

Arnot Ogden Medical Center, Vascular and Interventional Department, Elmira, NY

Background

An 88 year old female with relevant past medical history of Hypertension, Abdominal aortic aneurysm (AAA), and Atrial Fibrillation presented to the Emergency Department with complaint of abdominal pain radiating to back bilaterally. She has a known AAA, however CT performed at the time of her admission showed that it had increased in size from 3.5 cm to 4.5 cm in a period of less that a year.

Vascular surgery was consulted and the patient was amenable to aortic endovascular aneurysm repair (EVAR). During the procedure, there was the technical complication of a Type I endoleak, which involves high flow leakage of blood through the top of the intraluminal graft into aneurysm sac that is meant to be excluded from circulation. To address this, angioplasty of the stent was performed followed by Palmaz stenting, with a delayed type 1 noted after angiography. Multiple 60 cm penumbra packing coils were advanced into the excluded aneurysm, with completed angiography showing resolution of the leak. The patient was discharged without further complications.

References

1. Faries PL, Cadot H, Agarwal G, Kent KC, Hollier LH, Marin ML. Management of endoleak after endovascular aneurysm repair: cuffs, coils, and conversion. *J Vasc Surg.* 2003;37(6):1155-1161. doi:10.1016/s0741-5214(03)00084-3
2. Arthurs ZM, Lyden SP, Rajani RR, Eagleton MJ, Clair DG. Long-term outcomes of Palmaz stent placement for intraoperative type Ia endoleak during endovascular aneurysm repair. *Ann Vasc Surg.* 2011;25(1):120-126. doi:10.1016/j.avsg.2010.08.004

Imaging



Figure 1

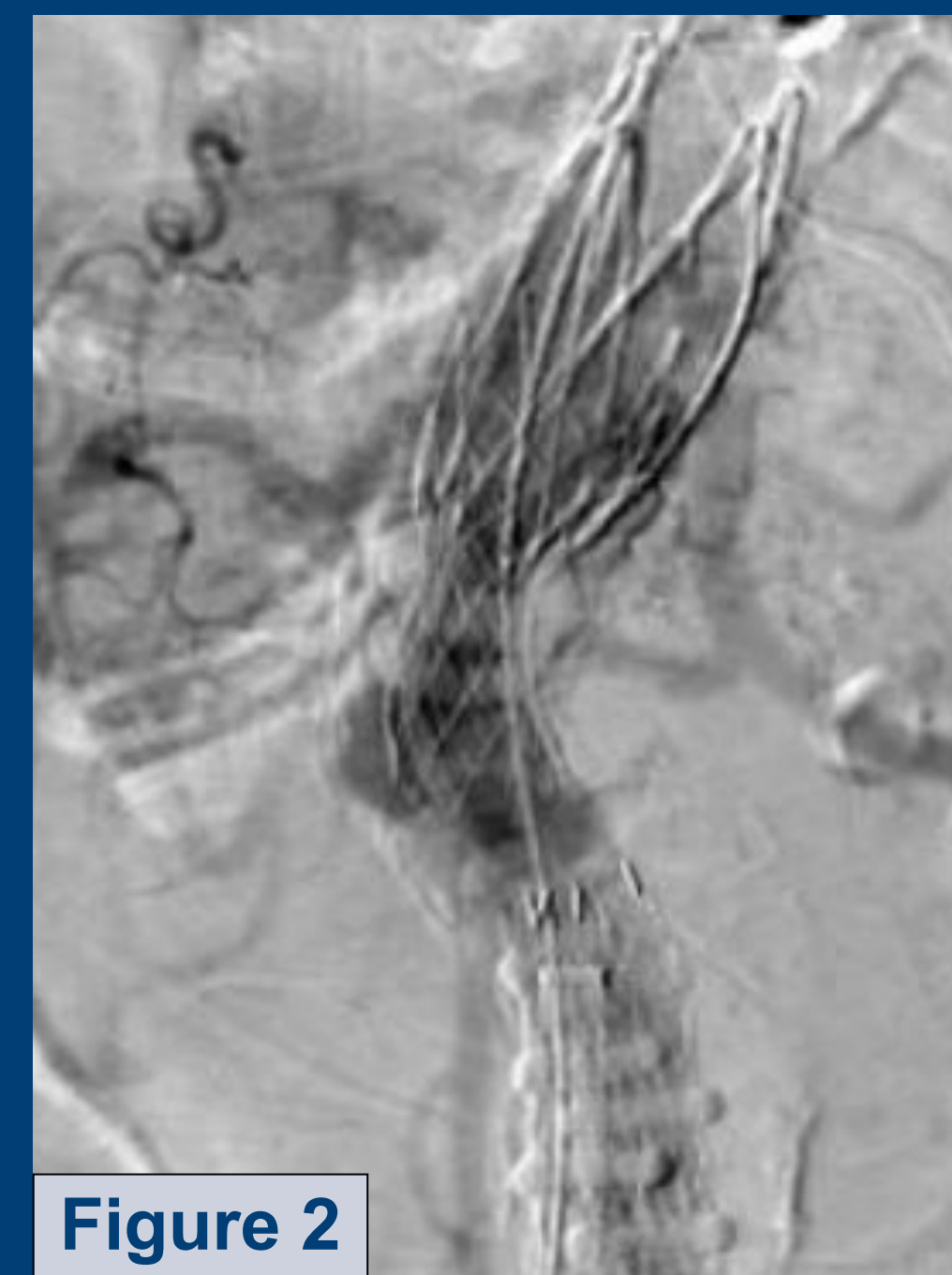


Figure 2



Figure 3

(Figure 1) Digital Subtraction Angiography (DSA) at the start of intervention demonstrates an angulated, fusiform abdominal aortic aneurysm (AAA). (Figure 2) was obtained after deployment of the EVAR main body, limbs, and Palmaz stent for a Type I endoleak. The endoleak persisted after Palmaz stent, and subsequently coils were placed in the excluded aneurysm sac to resolve the leak, seen on abdominal radiograph (Figure 3).

Discussion

Abdominal aortic aneurysms can be managed with open surgery or EVAR. Open surgery has significant risks so EVAR is a great alternative for patients who would not qualify as surgical candidates. However, a downside to EVAR is the chance for an endoleak to occur.

Endoleaks have been observed in 15-21% of endovascular grafts. [1] Our patient had a type I endoleak, which is when a graft allows blood to enter the blocked off aneurysm on around the proximal (Ia) or distal (Ib) end of the graft.

Common options for management include extension endograft, coil embolization, as well as conversion to open repair. Extension endografts have a 97% success rate (n=44), coil embolization a 87% rate (n=24) , and open repair is 100% (n=5). [1] Management varies based on the patient's overall condition and operator choice.

Our case shows an example of a patient with an AAA that was repaired via an Alto stent, which eventually had a type I endoleak. This was subsequently repaired with a Palmaz stent and adjuvant coil embolization.

Palmaz stents are an effective solution to a type Ia endoleak and can be placed at the proximal neck of the graft where the leak originates. One study with a median follow-up period of 53 months, with 31 patients, showed no type I endoleak development after Palmaz stent placement. [2] However, in our case, the stent was not adequate in stopping the leak, and required subsequent coiling. Not many cases requiring both stenting and coil embolization have been documented, so this case may serve as a successful example of how to treat a persistent, difficult endoleak.