Progress in Blunt Thoracic Aortic Injury and The Aortic Trauma Foundation

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Traumatic Aortic Injury (TAI): Epidemiology

• 2nd - cause of death
• Majority - MVC
• Rapid deceleration


AAST I & AAST II
2008-2009

• Transition in diagnosis
  • Angiogram / echocardiogram >>> CTA

• Improved outcomes with transition to TEVAR
  • Mortality decreased from 22.0% to 13.0%
  • Paraplegia decreased from 8.7% to 1.6%

• Delayed repair > Immediate repair

Changing practices: The emergence of TEVAR

Actuarial Survival

Is TEVAR the entire answer? The role of an optimal grading system

• Determine treatment
  • NOM vs. TEVAR vs. Open repair

• Guide timing of treatment
  • Emergent vs. Urgent vs. Delayed

• Guide prediction of natural history and optimal follow-up

Same Risk for Early Rupture?
SVS Grading System and Treatment Algorithm

GRADE I
Intimal Tear → IVUS / Med TX

GRADE II
Intramural Hematoma → TEVAR / OR

GRADE III
Pseudoaneurysm → TEVAR / OR

GRADE IV
Rupture → TEVAR / OR (Emergent)

2011

Alternative Proposals...

• Vancouver simplified system
• Harborview “Minimal Aortic Injuries”
• Baltimore Classification
  • Lesion / aortic ratio
  • Lactate
  • Mediastinal hematoma size

BTAI: Ongoing Areas of Controversy

• Management of intramural hematoma (G 2) / “Mild” BTAI
• Timing of repair
  • Urgent vs. emergent
• Prioritizing repair of associated injuries (TBI)
• Optimal follow-up imaging regimen

Aortic Trauma Foundation
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
• Multispecialty Medical Advisory Board

COMPLETED: ATF Survey
Defining present practices / opinions

• Participating organizations
  • SVS
  • AAST
  • EAST
  • STS
  • SIR

Guidelines Use / Management Practices?

Once the diagnosis of BTAI has been made, what decision aid do you utilize to determine which patients require aortic repair?

- Society for Vascular Surgery (SVS) practice guidelines: 27.5% (105)
- American Association for the Surgery of Trauma (AAST) guidelines: 12.8% (57)
- Personal knowledge of the literature and experience: 50.5% (201)
- Other (please specify): 9.10% (37)

Total Respondents: 389
Optimal management of low mid-grade injuries?

- ATF Multicenter Collaboration
  - 9 ACS level 1 trauma centers (US)
  - N = 382 pts
- TEVAR (vs. Open Repair) associated with
  - Lower transfusion requirements (Mean 3.1 vs. 5.9, p = 0.002)
  - Lower overall mortality (8.6% vs. 19.7%, p = 0.021)
  - Lower aortic-related mortality (2.5% vs. 13.1%, p = 0.003)

Retrospective Multicenter Study

- SVS Grade I / II Injuries
  - No difference in outcomes for patients treated with NOM vs. TEVAR for “Minimal BTAI”
  - SVS guidelines suggest TEVAR
  - More investigation needed

ONGOING:
ATF International, Multicenter PROSPECTIVE BTAI Registry

- Predictors of early rupture
- Multispecialty consensus on diagnosis and treatment
- Long-term outcomes
  - Establish natural history
  - Elucidate better follow-up practices

US Regions

OUS Regions

ATF International, Multicenter Prospective BTAI Registry

- Centralized, online data reporting
- “Live” February 2016
- As of November 2018
  - 381 patients
  - 23 centers internationally
ATF: Impending Next Steps

• Series data review and reporting
  • N = 500

• Investigative use of the data
  • Identify / Define optimal care practices
  • Solicit and review proposals for use

• Foundational data for multi-specialty guidelines