

Case Report

Traumatic Aneurysm of the Inferior Lateral Geniculate Artery After Total Knee Replacement

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Abstract: A 55-year old man incurred a false aneurysm of the inferior lateral geniculate artery after total knee replacement. The false aneurysm appeared as a pulsatile mass with compressive neuropathy of the posterior tibial nerve. The development of this complication and treatment are discussed. **Key words:** pseudo-aneurysms, total knee replacement, inferior lateral geniculate artery.

Major vascular injury is an unusual but potentially limb-threatening complication of total knee replacement. Small vessels can be disrupted after any surgery around the knee, and this disruption rarely may lead to a false aneurysm. Various causes of false aneurysms of the popliteal artery, or one of its branches, have been reported, including fibular osteochondroma [1,2], blunt injury [3], arthroscopic meniscectomy [4,5], and total knee replacement [6,7]. The article reports a case of false aneurysm of the inferior lateral geniculate artery after total knee arthroplasty.

Case Report

A 55-year-old man with degenerative arthrosis of the left knee underwent low contact stress (LCS) total knee replacement (DePuy Inc., Leeds, UK). The operation proceeded without any apparent intraoperative complications. On the second postoperative day, the patient's recovery was complicated by the development of a large hematoma, which required evacuation. Evacuation of the hematoma was performed under tourniquet, and only 20 mL of blood was evacuated arthroscopically from the joint.

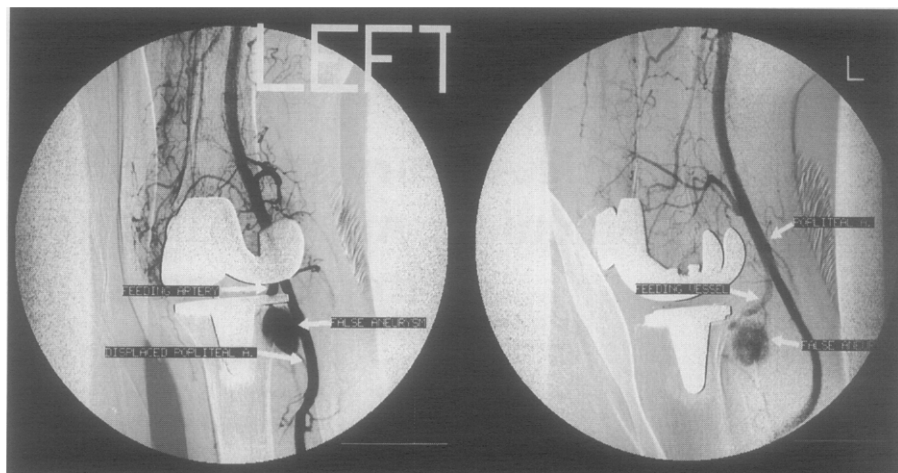
After the arthroscope was withdrawn, the lateral portal was enlarged, and approximately 500 mL of clotted blood was milked out of the soft tissue surrounding the joint. The wound healed without problems.

Six weeks later, the patient presented with pain in the back of the knee and paresthesia over the sole. Clinically, there was a pulsating swelling in the popliteal fossa measuring about 6 × 4 cm. The mass was cystic to palpation with an audible bruit. The popliteal, dorsalis pedis, and posterior tibial pulses were all normal. Subsequent ultrasound and arteriograms (Fig. 1) revealed a large aneurysm situated laterally in the popliteal fossa, indicating a false aneurysm of the inferior lateral geniculate artery with quite a large organizing hematoma. Under tourniquet, through a standard curvilinear posterior approach, a large sac was exposed under the lateral head of the gastrocnemius measuring 6 × 8 cm.

This sac was opened through a vertical incision on the sac, and a large amount of organizing hematoma was evacuated. The feeding vessel was doubly ligated with 4-0 Prolene. The sac was dissected carefully from the posterior tibial nerve and was excised. The tourniquet was then released to ensure that hemostasis was obtained, and the wound was closed in layers. The patient was discharged on the third postoperative day, and a Doppler examination performed 6 weeks later showed no evidence of recurrence of aneurysm. He was doing well 12

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Fig. 1. Arteriogram revealed an aneurysm of the inferior lateral geniculate artery at the joint level.



months later with some residual paresthesia over the lateral half of the sole.

Discussion

Popliteal artery aneurysm accounts for 70% of peripheral aneurysms. Atherosclerosis is a common cause. Aneurysms are classified according to structure into true aneurysms or pseudoaneurysms. *True aneurysm* is dilation of an artery more than twice normal size, with stretching and thinning of all vessel wall layers. In contrast, a *pseudoaneurysm* is a pulsatile swelling not contained by the vessel wall layers but instead confined by a fibrous capsule.

In view of the large number of total knee replacements that are done, it is remarkable that formation of a false aneurysm is rare. False aneurysm of the inferior medial geniculate artery after medial release in total knee replacement has been reported [6,7]. It is possible that many small arteries, when divided, retract completely and seal off, producing relatively little bleeding without subsequently forming aneurysms [5]. Pseudoaneurysms are more likely to form from a partially damaged vessel with blood dissecting into the surrounding soft tissues. The encapsulated hematoma then undergoes organization and endothelialization of the surrounding cavity. This lesion communicates with the arterial defect forming a pseudoaneurysm.

The lateral inferior geniculate artery arises from the popliteal artery under the cover of the origin of the lateral gastrocnemius muscle and winds close to the lateral meniscus with nothing intervening except the popliteal tendon. It is possible to damage this artery at the time of excision of the lateral meniscus or by retraction during total knee replacement. As the anatomy predisposes to this complication, this can be avoided by following a few simple precautions, such as a leaving a thin rim of lateral

meniscus. The tourniquet should be deflated before closure to reveal any abnormal bleeding in this area.

Early recognition with subsequent treatment is critical for this relatively uncommon complication. Surgical removal of the pseudoaneurysm and ligation of the inferior lateral geniculate artery are recommended as the definitive treatment. Failing treatment, aneurysms may produce symptoms by distal embolization or compression of the popliteal vein or the tibial nerve.

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