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Room Room 245

**Airway Injuries Associated with General Anesthesia: A Closed Claims Update**

Joseph C. Herring, B.S., Karen L. Posner, Ph.D., Karen B. Domino, M.D., M.P.H.  
University of Washington, Bothell, Washington, United States

**BACKGROUND:**

Airway injuries during general anesthesia are a significant source of liability for anesthesiologists and a well-known source of morbidity for patients.<sup>1</sup> Injuries to the larynx represented 33% of airway injury claims, and perforation of the pharynx or esophagus 23%.<sup>1</sup> The current study describes airway injuries from 2000-2011 with comparison to the previously published report.

**METHODS:** Inclusion criteria were injuries to the airway or esophagus (airway injury) associated with general anesthesia in 1980-2011 from the Anesthesia Closed Claims Project Database of 10,093 malpractice claims. Sites of airway injury were classified as previously described.<sup>1</sup> Perforations of the pharynx or esophagus were identified from claim narratives. Difficult intubation was identified by the on-site Closed Claims reviewer. Claims for airway injuries that occurred in 2000-2011 (n=116) were compared to previously published results (n=266) by Z-test using OpenEpi<sup>2</sup> with  $p < 0.05$  for statistical significance.

**RESULTS:**

Airway injuries continued to represent 9-11% of general anesthesia malpractice claims in each decade from 1980-2011. The esophagus was the most common site of injury in 2000-2011 (33% vs. 18%,  $p < 0.01$ , Figure), with perforations in nearly all of the recent claims (95%). Pharyngeal injuries accounted for 25% of airway injuries in 2000-2011, with perforations in 59%. Altogether, perforations of the pharynx or esophagus represented 46% of airway injury claims in 2000-2011 (vs. 23%,  $p < 0.001$ ), with 17% of these resulting in death. Greater than half of perforations were associated with equipment (57%) and the remainder with difficult intubation (43%). Injuries to the larynx declined but still represented 22% of airway injuries in 2000-2011 (vs. 33%,  $p = 0.01$ ). Claims for temporomandibular joint injury have decreased to 4% of airway injury claims (vs. 10%,  $p = 0.04$ ). Difficult intubation continued to be associated with one third of airway injury claims (32% vs 39%,  $p = 0.12$ ). There was a trend toward more severe outcomes in 2000-2011 (9% vs. 5%,  $p = 0.03$ ), while mortality remained constant at 10% (vs. 8%,  $p = 0.35$ ). Three fourths of airway deaths were perforations of the posterior pharynx or esophagus.

**CONCLUSIONS:**

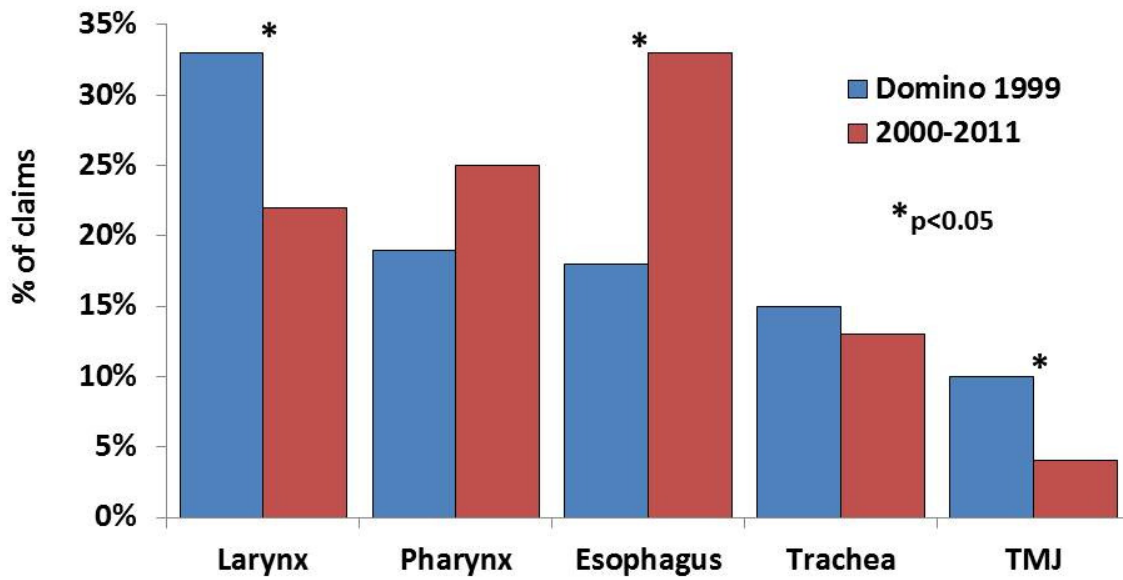
Pharyngeal and esophageal perforations continue to represent a significant source of patient morbidity and mortality, as well as liability for anesthesiologists. Esophageal equipment such as dilators for gastric surgery or transesophageal echo probes have been identified as causes of recent esophageal perforations,<sup>3</sup> although difficult intubation continues to play a role in pharyngeal and esophageal perforations. All providers associated with the perioperative period should be aware of the early signs and symptoms of perforation and respond appropriately, particularly in patients exposed to esophageal equipment or difficult intubation. Further management strategies are needed to improve patient safety by preventing perforation and facilitating prompt diagnosis.

**References:**

1. Domino KB, *Anesthesiology* 1999, 1703
2. <http://www.openepi.com/v37/Proportion/Proportion.htm> Accessed 4-7-14
3. Esmail S, *Anesthesiology* 2012, A1081

**Figure 1**

## Airway Injuries Associated with General Anesthesia



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