



Fenestrated Four Vessel Endovascular Aortic Repair for a 10 cm Type V Thoracoabdominal Aortic Aneurysm presenting with Type IB Endoleak from a Prior TEVAR with a Celiac Artery Periscope

Tara Zielke MD, Adam Hicks MD, and Andres Fajardo MD

Purpose

A 67-year-old male with coronary artery disease, hypertension, and atrial fibrillation was referred to our institution with a type 1B endoleak following repair of a type V thoracoabdominal aortic aneurysm at an outside institution. The index operation was performed with a thoracic endovascular aortic graft with an 8 mm parallel graft in periscope configuration into the celiac artery. The patient developed a type IB endoleak with rapid aneurysmal sac enlargement from 8 cm preoperatively to 10 cm at presentation to our institution in less than one year.

Materials and Methods

After thorough patient evaluation and discussion of different alternatives for treatment, it was decided to proceed with endovascular management of his aneurysm. Due to the size and complexity of repair, a physician modified endograft was utilized. In the hybrid suite, the patient was placed under general anesthesia with motor/sensory evoked potential monitoring intraoperatively. We started the procedure by obtaining percutaneous access on both femoral arteries. Patient was fully anticoagulated, and then we placed a tapered Cook TX2 endoprosthesis 32-24 mm x 196 mm to bridge from the prior endograft down to the origin of the SMA and inferior edge of prior periscope. Then a back table modification of a Cook TX2 26 mm x 136 mm was performed to accommodate for the SMA, celiac periscope, and renal arteries bilaterally. An aortogram was obtained and the celiac periscope stent was cannulated. The modified endograft was then positioned and deployed. The bottom of our endograft was accessed from a contralateral approach. We then proceeded to sequentially cannulate the SMA and bilateral renals. At this point, the endograft was fully deployed and ballooned. Sequential stenting was done using Gore VBX 7mmx29mm for the SMA and 6mmx22mm iCAST stent for each renal artery. The celiac periscope was subsequently re-engaged through the fenestration of the modified TX2. There appeared to be minimal distal overlap of the prior periscope into the celiac artery, so a 7mm x 39mm Gore VBX stent was utilized to extend the distal extent of the celiac periscope. A Gore VBX 7 x 59 was utilized to bridge the fenestration to the celiac periscope. A completion aortogram revealed excellent flow into all visceral vessels with no evidence of endoleak.

Figure 1

Figure 1. Preoperative CTA demonstrating the 10 cm aneurysm sac, prior TEVAR, and celiac periscope.

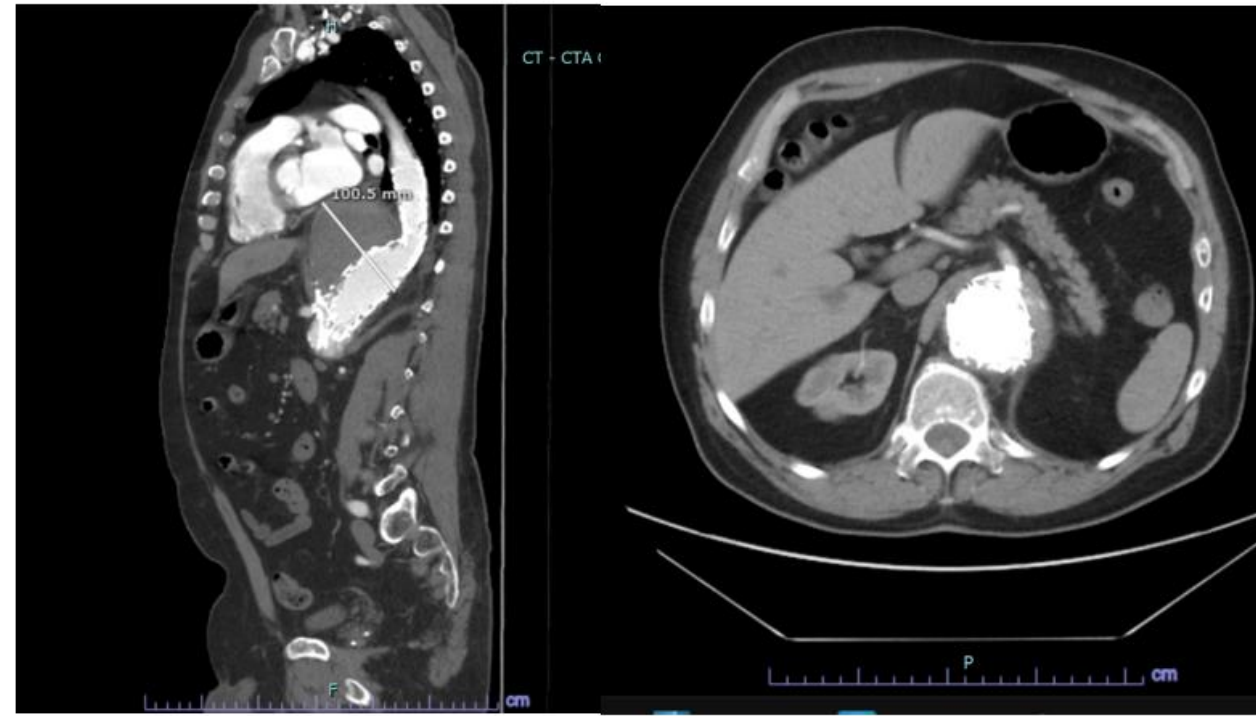


Figure 3

Figure 3. Intraoperative completion aortogram demonstrating no evidence of endoleak and patent vasculature and 3D reconstruction of the aortic repair.

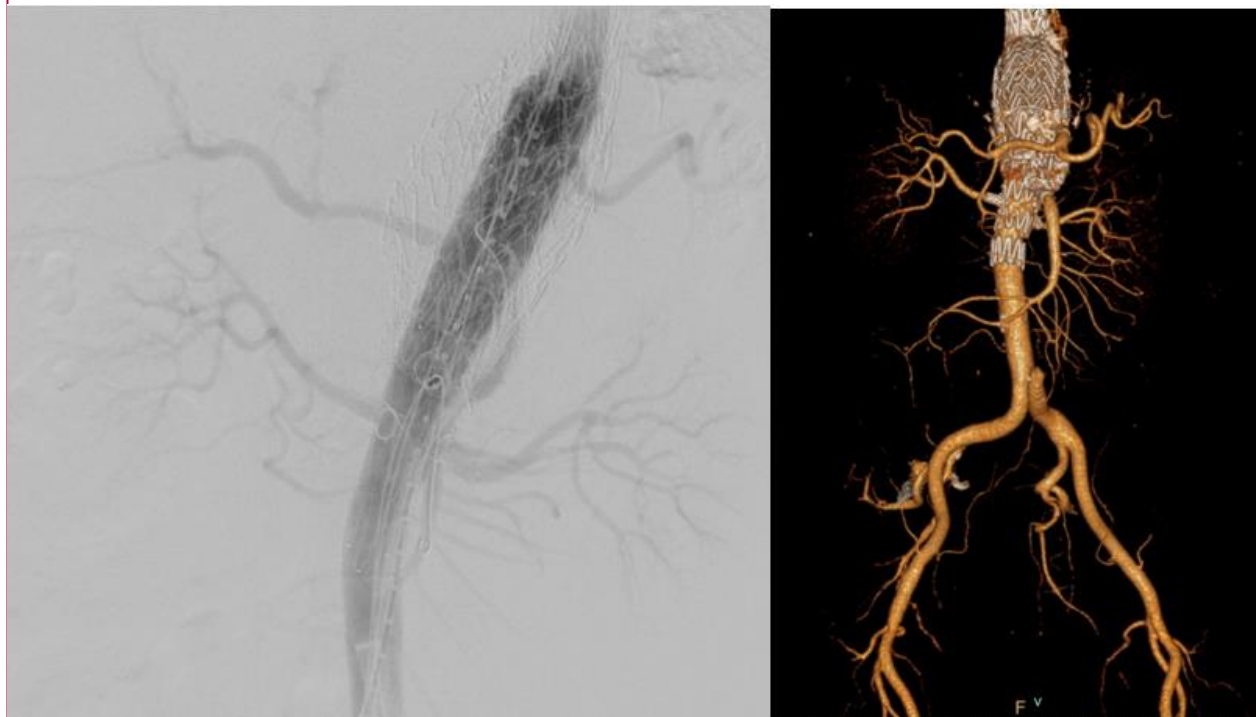


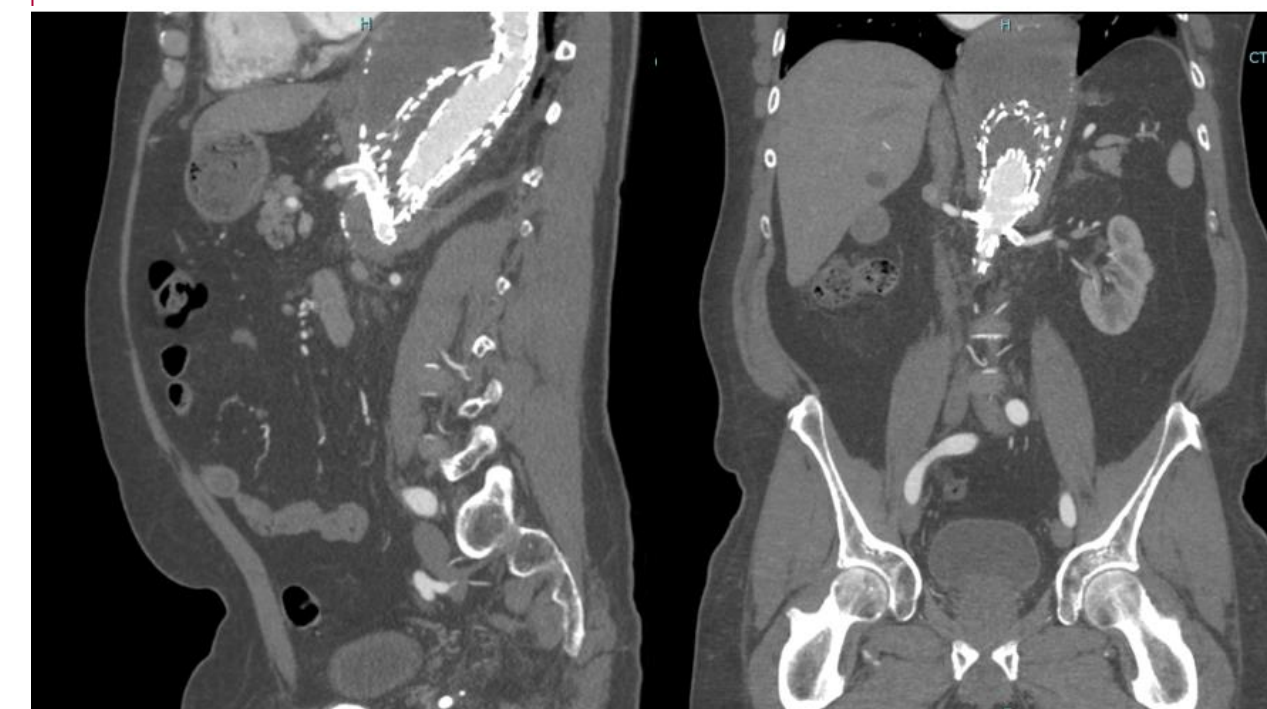
Figure 2

Figure 2. Back table modification of a Cook TX2 26 mm x 136 mm graft was performed to accommodate for the SMA, the celiac periscope and the renals.



Figure 4

Figure 4. Postoperative imaging demonstrating the aortic repair with a modified four vessel fenestrated Cook TX2, 26 x 136 thoracic endograft.



Results

He had an uncomplicated hospital stay and was discharged home on postoperative day three. At his six month follow up visit, he was doing well with CTA showing sac regression and no evidence of endoleak.

Conclusions

This case highlights a unique approach to a difficult clinical situation in which a patient had a failed repair for a Type V TAAA. This was able to be managed with a four-vessel physician modified endoprosthesis. Follow up imaging confirmed exclusion and regression of the aneurysm sac.