

Endoluminal Repair of an Aorto-esophageal Fistula

With every procedure attempted, another complication arose.

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A previously healthy 31-year-old man presented to our emergency department with severe hematemesis. He had been progressively unwell for the past 8 days after swallowing a small chicken bone, with mild thoracic pain, dysphagia, coughing, and fever. His general practitioner had prescribed him antibiotics for a presumed pneumonia. On admission, the patient was hemodynamically stable. An esophagogastroscope was performed, which showed a tear in the distal esophagus. This was presumed to be a Mallory-Weiss lesion and was treated by adrenaline injection.

The next day, the patient rapidly developed severe swelling of the neck with breathing difficulties, and he became hemodynamically unstable. Computed tomographic angiography (CTA) showed a mediastinal mass with free air and contrast leakage from the aorta just distal to the left subclavian artery. The diagnosis of an aorto-esophageal fistula was apparent, and the patient was transferred to the operating room immediately for an endovascular stent graft implantation to stop the brisk bleeding.

PROCEDURE

A 28-mm X 10-cm endograft (Gore & Associates, Flagstaff, AZ) was implanted through the femoral artery with intentional coverage of the left subclavian artery to achieve sufficient proximal sealing. The diam-

eter of the thoracic aorta proximal to the left subclavian artery was 24 mm to 25 mm. The completion angiogram showed no leakage, and the patient was immediately hemodynamically stable. The next morning, he was transported to the operating room again for surgical decompression of his neck through a right-sided longitudinal incision along the anterior border of the sternocleidomastoid muscle. A huge hematoma was evacuated. A perioperatively performed esophageal endoscopy revealed an oval-shaped deep defect in the mid-esophagus. Because primary repair of this lesion seemed unfavorable, the decision was made to transect the esophagus through the neck incision. However, due to this manipulation, severe bleeding occurred, and a second endovascular intervention was necessary. A similar, but longer endograft, the TAG 28-mm X 15-cm, was placed inside the first one. Fortunately, in this patient, the left common carotid artery originated from the brachiocephalic trunk ("bovine anatomy"), and an additional 2 cm of proximal seal could be obtained.

A SERIES OF COMPLICATIONS

After this second procedure, the patient rapidly recovered, and during this same admission, an abdominal esophagectomy with gastric tube reconstruction was performed. This was complicated by paralysis of the right vocal cord, probably due to a contusion or

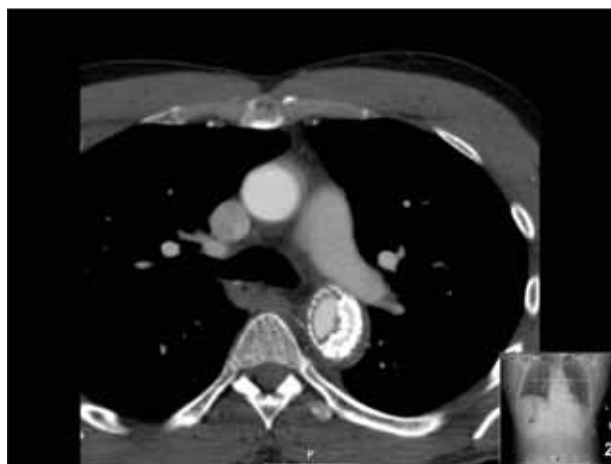


Figure 1. CTA of the thoracic aorta showing infolding of the inner TAG endograft within the earlier-placed endograft.



Figure 2. Angiogram showing an embolic thrombus at the trifurcation of the left leg.

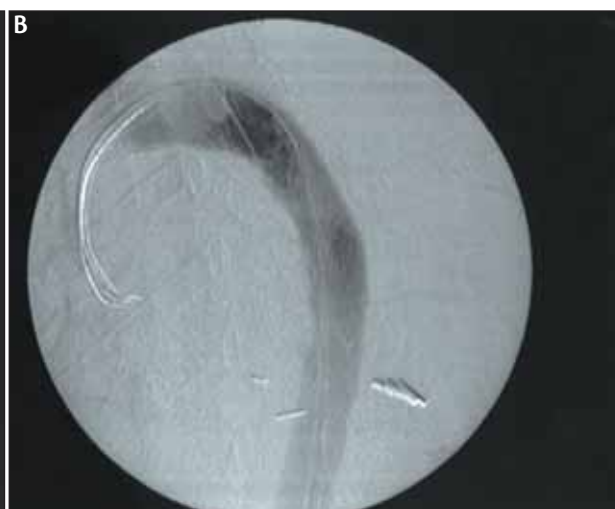
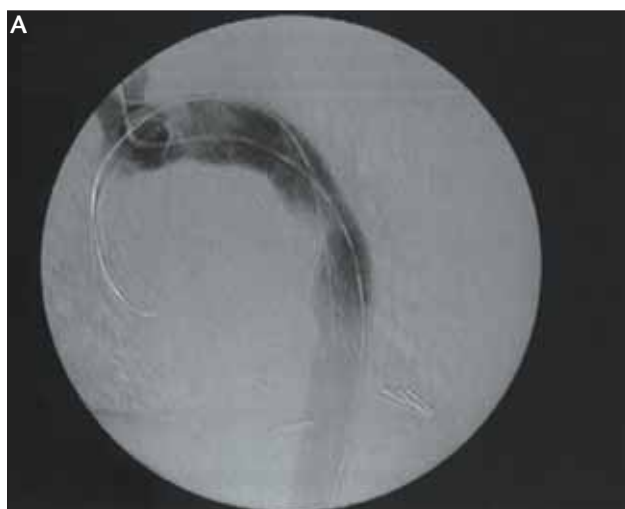


Figure 3. Angiogram before Palmaz stent placement (A) and after stent placement, showing successful repair of the diameter reduction due to infolding of the inner endograft (B).

lesion of the right recurrent nerve, resulting in some slight hoarseness.

After our clinical protocol, a control CTA was performed that revealed an asymptomatic infolding of the inner endograft with a diameter reduction of 50% (Figure 1). Because this infold was completely asymptomatic with clearly palpable pulsations at the ankle, no further intervention was planned.

However, 9 months later, the patient presented at our hospital with an acute onset of 400-meter bilateral claudication. Angiography was performed, which showed thrombus at the level of the trifurcation of both lower legs (Figure 2). Intra-arterial thrombolysis was initiated but proved to be completely unsuccessful. Therefore, a surgical bilateral embolectomy was per-

formed the next day, followed by an uneventful recovery. A standard work-up for the cause of these emboli was done, although no abnormalities were found except the thoracic endograft infold.

After careful evaluation, we decided to treat the infold by placing a giant Palmaz stent (Cordis Corporation, a Johnson & Johnson Company, Miami, FL) inside the second TAG device. The completion angiogram showed a successful stent placement without any sign of diameter reduction or infolding (Figure 3). The ankle-brachial index was normal (>1.0). Unfortunately, a CTA the next day showed a complete infolding of both the second TAG endograft as well as the Palmaz stent (Figure 4). The patient was completely asymptomatic and had not experienced any adverse

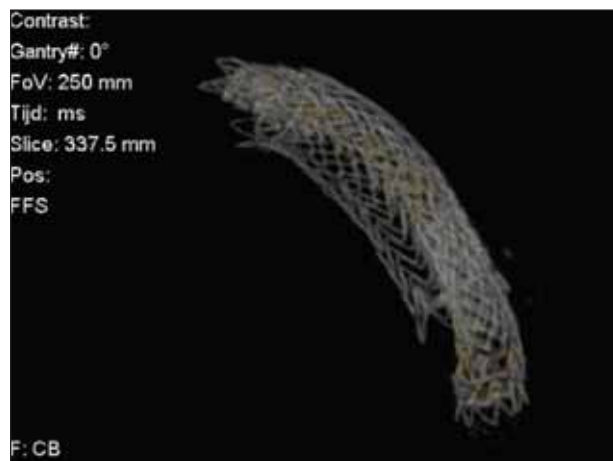


Figure 4. CTA reconstruction 1 day after placement of the giant Palmaz stent showing infolding of both the second TAG endograft as well as the Palmaz stent.

signs, but his ankle-brachial indices had dropped significantly to .6 bilaterally. The infolding of the giant Palmaz stent was therefore thought to have occurred during the first day after the intervention.

ABANDONMENT OF FURTHER TREATMENT

Considering the young age of this patient and because the thoracic endograft was placed immediately proximal to the left carotid artery, further endovascular solutions were abandoned. The patient was put on coumarin therapy, and a semi-urgent surgical arch replacement was planned through a left thoracotomy. However, because paralysis of the right vocal cord was already present and the possibility of damage to the left recurrent nerve due to the left thoracotomy existed, the patient refused further surgical treatment.

A few weeks later, our patient presented at the emergency department again with a painful, pulsatile mass in the right lower abdomen. A CT scan revealed a large, 5.1-cm-diameter false aneurysm of the inferior epigastric artery, possibly due to a subcutaneous heparin injection (Figure 5). Ultrasound-guided thrombin injection was unsuccessful, possibly due to the coumarin therapy. Again, surgical therapy was refused by the patient.

CONCLUSION

Although a quick endovascular treatment of the aorto-esophageal fistula was successful and likely saved the patient's life, many unforeseen complications occurred that resulted in a potentially lethal situation with a substantial chance of acute aortic occlusion or massive embolization. Contrary to general opinion, a giant

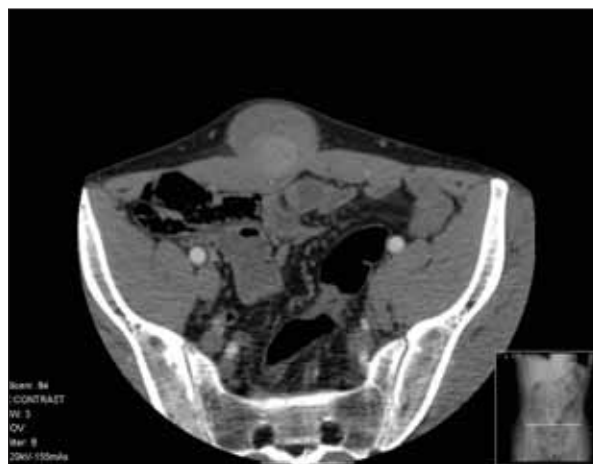


Figure 5. CT scan with a large, 5.1-cm-diameter false aneurysm of the inferior epigastric artery.

Palmaz stent can completely infold due to the enormous forces that are present in the dynamic environment of the thoracic arch. ■

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