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Autologous deep vein reconstruction of infected thoracoabdominal aortic patch graft

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Graft infection remains a serious complication of prosthetic aortic repair. Infection of thoracoabdominal aortic prosthetic grafts, in particular, is a significant clinical challenge and is associated with high mortality. We report successful in situ reconstruction of an infected thoracoabdominal aortic prosthetic patch graft with autogenous superficial femoral vein. To our knowledge, this is the first such case described in the North American and English language surgical literature. At 24-month follow-up the patient remains well, with no evidence of sepsis or graft complication at clinical and radiologic assessment. (J Vasc Surg 2003;38:852-4.)

CASE REPORT

A previously fit 23-year-old white man was referred to our vascular surgical service with mid-aortic syndrome, identified during investigation for hypertension. Aortograms demonstrated stenosis of the visceral aorta commencing at the level of the celiac axis and extending to just below the renal arteries. A decision was made to proceed with patch angioplasty of the lesion. Through a left thoracolaparotomy, transperitoneal medial visceral rotation enabled access to the visceral aorta. An inflammatory mass was identified at the site of the previous aortic repair. After intravenous administration of 3000 units of heparin, supraceliac and infrarenal aortic clamps were applied. The area of aortic stenosis was opened, and visceral artery backbleeding was controlled with balloon occlusion catheters. Patch angioplasty was undertaken with a knitted Dacron graft (Sulzer Vascutek, Inchinnan, Scotland) and 3/0 polypropylene sutures. The existing Dacron patch and involved aortic wall was excised, and the para-aortic tissues were widely debrided, leaving an aortic defect 2 × 6 cm and incorporating 60% of the aortic circumference. The infected field was irrigated with 1 g of rifampicin. The superficial femoral vein graft was opened longitudinally and sutured to the freshened edges of the aorta with 3/0 polypropylene sutures. Postoperatively the patient was transferred to the intensive care unit for 24 hours. Recovery was unremarkable, and the patient was discharged to home 10 days after surgery.

Three months later the patient returned with systemic malaise and rigors. Clinical examination revealed fever, with a soft abdomen and well-healed wound. White blood cell count was normal, although C-reactive protein was elevated at 126 mg/L. Blood cultures revealed methicillin-sensitive Staphylococcus aureus bacte-

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DISCUSSION

Svensson et al in their review of 1509 thoracoabdominal aortic operations reported an incidence of prosthetic graft infection of about 1.7%. The gravity of such a complication is illustrated by Crawford’s series of 13 patients with infected thoracoabdominal graft infection, of whom 11 died as a consequence of graft sepsis.

The traditional management of aortic graft infection has entailed radical resection of the graft, together with extra-anatomic bypass. Such an approach is associated with high mortality, prolonged hospital stay, repeat operation, and a significant rate of limb loss. Thoracoabdominal graft infection generally demands in situ revascularization or preservation of an existing infected graft to maintain visceral and spinal arterial inflow. However, in situ prosthetic graft reconstruction within a previously infected field or preservation of an infected graft is associated with considerable risk for recurrent graft sepsis. To reduce this risk, use of biological grafts for in situ reconstruction has been advocated. Previous reports have documented successful management of thoracoabdominal aortic graft infection with arterial autografts and allografts. Only anecdotal reports of the former approach exist, and demand sacrificing a “donor” arterial segment, together with complex reconstruction. Greater experience exists with use of cryopreserved aortic allografts for treatment of thoracic aortic graft infection. Nonetheless, the risk for late graft rupture and infection associated with this technique does not justify its preferential use in prosthetic aortic graft sepsis.

Autologous deep veins for arterial reconstruction have been used successfully in infrarenal abdominal aortic prosthetic graft infection, with an associated mortality rate of only 7% to 10%. However, use of such a technique in management of thoracoabdominal aortic graft infection has not previously been described. Superficial femoral vein confers all the benefits of an autogenous biologic graft while remaining easy to harvest and reconstruct as an arterial conduit. Theoretical concerns regarding risk for late graft infection and aneurysm change have been raised. However, Clagett et al, in their review of 41 patients with deep vein aortofemoral or femoral reconstructions, failed to identify any such problems. Furthermore, Wells et al demonstrated minimal mid-term to late-term lower extremity venous morbidity despite outflow obstruction after superficial femoropopliteal vein harvesting.
Our patient’s relative youth, and preservation of a portion of the native thoracoabdominal aorta no doubt contributed to successful management. Nevertheless, thoracoabdominal aortic graft infection remains a complex problem. Where feasible, graft excision and arterial reconstruction should be the recommended treatment strategy. Autogous deep vein is a useful arterial conduit for attainment of these goals. Although regular radiologic surveillance, together with antibiotic prophylaxis, is recommended and long-term follow-up is lacking, early results are cause for optimism.

REFERENCES

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