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Penetrating Neck Injury

Purpose: To provide guidelines for the management of a penetrating injury to the neck, specifically as it relates to the need for operative exploration and the ordering of diagnostic studies.

Definitions:

- A. Penetrating injury: any inflicted injury that penetrates the skin. This could be a gunshot wound, stab wound, or foreign body penetration of any nature. These guidelines do not apply to penetration of the oral or pharyngeal mucosa.
- B. Neck: the circumferential region of the body bounded by the clavicles and the base of the skull

Guidelines:

- A. If the neck injury is associated with any of the following conditions, then the patient should be taken immediately to the operating room
 - a. Shock
 - b. Active hemorrhage
 - c. Expanding hematoma
 - d. Need for surgical airway
 - e. Obvious tracheal injury
- B. For other stable neck injuries, a determination should be made as to whether the platysma has been penetrated.
 - a. Slash wounds can easily be examined to determine this
 - b. For puncture wounds that seem superficial, the wound can be anesthetized and enlarged for a direct visual observation to determine if the platysma is intact
 - i. If the platysma is intact, then irrigate and close the wound if possible
- C. If the platysma has been violated, then classify the wound as
 - a. Zone I: below cricoid cartilage
 - b. Zone II: between cricoid and angle of the mandible
 - c. Zone III: above the angle of the mandible

D. For Zone I Injuries

- a. Obtain a chest x-ray to determine the presence of chest injury
- b. Obtain an angiogram, including the aortic arch and the great vessels
- c. Obtain an esophagram
- d. Obtain or perform bronchoscopy
- e. Treat on the basis of findings

E. For Zone II Injury

- a. Use clinical findings to classify as low probability of vascular and aerodigestive injury or high probability of vascular and aerodigestive injury
 - i. For high probability injuries (GSW, swelling, path crossing midline)
 1. If the injury is a gunshot wound, obtain an angiogram
 2. Prophylaxis with antibiotics
 3. Take to the operating room for neck exploration
 - ii. For low probability injuries (stab wounds, minimal swelling, lateral, posterior)
 1. Obtain angiogram
 2. Obtain esophagram
 3. Perform laryngoscopy and bronchoscopy if indicated (e.g. air in tissues or subcutaneous emphysema)
 4. Treat based on findings

F. For Zone III Injury

- a. Obtain angiogram
- b. Obtain or perform direct pharyngoscopy and laryngoscopy
- c. Treat based on findings

G. For all penetrating neck injuries that have violated oral mucosa, treat with antibiotics

- a. Usually penicillin or penicillin/aminoglycoside

References:

- Advanced Trauma Life Support, American College of Surgeons, 10th Edition
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- Kozar R, Moore F, Moore E, et al. (2013). Western Trauma Association Critical Decisions in Trauma: Penetrating Neck Trauma. Journal of Trauma Acute Care Surg 75, 936-940. DOI: 10.1097/TA.0B013E31829E10E3.
- Diaz J, (2022) Surgical Exploration for Severe Neck Trauma. UpToDate <https://www.uptodate.com/contents/surgical-exploration-for-severe-neck-trauma>