Update on Blunt Thoracic Aortic Injury: The Aortic Trauma Foundation and the New SVS Guidelines

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atf | aortic trauma foundation

The University of Texas at Austin
Dell Medical School

Mission Statement

- To improve outcomes of patients with traumatic aortic injury (TAI) through *education* and *research*.
- Structure:
  - Non-profit 501(c)(3) organization
  - Board of Directors
    - Regionalized Representation
  - Multispecialty Medical Advisory Board

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Improving outcomes for Aortic Trauma

We are dedicated to saving lives through global research, and education for patients with Traumatic Aortic Injury (TAI).

Patient Guide →

For Clinicians

Who We Are

Established in 2014, the Aortic Trauma Foundation (ATF) is a nonprofit organization dedicated to education and the optimal diagnosis and management of traumatic aortic injury.

Our History

Created by a consortium of vascular surgeons and trauma specialists to address a critical gap in aortic injury care. Despite being the second leading cause of sudden death after accidents, lack of standardized protocols and experience level across health systems led to variability of outcomes after TAI.

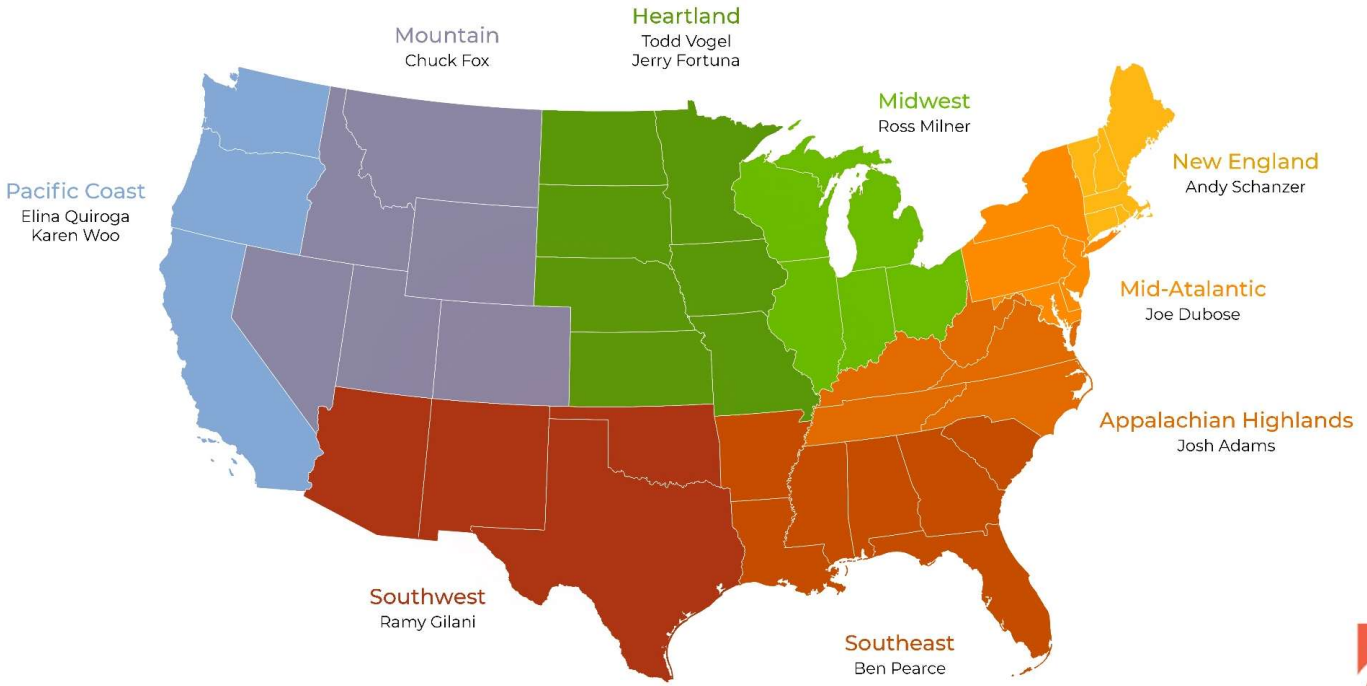
Our Mission

To improve outcomes for patients with traumatic aortic injury (TAI) through education and research. We raise public awareness and educate medical professionals on optimal diagnosis and management of TAI.

Our Vision

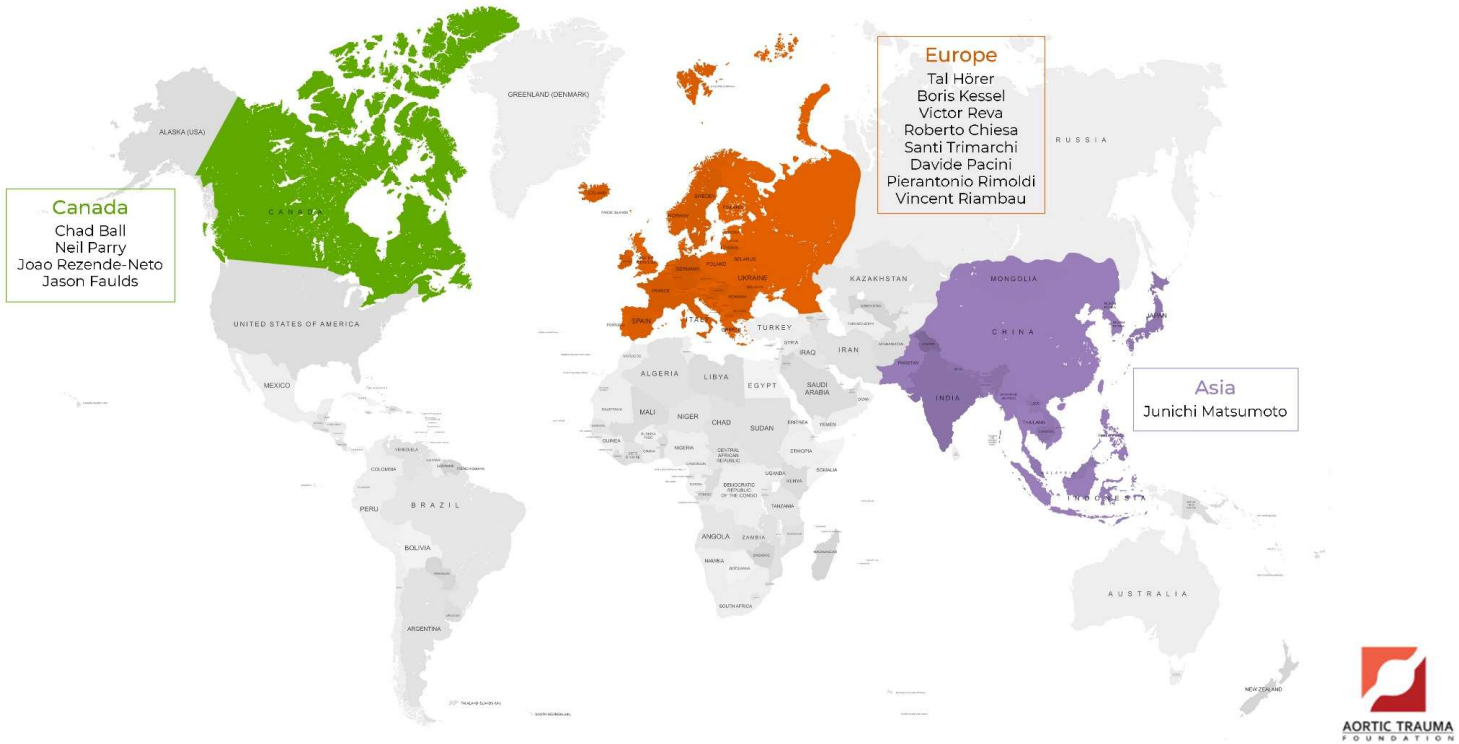
A future where every patient with an aortic injury receives immediate, and expert care at any trauma center, ensuring the best possible chance for survival and recovery.

US Regions



AORTIC TRAUMA FOUNDATION

OUS Regions



AORTIC TRAUMA FOUNDATION

FOR MEDICAL PROFESSIONALS

Clinical Education & Research Hub

A centralized resource for guidelines, surgical techniques, and the global BTAI registry.

Clinical Education | Research

TAI Overview & Subtypes | BTAI | Interesting Cases

Traumatic Aortic Injury (TAI)

Traumatic Aortic Injury remains the second most common cause of death in patients suffering from blunt trauma, second only to head injury. While traditionally associated with high-speed motor vehicle accidents, the changing demographics of the population have seen a rise in injuries related to falls in the elderly.

Epidemiology

- **Incidence:** Occurs in approximately 1.5% to 2% of patients with severe blunt thoracic trauma.

Management Trends

- **Paradigm Shift:** Over the last two decades, management has shifted from open surgical repair to Thoracic Endovascular Aortic Repair (TEVAR).

GLOBAL INITIATIVE

ATF International BTAI Registry

The world's largest prospective, multi-center database dedicated to aortic trauma, established to answer critical questions about injury management and long-term outcomes.

Member Portal Login

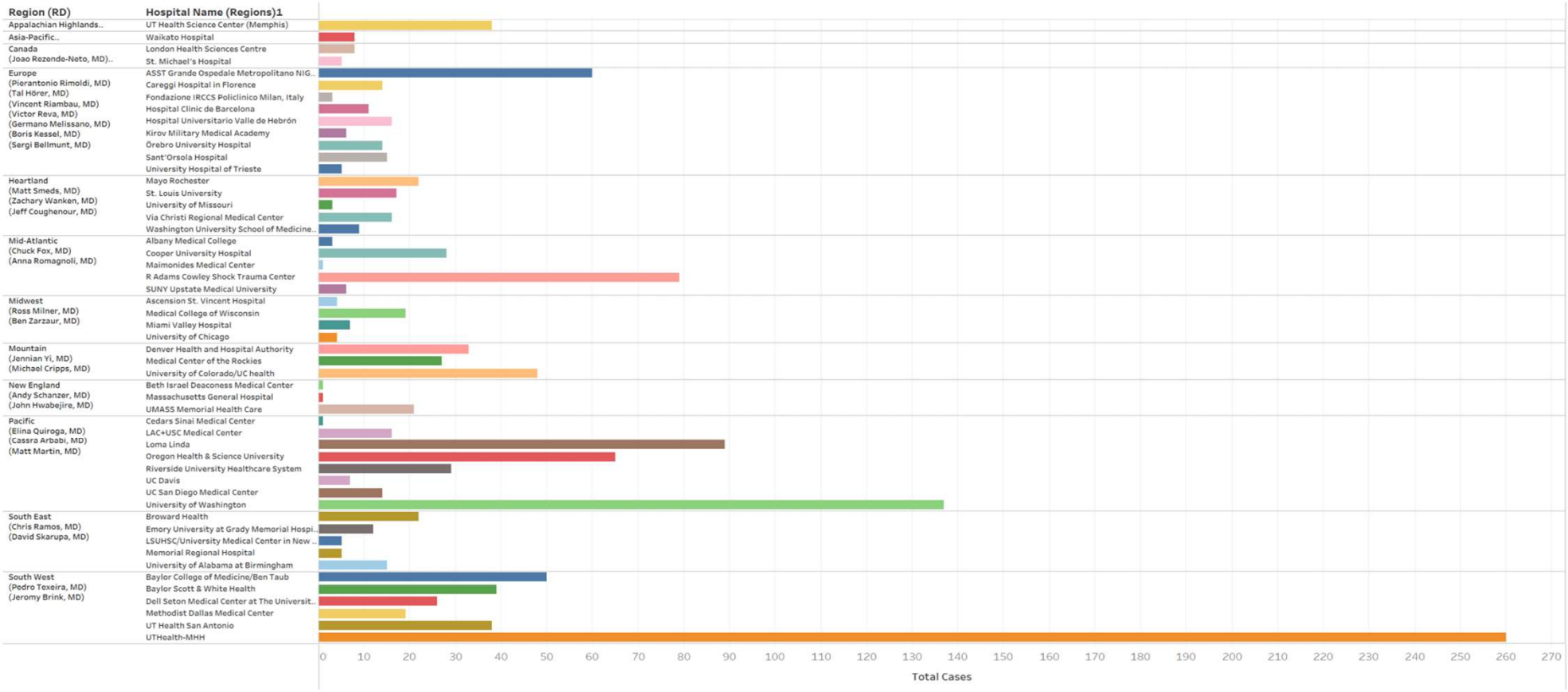
Case Entry Portal (Coming Soon)

52
PARTICIPATING CENTERS

1,406
PATIENTS ENROLLED

10+
YEARS OF DATA

Aortic Trauma Foundation (ATF) BTAI Registry regional enrollment - October 2025



Completed research efforts:

aortic trauma foundation

- DuBose JJ, Charlton-Ouw K, Starnes B, Saqib N, Quiroga E, Morrison J, Gewertz B, Azizzadeh A; AAST / Aortic Trauma Foundation Study Group. **Do patients with minimal blunt thoracic aortic injury (BTAI) require TEVAR?** *J Trauma Acute Care Surg*. 2020 Oct 16.
- Arbabi CN, DuBose J, Charlton-Ouw K, Starnes BW, Saqib N, Quiroga E, Miller C, Azizzadeh A; Aortic Trauma Foundation Study Group. **Outcomes and practice patterns of medical management of blunt thoracic aortic injury from the Aortic Trauma Foundation Global registry**. *J Vasc Surg.* 2021 Sep 21
- Arbabi CN, DuBose J, Charlton-Ouw K, Starnes BW, Saqib N, Quiroga E, Miller C, Azizzadeh A; Aortic Trauma Foundation Study Group. **Outcomes of TEVAR in patients with concomitant blunt thoracic aortic injury and traumatic brain injury from the Aortic Trauma Foundation Global registry.** *J Vasc Surg.* 2021 Oct 1
- Crapps JL, Efird J, DuBose JJ, Teixeira PG, Shrestha B, Brown CVR, Aortic Trauma Foundation. **Is Chest X-ray a reliable screening tool for blunt thoracic aortic injury? Results from the American Association for the Surgery of Trauma / Aortic Trauma Foundation prospective blunt thoracic aortic injury registry.** *J Am Coll Surg.* 2023 May 1
- Romagnoli AN, Paterson J, Dua A, Kauvar D, Saqib N, Miller C, Starnes B, Azizzadeh A, DuBose J. **Cover with caution: Management of the left subclavian artery in TEVAR for trauma.** *J Trauma Acute Care Surg*. 2023 Mar 1
- D'Oria M, Pipitone MD, DuBose J, Azizzadeh A, Miller CC 3rd, Starnes BW, Tolva VS, Arbabi CN, D'Alessio I, Lepidi S; Aortic Trauma Foundation Study Group. **Development of a validation and risk prediction tool for in-hospital morality after thoracic endovascular repair in patients with blunt thoracic aortic injury using the Aortic Trauma Foundation registry**. *Ann Vasc Surg.* 2024 Feb.
- Golestani S, DuBose JJ, Efird J, Teixeira PG, Cardenas TC, Trust MD, Ali S, Aydellotte J, Bradford J, Brown CV. **Nonoperative management for low-grade blunt thoracic aortic injury.** *J Am Coll Surg.* 2024 Jun
- Lu E, DuBose J, Venkatesan M, Wang ZP, Starnes BW, Saqib NU, Miller CC, Azizzadeh A, Chou EL. **Using machine learning to predict outcomes of patients with blunt thoracic aortic injuries**. *J Trauma Acute Care Surg.* 2024 Aug 1
- Jenkins PD, Kolesnikov MR, Willis S, Andujo V, Lian T, Thanawala R, Bhamidipati C, Regner J, Doberne J. **Physiologic phenotypes in blunt thoracic aortic injury: implications for risk stratification and surgical decision-making using machine larning**. *Front Dig Health.* 2026 Feb 9:8:1745987.
- Mattews R, Chou L, DuBose JJ, Baril DT, Gupta N, Arbabi CN, Saqib NU, Starnes BW, Quiroga E, Miller CC, Azizzadeh A. **Impact of Trauma Center Volume on Treatment Strategies and Outcomes of Blunt Traumatic Aortic Injuries**. *J Vasc Surg.* 2026 [Online ahead of print].
- D'Alessio I, Monzio-Compagnoni N, Salinetti G, DuBose J, Starnes BW, Quiroga E, Benasconi D, D'Oria M, Lepidi S, Rimoldi P, Tolba VS; ATF Collaborative Group. **The Role of Gender in Blunt Thoracic Aortic Injuries.** *Ann Vasc Surg.* 2026 Feb;123:64-73.

GRADING

SOCIETY FOR VASCULAR SURGERY® DOCUMEN

Endovascular repair of traumatic thoracic aortic injury: Clinical practice guidelines of the Society for Vascular Surgery

W. Anthony Lee, MD,[a] Jon S. Matsumura, MD,[b] R. Scott Mitchell, MD,[c] Mark A. Farber, MD,[d] Roy K. Greenberg, MD,[c] Ali Azizzadeh, MD,[f] Mohammad Hassan Murad, MD, MPH,[g] and Ronald M. Fairman, MD,[h] *Boca Raton, Fla; Madison, Wisc; Palo Alto, Calif; Chapel Hill, NC; Cleveland, O Houston, Tex; Rochester, Minn; and Philadelphia, Pa*

2011

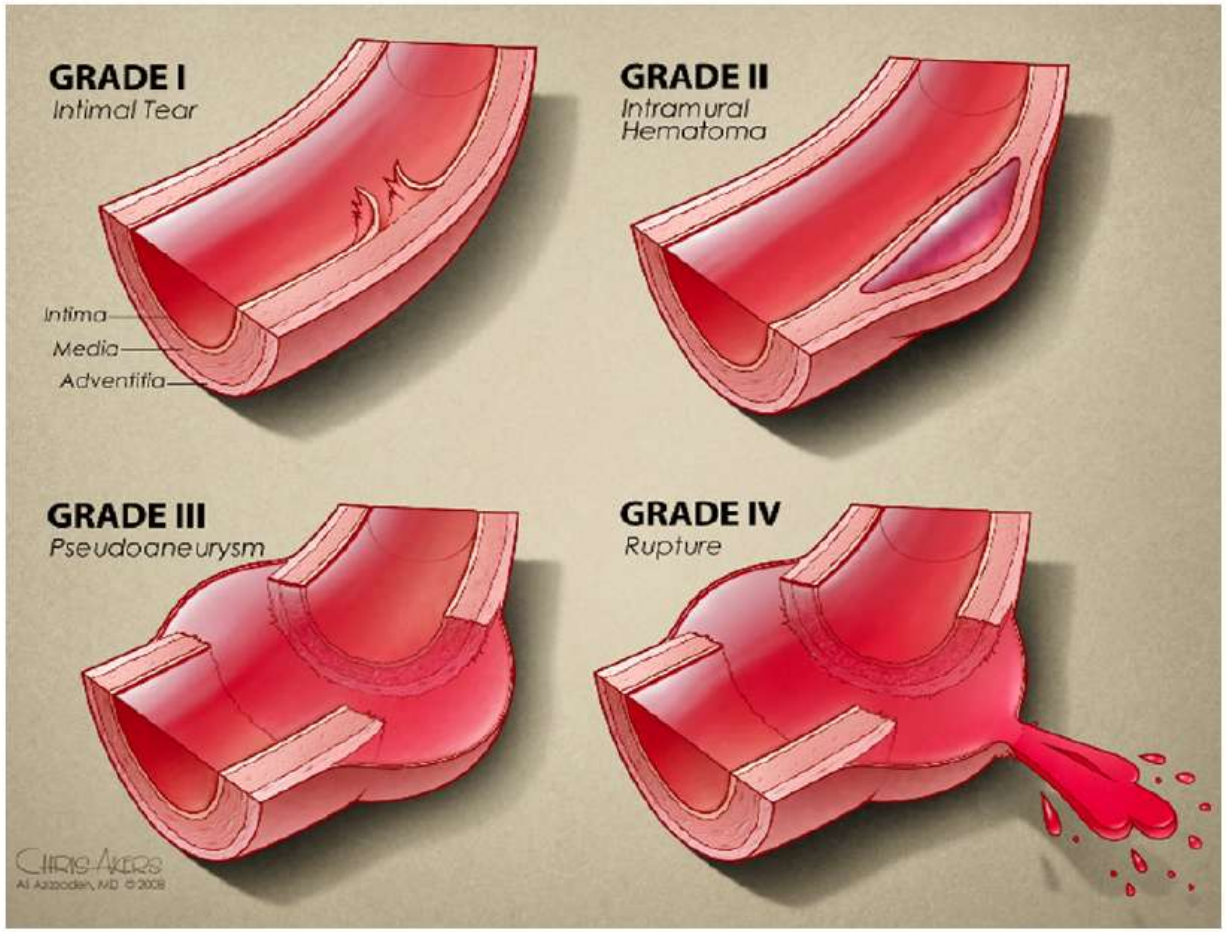
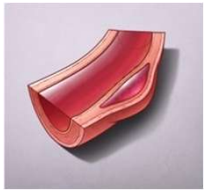


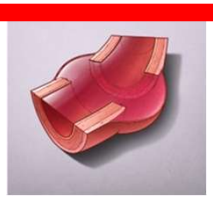
Fig. Classifications of traumatic aortic injury.[12]

SVS BTAI Management Recommendations -2011

GRADE I → Medical TX



GRADE II
Intramural Hematoma → TEVAR / OR
Urgent repair



GRADE III → TEVAR / OR
Urgent repair

GRADE IV → TEVAR / OR
(Emergent)

MINIMAL AORTIC INJURIES

2026 SVS Guideline Update

- Multi-disciplinary (SVS + other stakeholders)
- Mayo Clinic Evidence-Based Practice Research Program Engagement
- Aortic Trauma Foundation Review and Endorsement

Paired Guideline Publication

ARTICLE IN PRESS

A systematic review supporting the development of the Society for Vascular Surgery Clinical Practice Guidelines on the management of blunt thoracic aortic injury

Mohammed Firwana, MBBS,[a,b] Mohamed Seisa, MD,[a,b] Magdoleen Farah, MD,[a,b] Reem Alsibai, MD,[a,b] April Christensen, MD, MS,[c] Yahya Alsawaf, MD,[a,b] Alzhraa Abbas, MD,[a,b] Bashar Hasan, MD,[a,b] Samer Saadi, MD,[a,b] Larry J. Prokop, MLS,[d] Ali Azizzadeh, MD,[e] *and* M. Hassan Murad, MD, MPH,[a,b]

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Dell Medical School

SVS | Society for Vascular Surgery

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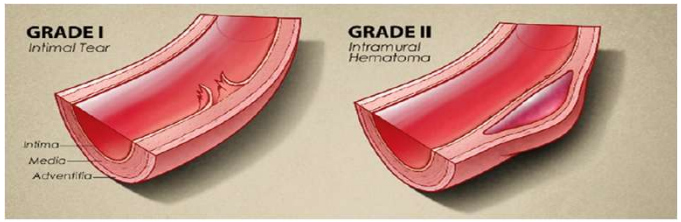
7 PICO Questions

1. Should patients with minimal aortic injuries (Grade 1 and 2 BTAI) be treated with non-operative management (NOM) alone or TEVAR?
2. Should patients with Grade 3 BTAI undergo early or delayed TEVAR?
3. Do patients undergoing left subclavian artery (LSA) coverage (Zone 2) for TEVAR after BTAI require left subclavian revascularization?
4. What is the optimal role of intraoperative systemic anticoagulation in BTAI patients undergoing TEVAR?
5. What is the optimal imaging surveillance protocol for BTAI patients after TEVAR or NOM?
6. What is the optimal treatment of BTAI patients with concomitant solid organ injury or traumatic brain injury?
7. What is the role of anti-impulse therapy in the non-operative management (NOM) of BTAI?

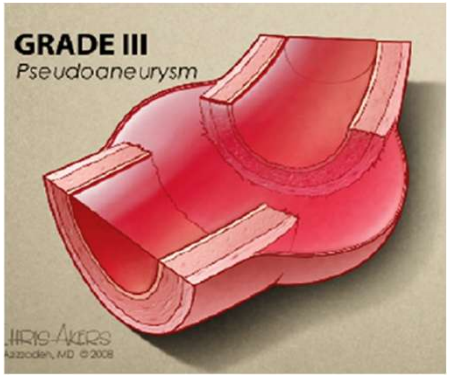
PICO #1



Should patients with minimal aortic injuries (Grade 1 and 2 BTAI) be treated with non-operative management alone or TEVAR?

In patients with Grade 1 and 2 BTAI (minimal aortic injury, MAI), we recommend definitive non-operative management (NOM) over Thoracic Endovascular Aortic Repair (TEVAR) or open repair (OR). (1C) Grade 1 injuries require no routine follow up imaging . We suggest Grade 2 injuries undergo follow-up CTA to assure resolution.

PICO #2



Should patients with Grade 3 BTAI undergo early or delayed TEVAR?

In patients with hemodynamically stable Grade 3 BTAI, we suggest delayed TEVAR (> 24 hours) to allow for management of other associated traumatic injuries if needed. (2C) In an unstable patient where there is a concern that the BTAI is the specific cause for the patient's instability, we recommend urgent (< 24 hours) or emergent intervention. (1B)

PICO #3

Do patients undergoing left subclavian artery (LSA) coverage (Zone 2) for TEVAR after BTAI require planned left subclavian revascularization?

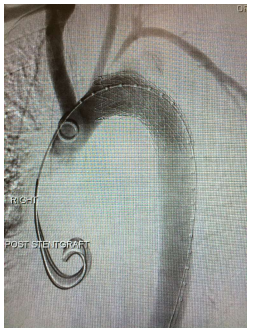
Among patients requiring left subclavian artery (LSA) coverage for TEVAR after BTAI, we suggest that the decision about LSA revascularization be based upon feasibility and factors such as a patent prior left internal mammary to coronary bypass, a dominant left vertebral artery is detected on pre-operative or intra-operative imaging, or an aortic origin of the left vertebral artery. (2C)

PICO #4

What is the optimal role of intraoperative systemic anticoagulation in BTAI patients undergoing TEVAR?

In patients with BTAI undergoing TEVAR, we suggest that intraoperative anticoagulation can be used at the surgeon's discretion after considering the risk of bleeding and thrombotic complications.

PICO #5



What is the optimal surveillance protocol for BTAI patients after TEVAR or NOM?

In all patients with Grade 1 BTAI treated nonoperatively, we suggest against surveillance imaging. (2C)

In patients with Grade 2 BTAI treated nonoperatively, we suggest at least one follow-up surveillance imaging study. We suggest repeat imaging at 1-3 months following injury. (2C)

In patients who had TEVAR for BTAI, we suggest postoperative surveillance imaging. (2C)

PICO #6

What is the optimal treatment of BTAI patients with concomitant solid organ or traumatic brain injury?

In patients with Grade 1 or 2 BTAI (MAI) and concomitant brain injury (TBI) we suggest against anti-impulse therapy for BTAI. Management of blood pressure should prioritize TBI over BTAI. (2C)

In patients with Grade 3 BTAI an concomitant TBI, we suggest that the decision to use anti-impulse therapy should be individualized based on collaborative management with other surgical and medical specialties (2C)

PICO #6

What is the optimal treatment of BTAI patients with concomitant solid organ or traumatic brain injury?

In patients with Grade 3 BTAI and concomitant TBI or solid organ injury (SOI), we suggest that timing for TEVAR should be determined in a collaborative fashion in consultation with other stakeholders, including trauma and neurosurgery (2C)

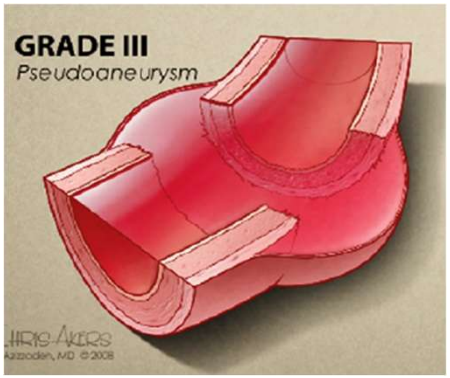
In patients with Grade 4 BTAI, we recommend emergent repair. (1C)

PICO #6

What is the optimal treatment of BTAI patients with concomitant solid organ or traumatic brain injury?

For patients with BTAI and concomitant TBI or solid organ injury, we suggest a collaborative approach for intraprocedural anticoagulation during TEVAR. While current observational studies do provide some reassurance that heparinization is not associated with worse intracranial bleeding or neurologic outcomes, the certainty in this evidence is very low. Decision about anticoagulation in patients with TBI should be based upon multidisciplinary collaboration (Best Practice Statement)

PICO #7



What is the role of anti-impulse therapy in the non-operative management (NOM) of BTAI?

In patients with Grade 3 BTAI, we suggest anti-impulse therapy as a stabilizing measure until TEVAR is performed if the concomitant injuries do not preclude this approach. (2C)

Future Steps for ATF

- SVS / ATF Guidelines provide highlight of areas for future research focus
- Expand ATF registry enrollment
- Funding sources

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