

PRACTICE GUIDELINES: MANAGEMENT OF TRANSMEDIASTINAL GUNSHOT WOUNDS

OBJECTIVE:

To provide guidelines for the diagnosis and management of a patient with a possible gunshot wound that traversed the mediastinum.

DEFINITION:

Transmediastinal gunshot wound: A penetrating injury with a trajectory that suggests penetration of any of the structures of the mediastinum, including heart, great vessels, pulmonary hilar structures or esophagus.

GUIDELINES:

1. If the patient is in cardiac arrest without “witnessed signs of life,” (>10 minutes) stop the code. Nothing you do is going to make a difference.
2. If the patient is in cardiac arrest and has had “witnessed signs of life” in the pre-hospital phase (<10 minutes), proceed to open thoracotomy:
 - a. Perform emergent left anterior thoracotomy.
 - b. Consider right thoracotomy if there is an entry wound on the right side of chest without an exit wound. Always remember that you can “clamshell” the thoracotomy and extend a left thoracotomy to the right and a right thoracotomy to the left.
 - c. Control cardiac bleeding with finger compression, Foley balloon tamponade, sutures or skin staples.
 - d. Control hilar bleeding with a hilar Satinsky clamp, top to bottom. Remember to take down the inferior pulmonary ligament, if you have to apply the clamp from below.
 - e. Control retropleural bleeding with large figure-of-eight sutures.
 - f. Control great vessel bleeding with Satinsky clamps, a finger, or sutures.
3. If the patient is hypotensive:
 - a. Start vigorous IV resuscitation (activate MTP) through large bore IV lines
 - i. one above and one below the diaphragm.
 - b. If blood pressure improves, then go to next section – “Stable or Improving.”
 - c. If blood pressure remains low or pulse is high, then:
 - i. Consider tension pneumothorax – follow tension pneumothorax guideline.
 - ii. Consider pericardial tamponade – perform FAST exam cardiac window only, follow cardiac tamponade guideline.
 - iii. Consider ongoing bleeding.
 - iv. Obtain a chest X-ray. Mark the entry and exit sites.
 - d. At this point, if there has been no improvement in blood pressure despite fluid infusion and possible chest decompression, consider going to the operating room. See protocol for Emergent OR notification. Once you have made this decision, don’t talk yourself out of it!
4. If the patient has relatively normal vital signs, i.e., BP sys >100, P <110, then proceed with rapid evaluation to determine injury.
 - a. Chest X-ray: treat findings of pneumothorax or hemothorax.

- b. Subxiphoid ultrasound: if positive for effusion, then consider rapid transport to the operating room. See protocol for Emergent OR Notification. Consider left thoracotomy to gain access to heart and other potentially injured mediastinal structures.
- c. If there is widening of the mediastinum or supramediastinal enlargement, or a difference in the radial pulses, consider CTA or angiography.
- d. All transmediastinal injuries treated non-operatively should undergo esophageal imaging studies (e.g., gastrograffin swallow).
- e. Bronchoscopy if any hemoptysis or rapid air leak.

All patients with transmediastinal gunshot wounds, if managed non-operatively, need admission and follow-up chest X-rays.