OBJECTIVES: External trauma to the larynx can threaten not only life but also the quality of life. Laryngeal fracture patients can present with a spectrum of clinical findings ranging from normal to airway collapse and death. We will therefore examine and emphasize clinical presentations, algorithms for correct diagnosis and acute airway management, radiologic/physical exam findings, and demonstrate the appropriate surgical approach for optimum clinical outcome in cases of blunt and penetrating laryngeal injury. Herein we present one of the largest series of management of laryngeal and tracheal fractures in the literature from a tertiary care level 1 trauma center.

STUDY DESIGN: A retrospective chart review from 1998-2008. METHODS: A retrospective chart analysis of patients presenting to the otolaryngology service. RESULTS: Our series consisted of 12 males and 1 female with a mean age of 29.9 years presenting with laryngeal fractures caused by blunt (n=11) or penetrating (n=2) trauma. One patient presented with complete laryngotracheal separation which was successfully managed by immediate tracheostomy and early surgical intervention. The other 12 patients had a combination of conservative (n=6) and surgical (n=7) management. All patients who required a tracheostomy (n=7) were de-cannulated.

METHODS: One of the most challenging problems in treating laryngeal injuries is the heterogeneity with which they present and the array of techniques with which they can be treated. Management may include medical and/or surgical intervention depending on the status of the airway, and the amount of cartilaginous displacement (14). We describe an algorithm for correct diagnosis of laryngeal injury and acute airway management based on physical and radiologic exam findings. A patient presenting with laryngeal injury may not be intubated upon arrival. If stable, proceed to imaging modalities such as CT scan to determine the presence or absence of laryngeal fractures. Presence of laryngeal fracture can be further divided into displaced versus non-displaced fracture patterns. Displaced fractures will be taken to the OR for open reduction and internal fixation (ORIF) of the larynx with trachaeostomy placement (ideally while the patient is awake). Post-operatively, the patient can be decannulated once the edema subsides (generally 2-3 weeks) with voice treatment as needed. Non-displaced fractures can be managed conservatively. In our report, patients presented with diaphoresis, stridor, hemoptysis, anterior neck pain, neck hematoma, edema, and dysphagia etc. Penetrating injuries are more likely to present with subcutaneous crepitus, respiratory distress, shock or cardiac arrest when compared with blunt neck injury (13). However, many patients are asymptomatic at presentation through the initial 24 to 48 hours (13). These findings should not underscore the need for a heightened index of suspicion in establishing a diagnosis as the force of the injury can cause significant soft tissue and cartilaginous disruption with minimal external signs of laryngeal trauma (14). Computed tomography (CT) of the cervical spine provides the most complete radiographic assessment of the laryngeal framework and its findings assist in management decisions by helping to exclude injuries requiring surgical intervention. CT angiogram allows for identification of vascular injury and violation of the mucosa (7). Conservative treatment includes delivery of humidified air, voice rest, antibiotics, and steroids (11). Continued reassessment is essential at every stage of hospital care, beginning in the emergency department, until the patient’s safety is assured (6).

CONCLUSIONS: Early suspicion and diagnosis of acute laryngeal and tracheal injuries are crucial. If the airway must be secured via emergent tracheostomy when needed, CT can play a central role in diagnosis. Laryngotracheal injuries must be individually evaluated and subjected to appropriate therapy. Proper restoration of the laryngeal framework with appropriately timed open reduction and internal fixation is critical for optimal recovery of the airway, voice, and swallowing. Although experience in managing laryngeal trauma is lacking due to the rarity of this injury, early identification and management of this condition prevents morbidity-long-term complications (11).

References