

Trauma Department Practice Manual

TITLE: Penetrating Neck Injury

EFFECTIVE: April 1, 2012

PURPOSE: This is a clinical practice guideline for the initial evaluation of penetrating neck injuries.

I. Scope

Trauma service, Division of Otolaryngology, Department of Radiology

This is a guideline only. This does not constitute a standard of care or hospital policy. Clinicians can deviate from this guideline when clinically appropriate but must document a reason for doing so.

II. Background

- A. Anterior penetrating neck injuries are defined as injuries that violate the platysma muscle
- B. Up to 20% of visceral injuries following anterior neck penetrating injury are clinically occult. Physical exam alone is inadequate for determining the presence of visceral neck injury following penetrating injury.
- C. The gold standard for the diagnosis of neck visceral injury remains operative exploration. Operative exploration is warranted in instances where: injury cannot be definitively ruled-out using imaging and other non-invasive techniques, the patient manifests hard signs of injury (see below), or the patient is too hemodynamically unstable to allow for non-invasive or radiographic assessment for injury.
 1. Hard signs of injury include, but are not limited to:
 - a) Vascular: overt hemorrhage, expanding hematoma, bruit, thrill, signs of acute stroke
 - b) Airway: stridor, subcutaneous emphysema of the neck, bubbling through an open neck wound, pneumomediastinum, hoarseness
 - c) Esophageal: pneumomediastinum, sepsis that cannot be accounted for via another mechanism, subcutaneous emphysema, dysphagia, odynophagia
 2. Operative neck exploration should always be performed under general anesthesia and in the operating room.
 3. Operative neck exploration can be performed by either the attending trauma surgeon or the attending otolaryngologist
- D. Patients with a penetrating neck injury who do not have hard signs of injury as detailed in section C.1. above, may be candidates for non-invasive/radiographic assessment of injury
 1. Following a gunshot wound, the purpose of a CT scan is to determine the *trajectory* of injury rather than the actual presence of injury. If the

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trajectory potentially involves the vascular sheath, skull base, mediastinum, esophagus or trachea, both an angiographic evaluation (including CTA) as well as endoscopic evaluation is needed to exclude injury to these vital structures.

2. Caution is needed in interpreting radiographic studies following stab wounds. These low-energy wounds do not allow for reliable assessment of trajectory and injured structures using CT scan.
3. Video-endoscopic evaluation of penetrating injury, particularly stab wounds, may be warranted to exclude injury to the aerodigestive tract.
4. Whereas rigid bronchoscopy and nasopharyngeal laryngoscopy are within the skill set of otolaryngology, flexible bronchoscopy and esophagoscopy can be performed by either the trauma surgeon or otolaryngologist.

III. Procedures

A. Radiographic Modalities

1. CT scanning can be used to evaluate if the trajectory of injury potentially involves the aerodigestive tract
2. CT angiography can be used to determine if injury involves the carotid or vertebral arteries. However, the gold standard for the diagnosis of vascular injury remains angiography.
 - a. Duplex ultrasound is not recommended for the evaluation of vascular injury
 - b. When indicated as a screening test, angiography (including CTA) should be performed as soon as possible
3. Either esophagoscopy or esophagography is required in instances where esophageal injury is possible based on the trajectory of injury.
 - a. Esophagography loses sensitivity in the hypopharynx and proximal portion of the esophagus. At the trauma or otolaryngologist surgeon's discretion, patients who have a trajectory of injury that potentially involves the proximal esophagus should undergo an esophagoscopy when they are stable to rule out esophageal injury.
 - b. When indicated, esophagography and/or esophagoscopy must be performed within 24 hours of arrival to the trauma center

B. Video and endoscopic Modalities

1. The need for endoscopic evaluation of the aerodigestive tract can be obviated with a CT scan which clearly demonstrates that the trajectory of injury is well away from the esophagus and trachea. However, as noted above, caution is advised when evaluating the tract of stab injuries.
2. Esophagoscopy may be used in conjunction with or in lieu of esophagography in instances where injury cannot be ruled-out using CT scan alone.
 - a. Flexible esophagoscopy can be used to assess the mid and distal esophagus but lacks sufficient sensitivity to evaluate the hypopharynx and proximal esophagus. Flexible esophagoscopy can be performed by either the trauma or otolaryngology service.

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- b. Rigid esophagoscopy is required to evaluate the proximal esophagus. This procedure can only be performed by the otolaryngology service.
 - c. When indicated, esophagoscopy should be performed as soon as possible and always within 12 hours of arrival to the trauma center.
3. Nasolaryngoscopy can used to evaluate the upper aerodigestive tract (nasopharynx, oropharynx, hypopharynx, and larynx) including vocal cord function in the non-intubated patient. This procedure can only be performed by the otolaryngology service.
4. Bronchoscopy is needed to evaluate the trachea and proximal airways. This procedure should be performed by the otolaryngology service. However, a flexible bronchoscopy through an endotracheal tube is inadequate to exclude injury to the proximal trachea.

REFERENCE: EAST Guidelines for Penetrating Neck Injury.

<http://www.east.org/Content/documents/practicemanagementguidelines/neck-penetrating-tra.pdf>. Accessed February 27, 2012.

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Date

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