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Case Reports

Emergency Embolization of a Ruptured Aneurysm of the Internal Iliac Artery by Direct Ultrasound-Guided Puncture: Report of a Case

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We report the emergency embolization of a ruptured aneurysm of the internal iliac artery in a patient at high surgical risk. Admission computed tomography scan showed that the ostium of the aneurysmal internal iliac artery was covered by a covered stent. In this patient, we chose to carry out an embolization of the aneurysm and its efferent arteries by direct puncture of the aneurysmal sac using an antero-external abdominal approach under ultrasound guidance. Short-term results were favorable and we consider that this technique is one of the therapeutic options to discuss in such situation.

Isolated atheromatous aneurysms of the internal iliac artery (AIIAs) are extremely rare with a prevalence considered lower than 0.03%.[1] The diagnosis of these lesions is difficult when they are asymptomatic. Current techniques available to treat AIIAs are mainly ligation, aneurysmectomy, aneurysmorrhaphy, embolization, or implantation of a covered stent and these various techniques can also be combined.[2]

After endovascular treatment of these lesions, the rate of endoleaks is between 2.8% and 33%.[3] Type 1 endoleaks are in general treated by the implantation of an additional covered stent at the level of the proximal or the distal neck. In general, type 2 endoleaks are treated by embolization carried out by a femoral approach when they are associated with an expansion of the diameter of the aneurysm.

When AIIA is treated by means of a covered stent covering the ostium of the aneurysmal internal iliac artery, a distal embolization of the branches of the internal iliac artery is associated with the stent implantation. If the distal embolization is incomplete, the development of a type 2 endoleak may be difficult to treat because the covered stent is placed in front of the ostium of the aneurysmal internal iliac artery which precludes direct access to the branches which supply the aneurysmal sac.[3]

We report the case of a patient admitted in emergency for severe abdominal pain 6 years after the treatment of an AIIA by embolization of the aneurysmal sac associated with the implantation of a covered stent between the common iliac artery and the external iliac artery which covered the ostium of the internal iliac artery. The computed tomography (CT) scan carried out in emergency found a bulky ruptured AIIA. The patient was treated by embolization with coils and endovascular glue by direct percutaneous puncture of the aneurysm under ultrasound and radiological control.

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An 84-year-old man was admitted in emergency for sudden abdominal pain associated with a fever of 39.1°C. Cardiovascular risk factors were high blood

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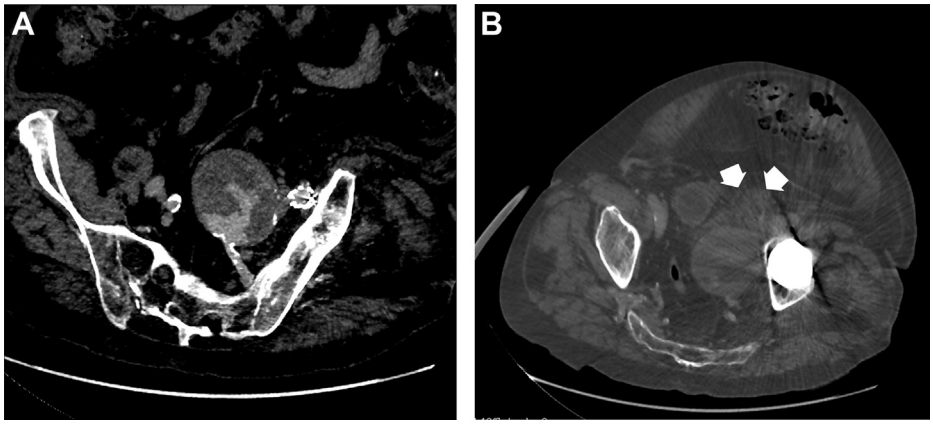

Fig. 1. (A) CT scan reconstruction showing a 72-mm aneurysm with contrast enhancement via the collateral branches of the internal iliac artery. **(B)** Retroperitoneal perianeurysmal hematoma (*arrow*).

pressure, dyslipidemia, and diabetes mellitus. The patient had been treated successfully for a left AIIA 6 years before by the association of an embolization of the aneurysmal sac by Mega Coils (Cook, Bloomington, IN) and a covered stent implanted between the common iliac artery and the external iliac artery. The patient reported the absence of follow-up since the initial procedure. The other notable antecedents of this patient were coronary disease treated by angioplasty, aortic stenosis, paroxystic atrial fibrillation treated by antivitamin K, and obesity (body mass index 32.1).

Clinically, the patient was hemodynamically stable and presented an abdominal distension with pain prevailing in the left iliac fossa, without tenderness or guarding. Biological tests showed a hemoglobin level of 94 g/L, a leucocyte count of 11giga/L, and lactate value was 1.09 mmol/L. Abdominal angio-CT showed a 72-mm left AIIA with a type 2 endoleak reinjecting the aneurysm via the superior and inferior gluteal arteries (Fig. 1A) associated with a perianeurysmal hematoma (Fig. 1B). No other etiology was found to explain the abdominal pain and the diagnosis of ruptured aneurysm was posed.

The patient was operated in emergency. In the operating room, under local anesthesia, the aneurysm was punctured by an anterior transabdominal route in its inferior and external part. Ultrasound guidance permitted to keep the needle extraperitoneal. This time of the procedure was carried out by an interventional radiologist familiar with this type of procedure (J.A.). Then under X-ray control, an angiocath was introduced into the aneurysm (Fig. 2). Using a microcatheter, each branch of the AIIA was catheterized then embolized with Azur coils (Terumo, Somerset, NJ). Finally, the circulating part of the aneurysmal sac was entirely filled with ONYX glue (ev3 Neurovascular, Inc., Irvine, CA). At the end of the procedure no endoleak was found (Fig. 3). The introducer was then withdrawn while injecting ONYX all along the puncture path to prevent a possible active bleeding through the point of puncture.

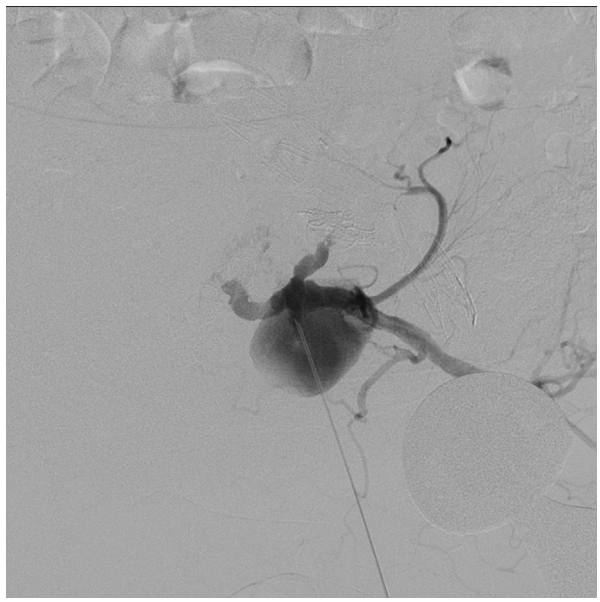

Fig. 2. Direct puncture of the aneurysm using an anterior-inferior-external route and then injection of contrast medium visualizing the aneurysmal sac and the collateral circulation.

The patient initially received 2 U of packed red blood cells. A 15-day probabilistic antibiotic treatment was prescribed and the fever and the biological inflammatory syndrome regressed in a few days during the hospitalization. The 9 blood cultures taken at the time of admission and bacteriological examination of urine were all sterile. Serologies for Chlamydia, Coxiella, Brucella, and Candida were negative, like the search for Legionella and Aspergillus antigens. Before discharge, MRI, echo-Doppler, and CT all confirmed the complete exclusion of the aneurysm (Fig. 4). Postoperative course was uneventful and the patient left the hospital on postoperative day 10.