SHORT REPORT

Use of an Endograft from the External to the Internal Iliac Artery to Treat a Perforation of the Common Iliac Artery

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Introduction

An increase in the number of endovascular procedures has let to a concomitant increase in iatrogenic arterial lesions such as catheter-induced arterial perforation or vessel rupture after PTA.¹ The traditional way of treating these problems is by way of an open surgical approach, balloon tamponade, insertion of uncovered stents or covering the rupture site with an endograft.²⁻⁴

The present case describes a new technique for treating catheter-induced perforation of the common iliac artery during an attempt to recanalise an occlusion of this vessel. This complication was treated by insertion of an endograft from the external to the internal iliac artery to exclude flow to the perforated common iliac artery.

Technique

An 80-year-old-patient developed deteriorating claudication with a walking distance of 20 m. Physical examination revealed bilateral absent femoral pulses, and CT-angiography showed an occlusion of the right common iliac artery, and a high grade stenosis of the left common iliac artery. Poor cardiac function and two previous myocardial infarctions were indications for an endovascular approach to treat this patient.

Sheaths were inserted in both common femoral arteries, and 5000 units of heparin were administered intravenously. On table angiography confirmed the angiographic CT-findings (Fig. 1). In attempting to recanalise the right common iliac artery, it was wrongly assumed that the hydrophylic guide wire (Terumo, Europe) was positioned in the aorta. A six French angiography catheter was thus advanced to the level of the aorta. Angiography through the catheter however, revealed para-aortic contrast extravasation. As a rupture was suspected, the catheter was withdrawn. A perforation of the occluded right common iliac artery with serious extravasation, was confirmed by angiography through the femoral sheath (Fig. 2).

As the patient became haemodynamically unstable, balloon tamponade of the perforation was performed. However, each time the balloon was deflated, angiography showed persistent extravasation, and the blood pressure dropped to 70/40 mmHg. Protamine was administered intravenously to reverse the heparin. Even prolonged balloon inflation could not arrest the hemorrhage the patient remained unstable.

To avoid persistent shock and to prevent cardiac ischemia, it was decided to insert an endoprosthesis from the external to the internal iliac artery. A stiff guide wire (Amplatz super stiff, Boston Scientific) was positioned in the internal iliac artery. A Hemobahn endograft 10 mm × 5 cm (W.L. Gore and Associates, Flagstaff, AZ, USA) was then successfully deployed, thus excluding the perforation as there was no antegrade flow down the occluded common iliac artery. Control angiography showed no contrast extravasation (Fig. 3) and the patient remained hemodynamically stable until discharge, 2 days after the intervention. Two units of packed cells had to be...
administered because of a postoperative hematocrit level of 0.27.

Discussion

Iatrogenic vascular lesions are increasingly reported because of the rapid expansion of vascular procedures. Rupture of the iliac artery in angioplasty may occur in 0.5% of the procedures. Other complications, such as catheter-induced arteriovenous fistula, large dissections and flow obstructing intramural thrombus have also been reported.5

Traditionally, vessel perforation or rupture after PTA has been treated surgically. Prolonged balloon tamponade has however been reported to be successful, and even uncovered stents have been inserted to stop hemorrhage.2,3 With the introduction of endografts, a new option has been added to treat this complication in a reliable way.4

In the present patient, a life threatening complication had to be dealt with in a prompt manner. Ligation or embolisation of the external iliac artery, would not have stopped the retrograde bleeding from the internal iliac artery. The only way to treat the perforation and to preserve flow in the internal iliac artery was to insert an endograft from the external to the internal iliac artery.

This technique has been reported before, for the exclusion of common iliac artery aneurysms while preserving flow to the internal iliac artery.6–9 In the present case, the same principle was applied, thus excluding flow to the common iliac artery.

The Hemobahn endoprosthesis was chosen for its flexibility to circumvent the main technical problem, which is the angle between the external and internal iliac artery.

In conclusion, this report outlines a new indication for this technique in cases of iatrogenic arterial trauma.

References


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