

# Postoperative ICU Management of Vascular Surgery Patients



Ettore Crimi, MD<sup>a,\*</sup>, Charles C. Hill, MD<sup>b</sup>

## KEYWORDS

- Critical care management • Vascular surgery • Thoracic aortic surgery
- Endovascular repair • Anesthetic management • Perioperative medical care

## KEY POINTS

- Most patients undergoing major vascular procedures have multiple comorbidities and are at high risk for postoperative complications.
- Major postoperative complications affect multiple organ systems.
- Endovascular repair techniques may decrease mortality and morbidity in vascular surgical patients.

## INTRODUCTION

Vascular surgery patients, whether undergoing open surgery or endovascular procedures, are at high risk for perioperative complications and require meticulous postoperative management. Widespread atherosclerotic disease, advanced age, and multiple comorbidities (often involving the cardiac, pulmonary, and renal organ systems), combined with the insult of major vascular surgery (which includes tissue damage, inflammatory responses, and profound hemodynamic changes), all serve to increase the risk of postoperative morbidity and mortality.

Preoperative risk stratification, careful perioperative management by the anesthesiologist, and scrupulous intensive care unit (ICU) care serve to minimize perioperative complications and optimize patient outcomes. Intraoperative anesthetic management should reestablish preoperative homeostasis and hemodynamics. Postoperative ICU management should support organ function until recovery from the surgical insult and provide early detection and effective management of postoperative complications.<sup>1</sup>

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<sup>a</sup> Department of Anesthesia and Critical Care Medicine, Shands Hospital, University of Florida, 1600 Southwest Archer Road, PO Box 100254, Gainesville, FL 32610-025, USA; <sup>b</sup> Department of Anesthesia, Pain and Perioperative Medicine, Stanford University Medical Center, Stanford University School of Medicine, 300 Pasteur Drive, H3580, MC5640, Stanford, CA 94305, USA

\* Corresponding author.

E-mail address: [ecrimi@anest.ufl.edu](mailto:ecrimi@anest.ufl.edu)

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In this review, the authors discuss descending thoracic and thoracoabdominal aneurysms (TAAAs), abdominal aortic aneurysms (AAAs), and arterial occlusive disease, including carotid artery stenosis and peripheral artery disease (PAD), with an emphasis on the common postoperative complications and their critical care management.

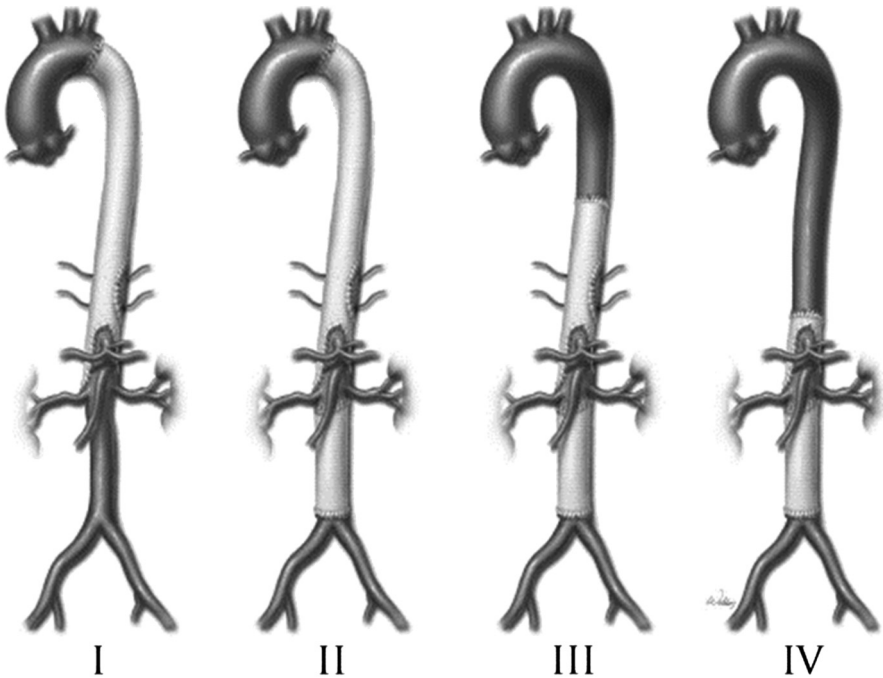
## AORTIC ANEURYSMS

### *Descending Thoracic Aneurysms and TAAAs: Open Repair*

A descending thoracic aortic aneurysm involves any portion of the thoracic aorta distal to the left subclavian artery. TAAAs may extend from the left subclavian artery to different portions of the abdominal aorta, involving visceral arteries, such as the celiac axis, the superior mesenteric artery, and the renal arteries. **Fig. 1** demonstrates the Crawford classification system of TAAAs.

The incidence of diagnosed descending thoracic aneurysms and TAAAs is increasing as a result of improved radiographic imaging and an aging population and is estimated to be 10.4 per 100,000 people per year.<sup>2</sup> The common causes of thoracic aortic aneurysms are atherosclerotic degenerative disease, aortic dissection, and connective tissue diseases; less frequent causes are traumatic injury and infection.<sup>3</sup>

Open repair of TAAAs is the gold standard treatment.<sup>4</sup> Despite improvements in surgical techniques and perioperative care, the overall mortality ranges from 2% to 10%,



**Fig. 1.** Crawford classification of TAAA repairs. Extend I includes repairs of aorta from distal to the left subclavian artery to above the renal arteries. Extend II from distal to the left subclavian artery to the aortic bifurcation; Extend III from distal half of descending thoracic aorta to the aortic bifurcation. Extend IV involves most of the abdominal aorta from the diaphragm to the aortic bifurcation. (From Coselli JS, Bozinovski J, LeMaire SA. Open surgical repair of 2286 thoracoabdominal aortic aneurysms. *Ann Thorac Surg* 2007;83:S863; with permission.)

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