Case Report: Endoscopic Management of Penetrating Laryngeal Trauma

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ABSTRACT

Isolated laryngotracheal trauma is a rare clinical scenario. Penetrating laryngeal trauma is usually treated via open surgical techniques. We present a case of a patient who sustained a gunshot wound through the larynx with significant mucosal destruction from the blast injury who was managed completely endoscopically with an excellent clinical outcome.

INTRODUCTION

- External trauma to the laryngotracheal complex is rare
- Accounts for <1% of trauma cases, 1/30,000 ED visits per year in the United States
- Blunt penetrating trauma is more common than penetrating, however penetrating laryngeal trauma is increasing
- Injury to the aerodigestive tract occurs in 5–15% of penetrating neck traumas
- Patients with massive edema, mucosal disruption, exposed cartilage, vocal fold immobility, or displaced laryngeal cartilage require surgical intervention
- Penetrating laryngeal trauma caused by gunshot results in blast injury and cartilage framework fractures
- Usually requires open thyrotoomy
- We present a case of a patient who sustained a gunshot wound to the neck, resulting in blast injury, who was managed with endoscopic debridement and laryngeal stent

CASE REPORT

- A 25 year old male presented to the Temple University Hospital Emergency Department after sustaining a gunshot wound to the left neck
- He was orotracheally intubated in the trauma bay
- CT angiogram of the neck demonstrated extravasation from the right external carotid artery and its proximal branches
- He was taken emergently to the operating room (OR) by the Trauma service for neck exploration and control of hemorrhage
- Otolaryngology was consulted intraoperatively
- Direct laryngoscopy identified diffuse edema and ecchymosis of the supraglottic structures obscuring visualization of the vocal folds
- 48 hours later, he was taken to the OR by Otolaryngology for tracheotomy and laryngeal cartilage repair
- Microlaryngoscopy revealed extensive left sided supraglottic devitalized tissue involving the arytenoid, false vocal fold and ventricle
- Devitalized tissue was removed with the laryngeal microdebrider TricuT® blade (Medtronic Inc., Minneapolis, MN) until healthy appearing tissue was seen
- A soft endolaryngeal stent was fashioned from a sterile glove finger filled with Vaseline gauze was placed endoscopically
- He returned to the OR 7 days later for stent removal at which time marked improvement in supraglottic edema and a patent glottic airway was seen
- He was discharged home with his tracheotomy in place
- He returned to the outpatient clinic one month after endoscopic repair and was using a Passy Muir valve without issues
- On flexible laryngoscopy, his supraglottic and glottic airway was patent and his true vocal fold mobility was normal
- He was decannulated 6 weeks after his initial injury

DISCUSSION

- In blast injuries, the severity of the injury is directly related to the kinetic energy conveyed by the missile onto the laryngeal tissue
- Generally, civilian gunshot wounds are lower-velocity, though high-velocity handguns do contribute to civilian crime
- We describe the case of a patient who presented to our institution after sustaining a penetrating zone II neck trauma resulting in blast injury to the endolarynx
- The primary supraglottic location of the injury and the relative sparing of the vocal folds lent itself well to endoscopic treatment and his excellent voice and airway outcome
- The significant neck edema and extensive vascular repair required made neck exploration and open treatment more challenging and potential risky
- This technique may be applicable for use in other patients who sustain blast injury to the neck both in civilian and military environments, and should be in the toolbox of otolaryngologists

CONCLUSIONS

Endoscopic management of endolaryngeal injury from penetrating laryngeal trauma is a feasible option in select patients with significant mucosal destruction resulting from blast injury to the neck

REFERENCES