

Answers to Medical Quiz

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- A.1.** Multiple stab wounds of the anterior neck, as an attempt of suicide mainly involving Zone II, no active bleeding.
- A.2.** Extensive surgical emphysema was seen in deep neck spaces of the neck bilaterally.
- A.3.** Primary survey
- Airway and cervical spine protection
 - Breathing
 - Circulation and perfusion
 - Disability
 - Exposure
 - Adjuncts to primary survey

Secondary survey

- History/full physical examination
- Further investigations
- Full documentation¹

The patient has sustained penetrating injuries to the trachea at the cricotracheal junction, between the first and second tracheal rings and superficial injuries to the surrounding soft tissues and musculature.

The trachea was intubated through the wound between the first and second tracheal ring; the surrounding injuries were sutured with adequate hemostasis.

The patient had uneventful recovery, but had unilateral vocal cord paralysis. Tracheostomy closure was achieved two weeks post trauma and she was transferred to the psychiatric hospital for further evaluation.

DISCUSSION

Penetrating airway injuries in the neck are relatively uncommon. Penetrating injuries of the neck involve the larynx in 5 to 15% of patients, it is associated with carotid artery or digestive tract injuries, and it is twice likely than airway injuries. The prevailing site of tracheal transection is the junction of the cricoid with the trachea because the connective tissues in this area are weak².

Penetration neck injuries, like any trauma may be classified as intentional or unintentional. The objects causing these injuries can be divided into stabbing instruments (knives, cutting instruments, puncturing object) and shooting instruments (missiles, projectiles)³.

The neck may be divided into 3 zones using anatomical landmarks. Each zone has a group of vital structures, which could be injured and might determine the kind of trauma management:

Zone I: The horizontal area between the clavicle/suprasternal notch and the cricoid cartilage.

Zone II: The area between the cricoid cartilage and the angle of the mandible.

Zone III: The area that lies between the angle of the mandible and the base of the skull⁴.

Laryngotracheal Injuries Classified into:

Group 1: Minor endolaryngeal hematoma, edema or laceration without detectable fracture.

Group 2: Edema, hematoma minor mucosal disruption without exposed cartilage and non-displaced fractures noted on CT scan.

Group 3: Massive edema, mucosal disruption, displaced fractures, exposed cartilage and/or cord immobilization.

Group 4: The same as group 3 with the addition of 2 or more fracture lines, skeletal instability or significant anterior commissure trauma.

Group 5: Complete laryngotracheal separation⁵.

Any patient with a history of trauma to the central compartment of the neck should be considered to have a potential airway injury until proven otherwise.

The presenting symptoms of patient with laryngotracheal trauma include agitation and difficulty of breathing due to impending loss of airway, hoarseness, dysphonia/aphonia, and hemoptysis.

Physical examination may reveal air sucking in and out of the wound exposed laryngeal cartilage and subcutaneous emphysema, there are excellent diagnostic tools.

In the awake, stable, non-intubated patient, chest and neck x-rays may show air in the soft tissues of the neck or retropharyngeal space, deviation of the trachea or fracture of the hyoid bone. Flexible fiberoptic laryngoscopy is very helpful in assessing vocal folds, arytenoid cartilage position, diagnosing mucosal injuries and hematomas. In the intubated patient, computed tomography has been the diagnostic procedure of choice for its ability to detect fractures of the laryngeal framework and to stratify patients into operative versus non-operative management.

The most fundamental intervention in patients with laryngotracheal trauma is airway establishment, whether achieved trans-oral, trans-nasal, or trans-cutaneous, either surgically or through the wound.

Over the last four decades controversy, had continued to exist over the issue of intubation versus surgical airway in patients with penetrating neck trauma.

Patients in groups 1 and 2 can be safely observed for 24 hours. Patients with stable airways should be assessed at routine intervals, as edema and occult hematoma can cause supraglottic, glottic or subglottic airway compromise. Steroids were recommended to minimize airway edema, with the addition of anti-reflux medications.

In patients with mucosal lacerations, exposed cartilage, displaced fractures, or an unstable laryngeal cartilaginous skeleton, surgical intervention is required and can be accomplished through various techniques.

Consensus from several outcome-based studies showed improved voice quality and airway patency with early repair, most studies recommend intervention within 24 hours.

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