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Management of Transmediastinal Gunshot Wounds

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

Definitions:

Transmediastinal gunshot wound is 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:

- A. If the patient is in cardiac arrest without “witnessed signs of life”, stop the code
- B. If the patient is in cardiac arrest and has had “witnessed signs of life” in the pre-hospital phase, proceed to open thoracotomy
 - a. Perform emergent thoracotomy
 - b. Consider right thoracotomy if there is an entry wound on the right side of the chest without an exit wound
 - i. 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
 - i. 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
- C. If the patient is hypotensive
 - a. Start fluid resuscitation per ATLS protocols through large bore IV lines
 - i. Remember in this case, one above and one below the diaphragm
 - b. If blood pressure improves, the go to D (“If the patient has vital signs...”) below
 - c. If hypotension and tachycardia remain
 - i. Place chest tube in the side of the chest with the bullet entry
 - ii. Consider tension pneumothorax
 - iii. Consider pericardial tamponade

- d. Consider ongoing bleeding and if time allows, obtain a chest x-ray
 - i. Mark entry and exit sites
 - e. Use Massive Transfusion Protocol (MTP) for blood
 - f. Tranexamic acid (TXA) as appropriate
- D. If the patient has vital signs (i.e. SBP >100, P <100), then proceed with rapid evaluation to determine injury
- a. Chest x-ray
 - i. Treat findings of pneumothorax or hemothorax
 - b. If there is widening of the mediastinum or supramediastinal enlargement, or a difference in the radial pulses, consider angiography
 - c. All transmediastinal injuries treated non-operatively should undergo esophageal imaging studies (e.g. Gastrografin swallow)
 - i. If the patient is stable and it appears that the bullet traversed the mediastinum very anterior or very posterior, then a chest CT scan with contrast will be helpful
- E. All patients with transmediastinal gunshot wounds, if managed non-operatively, need admission and follow-up imaging

References:

- Deaconess Trauma Guideline Blunt Chest Trauma
- Deaconess Trauma Guideline Penetrating Chest Injury