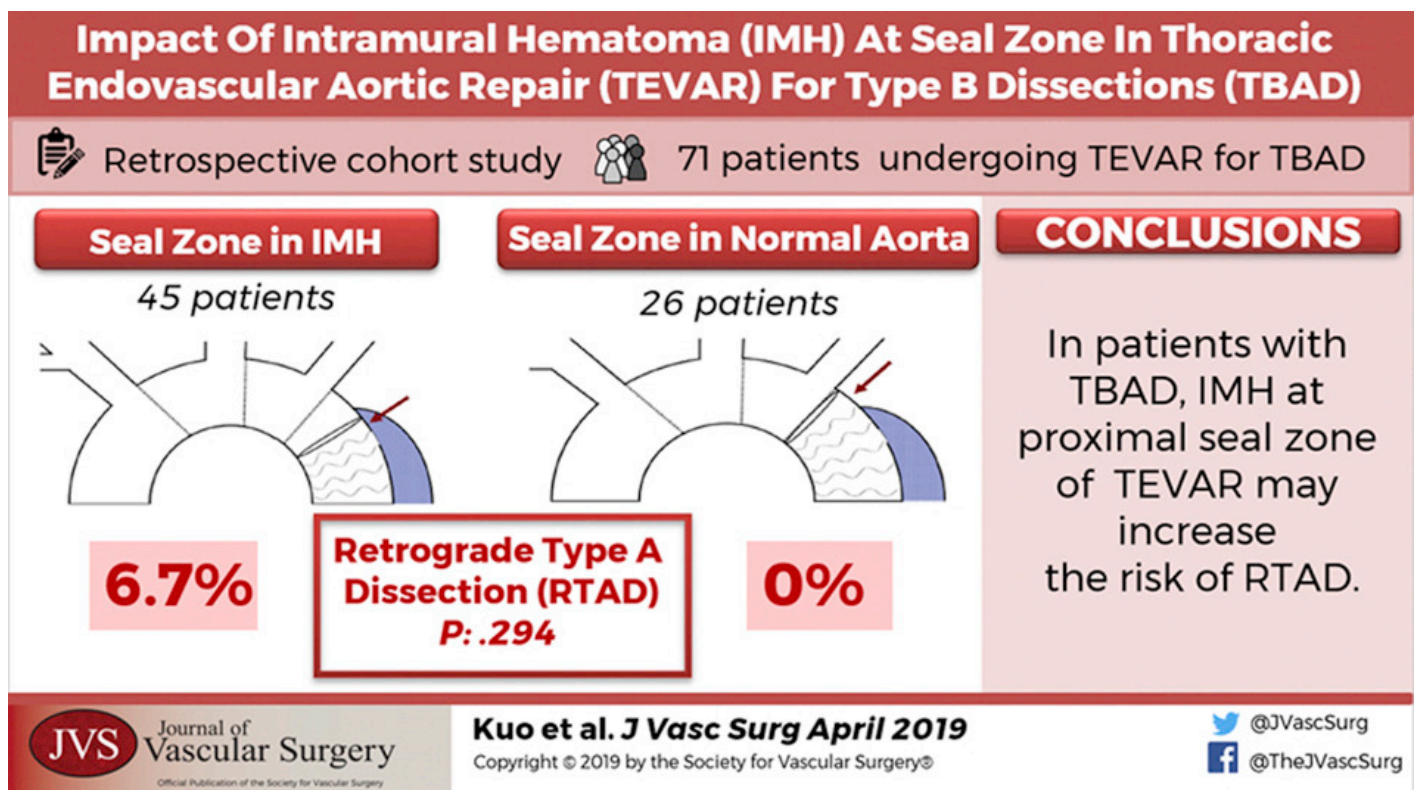




JVS: Proximal seal zone anatomy determines TEVAR outcomes

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**IMPACT OF PROXIMAL SEAL ZONE LENGTH AND INTRAMURAL HEMATOMA ON CLINICAL OUTCOMES AND AORTIC REMODELING AFTER THORACIC ENDOVASCULAR AORTIC REPAIR FOR AORTIC DISSECTIONS.**  
Journal of Vascular Surgery, April 2019.

ROSEMONT, Illinois, March 21, 2019 – New research highlights the importance of positioning thoracic endovascular aortic repair (TEVAR) devices within healthy aorta proximally to avoid serious complications.

Aortic dissection is the most common catastrophe of the aorta. Left untreated, mortality can be as high as 50 percent at 48 hours.

TEVAR is indicated in “complicated” Type B aortic dissection (TBAD), generally defined as persistent pain, rupture or distal aortic branch malperfusion. The main purpose of TEVAR is to cover the proximal intimal tear, preventing blood flow into the false lumen. The ideal proximal landing zone of the device is two centimeters of healthy aorta, devoid of intra-mural hematoma (IMH).

According to Dr. Eric Kuo, lead investigator from the University of Southern California, “one of the most devastating complications of this treatment is retrograde Type A dissection (RTAD). While avoiding excessive oversizing and balloon molding during the procedure is important, detailed anatomic assessment of the proximal seal zone in the context of RTAD development is lacking.”

As reported in the April 2019 edition of the Journal of Vascular Surgery, Dr. Kuo’s team performed a retrospective study of patients who underwent TEVAR for complicated TBAD in their institution between 2006 and 2016. To understand the impact of proximal seal zone anatomy on procedural outcomes, patients were categorized into two groups—those with proximal extent of seal zone in IMH/dissection-free aorta and those with landing zone entirely within IMH.

Characteristics of the 71 patients studied included:

- Male, 73%
- Age, 59 +/- 14 years
- Hypertensive, 92%
- Acute presentation, 61%

The proximal seal zones were:

- IMH-free, 37%
- 2cm, IMH-free, 9%

Review of the arch anatomy revealed that complete aortic debranching would be required in 44% of patients to achieve the “ideal” proximal seal zone.

At 24-month follow-up, they observed:

- Overall survival, 93%
- Freedom from aorta-related mortality, 97%
- Complete false lumen thrombosis, 46%
- No association with proximal landing zone characteristics and subsequent aortic remodeling
- RTAD, three patients

All three incidents of RTAD occurred in patients treated acutely and who had proximal landing zones involving IMH (Group A).

Interestingly, the entry tear was a median of 35.6mm from the left subclavian artery (shorter 20.2mm in Group A versus 36 in Group B, and all RTAD occurred in Group B with a longer distance to the entry tear. So even if the entry tear was more distal to the LSCA, it did not prevent RTAD. Sealing in healthy aorta was therefore found to be paramount to avoidance of RTAD. “The convenience of sealing entirely within IMH should be carefully considered in the context of potentially higher risk of RTAD, especially during the acute phase,” Dr. Kuo said. “Furthermore, the risks of RTAD after TEVAR must be considered against the indication for intervention, especially when the disease-free proximal seal zone is difficult to achieve.”

The study highlights some of the complexities in treating patients with aortic dissection. Achieving the ideal proximal landing zone is rarely possible without debranching, and not doing so can result in devastating complications.

The JVS article is open source through May 31 at [vsweb.org/JVS-Proximal](https://vsweb.org/JVS-Proximal) .

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