ble complications, it is advisable to always provide coverage with therapeutic dose of heparin during the critical initial window, then start with low doses of warfarin, and gradually increase the dose until the therapeutic range is reached.

Roberto Manfredini, MD
Benedetta Boari, MD
Massimo Gallerani, MD

Section of Internal Medicine, Gerontology and Geriatrics
Department of Clinical and Experimental Medicine
University of Ferrara
Ferrara, Italy

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Reply

We thank Dr Manfredini and his colleagues for their interest in this topic and agree with their assessment. The patient we have described initially presented 2 years previously to another hospital with deep venous thrombosis and at that time she underwent anticoagulation therapy with heparin as an inpatient, followed by transition to warfarin therapy. Her records indicate that the aortic thrombus (as well as thrombus involving upper extremities) occurred despite concurrent warfarin therapy.

Bruce A. Perler, MD
David A. Bluemke, MD, PhD

Johns Hopkins University School of Medicine
Baltimore, Md

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Regarding "Decreased use of iliac extensions and reduced graft junctions with software assisted centerline measurements"

The study by Valazquez et al (J Vasc Surg 2004;40:222-7) demonstrates that computer-derived centerline measurements allow sufficiently precise estimates of endograft fabric length, and thus endograft sizing can be planned more accurately before surgery. This results in a lesser requirement for iliac extensions and endograft junctions in genera,l as compared with the era when the authors used sizing catheter and calipers for estimating endograft length.

This was first described by our laboratory in March 2000[1] in a study that demonstrated the superior accuracy of our computer-generated central flowline (centerline) measurements of length over sizing catheter and caliper measurements. The computer software program was validated with glass phantoms, with measurements simultaneously carried out with electronic calipers for length and pyknometry for volume. Since then we have noted that endografts vary considerable in flexibility and stiffness. For example, the Guidant unsupported endograft and our own homemade polytetrafluoroethylene endograft[1] are at the flexible end of the spectrum, and the less flexible AneuRx endograft is at the stiffer end. The sizing catheter takes the shortest route ("as the crow flies") through the various angulations of the aneurysm from the proximal to the distal landing site. To confuse matters further, the stiffness of the sizing catheter is quite different from that of the stiff endografts. Fabric length calculated by this means is shorter than if one used the central flow line.

Because of this, using central flowline measurements we select a slightly longer fabric length when using a flexible endograft than with a stiffer device. Even so, there is an element of guesswork in selection of the final fabric length. We concur with Velazquez et al that computer-generated central flowline measurements are more accurate and represent a better guide for endograft sizing and planning.

M. Adiseshiah, FRCS

Consultant Vascular/Endovascular Surgeon
University College London Hospitals
London, England

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Reply

We appreciate and thank Dr Adiseshiah for comments offered in agreement with our recently reported findings.[1] We are familiar with the noted previous study in which phantom glass aneurysms filled with contrast material were used to validate the accuracy and feasibility in clinical use of 3-dimensional spiral computed tomography angiography for preoperative measurements in planning endovascular abdominal aortic aneurysm repair (EVAR). In that work the authors' specific focus centered on volumetric measurements.[2] Their software model of computer-generated centerline measurements also demonstrated high accuracy in measurement of length, and was superior to sizing catheters or caliper measurements. These findings are consistent with our currently reported work in which we used the now commercially available MMS software (Medical Metrx Solutions), and noted an associated highly significant decrease in use of iliac extensions.

We agree that the issue of optimal length measurements in the preoperative planning phase for EVAR may be more complex than initially thought, and is likely to be affected by endograft-specific design features that affect endograft flexibility and profile, as well as patient-specific aneurysm anatomy such as degree of angulation and tortuosity. As the technology for EVAR evolves, further study of this subject may be required in efforts to optimize the types of available computer-assisted software options, taking into account all potentially important endograft-specific and anatomy-specific features. The goal would continue to be decreased use of endograft components and junctions, because these affect cost and expected long-term durability of EVAR.

Omaida C. Velazquez, MD

Department of Surgery
Hospital of the University of Pennsylvania
Philadelphia, Pa