

Citation

Domino KB: Closed Malpractice Claims for Airway Trauma During Anesthesia. *ASA Newsletter* 62(6):10-11, 1998.

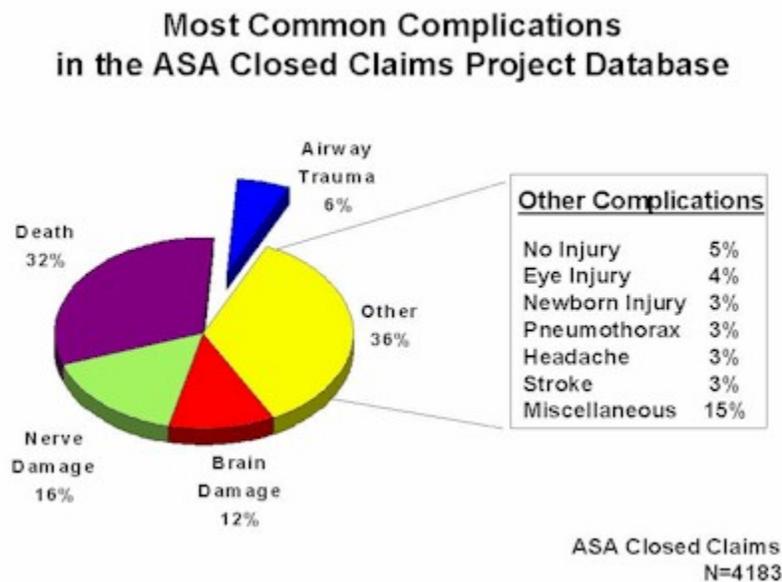
Full Text

As experts in airway management, anesthesiologists are at risk for liability from patient airway trauma occurring during endotracheal intubation. In order to define the risk of airway trauma for the patient and liability for the anesthesiologist, we examined the American Society of Anesthesiologists (ASA) Closed Claims Project database of closed anesthesia malpractice claims. Dental claims are excluded from this database.

Airway Trauma Claims

Claims for airway trauma form a major subgroup of anesthesia malpractice claims, ranking in frequency behind the "big three" complications of death, brain damage and nerve damage [Figure 1]. Approximately 6 percent (244 claims) out of 4,183 claims in the database were for airway trauma. Compared to 2,714 other claims involving general anesthesia, a higher proportion of airway trauma claims involved females ($P < 0.001$) and outpatients ($P = 0.01$) and a lower proportion involved children ($P < 0.001$) [Table 1]. Difficult intubation was a factor in 38 percent (93/244 claims) of airway trauma claims, a higher proportion than in other general anesthesia claims (234/2,174, $P < 0.001$) [Table 1].

Figure 1



Most common complications in the ASA Closed Claims Project database. Some claims involve multiple complications.

Table 1

Patient Characteristics Associated With Claims for Airway Trauma Compared to Other General Anesthesia Claims				
Type of Claim	Female Gender (% of type)	Pediatrics (% of type)	Outpatients (% of type)	Difficult Intubation (% of type)
Airway Trauma (n = 244)	164 (67%)*	11 (5%)*	40 (25%)*	93 (38%)*
Other General Anesthesia Claims (n = 2,714)	1,505 (55%)	362 (14%)	283 (17%)	234 (9%)

* P <0.01 compared to other general anesthesia claims

The severity of injury and payment to the plaintiff was generally less for claims for airway trauma than for other injuries during general anesthesia [Table 2]. There was a lower proportion of death than for other general anesthesia claims (9 percent versus 40 percent of the other general anesthesia claims, P <0.001).

Table 2

Severe Outcome, Standard of Care, and Frequency and Amount of Payment						
Claims	Severe Outcome		Standard of Care**		Payment^	
	Brain Damage	Death	Appropriate	Sub-standard	Yes	Median Amount
Airway Trauma (n = 244)	0*	21 (9%)*	166 (68%)*	43 (18%)*	111 (51%)*	\$25,000*
Other General Anesthesia Claims (n = 2,714)	397 (15%)	1,099 (40%)	1,070 (39%)	1,253 (46%)	1,634 (66%)	\$125,000

* P <0.001 compared to general anesthesia claims. Payment distribution analyzed by Kolmogorov-Smirnov test.
 ** These data represent claims where this could be judged by the reviewers. The remainder were impossible to judge.
 ^ The percentage is based on claims without missing data.

The standard of care was also more often judged by reviewers to be appropriate (P <0.001). Airway claims were characterized by a lower frequency of payment (P <0.001) and a lower payment to the plaintiff (P = 0.001) [Table 2], perhaps reflecting the fact that these cases exhibit a higher standard of care and a lower severity of injury than other injuries occurring during general anesthesia. Median payment to the plaintiff was \$25,000 for airway trauma claims compared to \$125,000 for other injuries during general anesthesia.

Specific Sites of Injury and Association With Difficult Intubation

The most frequent sites of injury were the larynx, pharynx, esophagus and the trachea [Table 3]. Claims were further classified as to whether or not they were associated with difficult intubation [Table 3]. Most cases (81 percent) of laryngeal injury were associated with nondifficult (routine) intubation. None of the temporomandibular joint injuries was associated with difficult intubation. Difficult intubation was more likely a factor in injuries to the esophagus, pharynx, trachea and multiple sites. Over half of injuries to the esophagus, trachea and multiple sites occurred during difficult intubation.

Laryngeal Injuries

Approximately half of the 83 claims for laryngeal injuries involved one of three specific types of injury: vocal cord paralysis (31 percent), granuloma (16 percent) and arytenoid dislocation (8 percent). The sites of laryngeal injury were similar in both the difficult and routine intubation groups. The site of injury was not specified in one-fourth of claims for laryngeal trauma. No injury was documented or the injury was related to patient condition in one-fourth of the claims. Most injuries resulted from short-term endotracheal intubation as prolonged endotracheal intubation occurred in only 5 percent of the claims. The one death in the laryngeal injury group was attributable to patient condition and was not related to the laryngeal trauma [Table 3]. The standard of care was evaluated as being appropriate in the vast majority (83 percent) of claims for laryngeal injury.

Nasal Injuries

Half of the 12 claims for nasal injuries arose from nasal tracheal intubation. The remaining injuries were related to a nasal gastric tube (5 cases) or an anesthesia mask (1 case). The most frequent injuries were nasal bleeding (6 claims) and nasal lesions (3 claims). None of the patients with nasal injury died [Table 3]. The standard of care was evaluated as appropriate in most (83 percent) claims for these injuries.

Tracheal Injuries

Sixty percent (20/34) of claims for tracheal injury were due to injury from the creation of a surgical tracheostomy. Most of these tracheostomies were performed for the purpose of emergency airway management. The patient subsequently filed a claim that reflected dissatisfaction with one or more of the expected sequelae of emergency airway access (e.g., prolonged hospitalization, discomfort, and disfiguring scars). The remaining 40 percent of tracheal injuries involved tracheal lacerations that occurred during endotracheal intubation. Fifteen percent (5/34) of tracheal injuries resulted in death [Table 3]. Four patients with tracheal lacerations died due to hemodynamic instability and difficult ventilation associated with massive subcutaneous and mediastinal emphysema and tension pneumothorax. One patient died from a complication from a surgical tracheostomy. The standard of care was evaluated as appropriate in 53 percent of the claims for tracheal injury.

Pharyngeal and Esophageal Injuries

The majority of pharyngeal (n = 41) and esophageal (n = 39) injuries were associated with laryngoscopy and attempted passage of an endotracheal tube. Nearly all esophageal injuries were due to instrumentation of the esophagus by either esophageal intubation (38 percent) or a nasogastric device (10 percent). Instrumentation of the airway also resulted in most

pharyngeal injuries, occurring with endotracheal intubation in 71 percent of claims and due to nasogastric devices in 13 percent of claims.

Injuries to the oropharynx and esophagus were more severe than injuries for most other sites of airway trauma. Esophageal and pharyngeal tears resulted in mediastinitis and retropharyngeal abscesses in 29 cases. There were three deaths in the pharyngeal injury group, one death related to the development of mediastinitis and two deaths related to overall patient condition [Table 3]. Of the nine deaths in the esophageal injury group, mediastinitis caused or contributed to seven (78 percent) deaths, while two were related to overall patient condition [Table 3]. A delay in diagnosis was evident in 62 percent of claims for mediastinitis and retropharyngeal abscesses and contributed to the severity of injury.

Table 3

Association of Death and Difficult Intubation With Site of Airway Injury (n = 244 claims)				
Site	Total (% of 244)	Death (% of site)	Routine Intubation (% of site)	Difficult Intubation (% of site)
Larynx	83 (34%)	1 (1%)	67 (81%)	16 (19%)
Esophagus	41 (17%)	9 (22%)*	14 (34%)*	27 (66%)*
Pharynx	39 (16%)	3 (8%)	22 (56%)*	17 (44%)*
Trachea	34 (14%)	5 (15%)	13 (38%)*	21 (62%)*
TMJ	24 (10%)	0 (0%)	24 (100%)*	0 (0%)*
Nose	12 (5%)	0 (0%)	9 (75%)	3 (25%)
Multiple Sites	11 (4%)	3 (27%)	2 (18%)*	9 (82%)*
* <i>P</i> < 0.05 compared to laryngeal injury				

The standard of care was evaluated as appropriate in 51 percent of esophageal injuries and 67 percent of pharyngeal injuries. Because of the high severity of injury, the payment for esophageal injuries (median payment \$165,000) was higher ($P < 0.001$) than for other airway injuries. Many patients had a sore throat or pain for several days prior to the development of a fever. The clinical implication is that patients in whom tracheal intubation has been difficult and involving esophageal intubation should be observed for or told to watch for development of signs and symptoms of a retropharyngeal abscess or mediastinitis. Surgeons should also be alerted to the possibility of such a complication after a difficult intubation so they can respond appropriately if the patient contacts them initially.

Temporomandibular Joint (TMJ) Injuries

The patient and litigation profile for TMJ injuries (n = 24) was different than for other airway injuries. TMJ injuries more often occurred in ASA 1-2 (100 percent), females (92 percent) younger than 60 years of age (96 percent) (P <0.001, compared to other airway injuries). TMJ injury was associated with routine endotracheal intubation in all cases. Pre-existing TMJ disease was documented in only 17 percent of the claims, although in the general population, the problem is most prevalent in females in the younger age group.¹

The standard of care was evaluated as appropriate in the majority of claims (79 percent). The frequency of payment was less than that for other types of airway trauma (21 percent versus 48 percent for other trauma, P = 0.03). The median payment when paid was \$7,000 compared to \$26,250 for other types of airway trauma (P = 0.03).

Conclusion

In summary, claims for airway trauma are frequent in the ASA Closed Claims Project database. Although most airway trauma claims involve a low severity of injury and low payment to the plaintiff, pharyngeal and esophageal injuries may result in death due to severe infection from mediastinitis.

Patients who have difficult intubation associated with esophageal intubation should be educated regarding the signs and symptoms of pharyngeal abscesses and mediastinitis. Delayed diagnosis of mediastinitis leading to high index of suspicion on the part of the anesthesiologist and surgeon may reduce the risk of severe complications.

Reference

1. LeResche L. Epidemiology of temporomandibular disorders: Implications for the investigation of etiologic factors. *Crit Rev Oral Biol Med.* 1997; 8:291-305.

Domino KB: Closed Malpractice Claims for Airway Trauma During Anesthesia. *ASA Newsletter* 62(6):10-11, 1998, is reprinted with permission of the [American Society of Anesthesiologists](#), 520 N. Northwest Highway, Park Ridge, Illinois 60068-2573.