

Current Status of Cryopreserved Veins as Arterial Replacement Grafts: Results Are Better Than You Think

NOTES

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Although the autogenous vein has proven itself to be the preferred conduit for infrainguinal revascularization, the ever increasing age and complexity of patients with arterial occlusive disease has brought about clinical scenarios where autogenous vein is not available and an alternative conduit must be found. Given the absence of reliable options for infrageniculate bypass when suitable autogenous vein is unavailable, venous allografts were investigated as a potential conduit. Development and standardization of cryopreservation techniques led to the commercialization of cryopreserved saphenous vein allografts (Cryografts). Cryografts have the potential to be the vascular surgeon's "dream conduit" because they are easy to handle, have "off the shelf" availability, and obviate the time and effort necessary to harvest and splice segments of autogenous vein.

The majority of reports evaluating the utility of Cryografts for infrainguinal revascularization are retrospective and the largest two of these studies contain 115 and 240 grafts.^{1,2} In these series primary graft patency at one year was reported as 37% and 30%, respectively. Multivariate analysis of graft patency revealed that secondary and composite Cryograft reconstructions, as well as diabetes, adversely affected graft patency. A number of studies have evaluated the effect of anticoagulation on Cryograft patency. Aspirin and warfarin, alone or in combination, did not improve graft patency in most studies. In one small prospective series an impressive 87% primary patency rate was noted in a cohort of patients who were treated with an intensive anticoagulation protocol.³

Despite discouraging patency data, use of Cryografts has been associated with acceptable limb salvage rates, and in our series 71% 2-year limb salvage was achieved.² The discrepancy between graft patency and limb salvage in our cohort of patients can be explained in part by secondary bypass procedures that were performed after primary graft failure. In addition, Cryografts, while patent, enabled healing of lower extremity ulcerations in a large proportion of patients. Ulcers may not have recurred despite graft failure. Of the various clinical factors to influence limb salvage, advanced age and anastomosis to a tibial vessel directly correlated with limb loss.^{1,2} Finally, Cryografts that remain open for a prolonged period are prone to aneurysmal degeneration.^{1,2}

Despite low patency rates, Cryografts clearly have a role in the armamentarium of the modern vascular surgeon. Since they have been reported to be relatively resistant to graft infection they have an advantage when revascularization needs to be performed in an infected field. They also have an advantage when distal bypass needs to be extended onto the foot since closure of the wound is considerably easier than if a prosthetic graft is used. Finally, Cryografts may stay open long enough to heal an ulcer or minor amputation. The final piece of evidence supporting the continued role of the Cryograft is the persisting demand for the product by the vascular surgery community as evidenced by the number of grafts that continue to be sold.

References

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3. Buckley CJ, Abernathy S, Lee SD, et al. Suggested treatment protocol for improving patency of femoral-infrapopliteal cryopreserved saphenous vein allografts. *J Vasc Surg* 2000;32:731-8.