What Factors Predict When Treatment of Blunt Thoracic Aortic Injuries Can Be Delayed

Robert S. Crawford, MD FACS
Assistant Professor, Surgery & Anesthesiology
Co-Director, Center for Aortic Disease
University of Maryland School of Medicine &
University of Maryland Medical Center

Donald G. Harris, MD
General Surgery Resident
University of Maryland School of Medicine

Aortic Injury in Maryland

2009 – 2013
149 patients
81% at UM

Aortic Injury at Maryland

Current Concepts
Blunt Aortic Injury

Patient selection
Distal bypass without heparin
CT diagnosis
Repair timing
TEVAR
Lesion directed therapy

309 TAI Patients
248 with TBI
138 head AIS ≥ 3
75 managed for TAI
29 early repair
24 delayed repair
22 non-operative
TBI Progression

- Non-op: 2/22 (9%)
- Early repair: 10/29 (34%) \( P < 0.05 \)
- Delayed: 0/24 (0%) \( P = 0.001 \)

Early Aortic Repair Worsens Concurrent Traumatic Brain Injury

Joseph Rabin, MEI; Donald G. Harris, MEI; Gordon A. Cross, BS; Michelle Hs, BS; Bradley T. Taylor, MEI; PME; Rajeev Sarker, MEI; PME; James O’Connor, MEI; Thomas M. Scalin, MEI and Robert S. Crawford, MEI

Early repair is associated with TBI progression
- 1st 24 hours: period of instability / sensitivity

Delayed repair safe with anticoagulation
- 48 – 72 hour delay
- TBI stabilized on imaging

Safe to Wait?

Limitation of Injury Grading

Parameters for successful nonoperative management of traumatic aortic injury

Joseph Rabin, MEI; Jose DelRosario, MEI; Chie. W. Skint, MEI; James O’Connor, MEI;
Thomas M. Scalin, MEI; and Harley F. Eldridge, MEI.
Aortic Injury Risk Assessment

- Lesion staging & Grade
- Clinical Stability

**Excluded:**
- In extremis
- Low grade lesions
- Repair < 48 hrs
- Non-aortic death < 48 hrs

**Stable + high grade lesion**

**Rupture:**
- Contrast extravasation
- Surgery or autopsy

**Stable:**
- No repair within 48 hrs

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**Diameter Ratio**

**Periaortic Hematoma**

High risk for aortic rupture when any 2 are present:
- Lactate > 4 mM
- Mediastinal hematoma > 10 mm
- Lesion/normal aortic ratio > 1.4 mm

90% Accuracy

Clinical judgment alone → 65%

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**Summary**

- In appropriately selected patients, delayed repair is preferable & safe with TBI.
- Not all high-grade injuries require repair
  - Quantifiable Anatomical and Physiologic factors can be used to direct the timing of TAI repair.
- Injury staging optimizes patient selection & enables lesion specific management

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**Lesion Directed Management**