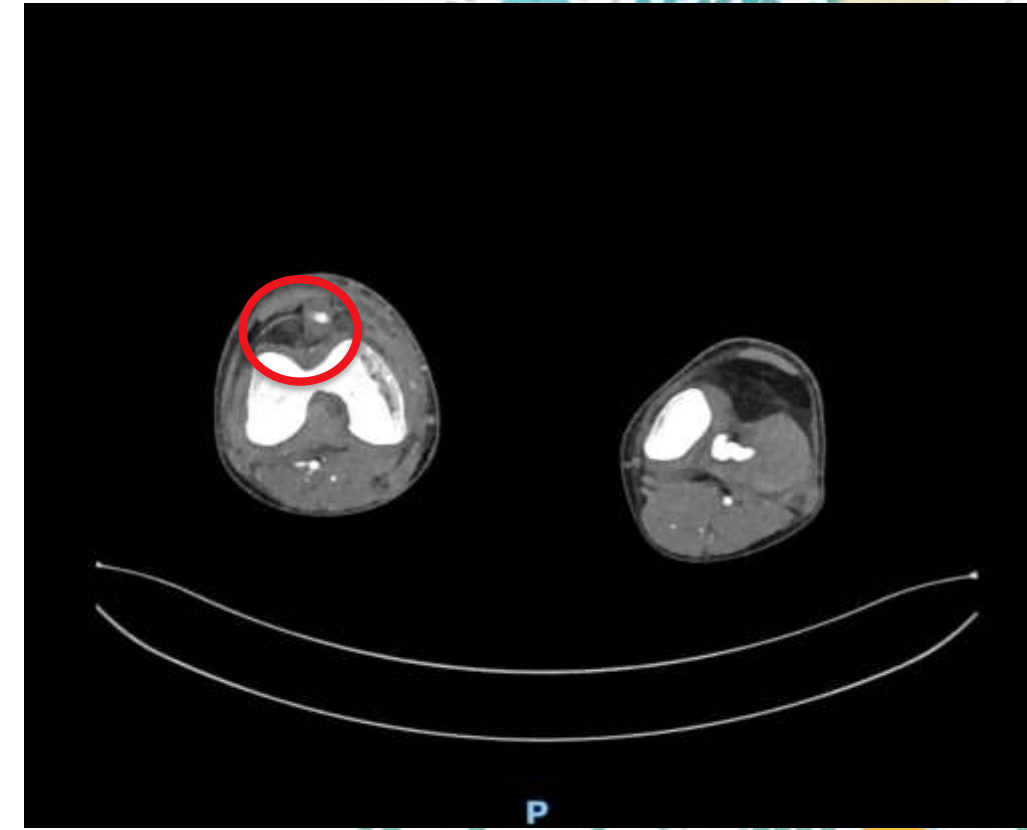
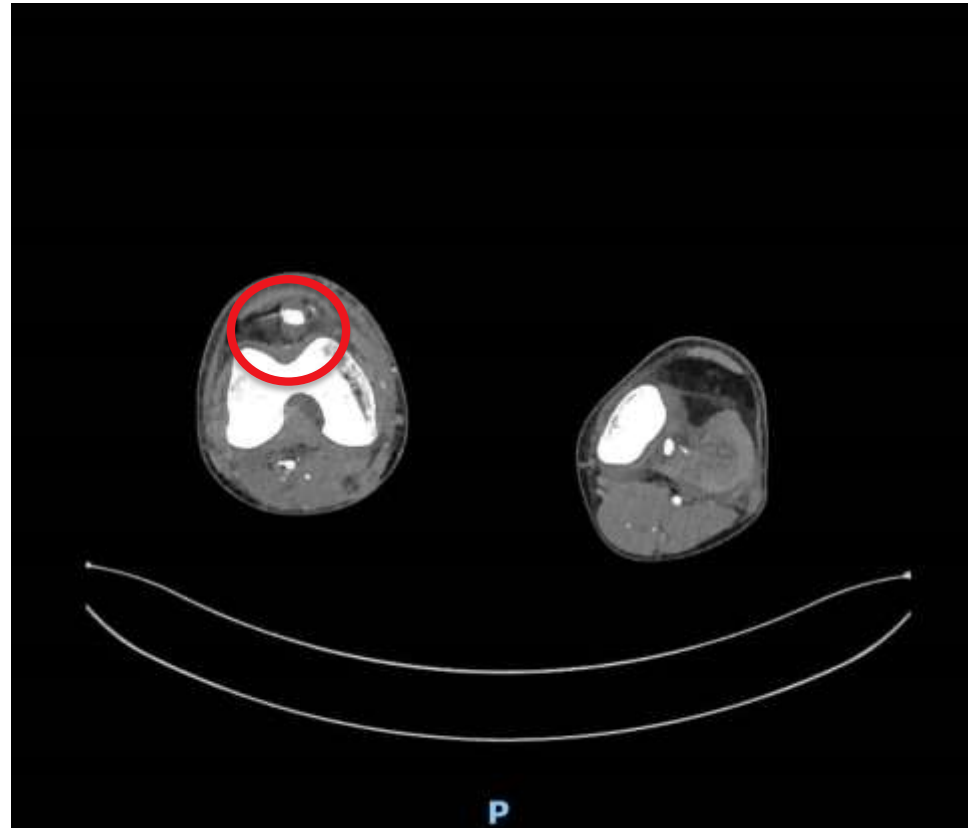
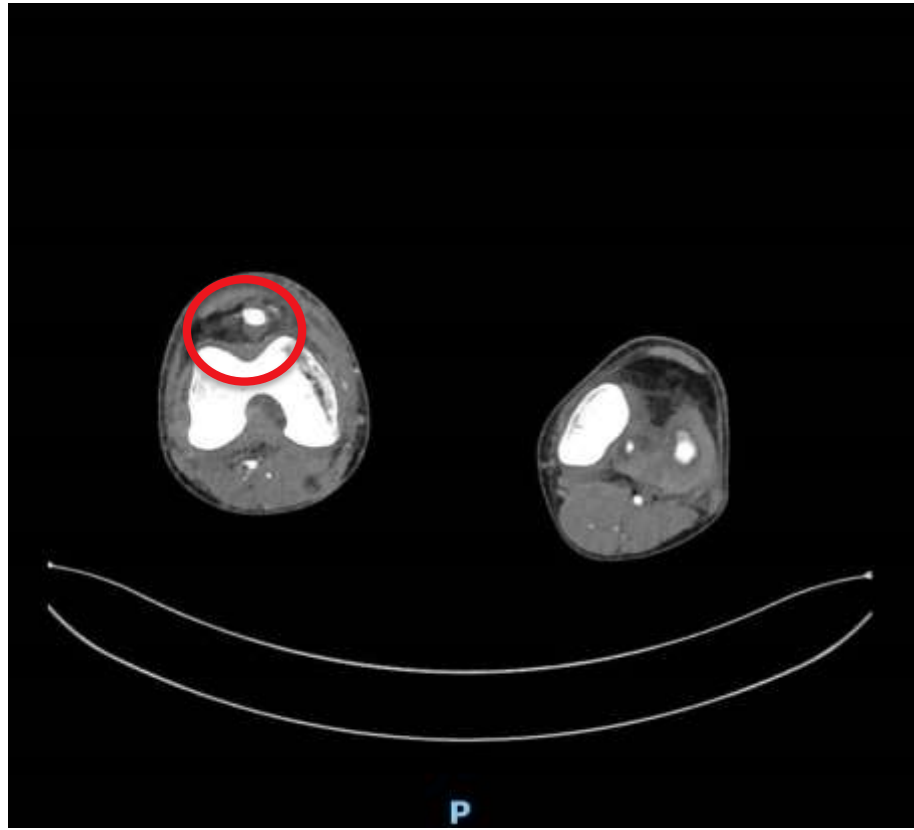
- The purpose of the present study was to describe the case of inferolateral genicular artery pseudoaneurysm following anterior cruciate ligament reconstruction with hamstrings tendon graft.

CASE REPORT

- A 15-year-old male patient, without comorbidities, underwent an elective ACLR using hamstrings (gracilis and semitendinosus tendon), due to an acute complete ACL tear of his right knee. He suffered this injury while playing soccer.
- The autograft was fixed with one endobutton in the femur and two staples of 8mm in the tibia. A selective external meniscectomy was also performed during the arthroscopic time of surgery. A compressive vendage with two lateral plaster splints were applied for one week. The patient was discharged from the hospital one day after surgery and allowed to perform partial weightbearing with crutches, ankle movements, and leg rises.

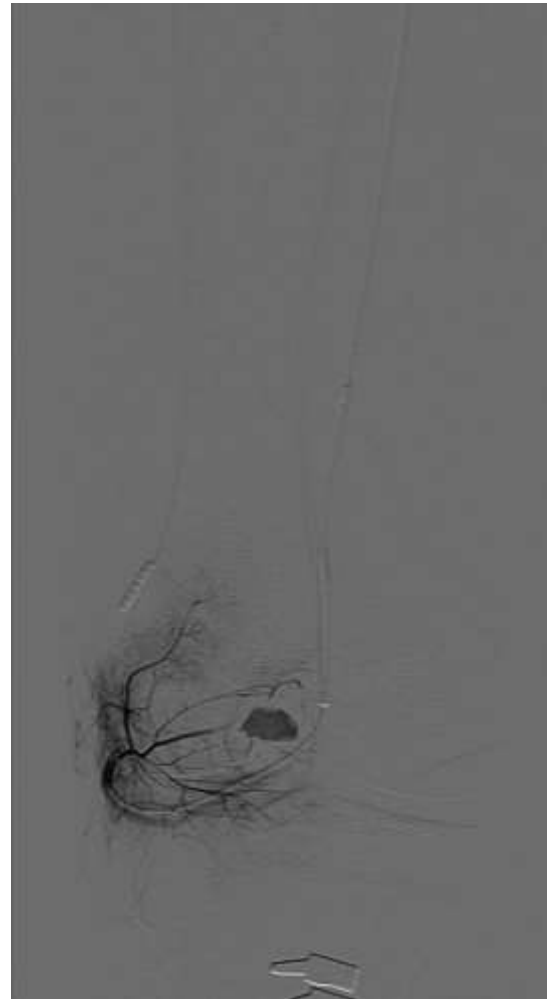
CASE REPORT

- On the seventh day of surgery, the patient presented to the urgency department with fever, pain in the back of the leg, and altered blood count with 9.4 gr/dl hemoglobin. There was no clinical evidence of site infection.
- He did not complain neither about any pain or pulsatile painless mass but there was repeated hemarthrosis.
- After two days being hospitalized, he tested positive to Covid, and hemoglobin dropped to 8.8 gr/dl.



- A computed tomography angiography (CTA) showed a **pseudoaneurysm** in the infrapatellar area.

- The **pseudoaneurysm** was treated by embolization, which confirmed a pseudoaneurysm with an arterial feeder from the **inferior-lateral genicular artery**.



CASE REPORT

- After surgery, a compression bandage was applied for one week.
- Surgical outpatient follow-up at 2 and 4 weeks showed no evidence of a recurrent aneurysm.

Discussion

- There are numerous reports in literature describing pseudoaneurysm in the genicular arteries after arthroscopic procedure, but this is the first report of a pseudoaneurysm of the inferolateral genicular artery following anterior cruciate ligament reconstruction with hamstrings tendon graft.
- In this specific case, the cause of the false aneurysm may be intraoperative trauma. In general, any pseudoaneurysm necessarily implies a direct trauma to the artery (drill bit, shaver, hardware or fixation device). Risk factors for injury are too small incisions, since it induces greater efforts to introduce the instruments in the knee, and too high realization of the anteromedial portal. However, anatomical variations exist, and it could be challenging to determine the location of these small arteries that run through the anterior part of the knee.
- In most cases, the common clinical presentation of the pseudoaneurysm is the painful, tender, pulsatile swelling of the leg, with or without palpable thrill and audible bruit. In our patient, there was no data as conclusive as a pulsatile mass, but there was repeated hemarthrosis. Cases might present a few days after arthroscopy or months after, our patient presented the symptoms on the seventh day of surgery.





Conclusions

- The incidence of pseudoaneurysm could increase due to the greater use of arthroscopic surgery currently.
- We must improve awareness of complications after ACLR to ensure better care in the surgery. For the prevention of vascular injuries in knee surgery it is necessary a good knowledge of the anatomy of the area and the location of the neurovascular structures.
- Is important to consider the clinical presentation of pseudoaneurysm to make a fast diagnosis and treatment.

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