



# Should the Management of a Ruptured Abdominal Aortic Aneurysm Be Regionalized?

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## Keywords

• Ruptured aortic aneurysm • Aortic aneurysm • Regionalization • EVAR

## Key points

- Regionalization of high-risk vascular emergencies is critically important to optimize patient outcomes.
- Transferring patients to rAAA repair center did not impact the low mortality of rEVAR at the tertiary care center.
- National consideration of the development of standards and possible accreditation of centers capable of caring for rAAA.

## INTRODUCTION

Over the last two decades, there has been a paradigm shift in the treatment of ruptured abdominal aortic aneurysms (rAAA). Without surgical repair, a ruptured aneurysm is a universally fatal event. For many years mortality for rAAA has remained unchanged, with mortality reported between 35% and 70%. Endovascular aneurysm repair (EVAR) for rAAA has expanded, with multiple recent reports documenting lower short-term morbidity and mortality in patients treated with EVAR instead of open repair [1–4]. Although EVAR

Disclosure: The authors have nothing to disclose.

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has become generally accepted as a first-line therapy in the setting of rAAA, safe and efficient EVAR requires not only surgical expertise, but also advanced infrastructure including immediate availability of an operating room (OR) and experienced staff with fluoroscopy training. Historically, patients have been treated at the hospital of initial presentation, either by a trained vascular surgeon or a general surgeon in a rural setting, most often by the open technique. An emerging model of care delivery is the transfer of patients with rAAA to a tertiary medical center with the necessary expertise. Several centers have published experiences developing a multidisciplinary protocol to expedite EVAR for ruptured aneurysms [3,5,6]. Some practices have undertaken a strategy of regionalizing and consolidating rAAA care, based on the realization that it is more efficient to transfer the patients to an academic medical center with advanced imaging and immediate availability of an OR with endovascular capability.

## BACKGROUND

In the late 20th century, trauma care delivery was modernized with advances in triage and regionalization to provide patients with appropriate high-level care in the fastest time possible. The mortality for traumatic gunshot wounds in New York State at the highest volume center is around 11%. In 1968, The American Trauma Society led a fight for nationwide quality trauma care. Its foundational goals were to prevent injury and trauma, and when trauma occurs, to ensure the injured victim is to be cared for by “the right people in the right place at the right time.” In the mid-1980s the American Trauma Society worked with Congress to develop a new program to support trauma centers and systems resulting in the passage of the 1990 Trauma Systems Development Act. This has been successful and likely contributes to the low mortality for gunshot wounds in New York State.

Historically, advances in regionalization for high-level trauma have not been duplicated in emergent vascular surgery. High-quality data have shown that hospital volume is an important factor in achieving good outcomes for aneurysm repair. With the advent of EVAR for elective and ruptured aneurysms, many studies have shown that the mortality for rAAA treated with EVAR is less than open repair but requires significant resources to have the equipment, trained staff, and hospital infrastructure to reduce mortality to the 20% range.

- In 2007, Holt and colleagues [7] published in an extensive meta-analysis of more than 421,000 elective aneurysm repairs and 45,796 rAAA repairs demonstrating that higher volumes correlate with lower mortality.
- Veith and Ohki [8] were the first to perform EVAR for rAAA. In their collective world experience published in 2008, they performed 1000 cases with mortality of 22%.
- Ullery and colleagues [9] evaluated the effect of an endovascular-first protocol for the treatment of rAAA and found this to be associated with reductions in perioperative morbidity and mortality, a higher likelihood of discharge to home, and even improved long-term survival at 1 year.

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