Latent Safety Defect Contributing to Vocal Cord Paralysis

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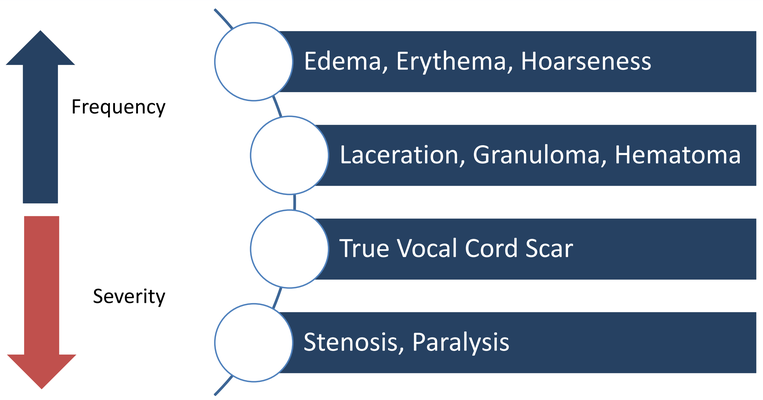
Background

Rapid sequence intubations are vital intervention towards stabilizing traumatic injury. ***Incorrect size selection of Endotracheal Tube (ETT) can lead to complications such as Glottic Stenosis and Vocal Cord Paralysis (1-7).*** Complications are identified and tracked as part of a Trauma Center's Performance Improvement Process (PIP). During the primary review process at our Level-1 Trauma Center, five patients were found to have vocal cord paralysis post extubation in a 4-month period

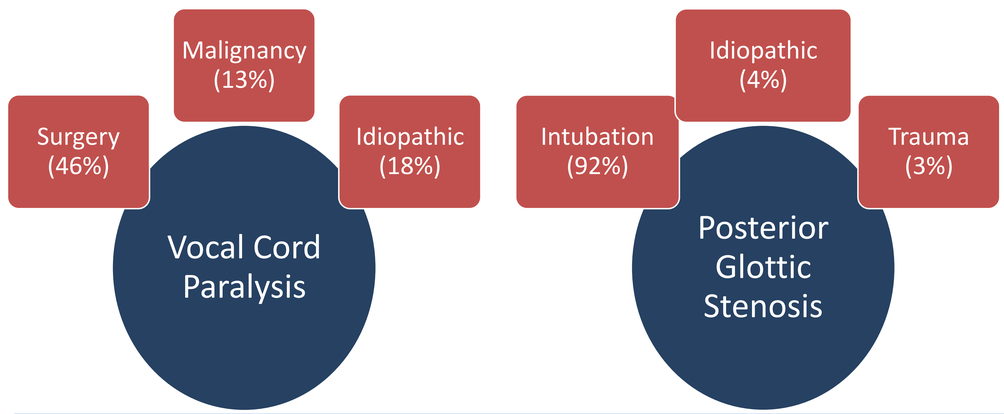
Purpose (10,11)

To present complications and analyze risk factors associated with vocal cord paralysis to multidisciplinary trauma committee to determine strategies to mitigate risk for future complications

Risk Factors of Incorrect Sizing [2,4]



Complications Contributing to Error (10-11)



Implications

A simple method of eliminating #8 ETT tubes from airway boxes in Adult Emergency Department can reduce one of factors associated with laryngeal injury from intubation post-extubation.

The identification and implementation of this project originated from following the trauma performance improvement process, inviting stakeholders, and collaborating on the most effective way to reduce harm.

Methods

Patients identified by Trauma PI coordinator during primary review

During secondary review by Trauma Medical Director and Otolaryngology (OTO), confirmed complication related to sizing

Invited OTO to multidisciplinary Trauma PI meeting for education to Trauma Resuscitation team (ED/Trauma)

After education, ED identified a latent safety defect in current airway process and intervention recommended

Feb 2022 – Intervention Implemented to Remove 8.0 ETT from Airway Boxes

Results

Trauma patients seen by the Adult Trauma Service, as well as those identified as meeting trauma registry inclusion criteria, are included into state trauma registry. Those patients have an associated trauma numbers that is entered into the Electronic Medical Record (EMR).

To determine the size and type of airway equipment used, an EMR report was generated looking at all intubations in the emergency department using documentation of "Airway Type" – which designates the size and type of equipment used during intubation.

The inclusion of results were a combination of an identified trauma patient (trauma number) and an airway administered in the report (EMR Report). Numerator of data was a count of size 8.0 ETT airway and denominator was total airways performed in the trauma bay.

Pre-intervention data was reviewed during the months the complications were observed to determine extent of incidence (June-Aug 2021). Post-intervention data (Table 1) was surveyed during the same seasonal timeframe (June-Aug) and 4-months post intervention (Feb 2022).

Pre-Intervention June-Aug 2021	Post-Intervention June-Aug 2022
27.5% 11/40 intubations	0% 0/28 intubations

Table 1. Incidence of Size 8.0 ETT during trauma resuscitation

References