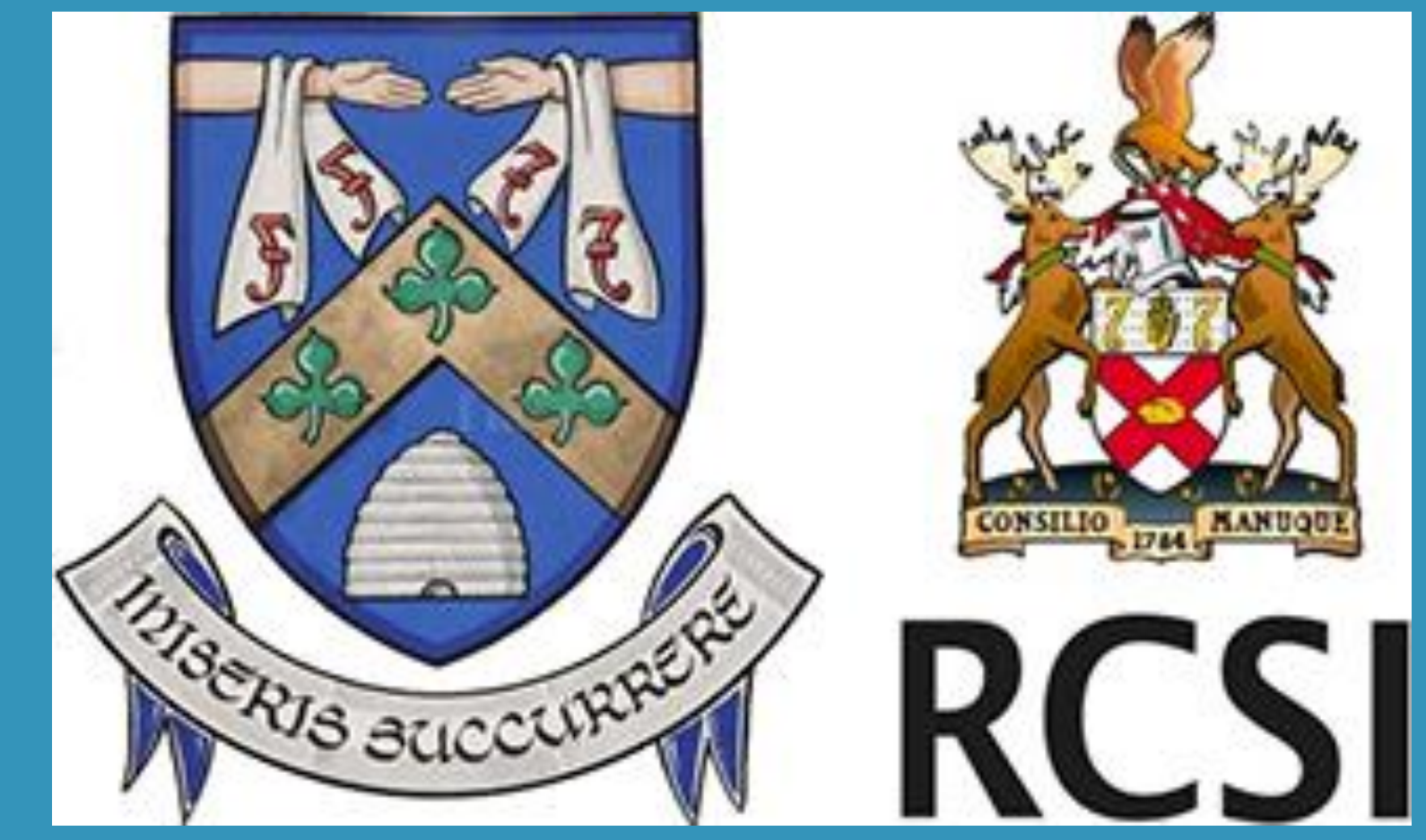


Persistent endoleak post-endovascular aortic repair for mycotic aneurysm requiring definitive treatment with bovine aortic graft

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Background

We report the case of a patient with a persistent endoleak and pseudoaneurysm formation post-endovascular aortic repair (EVAR) for mycotic aneurysm, ultimately requiring further surgical procedure for microbiological diagnosis, and a bovine graft for definitive treatment.

Case Report

- A 74-year-old female with a background of multiple myeloma currently in remission, presented to the Emergency Department with acute abdominal pain, fever and diarrhoea.
- Laboratory results were notable for a WCC 11⁹cells/L, with neutrophilic predominance, and CRP of 300mg/L.
- A CT aortogram revealed a ruptured infra-renal abdominal aortic aneurysm with surrounding stranding and a retroperitoneal haematoma.
- Blood cultures were negative.
- She underwent an EVAR with a typical synthetic graft. She was commenced on empiric Piperacillin/Tazobactam and Daptomycin for mycotic aneurysm, with a plan to complete 6 weeks of intravenous therapy and long-term oral suppression thereafter.
- One month post-operatively she developed rising inflammatory markers. Repeat imaging revealed an endoleak at the proximal ostium of the stent with periaortic fat stranding. A PET CT scan showed heterogenous FDG uptake at the superior aspect of the stent, SUV 6.3, with adjacent periaortic fat stranding.
- Further serial imaging revealed the development of a pseudoaneurysm arising from the origin of the left renal artery.
- A stent was placed across the origin of this pseudoaneurysm, however, follow up imaging demonstrated refilling and persistent expansion.
- She was subsequently transferred to a specialist vascular centre where she underwent explantation of the graft, bovine reconstruction of the aorta, and reimplantation of left renal artery with a venous conduit.
- 16sRNA from aortic thrombus and aortic tissue was positive for *Streptococcus pyogenes* DNA.
- She was commenced on Ceftriaxone with plan for 6 weeks intravenous therapy, followed by 6 weeks of oral Amoxicillin. Follow up PET CT at four months is planned.

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Discussion

- Endovascular graft infections are a serious complication in vascular surgery. Incidence of prosthetic aortic graft infection reported in the literature ranges from 0.6% to 3%.^{1,2} Infections are associated with a high morbidity and mortality, and prognosis is dependent on the site of the graft as well as patient characteristics.^{2,3}
- Up until a decade ago, the most frequently used procedure for treatment of an infected graft involved removal of the graft, followed by extra-anatomical prosthetic bypass revascularisation. However, this had many complications including aortic stump blowout, poor long-term patency, and reinfection (particularly at the groin).⁴
- Nowadays, effective treatment of an infected graft involves in-situ reconstruction, with removal of the graft, followed by vascular reconstruction at the level of the infected area. This procedure is usually combined with appropriate antibiotic therapy for definitive management.⁵
- Various materials have been used for in-situ reconstruction and include autologous veins, cryopreserved allografts, rifampicin-bonded or silver-coated synthetic grafts, and xenografts.
- Autologous veins are generally considered the most appropriate, with harvesting of a patient's own deep femoral vein or greater saphenous veins showing good results and low reinfection rates.^{6,7} However, these veins may be unavailable or unsuitable, or the prolonged operative times associated with vein harvesting may unacceptably increase the risks in the perioperative period.
- Bovine xenografts have been used as a material in cardiovascular surgery for many years, and these grafts have started to become more widespread in clinical practice in vascular surgery in recent years. However, experience is still limited to specialist centres, and their use is not yet widespread in Ireland.
- A number of small studies have shown bovine pericardium to be effective as an alternative to autologous material after aortic graft infection. Its benefit includes good patency, low rates of reinfection, restenosis and graft failure, and low early mortality.⁸⁻¹¹ Longer term follow up has not been studied.

Conclusion

This case demonstrates the complexity of treating those with endovascular graft infections. The necessity of repeat procedures for ultimate microbiological diagnosis and the importance of 16sRNA when cultures have been negative cannot be understated. Finally, bovine grafts are an emerging and proven option for those with aortic graft infection, though longer term studies are needed to assess continued function and complications.