

CryoArtery® Aortoiliac Artery in Infected Fields

Surgeon Interview



The following interview was conducted on June 2014 and reflects a vascular surgeon's perspective on the use of CryoArtery Aortoiliac Artery (AI) for reconstructions in an infected field.

Robert McCready, MD is a vascular surgeon at Methodist Hospital in Indianapolis, IN. He completed his medical degree at the University of Vermont, College of Medicine, and completed his internship, residency, and fellowship at the Mayo Clinic.

Dr. McCready's clinical interests include: Varicose veins, carotid surgery, abdominal aortic surgery, and endovascular surgery. He has authored or co-authored over 75 peer-reviewed publications.

Q: In what type of clinical situations should CryoArtery AI grafts be considered?

A: CryoArteries can be used in patients with active infection including: infected prosthetic grafts, aortoenteric fistulae (AEF), aortobronchial fistulae, infected aneurysms, or infected EVAR grafts. Additionally, individuals who may be immunosuppressed and are at increased risks for developing infection of a prosthetic graft are candidates for a CryoArtery AI graft. Patients with an adjacent infectious process in the chest or abdomen or extremity in the case of vascular trauma with associated soft-tissue loss are appropriate candidates for CryoArtery AI graft.

Q: Of the CryoArtery AI grafts that you have implanted, how have your results been?

A: We have published our results with [CryoArtery AI] grafts in patients with infected prosthetic grafts, infected aneurysms, and in patients with aortoenteric fistulae and aortobronchial fistulae. We are also part of the multicenter study on aortoiliac grafts that was just published in the *Journal of Vascular Surgery*.

Our long-term results are excellent with up to 10-year follow-up in some patients. We have

observed some degree of calcification in the allografts on long-term follow-up. However, in our experience, allograft degeneration is very rare.

Q: Are there certain types of bacteria that would deter use of the CryoArtery AI graft to replace an infected prosthetic graft?

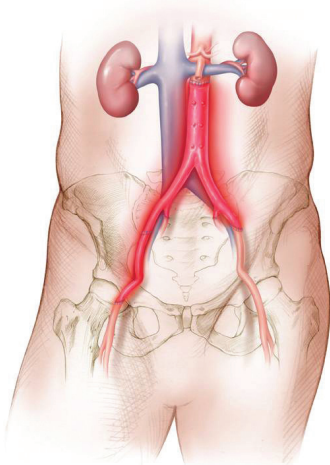
A: No. Although gram-negative bacteria are more virulent than gram-positive bacteria, I would still use an allograft even in the presence of gram-negative bacteria.

Q: In patients with a prosthetic graft infection involving the abdominal aorta, what are the advantages of implanting a CryoArtery AI graft as opposed to doing an axillofemoral graft or utilizing the SFVs (neo-aortoiliac system-NAIS)?

A: The chief disadvantage of the NAIS procedure in my opinion is the length of time required to harvest the SFVs and then reconstruct the abdominal aorta. Even with a 2-team approach, the operation requires several hours to complete. Some surgeons have even advocated staging the operation. The SFVs are dissected out on the first day. The patients return to the operating room the next day to complete the operation. In addition, there is not insignificant incidence of compartment syndrome as a result of harvesting the SFVs.

Drawbacks associated with an axillofemoral bypass include aortic stump blowout, which is usually fatal, and subsequent infection of the axillofemoral graft. Utilizing a CryoArtery AI graft allows in situ reconstruction to avoid aortic stump blowout and avoid the need for additional incisions to either harvest the SFVs or construct an axillofemoral artery graft.

Finally, implanting a CryoArtery AI graft allows for significantly shorter operative times, which is also important in these patients who often have multiple comorbidities.



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Q: Do you remove the internal iliac limbs of the CryoArtery AI prior to implanting it?

A: I usually ligate the internal iliac branches prior to implanting the graft unless I feel it is necessary to revascularize one of the internal iliac arteries. I usually ligate the internal iliac branch with either a 2-0 silk suture or alternatively oversew it with a Prolene® suture in 2 layers.

Q: How do you compensate for the diameter mismatch between the native, pressurized aorta and the packaged, unpressurized diameter of the CryoArtery AI graft?

A: It is important to realize that the allograft will elongate and expand (approximately 30% greater than the package diameter) once the proximal anastomosis is pressurized. It is also important to realize that there will be considerable elongation of the allograft once it is pressurized. For both of these reasons, I will leave the body of the graft short to avoid kinking of the graft limbs.

Q: Do you ever use any anastomotic reinforcement? If so, what type and when?

A: If the native aorta is thinned out or if there is anastomotic bleeding, then the anastomosis can be reinforced with pledgets made from redundant portions of the allograft. I would avoid using a Teflon® pledget in the presence of an infection.

Q: Do you typically use omentum wrapping?

A: I think it is very important to “wrap” the allograft with omentum if at all possible, or at least interpose

omentum between the allograft and the gastrointestinal tract to minimize the risk of recurrent infection. In the groin, covering the allograft with a rotational muscle flap is likewise beneficial in minimizing the risk of recurrent infection.

Q: Do you take any additional surgical steps or precautions when the patient presents with an aortoenteric fistula? If so, what do you do to mitigate recurrence?

A: Aortoenteric fistulae are probably the most difficult cases that we have to deal with in terms of not getting the best outcomes because of recurrent

bleeding or recurrent infection. Minimizing the risk of ongoing bacterial contamination of the allograft is critical to minimize the risk of recurrent infection. Repair of any defect in the gastrointestinal tract is imperative. Therefore, the assistance of a general surgeon in the operating room is wise to affect a tension-free repair of the gastrointestinal defect. Finally, coverage of the allograft with omentum is desirable as previously noted.

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Surgical technique is at the discretion of the surgeon. Variations in technique and practices will inevitably and appropriately occur when clinicians take into account the needs of the individual patients, available resources, and limitations unique to an institution or type of practice. NOTE: The opinions and outcomes expressed in this article are those of the interviewee and do not necessarily reflect the views of CryoLife, Inc. or the outcomes observed by all vascular surgeons.