

Prosthetic Vascular Graft Infections at a UK Tertiary Vascular Centre

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Background

Prosthetic vascular graft infections (PVGIs) are rare; thought to affect just 0.5 – 1%^{1,2} of vascular grafts, but these infections can result in significant morbidity and have a high risk mortality. The number of patients receiving vascular grafts is increasing over time as techniques and identification of patients improves.

Unlike other chronic infections there are not as yet clear guidelines about the best management of PVGIs and so there can be considerable heterogeneity in the management of them. This study looked at collecting data on the characteristics of presentation, microbiological findings, medical and surgical management and the outcomes of patients with PVGIs managed at a London tertiary care vascular surgery centre.

Method

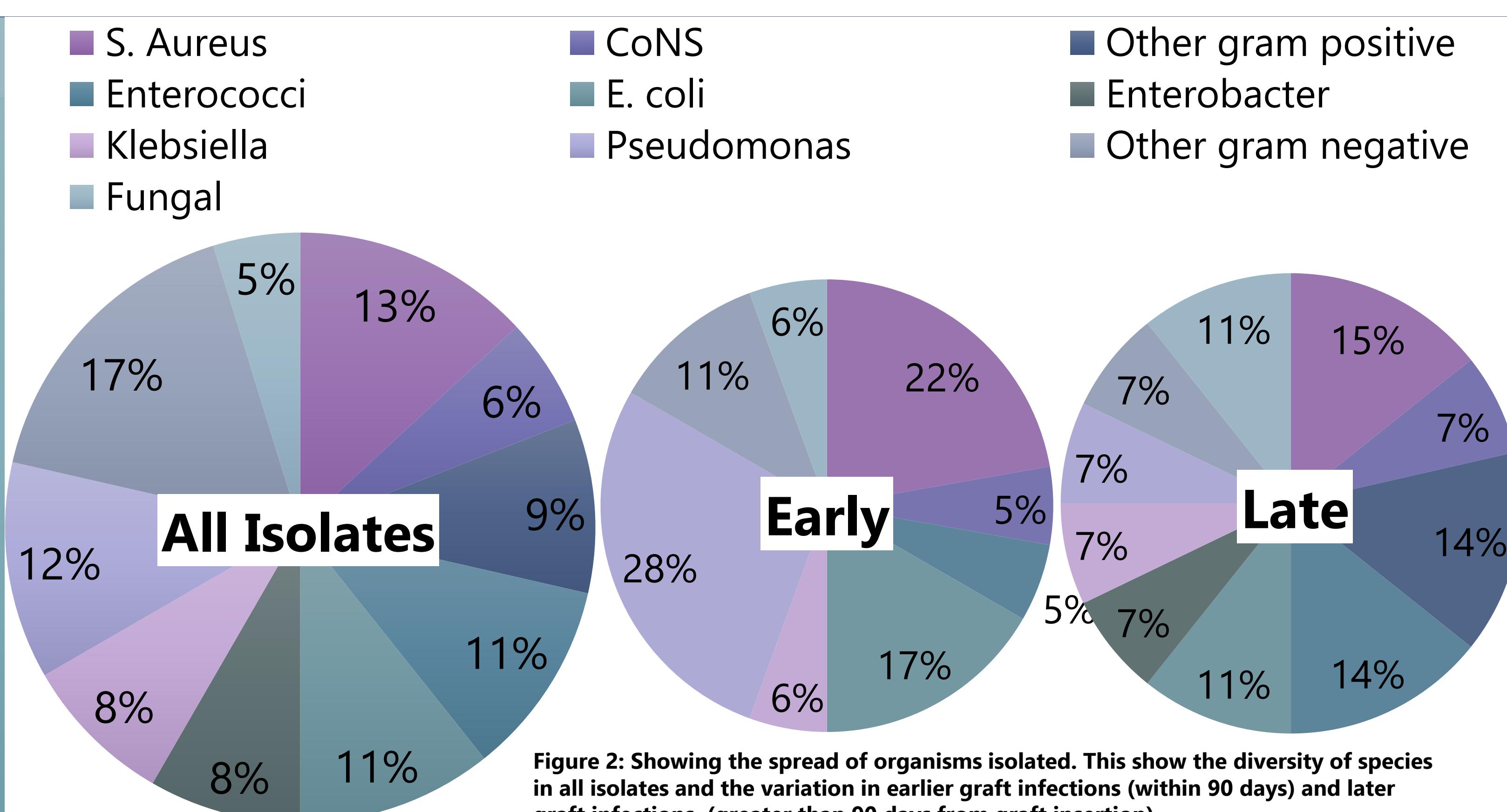
PVGI episodes were identified from a search of the outpatient parenteral antibiotic treatment (OPAT) database. Additional patient level data was retrospectively collected from the electronic hospital records and letters. Outcomes at completion of treatment and mortality at 90 days from presentation with infection. Were collected.

Patients who had presented with their infection episode from 1st May 2013 until 1st May 2018 were included. Patients with haemodialysis graft infections, inflammatory aortitis and those where the majority of treatment was conducted at another hospital were excluded. Results were analysed using chi-squared and t-tests where appropriate.

Patient Characteristics		Primary Surgery Characteristics		
Age (years)	Average	69 (median 70, SD 11)	Graft site	Aortic (N) 30.5% (18)
Gender	Female % (N)	27.1% (16)		Femoral (N) 42.4% (25)
	Male % (N)	72.9% (43)		Axillo-femoral (N) 15.3% (9)
Co-morbidities	Average CCI score*	6.0 (median 6.0, SD 2.43)		Popliteal (N) 3.4% (2)
	Diabetes % (N)	28.8% (17)		Mycotic (N) 8.5% (5)
	Dyslipidaemia (N)	32.2% (19)	Urgency index	Emergency 20.3% (12)
Smoking status	Current smoker (N)	42.4% (25)		Elective (N) 33.9% (20)
	Ex-smoker (N)	28.8% (17)		No record (N) 45.8% (27)
	Never smoker (N)	27.1% (16)	Surgical access	Open 66.1% (39)
				Endoscopic 18.6% (11)

Table 1: Patient demographics and primary surgery characteristics. As the graft implantation may have occurred at other surgical centres so complete records were not always available.

*CCI score: Charlson Co-morbidity Index



Results

83 infection episodes were initially identified of which 24 were excluded and 59 were included in the study. Baseline patient demographics are recorded in Table 1. In this cohort, excluding mycotic aneurysms, 53.6% presented within 3 months of surgery. The median time to presentation was 84 days (mean; 300 days, range 8 – 3,952 days). Only 61% of patients were considered to have likely infection on initial presentation. 8.5% were electively admitted for further vascular surgery.

The majority (61%) of patients were treated for at least 12 weeks and 10.2% of patients continued lifelong antimicrobial suppression treatment. There was no difference in success of treatment (80.6% v 69.6%, $p = 0.94$) between those treated with shorter or longer courses of antibiotics.

No organism was identified in 11.9% of cases and 42.4% of patients had a mixed infection. Blood cultures were taken in 69.5% of patients and 36.6% of these were positive. Tissue culture was obtained in 64.4% of cases and was positive in 57.9%. A breakdown of isolates is shown in figure 2.

Overall 90 day survival from presentation with infection was 89.8% in this cohort. At completion of the initial treatment course 76.3% had an outcome of cured or improved.

Conclusions

- Patients often present with PVGIs some time from the initial surgery and do not always present with obvious infection.
- Many patients had polymicrobial infections, highlighting the importance of adequate samples to guide therapy.
- No difference was noted with longer or shorter courses of treatment, but this was a small heterogeneous population.
- Survival was high, which likely represents that the sickest patients did not get referred to the OPAT service.
- PVGIs are infrequent complications and monitoring the findings and outcomes can help inform future practice.

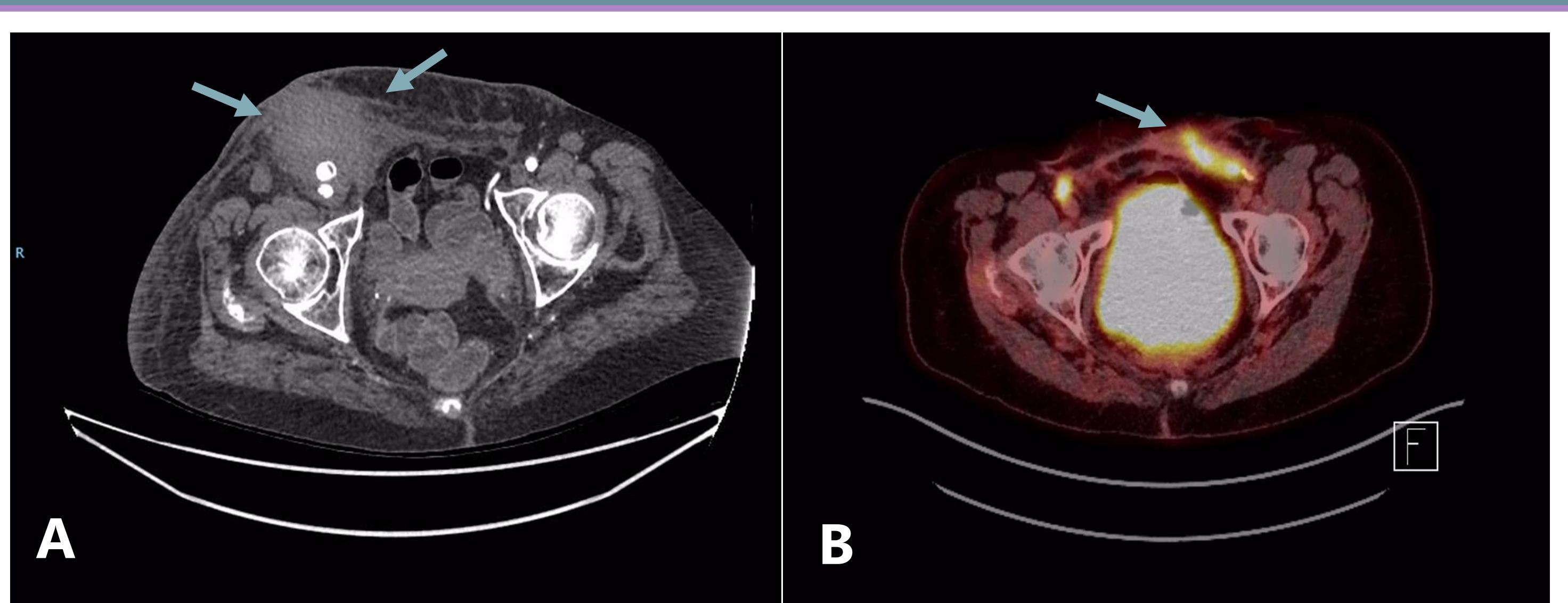


Figure 1: A: Computer tomography angiography of an infected external iliac artery to common femoral artery graft with a collection (arrows). Collection was drained and the graft was revised. B: A positron emission tomography showing intense uptake from suprapubic sinus (arrows) tracking to the right groin as well as in left groin at site of previous fem-fem crossover graft.

References

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