ELSEVIER

Case Report

Failed Minimally Invasive Staged Treatment of a Giant Symptomatic Aortic Perigraft Hygroma after Open Aortic Repair

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Background: Perigraft hygromas or seromas are an unusual finding and/or complication after open aortic repair.

Methods and Results: We present a case of an 82-year-old man with a previous urgent aortic bifurcated graft for abdominal aortic aneurysm rupture. He received several treatments due to abdominal compartment syndrome, requiring a Bogota Bag and colostomy derivation. He was finally discharged home and lost on follow-up. Eight years after this procedure, he presented to the urgency department with an abdominal mass and pain. Urgent computed tomography (CT) scan revealed a giant bilobed aortic sac, corresponding with a huge hygroma. A 3-stage minimally invasive procedure was scheduled due to hostile abdomen. Six months after successful treatment, patient came with fever and abdominal pain. He was diagnosed with graft infection and aortoenteric fistula and was treated with explantation and silver in situ repair.

Conclusions: Aortic hygroma or seromas after open repair should be treated by open means whenever possible. Endovascular techniques could be a valid option in selected patients; however, further evidence is needed.

Perigraft hygromas (PGH) are an unusual complication of open aortic repair. This complication is mostly encountered with aortic graft procedures; however, PGH have been reported even with vein bypass (1–2%).[1,2] This disease is usually asymptomatic, although mass sensation, pressure symptoms, abdominal tenderness, limb ischemia, or even rupture have been described. A wide variety of pathogenic mechanisms have been proposed as the cause of PGH, such as low-grade infection[3] or a fibrinolytic milieu retarding sealing of graft pores.[4] Several predisposing factors are also detailed, such as low-grade allergy to material,[5] hipoalbuminemia, anticoagulation state, or high blood pressure. Treatment is always an issue, as patients with previous aortic repair are considered as high-risk patients. Graft explantation with thrombus and sac material removal, and in situ graft repair are proposed as definitive treatments. However, in very ill, high-risk patients, some reports have been described with successful endovascular aortic repair (EVAR) exclusion and PGH involution.

CASE REPORT

An 82-year-old man previously treated with a bifurcated PTFE graft for AAA rupture. During hospitalization, he

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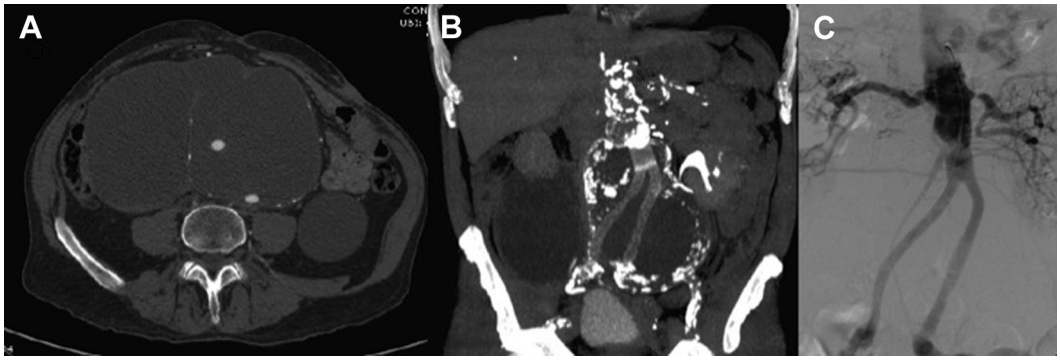

Fig. 1. Panels **(A)** and **(B)** show primary diagnosis CT scan with severe proximal calcification. Panel **(C)** shows angiography with no endoleaks.

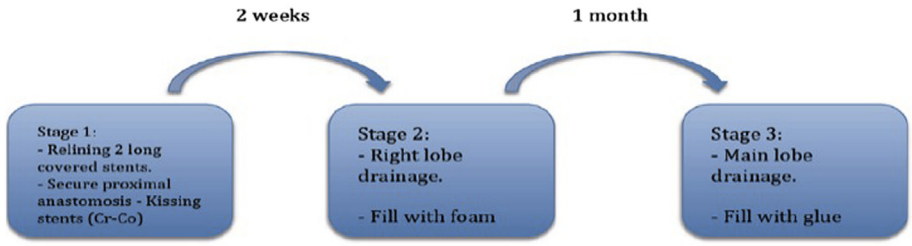

Fig. 2. Summary of the staged scheduled procedure.

required several interventions due to abdominal compartment syndrome. He was treated with a Bogota bag and needed a left colectomy with colostomy derivation. Some weeks later, bowel reconstruction was performed. After 1 month and a half, he was discharged home and lost on follow-up. Eight years later, he presented in the urgent department with an abdominal mass and pain. Urgent computed tomography (CT) scan revealed a giant 10 cm bilobed aortic sac. Previous graft proximal anastomosis was severely calcified, as were the iliac accesses. Angiography revealed no leaks. Blood culture tests and white blood cell count (WBCC) were negative for infection. Patient revealed that the abdominal mass had been enlarging over the last 3 years. With this information, PGH was diagnosed. (Fig. 1). The patient was considered as symptomatic and a moderate-high risk of rupture was given. No further examinations were considered and semiurgent treatment was decided. Due to the extremely hostile abdomen, a 3-stage procedure was scheduled. (Fig. 2). Stage 1 consisted of graft relining with bilateral long selfexpandable covered stents and 2 balloon-expandable covered stents to secure the proximal anastomosis of the previous PTFE graft. Second stage consisted of accessory lobe drainage under CT scan guidance. This procedure was successfully performed. Figure 3 summarizes stage 1 and 2. Final stage was performed 2 weeks later, and main lobe drained under CT guidance and was filled with contrasted glue. Main lobe remained stable on control CT scan. (Fig. 4). However, 9 months after initial procedure, the patient returned with fever and abdominal pain, corresponding with elevated WBCC and inflammatory markers. He mentioned 1 month of slight fever. Urgent CT scan revealed gas in the sac and a communication with the bowel; therefore, graft infection with aortoenteric fistula was diagnosed. He was urgently treated with graft explantation, silver in situ bypass, and bowel repair. (Fig. 5). Patient recovered, was put on culture specific antibiotics due to *Staphylococcus epidermidis* positive graft and blood cultures, and was finally discharged home after 1 month of hospitalization.

DISCUSSION

Risberg et al. coined the term perigraft hygroma for sac expansion in the absence of detectable endoleak.[6] Endoleaks are the main reason of aortic sac expansion after EVAR.[7]

Sac expansion can also occur in the absence of an endoleak through a process of pressure transmission or fluid ultrafiltration across the graft fabric. Factors that adversely affect this process can lead to continued graft porosity and slow leakage of plasma fluid into the perigraft area. The largest series to date reporting on PGH is the one by Kadakol et al.,[8]