Endovascular Stent-Grafting for Recurrent Aneurysm in Behcet’s Disease

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SUMMARY

Arterial aneurysms represent a severe complication of Behcet's disease. A 42-year-old woman with Behcet's disease had a recurrence of an aneurysm after two surgical repair attempts using grafts. A covered stent-graft was implanted in her iliac external artery to occlude the neck of the aneurysm at the anastomosis of the bypass graft to her external iliac artery. The procedure reduced the size of the aneurysm by allowing the formation of a thrombus within its cavity. The implantation of an endovascular stent-graft may be a sound alternative to surgical repair for aneurysms associated with Behcet's disease. (Int Heart J 2005; 46: 745-749)

Key words: Endovascular stent, Interventional radiology, Iliac artery, Long-term efficacy

BEHCET'S disease is an inflammatory disorder characterized by recurrent oral and genital ulcers, uveitis, and skin lesions.1) Cardiovascular complications develop in up to only one third of patients, but they are the main causes of death.2-4) Arterial complications account for 10-15% of vascular complications and consist mainly of aneurysms. Though open surgical repair is the standard therapeutic approach for aneurysms, its results are unpredictable because of frequent postoperative recurrences.5,6) Stent-graft placement has recently been attempted for the alternative treatment of aortic and arterial aneurysms in patients with Behcet's disease.7) We describe a woman with this disease, in whom a covered-stent was successfully implanted in her right iliac external artery to occlude the neck of a recurrent aneurysm at the anastomosis of the bypass graft to her right external iliac artery.
CASE REPORT

A 42-year-old woman with a 13-year history of Behcet's disease was admitted to our hospital complaining of a firm, pulsatile mass in her central abdomen. She had undergone a partial colectomy for colon perforation and Behcet's disease was diagnosed in 1991. She had undergone replacement of her abdominal aorta using a Dacron graft at the level of the renal arteries because of an aortic aneurysm in 1999. However, the blood flow to the left kidney was not reconstructed sufficiently due to a fragile arterial wall, and renal dysfunction developed. One year after the aortic operation, an aneurysm developed at the distal anastomosis of the graft, and she underwent a second graft replacement with a Dacron Y-graft. The distal end of the prior graft was anastomosed to the Y graft, and the two branches of the Y graft were anastomosed to the side of the external iliac arteries, preserving the lower abdominal aorta and arteries originating from it. Three years after this second intervention, the patient noted a firm, pulsatile mass in her central abdomen. Computed tomography of the abdomen with 3D reconstructions showed a new 60-mm diameter aneurysm at the anastomosis of the graft to the right external iliac artery (Figure 1), which obstructed the right ureter, causing right hydronephrosis that resulted in a further decrease in renal function. To reduce the size of the aneurysm, prevent its rupture, and eliminate the hydronephrosis, we planned the implantation of a covered stent in her right external iliac artery, while closing the entry into the aneurysm. Written informed consent was received from the patient.

Under local anesthesia, a catheter-guiding sheath was introduced into the right femoral artery. The guiding wire (RADIFOCUS 0.035 inch, Terumo Corp.,

Figure 1. Computed tomography with 3D reconstructions. A: Frontal abdominal computed tomographic image. Frontal (B) and sagittal (C) computed tomographic angiogram. A large aneurysm (arrows) is present at the right distal margin of the Y-graft to the right external iliac artery. The arrowheads point to the postoperative remnants of the distal abdominal aorta.
Tokyo, Japan) was passed through the aneurysm to the Y graft. A pigtail catheter was advanced from the right external iliac to the right branch of the Y graft, and the angiogram confirmed that the neck of the aneurysm was located at the anastomosis of the right iliac artery (Figure 2). Intravascular ultrasound (Sonicath Ultra 3.2, Boston Scientific, Natick, MA) confirmed the presence of a wide neck and an 8-mm in diameter reference vessel. Based on this ultrasound measurement, a $10 \times 60$ mm PASSGER™, PTFE-covered stent-graft (Boston Scientific) was placed from the right branch of the Y-graft to the right external iliac artery, covering the full length of the aneurysm. Postdilatation of the stent was performed twice, initially with a $7 \times 20$ mm balloon (Ultra-thin Diamond, Boston Scientific) at 15 atm, then with a $10 \times 20$ mm balloon (Ultra-thin Diamond, Boston Scientific) at 12 atm. Thereafter, angiography from the right branch of the Y-graft confirmed that the aneurysm was no longer opacified. One week after stent placement, computed tomography showed an aneurysm completely filled with a
thrombus (Figure 3). During a follow-up of 15 months, the size of the aneurysm decreased prominently and the renal function recovered slightly.

**DISCUSSION**

Although rupture of an arterial aneurysm is a rare event, it is the leading cause of death in patients with Behcet’s disease.\(^2,4\)\) The pathogenesis of the aneurysm formation or rupture seems to be vasculitis resulting in obliterative endarteritis of the vasa vasorum.\(^8\)\) To prevent its rupture, a surgical procedure can be performed to resect the aneurysm and replace it with a graft. However, the recurrence of a pseudo-aneurysm after its resection occurs in approximately 50% of cases, especially at the site of surgical repair, and the fragility of the vascular wall may play a major role.\(^5,6,9\)\) In our patient, a fragile arterial wall was found during the operation, and the aneurysm actually recurred twice after surgical treatment.

The efficacy of percutaneous endovascular treatment for peripheral aneurysms has recently been reported.\(^10,11\)\) The effectiveness of endovascular stent-grafting for aortic and arterial aneurysms in patients with Behcet’s disease has been also demonstrated, and the stent graft may represent a responsible alternative to open surgery because of the high recurrence rate after surgery.\(^5,6,9,12\)\) In our patient, stenting was chosen because open surgical treatment was complicated by the history of 3 prior operations and a high risk of recurrence.

Complications after endovascular aneurysm repair occur in about 20% of patients, and endoleaks are one of the most serious complications since they may, in some patients, evolve toward aneurysm rupture.\(^10,11\)\) To avoid an incomplete

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**Figure 3.** Computed tomography with 3D reconstructions at one week after stent placement. **A:** Frontal computed tomographic image of the abdomen showing the stent-graft (arrow) across the aneurysm and the nonopacified aneurysmal sac (arrowhead). **B, C:** Computed tomographic angiogram showing the stent-graft (arrow) and complete seal of the aneurysm.
seal, which may lead to continued aneurysm expansion, we measured accurately the diameter and length of the treated vessels before stenting with the assistance of intravascular ultrasound. The aneurysm did not recur in our patient during a follow-up of 15 months, although the long-term outcome of endovascular stent-grafts in patients with Behcet's disease is not well known.

In conclusion, endovascular stent-grafting may be a viable therapeutic alternative in the management of recurrent aneurysms after surgical repair in patients with Behcet's disease.

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REFERENCES