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Häufigkeit von Komplikationen in der Anästhesie bei der Atemwegs-Sicherung

H. Theilen

Klinik für Anästhesiologie und Intensivtherapie
Universitätsklinikum Dresden
Fetscherstraße 74, 01307 Dresden

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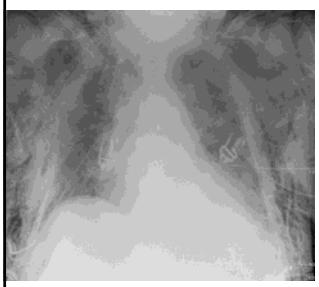
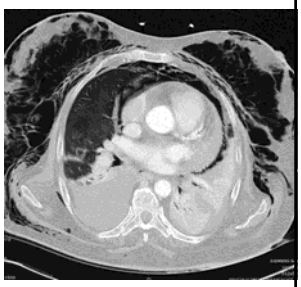
Das Intubationsdesaster





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Wie oft treten Probleme beim Atemwegsmanagement auf?

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Anesthesiology 2007; 106:675–80

Analysis of Deaths Related to Anesthesia in the Period 1996–2004 from Closed Claims Registered by the Danish Patient Insurance Association

Lars Dahlgaard Hove, M.D., Jacob Steinmetz, M.D.,† Jens Krogh Christoffersen, M.D.,‡ Ann Møller, M.D.,§ Jacob Nielsen, M.D.,§ Henrik Schmidt, M.D.‖*

Results: From 1996 to 2004, 27,971 claims were made by the Danish Patient Insurance Association covering all medical specialties, of which 1,256 files (4.5%) were related to anesthesia. In 24 cases, the patient's death was considered to result from the anesthetic procedure: 4 deaths were related to airway management, 2 to ventilation management, 4 to central venous catheter placement, 4 as a result of medication errors, 4 from infusion pump problems, and 4 after complications from regional blockades. Severe hemorrhage caused 1 death, and in 1 case the cause was uncertain.

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Anästhesiezwischenfälle
Atemwegsmanagement und Schäden in der Anästhesie – „closed claims“ der Norddeutschen Schlichtungsstelle

Walter Schaffartzik • Thomas Hachenberg • Johann Neu

Anästhesiol Intensivmed Notfallmed Schmerzther 2011; 46: 32–37

Tab. 1 Verteilung der Schäden in der Anästhesiologie, die der Norddeutschen Schlichtungsstelle gemeldet wurden [1].

Schäden in der Anästhesiologie	
intraoperative Wachheit	4,8 %
Lagerung	9,9 %
Gefäßzugänge	13,1 %
Regionalanästhesie	18,2 %
Atemwegsmanagement	23,9 %

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The airway: problems and predictions in 18,500 patients

D. Keith Rose MD FRCPC,*
Marsha M. Cohen MD FRCPC†‡§

CAN J ANAESTH 1994 / 41: 5 / pp 372–83

TABLE V Relationship of preoperative airway exam by method and outcome of tracheal intubation

	Direct laryngoscopy, (GA)¶							
	Easy		Awkward		Difficult		Alternative	
Preoperative airway examination (total n)	n	Rate (%)	n	Rate (%)	n	Rate (%)	n	Rate (%)
Normal (8953)	8523	95.2	164	1.8	113	1.3	58	0.6
Documentation incomplete (3153)	2967	94.1	58	1.8	53	1.7	13	0.4
Documentation missing (4596)	4326	94.1	71	1.5	48	1.0	46	1.0
↓MO only (93)	58	62.4*	8	8.6†	9	9.7‡	16	17.2§
↓Neck only (556)	418	75.1*	35	6.3†	18	3.2‡	74	13.3§
↓TM only (265)	194	73.2*	30	11.3†	28	10.6‡	7	2.6§
↓Vision hypopharynx (406)	332	81.8*	27	6.7†	21	5.2‡	15	3.7§
2 Abnormalities (409)	254	62.1*	42	10.3†	28	6.8‡	77	18.8§
≥3 Abnormalities (127)	57	44.9*	13	10.2†	8	6.3‡	47	37.0§
All (18558)	17129		448		326		353	

Pediatric Anesthesia 2004 14: 158–166

Perioperative anaesthetic morbidity in children: a database of 24 165 anaesthetics over a 30-month period

ISABELLE MURAT MD PhD, ISABELLE CONSTANT MD PhD AND HÉLÈNE MAUD'HUY MD
Service d'Anesthésie-Réanimation, Hôpital d'enfants Armand Trousseau, Assistance Publique-Hôpitaux de Paris, Paris cedex, France

Table 2
Details of respiratory adverse events observed during anaesthesia and in postanaesthesia care unit (PACU) in different age groups

	Intraoperative			*PACU*		
Respiratory event	*0–1 year*	*1–7 years*	*8–16 years*	*0–1 years*	*1–7 years*	*8–16 years*
No. of anaesthetics	3681	12 495	6867	3681	12 495	6867
Bronchospasm	19	25	4	4	11	5
Hypercarbia	8	10	1	5	5	8
Hypoxaemia	56	90	24	21	34	15
Aspiration	2	4	4	1	5	3
Unanticipated difficult intubation	9	7	6	–	–	–
Oesophageal intubation	3	2	1	–	–	–
Endobronchial intubation	6	3	1	3	5	7
Laryngospasm	17	31	9	1	6	4
Pulmonary oedema	0	0	2	1	9	7
Pneumothorax	0	2	0	1	7	6
Reintubation	13	17	7	5	11	9
Dental trauma	–	–	–	0	3	1
Respiratory depression	–	–	–	12	17	10
Total	133	191	59	54	113	75
Rate per 1000 anaesthetics	36.1	15.3	8.6	14.7	9.0	10.9

Konsequenzen des schwierigen Atemwegs

Anaesthesia, 2001, 56, pages 1141–1153

Mortality associated with anaesthesia: a qualitative analysis to identify risk factors

M. S. Arbous,[1] D. E. Grobbee,[2] J. W. van Kleef,[3] J. J. de Lange,[4] H. H. A. J. M. Spoormans,[5] P. Touw,[6] F. M. Werner[7] and A. E. E. Meursing[8]

n = (863489 over 2 years, 811 died, 119 due to anesthesia, d.h. Inzidenz 1,4 / 100.000)

Table 4 Contributing factors for different aspects of anaesthetic management in 119 anaesthesia-related deaths. Values are number (proportion).*

	Overall contribution	Human failure	Inadequate communication	Lack of supervision	Inadequate care	Organisational factors
Cardiovascular management	62 (52%)	92 (77%)	30 (25%)	6 (5%)	19 (16%)	13 (11%)
Ventilatory management	12 (10%)	83 (70%)	36 (30%)	15 (13%)	20 (17%)	15 (13%)
Patient monitoring	12 (10%)	71 (60%)	30 (25%)	6 (5%)	18 (15%)	48 (40%)
Other anaesthetic management	57 (48%)	88 (74%)	30 (25%)	6 (5%)	23 (19%)	14 (12%)

*Totals exceed 100% because more than one factor occurred in individual patients.

(human failure contributed to 75% of all deaths)

Anaesthesia, 2001, 56, pages 1141–1153

Mortality associated with anaesthesia: a qualitative analysis to identify risk factors

M. S. Arbous,[1] D. E. Grobbee,[2] J. W. van Kleef,[3] J. J. de Lange,[4] H. H. A. J. M. Spoormans,[5] P. Touw,[6] F. M. Werner[7] and A. E. E. Meursing[8]

Table 6 Deficiencies in respiratory management occurring in 46 out of 119 anaesthesia-related deaths, according to phase of anaesthesia. Values are number (proportion out of 46).

	Pre-operative	Induction	Maintenance	Emergence	Recovery	Postoperative
Inadequate oxygenation	2 (1.7%)	6 (5.0%)	12 (10.1%)	3 (2.5%)	3 (2.5%)	3 (2.5%)
Failure of (re)intubation		4 (3.4%)	1 (1%)		0	0
Failure to maintain an airway		1 (1%)	1 (1%)		0	0
Bronchospasm		1 (1%)	2 (2%)	0	0	0
Aspiration of gastric contents		1 (1%)	1 (1%)	0	0	0
Respiratory failure		0	0	0	0	1 (1%)
Failure to start IPPV*		0	0	0	1 (1%)	0

*IPPV = intermittent positive pressure ventilation.

Anästhesiezwischenfälle
Atemwegsmanagement und Schäden in der Anästhesie – „closed claims“ der Norddeutschen Schlichtungsstelle

Walter Schaffartzik • Thomas Hachenberg • Johann Neu

Anästhesiol Intensivmed Notfallmed Schmerzther 2011; 46: 32–37

Häufigkeit der Schäden beim Atemwegsmanagement	
Ösophagus	3,8 %
Trachea	7,6 %
Aspiration	10,5 %
Larynx	25,7 %
Zahn	30,5 %

Risikofaktoren für tracheale Intubationsverletzungen

Iatrogen
- mehrere tracheale Intubationsversuche
- unerfahrener Anästhesist

Material
- nicht sachgerechte Benutzung von Intubationshilfen
- Cuffüberblähung
- Fehllage des Tubus in der Trachealschleimhaut
- nicht angemessene Tubusgröße
- Verschieben des geblockten Tubus in der Trachea

Patient
- Spontanbewegungen
- Husten
- Alter über 50 Jahre
- weibliches Geschlecht
- Adipositas

Anatomie
- COPD
- Wirkung von Steroiden auf die Trachealschleimhaut
- Tracheomalazie

Epistaxis During Nasotracheal Intubation: A Comparison of Nostril Sides

Takuro Sanuki, DDS, PhD, Motoko Hirokane, DDS, PhD,* and*

J Oral Maxillofac Surg 68:618-621, 2010

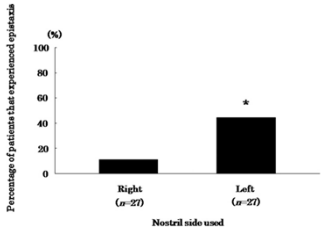

FIGURE 1. Incidence of epistaxis. Data represent percentages. *Asterisk* indicates a significant difference between the 2 nostril sides.

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Komplikationen bei endotrachealer Intubation:

Potenziell lebensbedrohlich

- Fehlintubation
- Cannot ventilate – cannot intubate
  (1:5000, 25% anesthesia-related death)
- Atemwegstraumata, insbes. Trachea- oder Oesophagusverletzungen
- Aspiration

Nicht lebensbedrohlich

- Halsschmerzen
- Stimmbandläsionen
- Zahnschäden
- Epistaxis oder Läsionen an den Choanen bei nasaler Intubation

(Materialprobleme)

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Begleitende Komplikationen durch endotracheale Intubation:

Potenziell lebensbedrohlich

- Kardiovaskuläre Nebenwirkungen (Hypertension, Dysrhythmie, etc.)
- ZNS-Nebenwirkungen (ICP-Erhöhung, auch durch Hypercarbie)
- allergische Nebenwirkungen (Latexallergie etc.)

Nicht lebensbedrohlich

- Erhöhung des intraokulären Drucks
- Kiefergelenksluxation

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Adverse Laryngeal Effects Following Short-term General Anesthesia

A Systematic Review

Elodie J. Mencès, MD; Jan W. Brunings, MD; Anbie E. W. Hamaekers, MD; Robert J. Stokroos, MD, PhD; Bernd Kremer, MD, PhD; Laura W. J. Baijens, MD

Arch Otolaryngol Head Neck Surg. 2012;138(3):257-264

Table 7. Lesions Due to Endotracheal Intubation or Laryngeal Mask Insertion

Type	Description
I	Vocal cord lesions impairing vibratory movement
A	Epithelial
	1. Inflammation
	2. Pigmentation
B	Lamina propria
	1. Reinke space edema
	2. Hematoma
	3. Acquired scar/laceration
C	Arytenoid
	Granuloma
II	Movement disorders of vocal cords
A	Neurologic: paralysis/paresis of laryngeal nerve(s)
B	Cricoarytenoid joint disorders (arytenoid luxation)

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Dental injury associated with anesthesia: a report of 161,687 anesthetics given over 14 years

Myrna C. Newland MD (Professor)[a,*], Sheila J. Ellis MD (Associate Professor)[a], K. Reed Peters MD (Professor)[a], Jean A. Simonson MD (Assistant Professor)[a], Timothy M. Durham DDS (Professor)[b], Fred A. Ullrich BA (Senior Specialist)[a], John H. Tinker MD (Professor and Chair)[a]

Journal of Clinical Anesthesia (2007) 19, 339–345

Table 4 Dental injury: discovery and type

Parameter	n = 78	%
Discovery of injury		
By provider	67	85.9
By patient	11	14.1
Location/time of discovery		
Immediately (in operating room)	53	67.9
In PACU	11	14.1
By patient, within 24 h	2	2.6
By patient, after 24 h	12	15.4
Classification of dental injury[a]	n=85	
Enamel fracture	25	32.1
Loosening/subluxation	18	23.1
Luxation	3	3.8
Avulsion	7	9.0
Crown fracture	6	7.7
Crown and root fracture	1	1.3
Missing tooth/teeth	8	10.3
Other injury	17	21.8

Data are presented as n (%).
[a] Totals more than 78 because of multiple injuries. Other injury may include damage to dental restorations, prosthetic crowns, fixed partial dentures, and dislodgement of veneers.

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Gender differences in risk factors for airway symptoms following tracheal intubation

M. Jaensson[1,2], A. Gupta[1] and U. G. Nilsson[1,2,3]
[1]Department of Anesthesiology and Intensive Care, Örebro University Hospital, Örebro, Sweden, [2]School of Health and Medical Sciences, Örebro University, Örebro, Sweden and [3]Centre of Health Care Sciences, Örebro University Hospital, Örebro, Sweden

Acta Anaesthesiol Scand 2012; **56**: 1306–1313

Table 5

Multivariate analysis of risk factors for post-operative sore throat (POST) and post-operative hoarseness (PH) in men and women.

Explanatory variables	Gender	Outcome	OR	95% CI	*P* value
Less than 3 months' work experience	Men	POST	3.8	1.7–8.3	0.001
Cuff pressure < 20 cm H_2O	Men	PH	0.5	0.3–0.9	0.036
Two or more laryngoscopies	Women	POST	2.6	1.2–5.6	0.012
ETT size 7.0	Women	POST	2.2	0.97–4.9	0.059
Oesophageal temperature probe intraoperatively	Women	PH	4.8	1.4–16.9	0.014
ETT size 7.0	Women	PH	2.9	1.1–7.7	0.024
Cuff pressure < 20 cm H_2O	Women	PH	1.8	1.0–3.1	0.038

OR, odds ratio; CI, confidence interval; ETT, endotracheal tube.

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BJA Advance Access published March 29, 2011

BJA

Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. Part 1: Anaesthesia

T. M. Cook[1*], N. Woodall[2], C. Frerk[3] and , on behalf of the Fourth National Audit Project

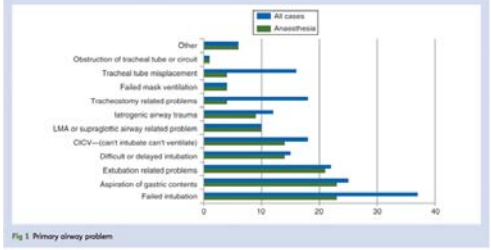

Fig 1 Primary airway problem

Anesthesiology
2000; 92:1229–36

Prediction of Difficult Mask Ventilation

Olivier Langeron, M.D., Eva Masso, M.D.,† Catherine Huraux, M.D.,‡ Michel Guggiari, M.D.,‡ André Bianchi, M.D.,‡ Pierre Coriat, M.D.,§ Bruno Riou, M.D., Ph.D.‖*

Table 2. Comparison of Patients (n = 1,502) with or without Difficult Mask Ventilation (DMV)

	No DMV (n = 1,427)	DMV (n = 75)	*P* value
Height (cm)	167 ± 10	168 ± 10	NS
Weight (kg)	68 ± 14	82 ± 20	<0.001
Body mass index (kg/m²)	24.5 ± 4.5	29.0 ± 6.8	<0.001
Age (yr)	50 ± 16	60 ± 15	<0.001
Sex (Male)	634 (44%)	37 (49%)	NS
Mallampati Class			
1	775 (54%)	24 (32%)	
2	466 (33%)	34 (45%)	0.02
3	140 (10%)	13 (17%)	
4	46 (3%)	4 (5%)	
Mouth opening (mm)	46 ± 9	46 ± 11	NS
Thyromental distance (mm)	89 ± 16	85 ± 13	0.002
Macroglossia	82 (6%)	13 (17%)	<0.001
Receding mandible	73 (5%)	3 (4%)	NS
Lack of teeth	137 (10%)	19 (25%)	<0.001
Beard	49 (3%)	9 (12%)	0.002
History of snoring	311 (22%)	34 (45%)	<0.001
Anticipated DMV	56 (4%)	13 (17%)	<0.001
Paralyzing agent use	672 (47%)	42 (56%)	NS

Data are mean ± SD or number (percent). NS = not significant.
Because of rounding, adding percentages may not provide a sum of 100%.

Table 1. Difficulties Encountered during Mask Ventilation in 75 Patients

Variable	n (%)
Important gas flow leak from the face mask	42 (56%)
Necessity to perform a two-handed mask ventilation technique	36 (48%)
Necessity to increase the gas flow above 15 l/min and to use oxygen flush valve more than twice	24 (32%)
No perceptible chest movement	18 (24%)
Sp_{O_2} < 92%	11 (15%)
Change of operator required	9 (12%)
One variable	38 (51%)
Two variables	21 (28%)
Three or more variables	16 (21%)

Effects of Muscle Relaxants on Mask Ventilation in Anesthetized Persons with Normal Upper Airway Anatomy

Anesthesiology 2012; 117:487–93

Aya Ikeda, M.D.,* Shiroh Isono, M.D.,† Yumi Sato, M.D.,‡ Hisanori Yogo, M.D.,‡ Jiro Sato, M.D.,§ Teruhiko Ishikawa, M.D.,† Takashi Nishino, M.D.‖

Table 2. Effects of Muscle Relaxants on Ventilatory Volume

	Control	Interval (*P* Value)	Paralysis (*P* Value)
Rocuronium Study (n = 14): Tidal Volume			
Nasal route (ml/kg)	1.9 ± 1.8	2.1 ± 2.1 (0.30)	1.9 ± 2.1 (0.92)
Oral route (ml/kg)	1.8 ± 1.3	1.8 ± 1.5 (0.96)	1.7 ± 1.7 (0.69)
Total airway (ml/kg)	3.8 ± 1.7	3.9 ± 2.2 (0.65)	3.7 ± 2.5 (0.83)
Succinylcholine Study (n = 17): Tidal Volume			
Nasal route (ml/kg)	2.7 ± 2.6	2.3 ± 2.0 (0.14)	3.1 ± 2.7 (0.04)
Oral route (ml/kg)	1.4 ± 1.1	2.1 ± 1.5 (0.002)	2.3 ± 2.1 (0.04)
Total airway (ml/kg)	4.2 ± 2.1	4.3 ± 1.7 (0.39)	5.4 ± 2.6 (0.02)

Control was mean tidal volumes of five successive breaths immediately before administration of the muscle relaxants; interval was mean tidal volumes of all breaths during the interval between the injection of the muscle relaxants and confirmation of complete paralysis after rocuronium injection or 60 s after succinylcholine injection; and paralysis was mean tidal volumes of five successive breaths at confirmation of complete paralysis after rocuronium injection or 60 s after succinylcholine injection. Values are mean ± SD. The values in the parentheses are the *P* values obtained by comparing to control conditions with paired Student *t* test.

The airway: problems and predictions in 18,500 patients

D. Keith Rose MD FRCPC,*
Marsha M. Cohen MD FRCPC†‡§

CAN J ANAESTH 1994 / 41: 5 / pp 372–83

TABLE I Anaesthesia and airway management – initial methods and failures* in 29,145 consecutive patients over a 27-month period

Initial technique/method	*Number of patients*	*% Total*	*Number of failures**	*% Failures*
Intubated using direct laryngoscopy, (GA)	18205	62.5	54	0.3
Intubated using alternative approach†	353	1.2	11	3.1
Laryngeal mask	634	2.2	30	4.7
Mask	3367	11.6	30	0.9
Endotracheal tube *in situ*	781	2.7	–	–
Regional technique	839	2.9	69	8.2
Neurolept analgesia	4966	17.0	32	0.6
Total patients	29145		226	0.8

*Required use of a different anaesthetic/intubation technique to manage the airway or case cancelled – for regional or neurolept anaesthesia another anaesthetic technique was required.
†Any method to intubate the trachea in a patient without general anaesthesia, and/or those involving fibreoptic, lightwand, retrograde placement and/or tracheostomy.

Airway Management in the Emergency Department: A One-Year Study of 610 Tracheal Intubations

MARCH 1998 31:3 ANNALS OF EMERGENCY MEDICINE

John C Sakles, MD
Erik G Laurin, MD
Aaron A Rantapaa, MD
Edward A Panacek, MD

Results: A total of 610 patients required airway control in the ED; 569 (93%) were intubated by emergency medicine residents or attending physicians. Rapid-sequence intubation (RSI) was used in 515 (84%). A total of 603 patients (98.9%) were successfully intubated; 7 patients could not be intubated and underwent cricothyrotomy. In 33 patients, inadvertent placement into the esophagus occurred; all such situations were rapidly recognized and corrected. Eight (24%) of the 33 esophageal intubations resulted in a reported immediate complication.

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Anesthesiology 2005; 103:429–37

Predicting Difficult Intubation in Apparently Normal Patients

A Meta-analysis of Bedside Screening Test Performance

Toshiya Shiga, M.D., Ph.D., Zen'ichiro Wajima, M.D., Ph.D.,† Tetsuo Inoue, M.D., Ph.D.,‡ Atsuhiro Sakamoto, M.D., Ph.D.§*

Table 2. Pooled Estimates of Bayesian Statistics of Six Different Bedside Tests for Difficult Intubation

Diagnostic Test	No. of Studies Included	No. of Patients	Prevalence of Difficult Intubation (95% CI), %	Pooled Sensitivity (95% CI), %	Pooled Specificity (95% CI), %	Pooled Likelihood Ratio (95% CI) Pos.	Pooled Likelihood Ratio (95% CI) Neg.	Pooled Log Diagnostic Odds Ratio (95% CI)
Overall population								
Mallampati classification	31	41,193	5.7 (4.4–7.3)*	49 (41–57)*	86 (81–90)*	3.7 (3.0–4.6)*	0.5 (0.5–0.6)*	2.0 (1.7–2.3)*
Thyromental distance	17	29,132	6.5 (4.6–9.1)*	20 (11–29)*	94 (89–99)*	3.4 (2.3–4.9)*	0.8 (0.8–0.9)*	1.7 (1.2–2.1)*
Sternomental distance	3	1,085	5.4 (3.1–9.2)*	62 (37–86)*	82 (67–97)*	5.7 (2.1–15.1)*	0.5 (0.3–0.8)	2.7 (1.4–3.9)*
Mouth opening	3	20,614	5.6 (2.2–14.5)*	22 (9–35)*	97 (93–100)*	4.0 (2.0–8.2)*	0.8 (0.7–1.0)*	1.7 (1.2–2.3)*
Wilson risk score	5	6,076	4.0 (1.8–9.0)*	46 (36–56)	89 (85–92)	5.8 (3.9–8.6)*	0.6 (0.5–0.9)	2.3 (1.8–2.8)*
Combination of	5	1,498	6.6 (2.8–15.6)*	36 (14–59)*	87 (74–100)*	9.9 (3.1–31.9)*	0.6 (0.5–0.9)*	3.3 (1.5–5.0)*

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Anesthesiology 1999; 91:1703–11

Airway Injury during Anesthesia

A Closed Claims Analysis

Karen B. Domino, M.D., M.P.H., Karen L. Posner, Ph.D.,† Robert A. Caplan, M.D.,‡ Frederick W. Cheney, M.D.§*

Table 3. Association of Age, Gender, ASA Status, and Difficult Intubation with Site of Airway Injury (n = 266 Claims)

Site	Total [n (% of 266)]	Age >60 years [n (% of site)]*	Female Gender [n (% of site)]*	ASA Status 3–5 [n (% of site)]*	Difficult Intubation [n (% of site)]
Larynx	87 (33)	17 (20)	52 (61)	15 (31)	17 (20)‡
Pharynx	51 (19)	16 (33)	33 (65)	8 (25)	26 (51)
Esophagus	48 (18)	22 (48)‡	41 (87)†	8 (28)	30 (62)‡
Trachea	39 (15)	8 (22)	22 (58)	10 (37)	25 (64)†
Temporomandibular joint (TMJ)	27 (10)	1 (4)†	23 (85)	1 (5)†	0 (0)‡
Nose§	13 (5)	1 (8)	9 (69)	3 (38)	4 (31)

* The percentage is based on claims without missing data.
† $P < 0.01$ *versus* other sites combined.
‡ $P < 0.001$ *versus* other sites combined.
§ Injuries to nose not tested statistically because of small numbers.

Universitätsklinikum Carl Gustav Carus DIE DRESDNER.

Anesthesiology 1999; 91:1703–11

Airway Injury during Anesthesia

A Closed Claims Analysis

Karen B. Domino, M.D., M.P.H., Karen L. Posner, Ph.D.,† Robert A. Caplan, M.D.,‡ Frederick W. Cheney, M.D.§*

Table 1. Demographic Characteristics for Patients Filing Claims for Airway Injury

	Airway Injury (n = 266) [n (%)]*	Other General Anesthesia Claims (n = 2,874) [n (%)]*
Gender		
Female	181 (69%)†	1,592 (56%)†
Male	81 (31%)†	1,255 (44%)†
ASA Status		
I–II	123 (73%)	1,272 (67%)
III–V	45 (27%)	634 (33%)
Age		
Pediatric (≤16 yr)	11 (4%)†	385 (14%)†
Adult (>16 yr)	240 (96%)†	2,340 (86%)†
Obese		
Yes	48 (41%)	454 (43%)
No	69 (59%)	596 (57%)
Emergency surgery		
Yes	31 (17%)‡	527 (26%)‡
No	149 (83%)‡	1,523 (74%)‡
Procedure		
Inpatient	127 (73%)‡	1,449 (82%)‡
Outpatient	48 (27%)‡	325 (18%)‡
Difficult Intubation		
Yes	103 (39%)†	251 (9%)†
No	163 (61%)†	2,623 (91%)†

* The percentage is based on claims without missing data.
† $P < 0.001$ airway injury *versus* other general anesthesia claims.
‡ $P \leq 0.01$ airway injury *versus* other general anesthesia claims.
ASA = American Society of Anesthesiologists.

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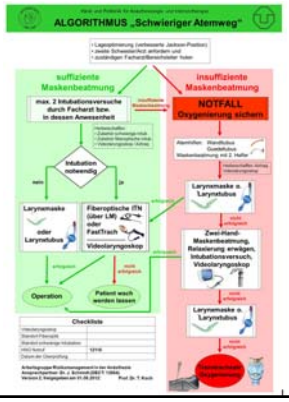

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