Up around the bend

Tomasz Timek, MD, PhD

From the Division of Cardiothoracic Surgery, Spectrum Health, Michigan State University College of Human Medicine, Grand Rapids, Mich.

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Address for reprints: Tomasz Timek, MD, PhD, Division of Cardiothoracic Surgery, Spectrum Health, Michigan State University College of Human Medicine, 100 Michigan Ave NE, Grand Rapids, MI 49503 (E-mail: tomasz.timek@spectrumhealth.org).

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Surgery on the aortic root, ascending aorta, and the aortic arch routinely requires the use of a prosthetic graft. With a more aggressive strategy leaning toward hemiarch repair at the time of aortic root replacement,¹ most patients require a graft-to-graft anastomosis to complete replacement of the entire ascending aorta. Yet reproducing the natural curve of the native aorta is no small feat. Considerable experience and judgment are required to avoid graft kinking as a result of excess length, improper beveling, or technical anastomotic errors. Although in rare instances graft crimping can result in hemodynamic consequences, usually it represents a recurring ego-dystonic “eyesore” to the surgeon on annual radiographic follow-up. In this month’s issue of the *Journal*, Campo and colleagues² from Northwestern University introduce a standardized graft plication technique to allow prosthetic grafts to mimic the native anatomy better. On the basis of mathematical calculations, Campo and colleagues² shorten the lesser curvature of the graft by a predetermined length to reproduce the 90° angle of the native aorta. They kindly include in their article a table with calculated graft shortening values to achieve the desired effect. Campo and colleagues² are to be commended for this effort, which uses geometric principles to attain a more predictable anatomic reconstruction. I have occasionally pliated the lesser curve of a Dacron polyester fabric graft with pledgeted sutures when faced with kinking caused by excess length. This is usually a bail-out technique to avoid re-arresting the heart and refashioning the anastomosis after resection of excess graft. Campo and colleagues² propose a more prospective approach that should fare better. Some problems, however, may arise. With pleating, the Dacron polyester fabric prosthesis is “locked” into a certain configuration.

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Central Message

Standardized graft plication may improve anatomical conformity of Dacron polyester fabric grafts and prevent graft kinking in ascending aortic surgery.

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Proper determination of initial graft length thus becomes paramount, yet it is not always easy to judge. For aortic root reconstructions concurrent with hemiarch repair, the distal graft is often surprisingly short, and an erroneously “locked” graft may not be anatomically ideal. Similarly, during total arch replacement, predetermining the length and curvature of the graft could limit the surgeon’s options for head vessel reimplantation without undue tension or distal kinking.

The proposed pleating procedure adds science to the art of prosthetic reconstruction of the ascending aorta, but sound surgical judgment and experience will still be needed to use the technique properly. For certain, the technical options for “goin’ up around the bend” have widened with this innovative contribution.

References

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