Embolization of traumatic false aneurysm of the geniculate artery

Embolisation d'un faux anévrysme traumatique de l'artère géniculaire

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Résumé

Des cas rares de faux anévrysmes de l'artère géniculée après prothèse du genou ont été rapportés.

Nous rapportons le cas d'un pseudo-anévrisme traumatique de l'artère géniculaire chez une patiente de 67 ans, qui a bénéficié d'une arthroplastie totale du genou. Un mois plus tard, une tuméfaction douloureuse est apparue sur la face latérale du genou.

La TDM a confirmé la présence d'un faux anévrisme de l'artère géniculaire, avec extravasation de produit de contraste.

L'anévrisme a été embolisé par des coils via une ponction antérograde de l'artère fémorale commune, avec des suites favorables.

Mots-clés

Faux anévrysme, chirurgie du genou, artère géniculaire, embolisation.

Summary

A few case reports of false aneurysms of the geniculate artery after knee replacement are reported. We report a case of a traumatic pseudo-aneurysm of the geniculate artery in a 67-year-old female patient. She was suffering from gonarthrosis and had a total knee replacement. One month later, a painful swelling in the lateral aspect of the knee occurred.

CT scan confirmed the presence of false aneurysm of the geniculate artery, with contrast extravasation.

He underwent embolization of the aneurysm by coils through antegrade puncture of the common femoral artery. The post-operative course was uneventful

Keywords

False aneurysm, knee surgery, geniculate artery, embolization.

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INTRODUCTION

Vascular complications of total knee arthroscopy or replacement are rare. The popliteal artery is usually affected [1]. A few case reports of false aneurysms of the geniculate artery are reported [2].

Their diagnosis and their management are challenging because of the late clinical presentation, and the anatomical location of the artery maintaining the dissection of the aneurysm difficult.

CASE REPORT

We report the case of a 67-year-old female patient with past-medical history of blood hypertension and dyslipidemia. She underwent total replacement of the right knee because of a severe gonarthrosis.

One month later, she was admitted for a progressive painful swelling of the operative site, without fever.

Physical examination revealed a pulsatile mass in the operative site.

Ultrasonography revealed a circulating mass lateral to the knee articulation measuring 24 mm of diameter.

CT scan confirmed the presence of false aneurysm of the geniculate artery measuring 20 mm of diameter with contrast extravasation (figure 1).

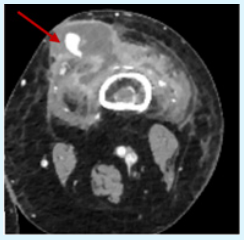

Figure 1. CT scan showing a circulating false aneurysm originating from the genicular artery (arrow).

Because of the risk of rupture and the anatomic location of the aneurysm making surgical management difficult, endovascular embolization by coils was indicated.

The procedure was performed under local anesthesia with antegrade puncture of the femoral artery. The superficial femoral artery was catheterized, and the guide was oriented to the geniculate artery.

Selective antegrade angiography confirmed the presence of the false aneurysm with narrow neck (figure 2).

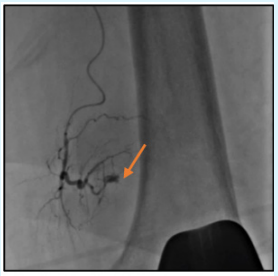

Figure 2. Selective angiography showing the false aneurysm of the genicular artery (arrow).

So, a complete embolization by deploying a coil was performed (figure 3).

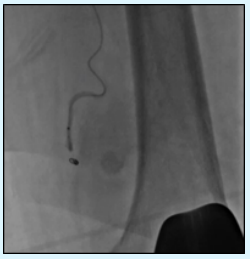

Figure 3. Angiography showing complete exclusion of the false aneurysm by coils

DISCUSSION

The proximity of the popliteal artery to the site of operation during total knee replacement exposes it and its branchs to potential direct surgical injury. The main vascular lesions are pseudo-aneurysm, arterio-venous fistula, and transection of the artery [3].

Pseudo-aneurysms of the geniculate artery and branchs of the anterior tibial artery, communicating with the artery through a disruption of the arterial, wall have also been reported in the literature [4].

Daniels et al, in their retrospective study including only symptomatic pseudo-aneurysm after total knee replacement diagnosed on imaging, confirmed the low incidence of this complication at approximately 0.02% [5]. The interval between the surgery and the apparition of the mass is variable. It makes the diagnosis difficult. The typical presentation of these pseudo-aneurysms around the knee may include pain, swelling, recurrent hemarthrosis, and presence

of a pulsating mass, like the case of our patient [6].

Ultra-sonographic and angiographic examinations allow the exact diagnosis and location of this lesion.

Treatment options depend on the size and location of the pseudo-aneurysm. If they are smaller than 1.8 cm in diameter, spontaneous thrombosis can occur. So, their management is conservative, cessation of anti-coagulation, with close follow-up [7].

If their diameter is larger, surgical repair by excision of aneurysm and ligation of feeding vessel, or embolization and exclusion with covered stent are indicated [8, 9].

Endovascular exclusion is less invasive than conventional surgery. A reverse-curve catheter is used to selectively catheterize the vessel origin, and to deploy the coil.

Thrombin is also used to perform embolization of theses aneurysms. However, in case of wide neck of the false aneurysms, systemic emboli can occur [10].

Petrillo S et al [11] reported a similar case to our patient: a false aneurysm of the genicular artery in a 41-year-old man, treated with coils.

CONCLUSION

Post-operative pseudo-aneurysms of the geniculate artery are rare and challenging.

Endovascular management with catheterization and embolization techniques is a minimally invasive treatment, which allows optimal patient outcomes. Furthermore, collaboration between orthopedic surgeons, radiologists, and vascular surgeons is essential to obtain a prompt diagnosis and a correct treatment of this complication.

This case focuses on the etiology, clinical presentation, diagnosis, and treatment modalities of the post-operative iatrogenic pseudo-aneurysms of the geniculate artery.

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