

**OREGON STATE TRAUMA ADVISORY BOARD  
PATIENT MANAGEMENT RECOMMENDATIONS**

**Guidelines for Suspected Traumatic Rupture  
Of Thoracic Aorta (TRTA) or Arch Vessel**

*These guidelines represent a suggested treatment method based on a review of the literature and expert opinion reflecting the clinical experience of members of the STAB. The literature review was not performed according to a formal evidence-based medicine process and would therefore be classified as Class III evidence. Situations where the needs of the patient may exceed the capabilities and resources of the institution should be evaluated on a case-by-case basis and transfer facilitated to a higher level of care as soon as possible.*

**Purpose:**

To provide information for the identification of patients with suspected TRTA and to provide recommendations for the optimum management of suspected TRTA patients for transport to a higher level of care.

**Background:**

- 1) Patients with a suspected traumatic rupture of the thoracic aorta (TRTA) or arch vessel are commonly transferred to a Level-1 or Level-2 trauma center for specialized cardiovascular surgery evaluation.
- 2) Although timely referral for specialized care is important, management of the patient's airway, ventilation, ongoing hemorrhage, and evolving neurological disability take higher priority.
- 3) Patients with TRTA may suffer free rupture of the aortic disruption from high thoracic shear forces in the setting of an elevated double product (i.e., hypertension and/or tachycardia).
- 4) Efforts to reduce the thoracic shear forces in the patient with a suspected TRTA (before or during transport) should not compromise primary resuscitation of the patient.

**Clinical Suspicion:**

- 1) Patients will be suspected of TRTA based upon a constellation of factors e.g., deceleration mechanism of injury, physical findings such as pulse asymmetry, and suggestive imaging studies.

- 2) In the adequately resuscitated, hemodynamically stable trauma patient, therapeutic interventions for TRTA need not await definitive diagnostic studies in the setting of strong clinical suspicion.
- 3) The decision to obtain definitive diagnostic studies prior to patient transfer should rest with the treating trauma team, although consultation with the receiving higher-level trauma center is encouraged.

Suggested Initial Management at Referring Hospital:

- 1) Stabilize patient as noted above.
- 2) Place a secure IV Line.
- 3) Sedate patient, control pain.
- 4) Intubate patient if agitated.
  - a. Use RSI Protocol.
  - b. Initiate long-acting Neuromuscular Blockade Agents and deep sedation prior to transport.
- 5) If no brain injury and patient is hypertensive:
  - a. Discuss transfer & management with receiving trauma center.
  - b. Cautiously add beta-blocker therapy to maintain SBP 90-110 mmHg and HR 80 (+/- 15).
  - c. Monitor SBP in arm with highest BP reading.
  - d. Consider addition of afterload reduction, if heart rate is adequately controlled and SBP remains >120 mmHg.
- 6) When beta-blocker therapy is used, transport with critical care team with appropriate monitoring capability.
- 7) Use most rapid form of transport available.

Caveats:

- 1) Do not use afterload reducing agent (e.g. nitroprusside) in presence of brain injury.
- 2) Elderly patients with congestive heart failure or reactive airway disease may be made worse with beta-blocker therapy.
- 3) Beware that an elderly patient may have a widened mediastinum due to an uncoiled thoracic aorta. This condition may mimic an aortic injury on chest radiograph. Cautious titration of therapy as outlined in this guideline should be well tolerated in these patients.