

# TEVAR for Acute Aortic Trauma

Determining if endovascular intervention is the best treatment option.

BY MARK K. ESKANDARI, MD

**A**n overwhelming amount of evidence has demonstrated the early successful outcomes of thoracic endovascular aortic repair (TEVAR) for the treatment of acute blunt aortic thoracic injuries. What remains to be determined are two critical pieces of information: (1) what is the long-term outcome of TEVAR for this problem, and (2) which patients are best served with TEVAR?

## ASSESSING THE INJURY

Oftentimes, as physicians, we are faced with a problem with more than one good solution. This is particularly relevant as an interventionist, where we can clearly see a problem on an imaging study (eg, computed tomography scan or angiography) but the guidelines for treatment are vague. Although we recognize that TEVAR for blunt aortic thoracic transection can promptly and effectively correct the problem in an individual with a number of other associated traumatic injuries, this minimally invasive procedure need not be applied with impunity. An assessment of the extent of injury is warranted. Minor intimal disruptions with little or no mediastinal hematoma can typically be effectively treated with blood pressure control and follow-up imaging (Figure 1). Delayed open surgical reconstruction remains a viable solution for individuals who develop a late pseudoaneurysm in the zone of injury. On the other end of the spectrum, a moribund patient is unlikely to benefit from any intervention.

## ASSESSING ANATOMIC CONSTRAINTS

It is also important to evaluate other possible anatomic constraints that may preclude a successful outcome with TEVAR. Several authors have reported on the complica-



**Figure 1.** Contrast-enhanced computed tomographic scan showing an isolated intimal injury to the medial side of the lesser curve of the proximal descending thoracic aorta. No significant mediastinal hematoma was identified.

tion of device collapse, thought to be due to excessive oversizing of currently available devices in a small aorta as well as placement of a straight device into a sharply angulated vessel. Until a disease-specific device is available, these two anatomic markers are harbingers for delayed problems that may, in fact, magnify the original problem. Lastly, associated vascular injury proximal to the proximal descending aorta (ie, innominate artery and/or left common carotid artery dissections) may hamper the effectiveness of TEVAR, and placement of a stent graft in this circumstance might be inadequate, increase the risk of cerebral embolization, or result in retrograde dissection.

## CONCLUSION

TEVAR for a partial-thickness blunt aortic injury certainly offers an effective, less-invasive, less morbid alternative to open surgical reconstruction among trauma patients. Although many reports have demonstrated lower stroke, paraplegia, and death rates following TEVAR as compared to open surgery for aortic transections, anatomic and/or clinical circumstances may negate the beneficial effects of TEVAR. There still remains a cohort of patients who are best treated with optimal medical therapy rather than surgical or endovascular intervention. ■

*Mark K. Eskandari, MD, is James S. T. Yao, MD, PhD, Professor of Education in Vascular Surgery; Professor of Surgery, Radiology, and Cardiology; and Chief, Division of Vascular Surgery, at Northwestern University Feinberg School of Medicine in Chicago, Illinois. He has disclosed that he has no financial interests related to this article. Dr. Eskandari may be reached at (312) 926-7775.*