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Correspondence

Management of Deep Femoral Artery Pseudoaneurysm in a COVID-19 patient



Dear Editor,

A 41-year-old renal transplant man affected by coronavirus disease-19 (COVID-19) was admitted to our exclusive COVID-19 care unit with respiratory symptoms but showed no obvious signs of pneumonia at a high resolution CT-scan. During his hospital stay, a worsening of his respiratory condition occurred and he was transferred to our COVID-19 intensive care unit (ICU) where he received supportive care including antiviral drugs and high flow oxygen. After 10 days, the patient was deemed to no longer require an intensive care protocol due to improvement and stability in his ventilatory conditions and was transferred back to our hospital's exclusive COVID-19 care unit once again. Upon his return, the patient was hemodynamically stable but a reduced hemoglobin count was evident (6.5 g/dL) and a clinical examination showed a left anterior-lateral swelling of the thigh associated with pain and palpable pedal pulses.

The day before returning to the exclusive COVID-19 care unit, the patient's hemoglobin values were stable at 9.3 g/dL and no swelling was reported at clinical examination, however his blood check and clinical examination performed 36 hours later once back in the COVID-19 unit revealed anemia and swelling, respectively (Fig. 1).

It was only at this point that our vascular surgery unit was alerted to assess the nature of the swelling. We immediately performed a duplex sonography (DUS) which showed a large multilobate pseudoaneurysm which corresponded to the swelling.

A computed tomographic angiography (CTA) confirmed the vascular lesion: a pseudoaneurysm with 2 main lobes of 20 and 30 mm diameter, respectively with connections to the deep femoral artery (DFA) (Panel A).

The reason of the pseudoaneurysm still remains unknown. We assumed an iatrogenic cause after attempting to puncture the common femoral artery for blood gas analysis or to place a central venous catheter but no information was reported in the medical records and the patient did not remember any medical action performed in the left inguinal area.

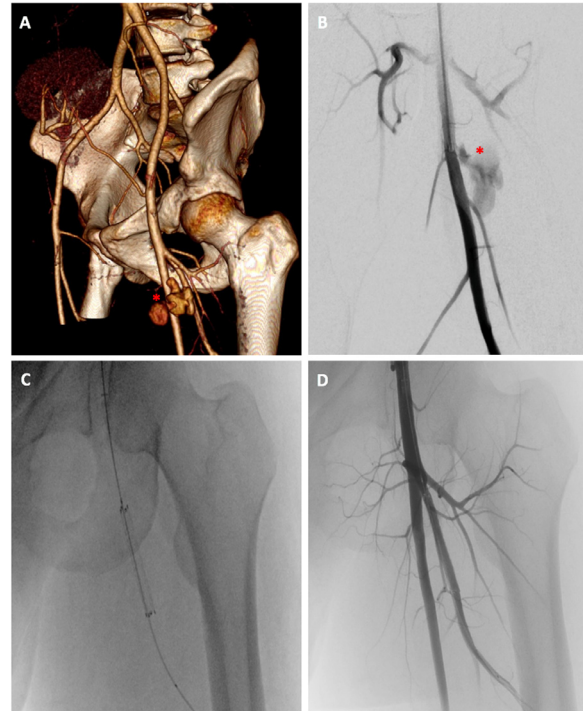


Fig. 1. Panel A, preoperative CT-scan (volume rendering); Panel B, selective angiogram of deep femoral artery (*pseudoaneurysm); Panel C, covered stent graft deployment across the pseudoaneurysm's neck; Panel D, final angiogram showing the complete exclusion of the pseudoaneurysm and patency of deep femoral artery.

We decided to treat the deep femoral artery pseudoaneurysm (DFAP) with a minimally invasive approach using a percutaneous ultrasound-guided injection of tissue glue and human thrombin (TG-HT) (*Tisseel 4 mL, Baxter*). With this procedure, the larger lobe of DFAP was immediately excluded but the neck of the deepest lobe still remained patent. As result, a different strategy was needed to obtain the complete exclusion of the DFAP.

At this point two treatment options remained: surgical or endovascular repair. The inability to administer spinal anesthesia (the patient was on anticoagulant treatment with Enoxaparin 3000 IU/die, with the last administration performed less than 12 hours before), a longer intervention time, the need to activate specific protocols for the decontamination of surgical and anesthetic instruments and the vascular surgeon's discomfort inevitably linked to a pandemic setting¹ led us to prefer endovascular repair over surgical.

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We opted for a covered stent graft implantation, considering the occlusion of small collaterals of the DFA irrelevant. Under local anesthesia, the right common femoral artery was punctured to deliver a 6 × 40 mm stent graft (*Fluency, DB Bard*) across the DFAP neck and obtain its complete exclusion² (*Panels B, C, and D*). We preferred to use a Fluency stent graft due to its shorter length compared to other more flexible devices available in our stock.

The COVID-19 pandemic has significantly impacted all healthcare systems worldwide and our case shows how a diagnostic delay can lead to serious complications.³ The respiratory function of patients affected by COVID-19 is and will most likely continue to be the main aspect on which attention is focused during recovery but this may lead to underestimating or sometimes not investigating other, secondary conditions that can arise during management of these types of patients. In this context, even a pseudoaneurysm becomes a problem that can aggravate the already difficult conditions of COVID-19 patients.⁴

Furthermore, first-line therapy changes as normally open surgical repair would be considered the gold standard for pseudoaneurysms of the lower limb while percutaneous treatment which includes TG-HT, transcatheter embolization and covered stenting, would be a viable alternative in selected cases only. Due to the clinical complications brought about by COVID-19 patients in this case we were led to reprioritize our selection process choosing the less invasive treatment option and bypassing the gold standard.

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