



Trauma Surgeons Gone Wild: When To Crack The Chest

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Take Home Points

- **The two major trauma guidelines do not agree on indications for ED thoracotomy. You need to consider mechanism of injury, down time, presence of signs of life, patient characteristics and available resources in your decision.**
 - **Bedside ultrasound showing no evidence of cardiac motion or cardiac tamponade indicates a survival rate of zero after thoracotomy.**
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- **Who should get a thoracotomy?**
 - **What was the mechanism of injury?** Was it a blunt injury? These have very bad outcomes. Or was it a penetrating injury? Slightly less bad. For penetrating injuries, was it a thoracic injury or an extra-thoracic injury?
 - **When did the patient lose the vital signs?** Some use the duration of CPR as a surrogate marker. How long has the patient been down? This can be difficult to discern.
 - **Are there signs of life?** These include pupillary response, spontaneous ventilation, movement of the extremities or cardiac electrical activity.
 - **What are the resources and infrastructure available?** You need to consider your available resources.
 - **You need to consider patient characteristics.** A 19 year old male with cardiac arrest secondary to a single stab wound to the heart is very different than a 92 year old patient with blunt trauma.

 - **Can bedside ultrasound help us determine patients in whom thoracotomy will be futile?**
 - Inaba, K et al. **FAST ultrasound examination as a predictor of outcomes after resuscitative thoracotomy: a prospective evaluation.** Ann Surg. 2015 Sep;262(3):512-8. [PMID: 26258320](#)
 - This was prospective observational study of 187 patients in traumatic cardiac arrest that underwent point-of-care cardiac ultrasound.
 - **What did they find?** 9 patients out of 187 survived. 6 patients survived to hospital discharge and 3 patients were organ donors. Every survivor had cardiac motion on ultrasound.

- **Ultrasound done at the bedside by the clinician was very sensitive in identifying patients who would survive. If patients had no evidence of cardiac activity or cardiac tamponade, the survival was zero regardless of any other factors.**
- **There is some criticism of this paper.** Simon Laing points out that the number of survivors was small. If there was just one survivor in the group with absence of cardiac motion, the conclusion would have been very different. These findings add to the prognostication but shouldn't be used in isolation.
- This may be helpful in centres where thoracotomy is not done frequently and presents major challenges for resource utilization.
- **What do the guidelines say?** The two major US trauma guidelines don't agree.
 - The EAST guidelines say you should do a thoracotomy if you have pulseless patient, irrespective of signs of life, with a penetrating injury. They have conditional recommendations for thoracotomy in pulseless patients with blunt trauma only if they have signs of life. **They do not recommend thoracotomy in pulseless patients with blunt trauma and no signs of life.**
 - Western Trauma Association has taken a different approach, utilizing time of CPR as a surrogate marker. They recommend not performing thoracotomy if the patient has received 10 minutes of CPR after blunt trauma and 15 minutes after penetrating trauma. They found no survivors after these times.