

Limited Distal Arch Open Stenting for Type B Aortic Dissection with an Enlarged Ulcer-Like Projection, Complicated by Abdominal Aortic Occlusion

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Abstract

Keywords

- aortic aneurysm
- cardiovascular surgery
- aortic stent

A 79-year-old man underwent bifurcated graft replacement for abdominal aortic aneurysm, but the graft was totally occluded owing to an acute type B aortic dissection. We could not have access to the root for performing endovascular stenting for dissecting aneurysm. Furthermore, it was difficult to remove the aneurysm via a left thoracotomy because it was impossible to perfuse the lower body with blood from the femoral artery and also a left axillary arterial cannulation was unusable. Herein, we report a patient who was successfully treated with open surgical aortic stenting for an enlarged ulcer-like projection complicated by a type B aortic dissection.

Introduction

Management of distal arch pathology is problematic. Recently, thoracic endovascular aortic repair (TEVAR) has become an attractive method for treating arch aneurysms.¹ However, newly developed techniques for open surgical repair of arch aneurysms and aortic dissection have resulted in increased positive outcomes in recent years.² Herein, we report a patient who was successfully treated with open surgical aortic stenting for an enlarged ulcer-like projection (ULP) complicated by a type B aortic dissection.

Case Report

The patient was a 79-year-old man who underwent bifurcated graft replacement for abdominal aortic aneurysm in 2013 at age 77 years. One year later, the bifurcated graft was totally occluded with large thrombus formed owing to an acute type B aortic dissection. A bilateral axillofemoral bypass was performed to relieve the leg ischemia. Follow-up computed tomography (CT) scan revealed patent axillofemoral bypass and an enlarged ULP (localized contrast

media in the occluded false lumen showing the primary entry site) on the distal aortic arch (►Fig. 1). Coronary CT angiography showed significant stenosis of the left anterior descending artery (LAD). We performed LAD bypass surgery using a saphenous vein graft and an open stent implantation through a median sternotomy during mild hypothermic circulatory arrest. Circulatory arrest was induced at a rectal temperature of 28°C without cerebral perfusion. The hemi-circumference of the anterior surface of the arch between the left common carotid and left subclavian arteries was obliquely incised. A J-Graft Open Stent (Japan Lifeline Co., Ltd., Tokyo, Japan) was inserted into the descending aorta to cover the ULP. The proximal side of the graft was trimmed and continuously sutured around the orifice of the left subclavian artery. The aortic incision and anterior side of the graft were closed using single continuous suture. The durations of circulatory arrest, cross-clamp, cardiopulmonary bypass, and overall surgery were 16, 39, 103, and 173 minutes, respectively. The patient was discharged without any complications on postoperative day 10. Postoperative CT scans showed a patent coronary bypass and no end leakage from the suture line (►Fig. 2).

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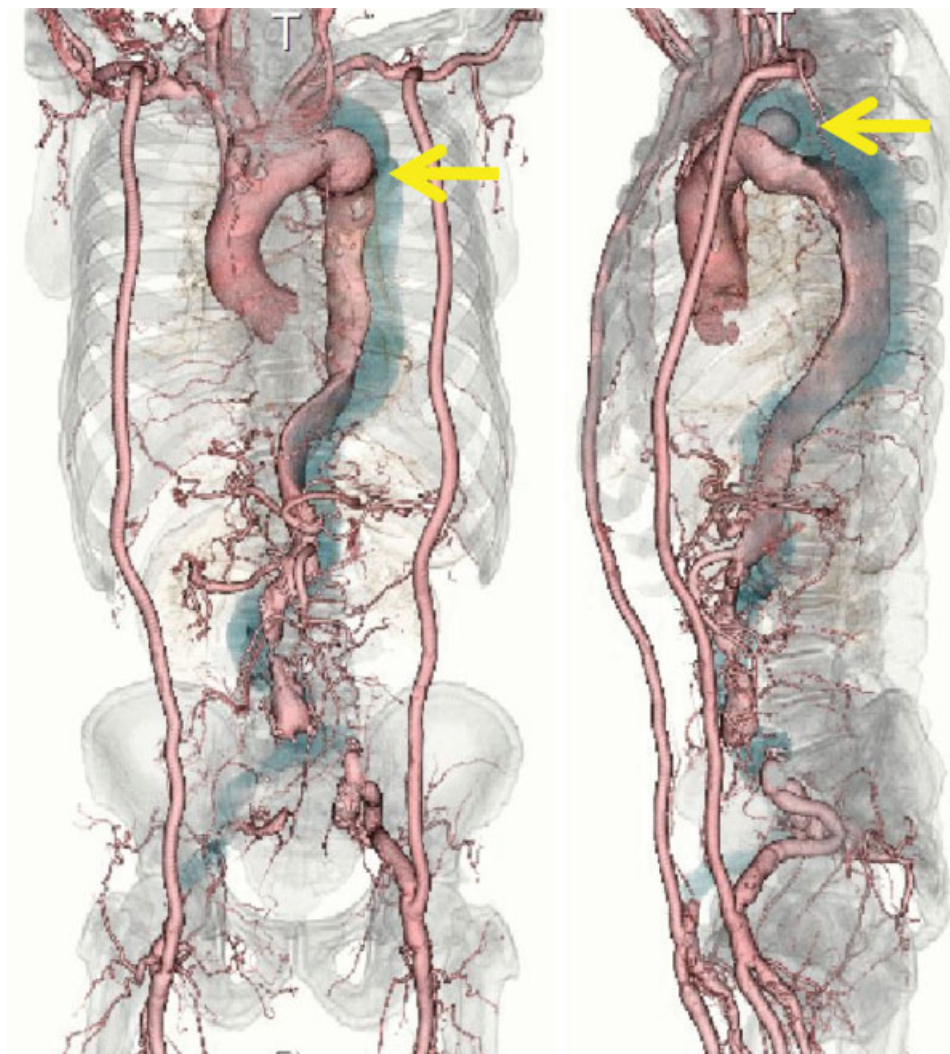


Fig. 1 Preoperative CT finding. Preoperative CT scans revealed patent axillofemoral bypass and an enlarged ulcer-like projection (arrow) located on the distal aortic arch.

Discussion

In the present case, the primary entry closure and redo Y-graft replacement should be performed at the time of dissection onset. However, the patient was so sick due to blood acidosis associated with lower body malperfusion at the time of dissection onset. Therefore, we considered that the patient might not be able to tolerate aggressive surgical stress of redo Y-graft replacement under general anesthesia. Therefore, we selected bilateral axillofemoral bypass under local anesthesia to relieve the lower body ischemia at the time of type B dissection onset. And then we had to fix the enlarging ULP in the next step. Recently, TEVAR has been recommended as the first line of treatment for type B aortic dissections, even when no complications exist, because of its improved early outcomes compared with open surgery.³ In the present case, it would have been safer and easier to fix the ULP by TEVAR if we could have accessed the root for performing TEVAR. On the other hand, we recently demonstrated the benefits of open repair using left thoracotomy for treating type B dissecting

aneurysms.⁴ However, it was difficult to remove the long segment of the dissecting aneurysm via a left thoracotomy approach because it was impossible to perfuse the lower body with blood from the femoral artery owing to occlusion of the abdominal aorta. A left axillary arterial cannulation was also unusable because we had to clamp the left subclavian artery and the aortic arch between the left common carotid and subclavian arteries. Furthermore, total arch replacement using antegrade cerebral perfusion would have risked axillofemoral bypass steal syndrome, reducing blood flow to the brain. In this case, our unique and less invasive method using open stenting with mild hypothermic circulatory arrest and no cerebral perfusion was the most appropriate procedure.⁵ Cerebral perfusion was not needed, because circulatory arrest was completed within 20 minutes. Furthermore, this approach avoids the risks of phrenic or recurrent nerve injury, as well as pulmonary complications. Therefore, we consider this procedure suitable for minimizing cardiopulmonary bypass time when concomitant open heart surgery is required.

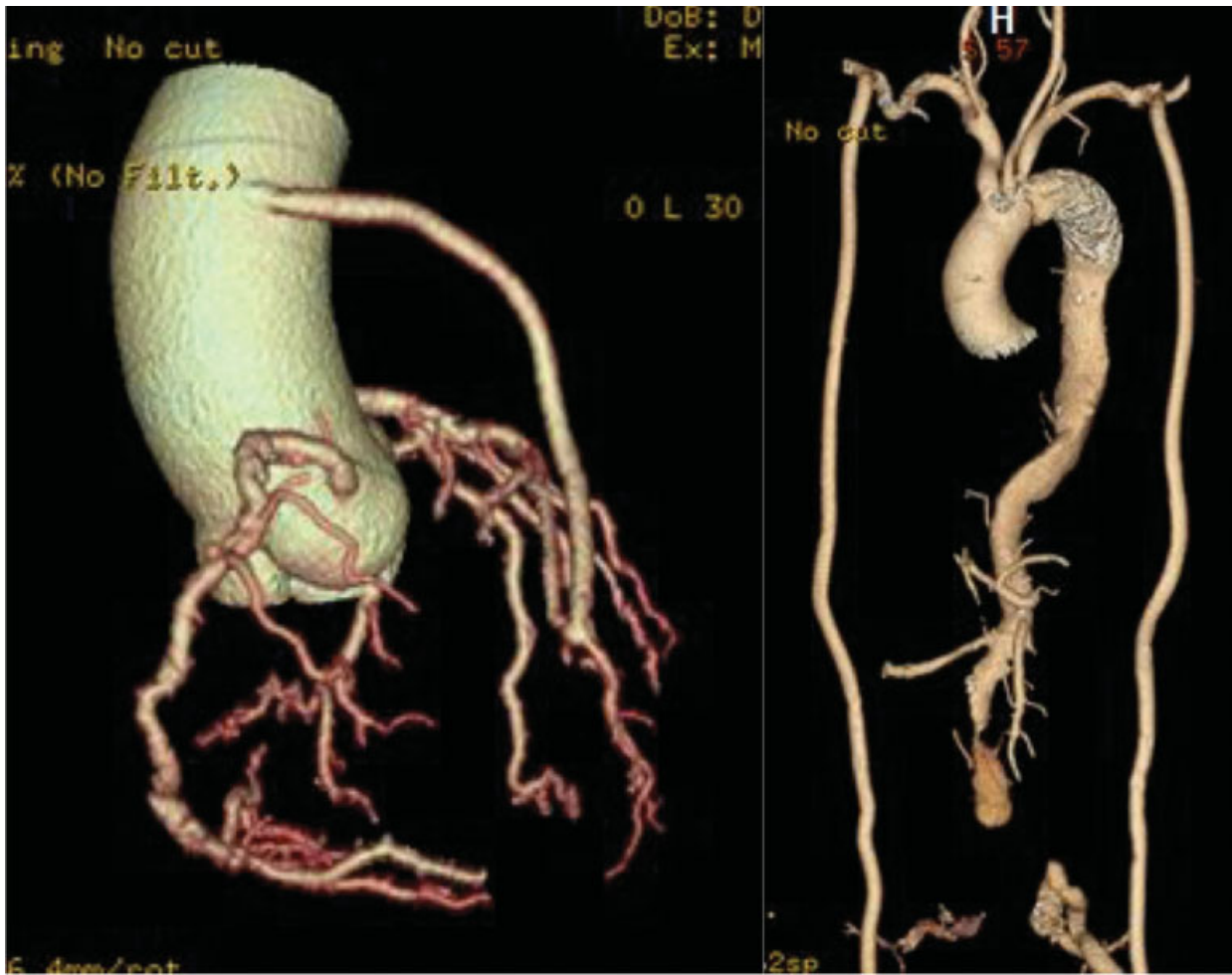


Fig. 2 Postoperative CT findings. Postoperative CT scans showed patent coronary bypass (left) and no end leakage from the suture line (right).

Conclusion

Herein, we report a rare case of a complicated distal arch pathology successfully treated by limited surgical open stenting.

Conflict of Interest

None.

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