

Resuscitative Thoracotomy Guidelines

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Introduction

Trauma surgeons face critical decisions regarding resuscitative thoracotomy in patients with traumatic cardiac arrest. This guideline aims to provide evidence-based recommendations for determining the appropriateness of resuscitative thoracotomy in trauma settings.

Definition of Traumatic Cardiac Arrest

Traumatic cardiac arrest refers to the condition in which individuals experience cessation of cardiac activity following traumatic injury. This is typically characterized by the absence of signs of life upon arrival at the emergency department, including no respiratory effort, pulse, confirmed absence of electrical activity in at least two leads on a rhythm strip, lack of pupillary response, and absence of motor activity (ACS COT).

Criteria for Determining Traumatic Cardiac Arrest

According to the American College of Surgeons Committee on Trauma (ACS COT) guidelines, traumatic cardiac arrest is determined based on specific circumstances for both adults and children:

Adults

- Blunt trauma with pre-hospital CPR exceeding 5 minutes
- Penetrating trauma to the abdomen, head, neck, or groin with pre-hospital CPR exceeding 5 minutes
- Penetrating trauma to the chest with pre-hospital CPR exceeding 15 minutes

Children (age < 13 years old):

- Blunt or penetrating trauma with pre-hospital CPR exceeding 15 minutes
(American College of Surgeons Committee on Trauma)

Inclusion Criteria for Resuscitative Thoracotomy

Resuscitative thoracotomy may be considered in cases meeting the following criteria:

- Patients experiencing penetrating thoracic trauma with less than 15 minutes of pre- hospital CPR
- Patients experiencing blunt trauma with less than 5 minutes of pre-hospital CPR
- Persistent severe post-injury hypotension with systolic blood pressure below 60 mmHg due to:
 - Cardiac tamponade
 - Hemorrhage (e.g., intrathoracic, intra-abdominal, extremity)
 - Air embolism

(Seamon et al., 2015); (Seamon et al., 2019)

Contraindications to Resuscitative Thoracotomy

Contraindications to resuscitative thoracotomy include:

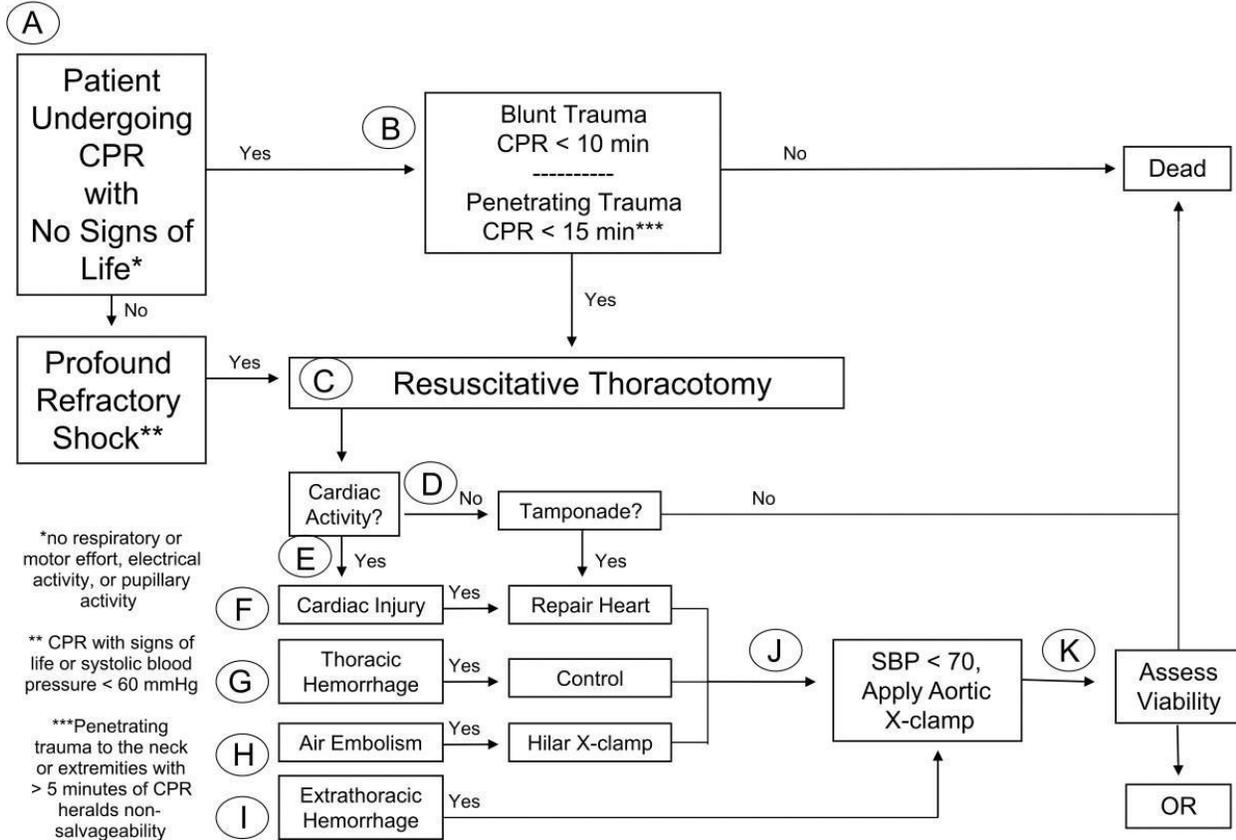
- Penetrating trauma with CPR exceeding 15 minutes and absence of signs of life
- Blunt trauma with CPR exceeding 5 minutes without response
- Asystole

(Seamon et al., 2013); (Brenner et al., 2017)

Indications for Performing Resuscitative Thoracotomy

The presence of pericardial tamponade and/or organized electrical activity, as determined by a FAST exam, can serve as indications to perform resuscitative thoracotomy. (Mandt et al., 2018); (Inaba et al., 2017).

Western trauma association decision-making guideline Resuscitative Thoracotomy:



Conclusion

Trauma surgeons should adhere to evidence-based guidelines when determining the appropriateness of resuscitative thoracotomy in cases of traumatic cardiac arrest. These guidelines aim to optimize patient outcomes and guide clinical decision-making in trauma settings.

(American College of Surgeons Committee on Trauma); (Khan et al., 2020)



Version Control Record

Version	Date	Author/Reviewer	Description of Changes
1	12/10/2024	Paul Wisniewski, D.O.	Initial review and update to reflect latest evidence/practice

References

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3. Inaba K, Chouliaras K, Zakaluzny S, Swadron S, Mailhot T, Seamon M, et al. (2017). "FAST ultrasound examination as a predictor of outcomes after resuscitative thoracotomy: a prospective evaluation." *Annals of Surgery*, 266(2), 442-448.
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8. Seamon M, Fisher C, Gaughan J, Lloyd M, Bradley K, Santora T, et al. (2013). "Emergency department thoracotomy: survival of the least expected." *Journal of Trauma and Acute Care Surgery*, 75(2), 332-342.
9. Note: Consider FAST exam and presence of pericardial tamponade and/or organized electrical activity as an indication to perform Resuscitative Thoracotomy.

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