Anderson C, Archiv Surg S Educ 2023, 5: 046
DOI: 10.24966/ASSE-3126/100046

HSOA Archives of Surgery and Surgical Education

Research Article

Evaluation of Fellowship Status on Litigation Rates for Endoscopic Sinus Surgery

Cassidy Anderson[1*], Abigail Funari[2], Isabella Flaquer[3], Isabella Pecorari[3], Seth Jeong[4], Nadeem Akbar[1], Patrick Colley[1] and Vijay Agarwal[3]

[1]*Department of Otorhinolaryngology – Head and Neck Surgery, Albert Einstein College of Medicine, 3400 Bainbridge Ave, Bronx, NY 10467, USA*

[2]*Department of Neurosurgery, Upstate Medical University, 750 East Adams Street, Syracuse, NY 13210, USA*

[3]*Department of Neurological Surgery, Albert Einstein College of Medicine, 3316 Rochambeau Ave, Bronx, NY 10467, USA*

[4]*Department of Otolaryngology, Upstate Medical University, 750 East Adams Street, Syracuse, NY 13210, USA*

Summary

Objective

Most subspeciality surgeons will be involved in a lawsuit during their career. 1 Otolaryngology is associated with some of the highest ratios of malpractice claims filed/paid, due to the complex anatomy and potential for debilitating complications. 2 Rhinology is an otolaryngology fellowship subspecialty that has seen an increase in case load of endonasal sinus surgery. The Westlaw legal research service database was used to observe different rates of litigation in endoscopic sinus surgery when performed by rhinology-fellowship trained otolaryngologists compared to non-rhinology fellowship trained otolaryngologists.

Methods

Cases obtained from Westlaw were stratified based on otolaryngology fellowship status (rhinology fellowship, other fellowship, or no fellowship training). Surgical complications of litigated cases were organized into one of five categories: nasal, skull base, orbital, vascular, and "other" complications. The reason for litigation was divided into failure to treat, failure of informed consent, and negligent surgery.

Results

According to the analysis of this paper, no significant difference in litigation reasons, complications, or outcomes occur among otolaryngologists of different fellowship-training status. No significant difference was found among residency graduation year of surgeons and complication types.

Conclusion

Therefore, board-certified otolaryngologists are not significantly more or less likely to be subjects of litigation following endoscopic sinus surgery based on fellowship training or attending position experience.

Keywords: Fellowships and Scholarships; Intranasal Surgery; Medical Jurisprudence; Otolaryngology; Residency

***Corresponding author:** Cassidy Anderson , Department of Otorhinolaryngology-Head and Neck Surgery, Albert Einstein College of Medicine, 3400 Bainbridge Ave, Bronx, NY, 10467, USA; Tel: 718-920-4646; E-mail: Cassidy.anderson@einsteinmed.edu

Citation: Anderson C, Funari A, Flaquer I, Pecorari I, Jeong S, et al. (2023) Evaluation of Fellowship Status on Litigation Rates for Endoscopic Sinus Surgery. Archiv Surg S Educ 5: 046.

Received: August 28, 2023; **Accepted:** September 11, 2023; **Published:** **September 18**, 2023

Introduction

Medical malpractice is defined as a doctor's failure to exercise the degree of care and skill that a physician or surgeon of the same specialty would use under similar circumstances [1]. Due to this broad definition, malpractice is often inappropriately judged [1]. Facing a medical malpractice claim is a near certainty for many physicians, with 80% of physicians in surgical subspecialties being involved in a lawsuit by the time they reach 45 years of age [2]. Physicians should be aware of litigation data to avoid certain practices and be better prepared to cope with a claim [3,4]. By understanding the reasons for litigations filed, physicians can identify high-risk behaviors and better prioritize patient values in a legal manner [3,5]. Because physicians are rarely involved with lawsuits, the lack of familiarity leads to greater apprehension. One survey conducted in 2011 found that most physicians view lawsuits as random, unpredictable events separated from the quality of care provided that could be disastrous to their financial stability, mental well-being, and medical reputation [6]. Defensive medical practices, such as ordering excessive tests or procedures to protect themselves from legal allegations, has become more prevalent amongst physicians [3,7,8]. A 2010 survey of physicians from all specialties found that the overwhelming majority of participants agreed that ordering more tests and procedures is necessary to protect themselves from malpractice lawsuits. The majority of physicians also agreed that protections against unwarranted malpractice suits are needed to limit the number of unnecessary diagnostic tests [7]. Only 7% of all malpractice lawsuits reach trial, and of that percentage, only 18% resolve in the plaintiff's favor [1]. However, medical liability suits cost the United States healthcare system $55.6 billion in 2008 alone [9]. In the field of otolaryngology specifically, $100 million was paid in lawsuits from 2000 to 2005. The complex head and neck anatomy, and the potential for debilitating complications, associated with otolaryngology leads to greater examination into malpractice allegations. Otolaryngology has one of the highest ratios of malpractice claims filed/ paid at 32.97% [1]. *Endoscopic Sinus Surgery* (ESS) is complex and holds potential risk for the patient due to proximity to vital structures of the skull base and orbit [10]. Amongst the otolaryngology malpractice

lawsuits, ESS was the most frequently litigated procedure [11]. This type of surgery was classically a surgery performed by general otolaryngologists. Then, in 2006, a formal rhinology fellowship match program was started. Rhinologists are fellowship-trained otolaryngologists specialized in skull base and ESS. The rhinology fellowship is a year in length and affords greater exposure to a higher number of specific cases and greater expertise with ESS than a general otolaryngology residency education [12]. In a recent review of otolaryngology litigations cases, rhinology made up the majority of implicated subspecialties at 28% of all otolaryngology cases between 2010 and 2019 [11]. The Westlaw legal research service (Thomas Reuters) is a database that contains more than 40,000 litigation cases and provides access to court documents, records, court rulings, and verdict summaries at the state and federal court level. Westlaw is one of most expansive legal research databases available and has been used in many specialties [3,9]. The aim of this study is to observe the difference in litigation rates in ESS when performed by rhinology fellowship trained otolaryngologists compared to non-rhinology fellowship trained otolaryngologists.

Materials and Methods

Data Collection

The Westlaw legal research service (Thomas Reuters) database was used to identify litigation cases. The search term "Endoscopic Sinus Surgery" was used to capture cases of ESS performed by otolaryngologists. Duplicate cases, specialties other than otolaryngology, and procedures unrelated to ESS were excluded. Of the 123 cases initially identified, 78 were included for analysis after application of these exclusion criteria. Of these included cases, some cases included more than one surgeon as the defendant. In these cases, the surgeons were counted as individual outcomes due to varying fellowship training. Fellowship training was identified through Google search of the defendant's name and state in which the trial took place. Physicians were excluded if multiple otolaryngologists with the same name in the same state were identified or their fellowship training status was inconclusive. If a residency graduation year was not found, 5 years were added to the medical school graduation year to estimate the residency graduation year. In five cases, an incident year was not included, and the outcome was not used in the analysis. The total number of outcomes included 60 physicians.

Complication Types

Surgical complications of litigated cases were organized into one of five categories (Table 1). Only complications documented following surgery were included, not qualities documented prior to intervention (i.e., rhinorrhea prior to surgery). Nasal complications included sinus infection, rhinorrhea, nasal polyps, and anosmia. Skull base complications encompass any complication related to the anatomical skull base, as well as any CNS related complication. Such complications included hydrocephalus, cerebrospinal fluid (CSF) leak, speech impairment, seizure, aphasia, motor weakness, hemiparesis/hemiplegia, paraplegia, quadriplegia, disequilibrium, vertigo, meningitis, respiratory distress, headache/chronic headache, and memory loss. Orbital complications included injured orbital muscles, diplopia, monocular blindness, optic nerve damage, and vision impairment/loss. Vascular complications included ischemic or hemorrhagic stroke. Complications labeled as "other" included osteitis, osteomyelitis, deafness, facial nerve damage, hoarseness, nausea/vomiting, weight loss, patient emotional distress, loss of consortium, financial loss, death, and other.

Complication Category	Westlaw Complication Types
Nasal	Sinus infection, rhinorrhea, nasal polyps, anosmia
Skull base	Hydrocephalus, CSF leak, speech impairment, seizure, aphasia, motor weakness, hemiparesis/hemiplegia, paraplegia, quadriplegia, disequilibrium, vertigo, meningitis, respiratory distress, headache/chronic headache,memory loss
Orbital	injured orbital muscles, diplopia, monocular blindness, optic nerve damage, vision impairment/loss
Vascular	Ischemic or hemorrhagic stroke
Other	Osteitis, osteomyelitis, deafness, facial nerve damage, hoarseness, nausea/vomiting, weight loss, patient emotional distress, loss of consortium, financial loss, death, and other

Table 1: Complication categories used in study with defined complications. Abbreviation CSF is cerebrospinal fluid.

Reason for Litigation

Westlaw database includes the reason for litigation in all cases. Failure to treat is defined as failure to diagnose, failure to treat, failure to test, or delayed treatment. The failure of informed consent refers to an inadequate description of the procedure. Negligent surgery also includes surgical complications and unnecessary surgery.

Statistical analysis

The outcomes were binomial categorical variables. Fisher's exact test (two-tailed) was used to identify any significant correlation between the groups. A p-value of <0.05 was used to define significance.

Results

Demographics of cases

Otolaryngologists were categorized by their year of residency graduation, year in which the litigated case occurred (incident year), and fellowship training. Most (35%) of the otolaryngologists graduated between 1990 and 1999, followed by 1966-1979 and 1980-1989 (each 25% of cases). The graduation year range of 2000-2010 was the least represented, at 15% of cases. Most (33%) of the cases took place between 2001-2005. 54% of the cases were equally split (each at 18%) among the ranges 1996-2000, 2006-2010, and 2011 to the present. 13% of the cases occurred before 1995. Most (73%) of the otolaryngologists are not fellowship trained. Only 5% of the surgeons completed a rhinology fellowship, and 22% of the surgeons were fellowship trained in another otolaryngology fellowship, including facial plastics or head and neck fellowships (Table 2). Most (67%) of the rhinology-trained otolaryngologists graduated between 2000-2010, and most (67%) of these incidents occurred from 2006 to the present. Most (62%) non-rhinology fellowship trained otolaryngology graduated between 1990-1999, with most (67%) of these incidents occurring from 2006 to the present. Approximately one-third (32%) of non-fellowship trained otolaryngologists graduated in the range of 1966-1979, and 40% of these incidents occurred between 2001-2005 (Table 3).

Complication Types

Comparisons were stratified by the variable category. Multiple complication types could be reported per one surgeon. For example, one case could report both a nasal and orbital complication. Most (57%) nasal complications were reported between 2006-2010. 39%

Characteristics		No. (%) Surgeons
Graduation year	1966-1979	15 (25)
	1980-1989	15 (25)
	1990-1999	21 (35)
	2000-2010	9 (15)
Incident year	1984-1990	2 (4)
	1991-1995	5 (9)
	1996-2000	10 (18)
	2001-2005	18 (33)
	2006-2010	10 (18)
	2011+	10 (18)
Fellowship	None	44 (73)
	Rhinology	3 (5)
	Other	13 (22)

Table 2: Demographics and comparison of incident year and graduation year according to fellowship status.

Values are represented as No. (%). P Values <0.05 are statistically significant (bolded font).

of skull base complications occurred from 2001-2005, followed by 26% in 1996-2000 and 17% in 2006-2010. 72% of the reported orbital fractures occurred between 2001-2010. Most vascular complications were reported in 2001-2005 (46%) and from 2011 to present (38%). Most complications categorized under "other" occurred between 2001-2005 (39%) followed by 2006-2010 (28%). None of these comparisons were statistically significant (Table 3). Half (50%) of the reported nasal complications occurred with surgeons who graduated between 1990-1999. Surgeons who graduated in 1990-1999 also had the highest rate of skull base complications (44%), followed by the graduates of 1980-1989 (28%). Orbital complications were more equally distributed among all graduates, but graduates from 1990-1999 still had the greatest amount (37% versus 21%). Graduates from 1980-1989 and 2000-2010 had the highest rate (31% each) of vascular complications. Graduates from 1990-1999 reported the highest rate (58%) of complications listed as "other." None of these comparisons were statistically significant (Table 3). Rhinology fellowship trained otolaryngologists were litigated most frequently (40%) for skull base complications, followed by nasal, vascular, and "other" complications (each 20%). Otolaryngologists with other fellowship training had equal rates (24% each) of nasal, skullbase, orbital, and "other" complications and only one incident of vascular complications. Otolaryngologists without fellowship training most commonly (30%) reported skull base complications, followed by orbital (23%), "other" (22%), vascular (17%), and nasal (8%) complications (Table 4). None of these comparisons were statistically significant.

		Fellowship Training			Complication Type				
Variable		Rhinology	Other	None	Nasal	Skull-base	Orbital	Vascular	Other
Incident year	1984-1990	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)
	1991-1995	1 (33)	1 (8)	3 (8)	0 (0)	2 (9)	0 (0)	1 (8)	0 (0)
	1996-2000	0 (0)	1 (8)	9 (23)	1 (14)	6 (26)	1 (6)	1 (8)	3 (17)
	2001-2005	0 (0)	2 (17)	16 (40)	1 (14)	9 (39)	7 (39)	6 (46)	7 (39)
	2006-2010	1 (33)	4 (33)	5 (13)	4 (57)	4 (17)	6 (33)	0 (0)	5 (28)
	2011+	1 (33)	4 (33)	5 (13)	1 (14)	2 (9)	3 (17)	5 (38)	3 (17)
	Total	3	12	40	7	23	18	13	18
	P Value	0.325	0.272	0.0600	0.213	0.430	0.100	0.085	0.501
Graduation year	1966-1979	0 (0)	1 (8)	14 (32)	2 (20)	4 (16)	4 (21)	2 (15)	2 (11)
	1980-1989	0 (0)	4 (31)	11 (25)	2 (20)	7 (28)	4 (21)	4 (31)	4 (21)
	1990-1999	1 (33)	8 (62)	12 (27)	5 (50)	11 (44)	7 (37)	3 (23)	11 (58)
	2000-2010	2 (67)	0 (0)	7 (16)	1 (10)	3 (12)	4 (21)	4 (31)	2 (11)
	Total	3	13	44	10	25	19	13	19
	P Value	0.083	0.052	0.106	0.807	0.463	0.763	0.240	0.091

Table 3: Comparison of complications and fellowship training by incident year and graduation year.

Stratification of complication type and fellowship training organized by the incident year or graduation year. Values are represented as No. (%). P Values <0.05 are statistically significant (bolded font).

Reason for Litigation

Rhinology fellowship-trained otolaryngologists were either litigated for failure to treat (50%) or negligent surgery (50%). Other fellowship-trained otolaryngologists were litigated for negligent surgery (52%) most commonly. Non-fellowship-trained otolaryngologists were litigated for negligent surgery (65%) most commonly (Table 4). Most verdicts from all three fellowship categories were in favor of the defendant (rhinology, 100%; other fellowship, 77%; non-fellowship, 52%) (Table 4).

Discussion

According to our analysis, we found no significant difference in litigation reasons, complications, or outcomes occur among otolaryngologists of different fellowship-training status. Therefore, board-certified otolaryngologists are not significantly more or less likely to be subjects of litigation following ESS based on fellowship training. No significant difference was observed with type of surgical complications, reasons for litigation, or payout for fellowship or non-fellowship trained otolaryngologists. Similarly, no correlation was found based upon year of graduation or year of incident. It should be emphasized that finding no significant difference among fellowship trained or non-fellowship trained surgeons shows that litigation rates are not necessarily associated with training or technical skill, but potentially the surgeon's diligence with patient management. This finding of no significant difference among fellowship training status is consistent in literature as well [10]. ESS is complex and holds considerable risk, as the surgeon is operating near vital structures of the skull base and orbit [10]. The European Rhinology Society categorizes ESS complications by type of injury and severity ("minor" or "major"); whereas, the complication type categories in this study were stratified based on Westlaw descriptions [13]. As in this study,

Fellowship	Complication type	No. (%)	P Value	Reason for litigation	No. (%)	P Value	Verdict	No. (%)	P Value
Rhinology	Nasal	1 (20)	0.427	Failure to treat	2 (50)	0.212	Defendant	3 (100)	
	Skullbase	2 (40)	0.565	Informed consent	0 (0)	0.566	Plaintiff	0 (0)	
	Orbital	0 (0)	0.545	Negligent surgery	2 (50)	0.354	Settlement	0 (0)	0.742
	Vascular	1 (1)	0.526						
	Other	1 (1)	1						
Other	Nasal	4 (24)	0.201	Failure to treat	5 (24)	0.504	Defendant	10 (77)	
	Skullbase	4 (24)	0.527	Informed consent	5 (24)	0.279	Plaintiff	1 (8)	
	Orbital	4 (24)	1	Negligent surgery	11 (52)	1	Settlement	2 (15)	0.341
	Vascular	1 (6)	0.262						
	Other	4 (24)	1						
None	Nasal	5 (8)	0.112	Failure to treat	11 (18)	0.207	Defendant	23 (52)	
	Skullbase	19 (30)	0.773	Informed consent	10 (17)	0.516	Plaintiff	13 (30)	
	Orbital	15 (23)	0.754	Negligent surgery	39 (65)	0.429	Settlement	8 (18)	0.120
	Vascular	11 (17)	0.481						
	Other	14 (22)	1						

Table 4: Reason for litigation and verdict and complication type by fellowship training.

Stratification of complication type organized by fellowship training status. Reason documented for litigation compared to fellowship training status. Trial verdicts organized according to fellowship training status. P Values <0.05 are statistically significant (bolded font).

the most commonly cited reasons for malpractice allegation were improper performance and failure to follow standard of care [1,10,14]. This constancy in allegation could be secondary to the close proximity of skull base anatomical structures. Inadequate informed consent is another common reason for allegations of malpractice in endoscopic sinus surgery, as was similarly demonstrated in this analysis [1,2,4]. Allegations of improper informed consent made up 16.1% of claims against otolaryngologists and 23.7% of compensation paid. Within ESS in particular, this number is as high as 37% of claims [4]. In this paper's analysis, allegations of inadequate informed consent made up 17.6% of claims, with no allegations against the rhinology-fellowship trained otolaryngologists. This absence of significant difference between allegation type and fellowship training status in this study which could indicate that ESS technique is adequately taught to all otolaryngology residents. Teaching the technique of ESS should be emphasized in residency regardless of fellowship training status to further decrease allegations of negligent surgery and inadequate informed consent. Limited research is available on the length of time as an otolaryngologist attending physician and its impact on litigation outcomes. One review article found longer time in practice as an attending physician in any specialty was associated with a greater risk of malpractice allegations [15]. However, this study did not find a significant association with time since residency graduation and complication type, allegation type, verdict outcomes, or payout amounts. Similarly, the year in which the injury warranting malpractice allegations was not found to be associated with any of the studied variables. This lack of correlation could be due to continuing education of practicing otolaryngologists despite residency graduation in conferences and workshops. Because negligent surgery is the most common malpractice allegation, robust training and skill development even as a practicing otolaryngology is vital to reducing such claims [10]. Rhinology has expanded the number of cases performed over the past decade and has subsequently received more malpractice claims [10]. Most rhinology malpractice claims involve issues of inadequate informed consent, improper performance, and improper documentation; the most common basis for claims being improper performance. Operative procedures of the nasal sinuses are the most frequent improperly performed procedure and make up the majority (64.3%) of compensation in rhinology malpractice cases [4]. Physicians can address potential informed consent allegations with complete documentation of patient discussions that includes all risks, even rare complications. Rarely sued physicians are perceived as concerned and willing to listen by their patients [4,16]. The average otolaryngologist who is currently facing litigation is more than 45 years old, male, board certified, a graduate of an American medical school, and has experienced a previous claim [4]. Physicians in specialties with a high-risk of litigation revealed that most of these physicians practice defensive medicine. "Assurance behavior," or "avoidance behavior," of ordering diagnostic tests and procedures and referring patients for consultations is increasingly common, as well as the avoidance of patients with complex medical issues that require a complex procedure [5,17]. Through the supplemental care or reduced care, defensive medicine is a separation from evidence-based care and an added cost to the healthcare system due to the physicians' fear of lawsuit [6,9]. Defensive medicine costs the United States health care system $45 billion annually, about 5% of total spending [5]. Although physicians can be insured against indemnity payments with malpractice insurance, this insurance does not cover the indirect costs of stress, added work, and potential reputation damage [18]. A 2001 article by Dr. Sara Charles addresses the emotional and psychological toll on physicians during lawsuits [19]. The litigations are often perceived as an attack on the physician's mastery of their field. Physicians feel out of control in a new realm of the legal system. If physicians cannot adequately cope, the experience could lead to chronic stress that exacerbates depression, substance misuse, or physical illness. Malpractice claims seem to suggest that the physician is incompetent or "a bad doctor," but it is important to recognize that lawsuits are "about compensation, not competence, that those who are sued are often the best in their field in working with sick and high-risk patients, and that most physicians are eventually vindicated." [19] Understanding the causes for litigation allow physicians to better improve surgical outcomes and expectations for

patients. Although rhinology fellowship trained surgeons have more training hours in ESS, the litigation rates do not significantly vary according to fellowship training status and technical skill. Therefore, lawsuit prevention should focus more on quality patient management, practice of surgical skill with continuing education, and adequate informed consent discussions with patients prior to ESS. This study is limited to the litigation data obtained from a single database. Westlaw only contains cases that have progressed to public record but does not upload smaller cases or cases that are settled prior to initiating a trial into the database [10]. Results were also limited to data obtained online regarding physician fellowship training status that can be unclear. The percentage of ESS performed by rhinologists versus other fellowship trained versus non-fellowship trained otolaryngologists was not obtained, thus this study cannot comment on the rate of lawsuit involvement. Similarly, conclusions could not be made regarding payout amounts according to fellowship training or time since residency graduation due to too few data points. Future studies could examine education strategies that are most helpful in continuing education seminars and workshops for attending otolaryngologists when learning novel procedures to further mitigate malpractice allegations of negligent surgery. The objective of this study was to analyze different aspects of litigation in ESS when performed by rhinology fellowship trained otolaryngologists compared to non-rhinology fellowship trained otolaryngologists utilizing the Westlaw legal database. Overall, no statistical differences in litigation outcomes, surgical complications or surgical outcomes were found between rhinology fellowship trained, other fellowship trained, or non-fellowship trained otolaryngologists performing ESS.

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