ORIGINAL CLINICAL RESEARCH REPORT

Anesthesia-Related Closed Claims in Free-Standing Ambulatory Surgery Centers

Marc Philip T. Pimentel, MD, MPH,* Scott Chung, MD,* Jacqueline M. Ross, RN, PhD,† Daniel Wright, RN, JD,† and Richard D. Urman, MD, MBA‡

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

BACKGROUND: As higher acuity procedures continue to move from hospital-based operating rooms (HORs) to free-standing ambulatory surgery centers (ASCs), concerns for patient safety remain high. We conducted a contemporary, descriptive analysis of anesthesia-related liability closed claims to understand risks to patient safety in the free-standing ASC setting, compared to HORs.

METHODS: Free-standing ASC and HOR closed claims between 2015 and 2022 from The Doctors Company that involved an anesthesia provider responsible for the claim were included. We compared the coded data of 212 free-standing ASC claims with 268 HOR claims in terms of severity of injury, major injuries, allegations, comorbidities, contributing factors, and financial value of the claim.

RESULTS: Free-standing ASC claims accounted for almost half of all anesthesia-related cases (44%, 212 of 480). Claims with high severity of injury were less frequent in free-standing ASCs (22%) compared to HORs (34%; $P = .004$). The most common types of injuries in both free-standing ASCs and HORs were dental injury (17% vs 17%) and nerve damage (14% vs 11%). No difference in frequency was noted for types of injuries between claims from free-standing ASCs versus HORs—except that burns appeared more frequently in free-standing ASC claims than in HORs (6% vs 2%; $P = .015$). Claims with alleged improper management of anesthesia occurred less frequently among free-standing ASC claims than HOR claims (17% vs 29%; $P = .01$), as well as positioning-related injury (3% vs 8%; $P = .025$). No difference was seen in frequency of claims regarding alleged improper performance of anesthesia procedures between free-standing ASCs and HORs (25% vs 19%; $P = .072$). Technical performance of procedures (ie, intubation and nerve block) was the most common contributing factor among free-standing ASC (74%) and HOR (74%) claims. Free-standing ASC claims also had a higher frequency of communication issues between provider and patient/family versus HOR claims (20% vs 10%; $P = .004$). Most claims were not associated with major comorbidities; however, cardiovascular disease was less prevalent in free-standing ASC claims versus HOR claims (3% vs 11%; $P = .002$). The mean ± standard deviation total of expenses and payments was lower among free-standing ASC claims ($167,000 ± $295,000) than HOR claims ($332,000 ± $775,000; $P = .002$).

CONCLUSIONS: This analysis of medical malpractice claims may indicate higher-than-expected patient and procedural complexity in free-standing ASCs, presenting patient safety concerns and opportunities for improvement. Ambulatory anesthesia practices should consider improving safety culture and communication with families while ensuring that providers have up-to-date training and resources to safely perform routine anesthesia procedures. (Anesth Analg 2024;139:521–31)

KEY POINTS

- **Question:** What are the major characteristics of recent anesthesia-related closed claims (2015–2022) in free-standing ambulatory surgery centers, compared to hospital operating rooms, from a national malpractice insurer's claims database?
- **Findings:** Compared to hospital operating room claims, anesthesia-related closed claims in free-standing ambulatory surgery centers had a lower severity of injury and had a higher incidence of claims related to communications with the patient/family. Improper performance of anesthesia procedures (ie, intubation and nerve blocks) was the most common allegation across both care settings.
- **Meaning:** Ambulatory anesthesia practices—especially in free-standing surgery centers—should ensure that providers have up-to-date training and resources for safe performance of anesthesia procedures while collaborating with colleagues to improve communication with patients and families.

From the *Department of Anesthesiology, Perioperative and Pain Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts; †Department of Patient Safety and Risk Management, The Doctors Company, Napa, California; and ‡Department of Anesthesiology, The Ohio State University, Columbus, Ohio.

Accepted for publication July 28, 2023.

Funding: None.

Copyright © 2024 International Anesthesia Research Society

DOI: 10.1213/ANE.0000000000006700

Conflicts of Interest: See Disclosures at the end of the article.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's website (www.anesthesia-analgesia.org).

Reprints will not be available from the authors.

Address correspondence to Richard D. Urman, MD, MBA, Department of Anesthesiology, The Ohio University and Wexner Medical Center, N437 Doan Hall, 410 W 10th Ave, Columbus, OH 43210. Address e-mail to richard.urman@osumc.edu

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

GLOSSARY

ASA = American Society of Anesthesiologists; **ASC** = ambulatory surgery center; **BI** = business information; **CI** = confidence interval; **CPAP** = continuous positive airway pressure; **ETT** = endotracheal tube; **HOR** = hospital-based operating room; **MAC** = monitored anesthesia care; **NAIC** = National Association of Insurance Commissioners; **OR** = operating room; **OSA** = obstructive sleep apnea; **PSA** = patient safety analyst; **STROBE** = Strengthening The Reporting Of Observational Studies in Epidemiology; **TDC** = The Doctors Company

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

The use of free-standing ambulatory surgery centers (ASCs) continues to increase as the health care system expands to efficiently access surgical care. In 2005, 41% of ambulatory surgeries were performed in free-standing ASCs; by 2015, 60% of ambulatory surgeries and 35% of all surgeries were performed in free-standing ASCs, with a decreasing share performed in hospital-based operating rooms (HORs).[1] Free-standing ASCs continue to proliferate in both quantity and size, as the number of Medicare-certified free-standing ASCs increased by 9% from 2014 to 2020, while the overall number of free-standing ASC operating rooms (ORs) increased by 14% in the same time period.[2] Meanwhile, current trends show more medically complex patients undergoing a wider variety of procedures in free-standing ASCs.[3,4]

Traditionally, the ambulatory surgical population supports an inherently lower liability risk as patients are generally younger, undergo nonemergency surgery, and are less likely to experience complex invasive procedures. However, providing safe patient care in free-standing ASCs requires addressing several challenges compared to HORs. The capacity for rescuing patients during intraoperative emergencies is limited by the availability of equipment and staff in the free-standing ASC.[5] A unique risk in the free-standing ASC is that unexpectedly extended postoperative care often requires arrangements for transfer via ambulance to an emergency department or intensive care unit.[6] The postdischarge period may also be particularly hazardous in terms of liability of anesthesiologists in ambulatory settings. A case report describes 2 motor vehicle accidents occurring after ambulatory surgery involving patients who were discharged without an accompanying escort.[7]

Data derived from the American Society of Anesthesiologists (ASA) Closed Claims Project from 1980 to 1999 suggest that malpractice claims for major damaging events are less common in outpatient settings versus inpatient settings.[8] However, a previous analysis of the ASA Closed Claims Project database revealed that ambulatory anesthesia malpractice claims are increasing.[9] Ambulatory anesthesia claims represented 20% of claims from 1985 to 1989 and 26% of claims from 1990 to 1995. Another analysis comparing anesthesia-related closed claims in free-standing ASCs (versus HORs) from 2007 to 2014 revealed that 31% of claims occurred in free-standing ASCs. This analysis revealed that free-standing ASC claims were more likely than HOR claims to be classified as medium severity, more likely to involve dental injury, and less likely to involve death or cardiac/respiratory arrest.[10]

Analysis of malpractice claims is a useful approach for understanding trends in preventable patient harm while offering potential insights into improving patient safety. Since 1984, the ASA Closed Claims Project has gathered a considerable database of closed malpractice claims and has been a consistent resource for understanding risks in perioperative patient safety. Medical malpractice insurers also maintain closed claims databases to reduce malpractice risk by identifying areas to improve patient safety.[11,12]

Given the proliferation of cases performed in free-standing ASCs over the past decade and the lack of patient safety data in this setting, we conducted a contemporary, descriptive analysis of anesthesia-related liability from a single national malpractice insurer. We hypothesized that there would be notable differences in reported injury, types of allegations, and prevalence of comorbid conditions between free-standing ASCs and hospital-based settings.

METHODS

Closed malpractice claims data were obtained from The Doctors Company (TDC), a national medical malpractice company. TDC is the largest physician-owned medical malpractice insurer in the United States, providing coverage for more than 89,000 physicians nationally, distributed across the East and West Coast, Midwest, Mid-Atlantic, and Southern states. Care settings include academic medical centers, private practice, community hospitals, and ASCs. The data are distinct and separate from the ASA Closed Claims Project. This observational study was reviewed by Brigham and Women's Hospital (IRB #2022P002340) and by The Ohio State University Institutional Review Boards. The requirement for informed consent was waived, given the deidentified nature of the data.

The methods for coding malpractice claims in the TDC database were previously described.[13] Each claim is analyzed and coded by nurse patient safety

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

analysts (PSAs) using available records including defense and plaintiff expert witnesses and opinions of independent medical examiners. When available, depositions of any subsequent treating providers for the claimant are considered. The National Association of Insurance Commissioners (NAIC) Injury Severity Scale is used to describe the clinical severity of injury (1–2, low severity; 3–5, medium severity; 6–9, high severity), as shown in Supplemental Digital Content 1, Appendix A, http://links.lww.com/AA/E519. The PSAs code for type of injury, contributing factors, procedures, and primary responsible services, using the evidence-based Clinical Coding Taxonomy.[13-15] Each claim can have additional injuries and other responsible services involved. The PSAs compile a narrative, not exceeding 2400 characters, for every claim, which provides the overall facts involved and supports the contributing factors chosen by the PSA, using the Clinical Coding Taxonomy. Each claim can have multiple corresponding injuries and contributing factors, and the sum of each may exceed the total number of closed claims cases. The authors examined these data, in addition to clinical summaries for each case to gain further insight into the events surrounding each closed claim.

TDC maintains quarterly internal quality audits at TDC of the claims data, in addition to a yearly external audit. Interrater reliability tests for coding claims between analysts are performed throughout the year. Quality scores are maintained, and any inconsistencies are addressed via recoding the claim. The PSAs, who code the data, performed at least 6 peer reviews annually. Peer-review sessions are comprised of 2 to 4 PSAs, who independently review coded cases while checking for agreement in 22 areas: major allegation, site, location, severity, responsible service, roles, comorbidities, devices, medication, major injuries, admitting service, initial diagnosis, final diagnosis, claimant type, presenting procedure, involved procedure, disclosure, apology, contributing factors, clinical description (clarity/contributing factor agreement), serious reportable events, and primary factor(s). The average agreement before any discussion was 93.2%. In any areas of disagreement, the PSAs will discuss the matters of each case until consensus is reached. If no consensus can be reached, then it is raised to the senior PSA or director. The final agreement was 100%.

Free-standing ASC and HOR closed claims between 2015 and 2022 that involved an anesthesia provider with primary or secondary responsibility in the claim were included. Office-based settings were excluded from analysis. HOR data included all hospital-based claims from the preoperative holding area and the OR, excluding the postanesthesia recovery unit. Findings were analyzed using the Explore tool developed by Candello, a division of the Risk Management Foundation of Controlled Risk Insurance Company, Ltd (CRICO), a subsidiary of Harvard Medical Institutions. The Explore tool is a Microsoft Power BI analytic tool used to deeply examine trends and areas of patient safety risks. The tool has visualization options and manipulation filters, and includes various clinical and financial factors (Candello Explore v1. [2022] Solutions by CRICO). We compared the coded data of free-standing ASC claims with HOR claims in terms of severity of injury, types of injuries, allegations, contributing factors, comorbidities, and the financial value of the claim. Descriptive statistics were used to describe free-standing ASC closed claims. The χ^2 test was used to compare categorical variables; the Wilcoxon rank sum test and *t* test were used in analysis of financial values. A value of $P < .05$ was used for significance. Ninety-five percent confidence intervals (CIs) were reported throughout. Statistical analyses were performed using STATA 13.1 (StataCorp). The Strengthening The Reporting Of Observational Studies in Epidemiology (STROBE) guidelines were used for reporting our results.

RESULTS

A total of 480 anesthesiology-related closed claims were identified between 2015 and 2022. Approximately 44% (212 of 480) of claims occurred in a free-standing ASC setting vs 56% (268 of 480) claims in an HOR setting. The primary responsible service description is shown in Supplemental Digital Content 2, Appendix B, http://links.lww.com/AA/E520, and classes of procedures are shown in Supplemental Digital Content 3, Appendix C, http://links.lww.com/AA/E521. Comparisons of free-standing ASC versus HOR claims in regard to the severity of injury, types of injuries, nature of allegations, contributing factors, and associated comorbidities are described below and summarized in Supplemental Digital Content 4, Appendix D, http://links.lww.com/AA/E522.

Severity of Injury

High-severity injury claims were less frequent in free-standing ASCs (22%; CI, 17–28) compared to HORs (34%; CI, 29–40; $P = .004$), as shown in Figure 1. Conversely, medium-severity injury claims were more frequent in free-standing ASCs (50%; CI, 43–57) compared to HORs (39%; CI, 33–45; $P = .018$). No difference was found in the frequency of low-severity claims between free-standing ASC claims (28%) and HOR claims (26%).

Types of Injury

The most common injuries in free-standing ASC claims were dental injury (17%), nerve damage

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

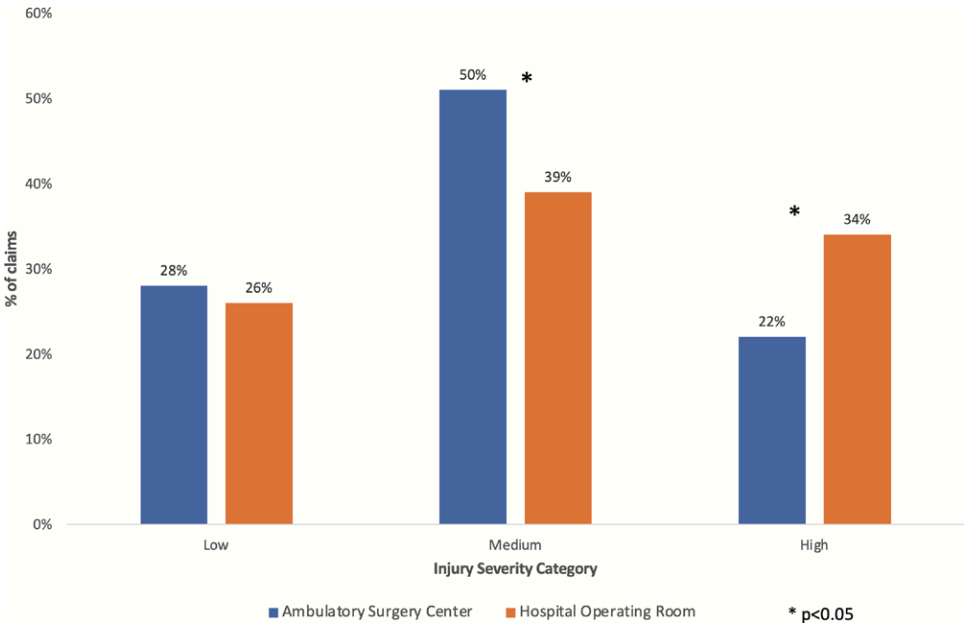

Figure 1. Closed claims by injury severity category description, with comparison between free-standing ambulatory surgery center and hospital operating room.

(14%), puncture or perforation (10%), cardiac or respiratory arrest (8%), and adverse medication reaction (7%). The most common injuries in HOR claims were dental injury (17%), nerve damage (11%), adverse medication reaction (8%), puncture or perforation (7%), and cardiac arrest (5%). Among 59 cases with nerve damage, more cases were associated with nerve blocks in free-standing ASC claims (63%; 19 of 30; CI, 44–80) than in HORs (31%; 9 of 29; CI, 15–51; $P = .013$). Burns appeared more frequently in the free-standing ASC claims than for HORs (6% CI, 3–10 vs 2% CI, 1–4; $P = .015$) (Figure 2). The burns in free-standing ASCs involved surgical fires ignited by electrocautery and chemical burns from skin preparation solution entering poorly protected eyes. The burns in HORs were also surgical fires ignited by electrocautery, which resulted in facial burns and scarring. Death occurred in 2 free-standing ASC claims and in 3 HOR claims.

Nature of Allegations

An allegation is the assertion of malpractice, with or without evidence. The most common allegations among free-standing ASC and HOR claims were "Improper Performance of Anesthesia Procedure" (25% CI, 20–32 vs 19% CI, 14–24; $P = .072$); "Improper Management of Surgical Patient" (19% vs 15%); and "Dental Injury Related to Intubation/Extubation" (18% vs 19%). "Improper Performance of Anesthesia Procedure" involves technical aspects of anesthesia

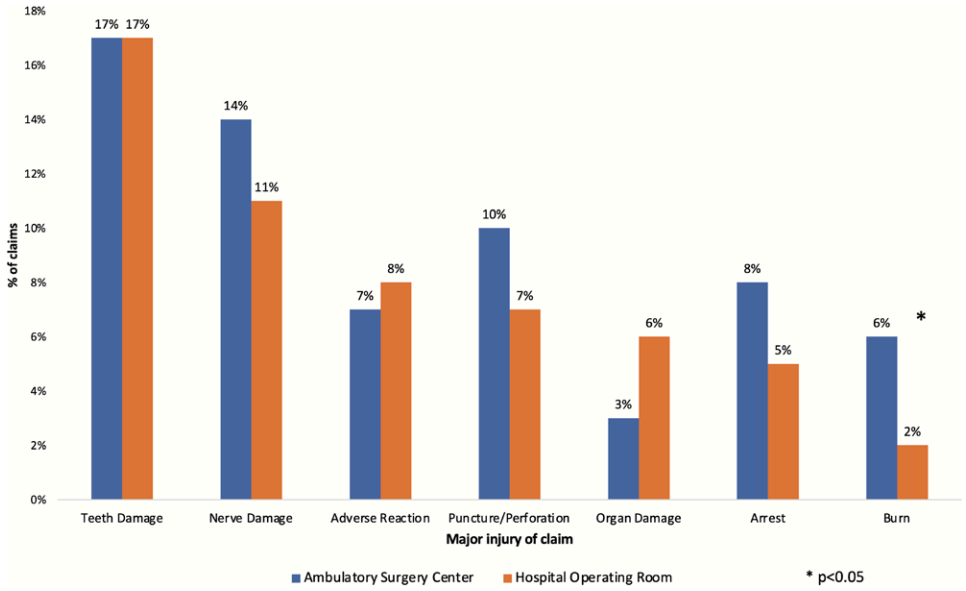

Figure 2. Injuries most frequently sustained, free-standing ambulatory surgery center versus hospital operating room. Note that >1 comorbidity may be associated with a particular claim.

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

care, such as poor technique or inexperience with a procedure. Among these claims at free-standing ASCs, approximately 52% were related to intubation (including nasopharyngeal), and 33% were related to nerve blocks, as shown in Figure 3. "Improper Management of Surgical Patient" claims were less frequent in free-standing ASCs versus HORs (17% CI, 12–22 vs 29% CI, 25–35; P = .001). The improper management of an anesthesia patient can encompass the entire perioperative continuum including the preoperative holding area, and intraoperative and postoperative areas. The improper management issues include clinical judgment and communication factors (eg, wrong site surgery due to lack of intraoperative time out). Positioning-related allegations were less frequent in free-standing ASCs than in HORs (3% CI, 1–7 vs 8% CI, 5–12; P = .025), as shown in Figure 4.

Contributing Factors

Contributing factors are circumstances or events that contribute to medical error. The 2 most common contributing factors among free-standing ASC claims and HOR claims were technical performance (both 74%) and selection and management of therapy (25% vs 30%). Technical performance includes actions related to technique during a procedure, for example, esophageal intubation or intra-arterial injection of local anesthetic. Insufficient documentation was the third most common contributing factor among free-standing ASCs (24%), with 35% of these claims related to poor documentation of clinical findings, and 25% related to poor documentation of informed consent. Patient assessment issues were the third most common contributing factor among HOR claims (24%). Free-standing ASC claims were more frequently related to communication between provider and patient and/or family than in HOR claims (20% CI, 15–26 vs 10% CI, 7–15; P = .004), as shown in Figure 5.

Comorbidities

Most claims were not associated with major comorbidities among both free-standing ASC claims (68%) and HORs claims (60%). The most common comorbidities in free-standing ASC claims included obesity (15%), obstructive sleep apnea (OSA) (7%), diabetes (6%), smoking (6%), and hypertension (5%). The most common comorbidities in HOR claims were obesity (16%), cardiovascular disease (11%), smoking (9%), hypertension (6%), and chronic pulmonary disease (6%), as shown in Figure 6. Cases involving cardiovascular disease were less frequent among free-standing ASC claims than in HORs (3% CI, 1–7 vs 11% CI, 7–15; P = .002).

Gross Total Incurred

The gross total incurred is the sum of expenses and payments (rounded to approximately $1000). The mean ± standard deviation gross total was lower among free-standing ASC claims ($167,000 ± $295,000) than in HOR claims ($332,000 ± $775,000) with P = .002. However, the median [interquartile range] gross total incurred in free-standing ASC claims ($35,000 [$2000, $213,000]) was not significantly different than in HOR claims ($44,000 [$4000, $283,000]) with P = .133.

Most Common Contributing Factors Among Free-Standing ASC Closed Claims

Representative vignettes from the top 6 contributing factors to anesthesia closed claims among free-standing ASCs are described below, and major categories are summarized in Supplemental Digital

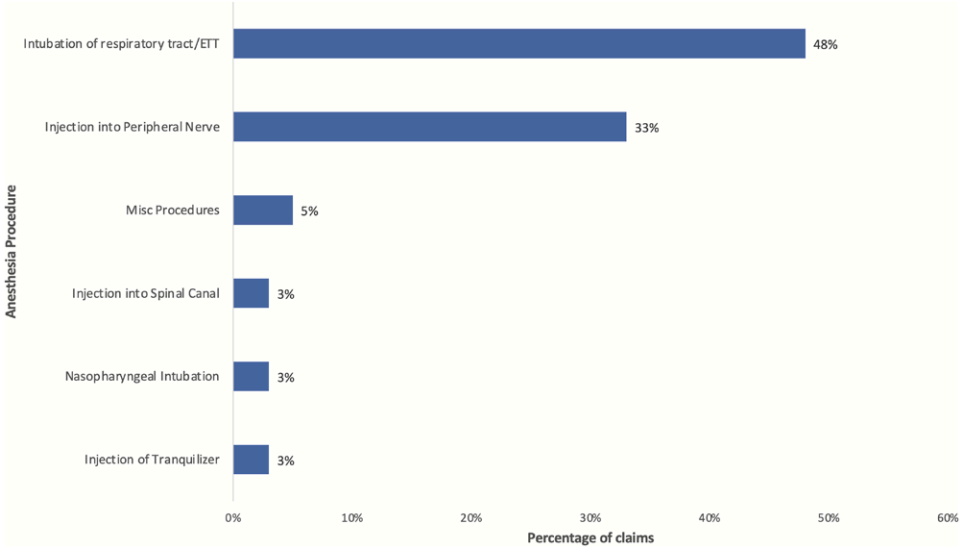

Figure 3. Types of anesthesia procedures for free-standing ambulatory surgery center claims with "Improper Performance of Anesthesia Procedure" identified as a contributing factor. ETT indicates endotracheal tube.

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

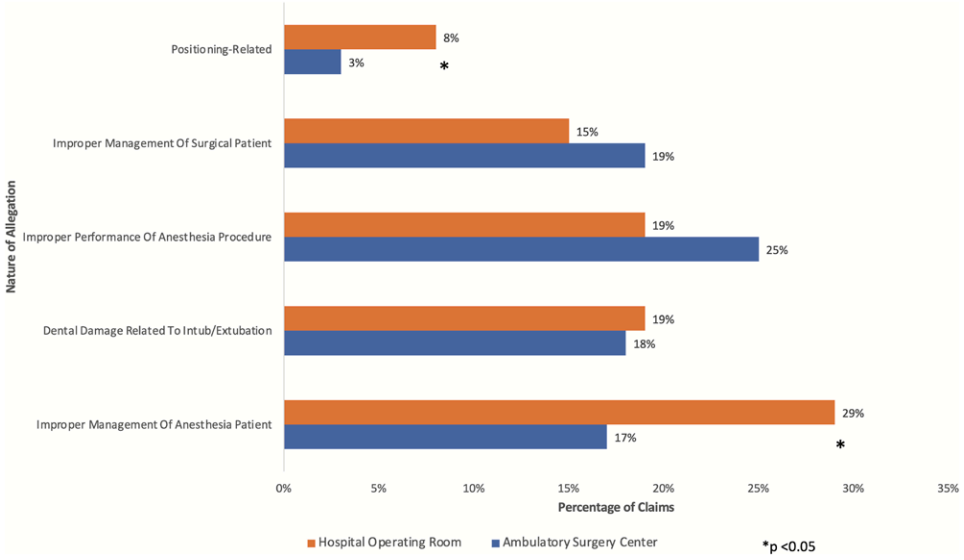

Figure 4. Nature of allegations, free-standing ambulatory surgery center versus hospital operating room. Note that >1 comorbidity may be associated with a particular claim.

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

Content 5, Appendix E, http://links.lww.com/AA/E523.

Technical Performance (74% of Free-Standing ASC Claims). A patient underwent an anterior tarsal tunnel release surgery. The anesthesiologist performed a popliteal fossa and saphenous nerve block with 50 mL 0.5% ropivacaine under ultrasound guidance. After the surgery, the patient reported numbness in medial toes and weakness in ankle dorsiflexion and eversion. The patient has ongoing calf tightness and general ankle/foot weakness. Experts noted the anesthesiologist was not sufficiently trained to do this type of nerve block and injured the nerve. Also, an inappropriately high volume of ropivacaine was used (typically only 20–30 mL).

Selection and Management of Therapy (25% of Free-Standing ASC Claims). An obese patient with a history of OSA on nightly continuous positive airway pressure (CPAP) came into an ASC for incision, drainage, and excision of a pilonidal cyst. The anesthesiologist opted for monitored anesthesia care (MAC). The patient was turned prone and sedated. The patient was initially combative with injection of local anesthetic by surgeons, which improved with propofol bolus. The oxygen mask was difficult to maintain. The surgeon was almost finished closing the incision when the patient became bradycardic, and Code Blue was called. The patient was turned supine and found to be in pulseless electrical activity. Cardiopulmonary resuscitation was administered with return of spontaneous circulation, and the patient was transferred to a hospital, where he had a prolonged hospital course and ultimately was discharged. The patient complained of cognitive impairment and memory problems. Experts/external consultants stated OSA may have caused the

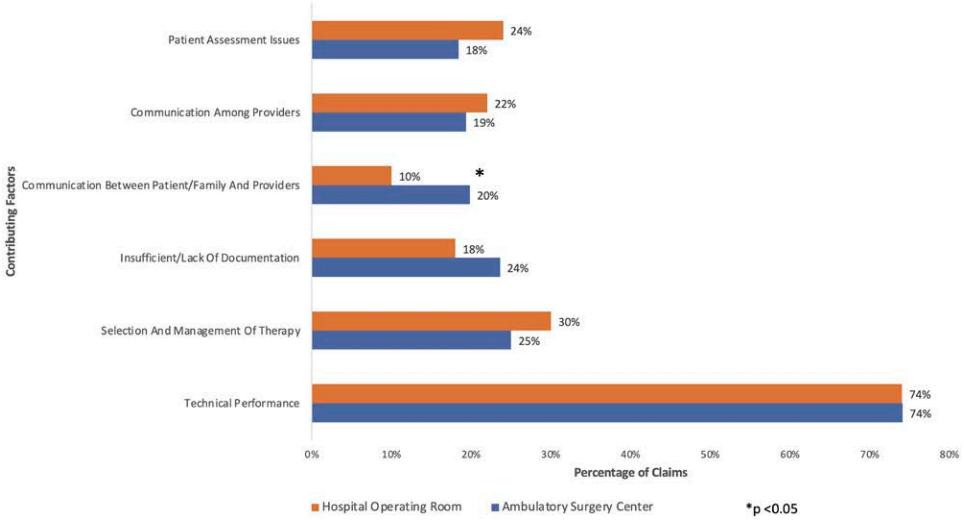

Figure 5. Contributing factors in claims from free-standing ambulatory surgery center versus hospital operating room. Note that >1 comorbidity may be associated with a particular claim.

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

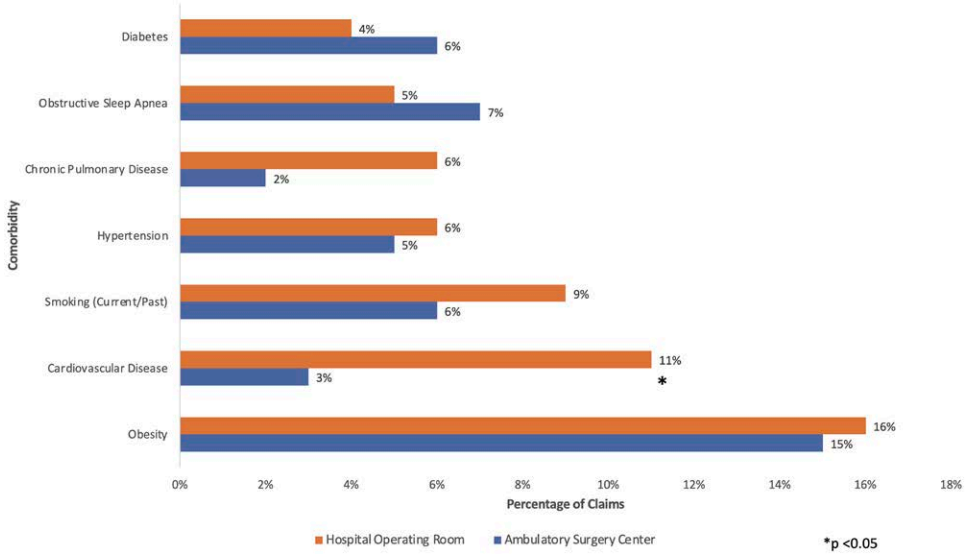

Figure 6. Comorbidities most associated with free-standing ambulatory surgery center claims. Note that >1 comorbidity may be associated with a particular claim.

respiratory arrest, and the anesthesiologist should have intubated and not used MAC, considering OSA and body mass index.

Insufficient/Lack of Documentation (24% of Free-Standing ASC Claims). A patient came into an ASC for a colonoscopy. The patient consented and reviewed the risks, including vomiting and aspiration pneumonia. MAC was administered by an anesthesiologist. The patient vomited during the procedure. Documentation of the event included, "limitations/complications: poor preparation. Sedation related," but there was no documentation that the patient vomited. The anesthesiologist told the patient that he aspirated and should go to the emergency department if he developed a fever. The patient developed fever, wheezing, and chills, went to the emergency department, and was diagnosed with aspiration pneumonia. The patient made a full recovery. Experts noted that the anesthesiologist's charting of the event was inadequate in detail to explain what had occurred.

Communication Between Patient/Family and Providers (20% of Free-Standing ASC Claims). A patient came to the ASC for shoulder arthroscopy and distal clavicle excision. The anesthesiologist spoke with the patient before the procedure about an interscalene block. The anesthesiologist said the discussion included the risks of the possibility of nerve damage and temporary ipsilateral hemidiaphragmatic paresis. The patient consented to the block. The anesthesiologist used a dual technique, a nerve stimulator ultrasound-guided posterior approach in the lateral decubitus position. The anesthesiologist documented the identification of all landmarks and that a test dose was negative for any neurological and central circulating symptoms. After the block wore off, the patient complained of shortness of breath and difficulty taking a deep breath. A chest X-ray showed suspected diaphragmatic paralysis. The patient stated they were not made aware of the possible permanent risk of nerve damage or paresis.

Communication Among Providers (19% of all Free-Standing ASC Claims). A patient underwent removal of a skin lesion suspected to be keratosis but wanted to rule out malignancy. The patient underwent MAC with supplemental oxygen via nasal cannula. The surgical team announced that they would begin cauterizing the skin lesion. The cautery was set to level 30 instead of 5 to 10 by the circulating nurse. The anesthesiologist did not turn off oxygen. Cauterization was started, and a spark ignited the patient's face, causing burns along the upper lips and opening of both nostrils. The surgery was stopped, and saline solution was applied to the patient's face. The patient was transferred to a hospital intubated due to concern for possible airway compromise. Experts/external consultants cited poor communication between the surgeon and anesthesiologist. Clearer communication was needed to assure oxygen was off before starting cautery.

Patient Assessment Issues (18% of All Free-Standing ASC Claims). A patient with a meniscus tear underwent a knee arthroscopy. The patient had a history of obesity and OSA. The case was performed under sedation and nerve block. The patient became restless and agitated under propofol sedation and started pulling off the monitors. The decision was made to convert to general anesthesia, and the surgeon was told to proceed. There were 3 unsuccessful intubation attempts, and the patient went into cardiac

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

arrest. The patient was resuscitated and transferred to a hospital for admission to an intensive care unit. The patient claimed disability from persistent cognitive impairment, despite independent medical review. Experts were critical of not having monitors on the patient, and the patient was likely combative due to hypoxia.

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

DISCUSSION

In this study, we performed an up-to-date analysis of anesthesia-related malpractice closed claims among free-standing ASCs from the database of a nationwide malpractice insurer. This observational study presents an updated overview of the allegations of injury and contributing factors related to anesthesia malpractice claims in an increasingly utilized setting for surgical care. Understanding these claims data is important for developing potential approaches to improving patient safety and reducing malpractice risk. Overall, our findings closely track patterns seen in a previous investigation of anesthesia-related free-standing ASC closed claims from an earlier time period encompassing claims from 2007 to 2014.[10]

Almost half of the claims (44%) occurred in the free-standing ASC setting versus HOR cases—which also included inpatient surgery. Although it is difficult to ascertain denominators for claims data, it is notable that approximately one-third of Medicare fee-for-service outpatient surgery is performed at free-standing ASCs.[16,17] A similar analysis from the preceding 10 years of TDC claims data reported that 35% (290 of 818) of claims occurred in the free-standing ASC setting.[10] This potential increase in frequency of free-standing ASC claims may reflect increased utilization of free-standing ASCs in the more recent decade. However, given the overall moderate acuity of procedures and healthier patients seen in free-standing ASCs, compared to HORs, the frequency of free-standing ASC claims per procedure may be nontrivial and deserves further investigation.

Claims with high severity of injury were less frequent among the free-standing ASCs than in HORs, and medium severity of injury was seen more frequently in the free-standing ASCs. This appears to be consistent with the notion that free-standing ASC patients are healthier on average, and their procedures are less acute than in HORs. HORs typically deal with more complex patients and procedures, and despite a greater level of resources for rescuing patients, are still faced with patient harm events. Although data are scant, previous investigations of outpatient orthopedic surgery suggest that overall complication rates are relatively low among free-standing ASCs,[5] and possibly even lower than compared to HORs.[5,18] However, careful patient selection based on comorbidities and procedure may also explain the observed low complication rate between the 2 procedural settings. Conversely, our findings might also reflect elevated patient expectations at free-standing ASCs. Patients may perceive a lower level of risk when undergoing surgery at a free-standing ASC, and thus may have higher expectations for outcomes and a reduced tolerance for medical errors. Cardiac arrest and death were rare among both free-standing ASC and HOR claims.

The frequencies of the most common injuries in free-standing ASC claims were overall very similar to those seen in HOR claims—dental injury and nerve damage were the 2 most common injuries across claims in both settings. Dental injury is one of the most common claims against anesthesiologists in general, reaching 20% to 40% of claims.[19,20] Indeed, we observed that dental injury was the most common injury among claims from both the free-standing ASC and HOR settings. Anesthesiologists perform airway management as a core practice, and dental injury is a well-known complication of anesthesia care. Advances in airway management tools, such as video laryngoscopes and fiberoptic scopes, have contributed to a decrease in the frequency of failed airways, but dental injury after anesthesia persists.[21,22] Various tools to protect the teeth during intubation are available, such as bite blocks and dental guards, but these do not eliminate the risk of dental injury during surgery. Patients may also consider having preexisting dental issues addressed before elective surgery.

Our data indicate burns appeared more frequently among free-standing ASC claims than in the HOR claims. Surgical fires are a rare occurrence; however, this finding denotes the need for more attention on fire safety in the free-standing ASC. Fires in the OR are a preventable danger, and they require continuous awareness of the entire surgical team.[23] The use of fire prevention tools/checklists and conducting fire drills can help avoid surgical fires.[24]

In addition to severity and types of patient harm, closed claims data also specify the allegations made for the claim—the assertion of what was done incorrectly. The most common allegation among anesthesia-related free-standing ASC claims is improper performance of anesthesia procedures. Concordantly, the most common contributing factor to each claim was technical performance. Most of these claims involved injury from intubation and improper performance of nerve blocks. Previous closed claims data regarding management of difficult airway showed that airway events occurred throughout the operative period, but two-thirds of airway events occurred during intubation.[25] Airway management remains a core component of anesthesia care and remains an ongoing safety issue, despite regularly updated practice guidelines for ensuring safe airway management[26] and the aforementioned advances in

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

airway management tools. The free-standing ASC environment may encourage production pressure to conduct cases under MAC instead of general anesthesia, which may contribute to airway issues or aspiration events. A previous closed claims analysis of procedures performed under MAC revealed that respiratory depression after administration of sedatives or opioids was the most common damaging mechanism in MAC claims.[27] Nerve blocks, especially performed with ultrasound imaging, are known to be relatively safe.[28] A previous closed claims study on injuries associated with nerve blocks showed no malpractice claims when ultrasound guidance was performed.[29] However, our findings suggest that nerve blocks continue to be a patient safety vulnerability, despite the widespread use of ultrasound guidance. The frequency of claims related to nerve blocks in our data may also reflect the underlying high prevalence of orthopedic procedures performed in free-standing ASCs. A recent closed claims study of injuries related to peripheral nerve blocks demonstrated that most claims were associated with interscalene blocks, followed by femoral and sciatic nerve blocks.[30] Factors contributing to these injuries were technical performance as well as preexisting injury and/or radiculopathy. Documentation of a neurological examination should be completed before performing regional anesthesia. Proper physical examination, review of symptoms, and patient counseling regarding the risks and benefit of the nerve block before performing the procedure are critical. Additionally, patient follow-up after discharge from the free-standing ASC is important to assess for symptoms of procedure-related nerve injury.

Claims with alleged improper patient positioning were found to be less common among free-standing ASCs than HORs. Procedures performed in free-standing ASCs tend to have simpler positioning requirements and are generally of briefer duration than in HORs. A previous claims analysis of positioning-related nerve injuries showed that most injuries involved the brachial plexus, as well as supine positioning.[31]

We also found that communication between patients/family and providers was a contributing factor more frequently among free-standing ASC claims than in HOR claims. Review of individual cases revealed that lapses in communication between patients and providers occurred bidirectionally. In some cases, the patient failed to inform the provider of important information (eg, history of OSA or CPAP usage), and in others, the anesthesiologist failed to follow-up with the patient after a complication. High case volume and fast turnovers in free-standing ASCs might pose challenges to effectively communicating with the patient and/or family around the time of surgery. Our findings suggest that opportunities exist to improve communications with patients in the free-standing ASC environment.

Most free-standing ASC claims were not associated with any comorbidity and were essentially healthy patients who experienced an adverse event. This finding is in concordance with a recent Medicare database study of patient selection for ASCs, which found that patients having surgery at an ASC had less baseline risk of 30-day revisits versus matched patients having surgery at an HOR (8.47% vs 13.09%).[32] Several notable comorbidities were associated with almost one-third of ASC claims, most notably obesity, smoking, OSA, and diabetes. Obesity is a risk factor for perioperative events, such as hypoxemia, nerve block failures, thrombosis, and difficult airway—although high-quality evidence regarding appropriate selection of obese patients for ambulatory surgery, including body mass index, is lacking.[33–35] However, a combination of obesity, OSA, and other major comorbidities such as cardiovascular disease and poorly controlled hypertension may confer a higher risk of adverse events in ambulatory surgery patients. OSA is common in ambulatory surgical patients, and assuming that their comorbidities have been optimized, they can be considered for ambulatory surgery, especially if a CPAP device can be used in the postoperative period and opioid-sparing techniques can be used to manage their postoperative pain.[36] Regarding diabetes, high-quality evidence for perioperative blood glucose control in ambulatory surgery patients is lacking, including data for specific preoperative blood glucose thresholds, and each patient should be reviewed on a case-by-case basis in regard to their appropriateness for ambulatory surgery.[37]

Analysis of closed claims data has several limitations regarding the assessment of patient safety risk. Although the database used in this study included claims made against physicians across the United States in a variety of practice settings, it is from a single malpractice insurance company, which may affect generalizability of the findings. Malpractice claims may be filed after complications of care, regardless of whether the injury was preventable. Furthermore, a patient's decision to file a malpractice claim can be influenced by factors other than preventable harm, such as the relationship with the care team. Patients may choose not to file a malpractice claim, even after experiencing preventable medical harm. Indeed, communication and resolution programs that focus on prompt disclosure of patient safety events, offering an apology, and offering compensation when applicable have been shown to reduce the rate of new malpractice claims.[38] Denominator data are difficult to ascertain beyond overall procedure volumes, and detailed risk-adjustment for ASA physical status, case acuity,

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

and provider level of training and experience are similarly unfeasible for claims data.

CONCLUSIONS

Our contemporary analysis of anesthesia closed claims identified several risks to patient safety in free-standing ASCs. Almost half of the claims occurred in the free-standing ASC setting, despite the perceived safety of ambulatory anesthesia and procedural care. Airway management and nerve blocks continue to be top areas of concern, across both free-standing ASCs and HORs, but patient burns and problems with communication with patients were more frequent among free-standing ASC claims. Despite decreased perceptions of risk outside of the hospital setting, ambulatory anesthesia practices should consider raising attention to adherence to established standards of care, improving safety culture and communication with families, and provision of up-to-date training and resources for performing routine anesthesia procedures.

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

DISCLOSURES

Name: Marc Philip T. Pimentel, MD, MPH.
Contribution: This author helped in the literature review, data acquisition, interpretation of results, writing and revision of the article, and final approval of the article.
Conflicts of Interest: None.
Name: Scott Chung, MD.
Contribution: This author helped in the literature review, data acquisition, interpretation of results, writing and revision of the article, and final approval of the article.
Conflicts of Interest: None.
Name: Jacqueline M. Ross, RN, PhD.
Contribution: This author helped in the literature review, data acquisition, interpretation of results, writing and revision of the article, and final approval of the article.
Conflicts of Interest: J. M. Ross is an employee of The Doctors Company.
Name: Daniel Wright, RN, JD.
Contribution: This author helped in the literature review, data acquisition, interpretation of results, writing and revision of the article, and final approval of the article.
Conflicts of Interest: D. Wright is an employee of The Doctors Company.
Name: Richard D. Urman, MD, MBA.
Contribution: This author helped in the literature review, data acquisition, interpretation of results, writing and revision of the article, and final approval of the article.
Conflicts of Interest: R. D. Urman reports fees/funding from AcelRx, Pfizer, and Merck.
This manuscript was handled by: Girish P. Joshi, MBBS, MD, FFARCSI.

REFERENCES

1. Frack B, Grabenstatter K, Williamson J. Ambulatory surgery centers: becoming big business. 2015;XIX. Accessed June 5, 2023. https://www.lek.com/insights/ei/ambulatory-surgery-centers-becoming-big-business.
2. Philip B, Pomerantz P. 2021 anesthesia almanac. Published 2021. Accessed June 18, 2023. https://www.asahq.org/-/media/sites/asahq/files/public/resources/analytics-research-services/2021-anesthesia-almanac.pdf.
3. Rajan N, Rosero EB, Joshi GP. Patient selection for adult ambulatory surgery: a narrative review. *Anesth Analg*. 2021;133:1415–1430.
4. Hawkins J, Green C, Park C. ASCs in 2021: a year in review. *Becker's ASC Review*. 2022. Accessed March 27, 2023. https://www.beckersasc.com/asc-transactions-and-valuation-issues/ascs-in-2021-a-year-in-review.html.
5. Goldfarb CA, Bansal A, Brophy RH. Ambulatory surgical centers: a review of complications and adverse events. *J Am Acad Orthop Surg*. 2017;25:12–22.
6. Bansal VK, Dobie KH, Brock EJ. Emergency response in the ambulatory surgery center. *Anesthesiol Clin*. 2019;37:239–250.
7. Chung F, Assmann N. Car accidents after ambulatory surgery in patients without an escort. *Anesth Analg*. 2008;106:817–820, .
8. Metzner J, Kent CD. Ambulatory surgery: is the liability risk lower? *Curr Opin Anaesthesiol*. 2012;25:654–658.
9. Posner K. Liability profile of ambulatory anesthesia. *ASA Newsl*. 2000;64:1012.
10. Ranum D, Beverly A, Shapiro FE, Urman RD. Leading causes of anesthesia-related liability claims in ambulatory surgery centers. *J Patient Saf*. 2021;17:513–521.
11. Schaffer AC, Yu-Moe CW, Babayan A, Wachter RM, Einbinder JS. Rates and characteristics of medical malpractice claims against hospitalists. *J Hosp Med*. 2021;16:390–396.
12. Ranum D, Ma H, Shapiro FE, Chang B, Urman RD. Analysis of patient injury based on anesthesiology closed claims data from a major malpractice insurer. *J Healthc Risk Manag*. 2014;34:31–42.
13. Tan J, Ross JM, Wright D, Pimentel MPT, Urman RD. A contemporary analysis of closed claims related to wrong-site surgery. *Jt Comm J Qual Patient Saf*. 2023;49:265–273.
14. Guideline for implementation of medical professional liability closed claim reporting. 2010. Accessed April 7, 2023. https://content.naic.org/sites/default/files/GL1077.pdf.
15. CRICO. *Clinical Coding Taxonomy*, V4.0; 2021.
16. Torabi SJ, Patel RA, Birkenbeuel J, Nie J, Kasle DA, Manes RP. Ambulatory surgery centers: a 2012 to 2018 analysis on growth in number of centers, utilization, Medicare services, and Medicare reimbursements. *Surgery*. 2022;172:2–8.
17. Hollenbeck BK, Dunn RL, Suskind AM, Zhang Y, Hollingsworth JM, Birkmeyer JD. Ambulatory surgery centers and outpatient procedure use among Medicare beneficiaries. *Med Care*. 2014;52:926–931.
18. Carey K, Morgan JR, Lin MY, Kain MS, Creevy WR. Patient outcomes following total joint replacement surgery: a comparison of hospitals and ambulatory surgery centers. *J Arthroplasty*. 2019;35:7–11.
19. Diakonoff H, De Rocquigny G, Tourtier JP, Guigon A. Medicolegal issues of peri-anaesthetic dental injuries: a 21-years review of liability lawsuits in France. *Dent Traumatol*. 2022;38:391–396.
20. Christensen RE, Baekgaard JS, Rasmussen LS. Dental injuries in relation to general anaesthesia—a retrospective study. *Acta Anaesthesiol Scand*. 2019;63:993–1000.
21. Kuo YW, Lu IC, Yang HY, Chiu SL, Hsu HT, Cheng KI. Quality improvement program reduces perioperative dental injuries—a review of 64,718 anesthetic patients. *J Chin Med Assoc*. 2016;79:678–682.
22. Newland MC, Ellis SJ, Peters KR, et al. Dental injury associated with anesthesia: a report of 161,687 anesthetics given over 14 years. *J Clin Anesth*. 2007;19:339–345.
23. Mehta SP, Bhananker SM, Posner KL, Domino KB. Operating room fires: a closed claims analysis. *Anesthesiology*. 2013;118:1133–1139.
24. Fire safety | AORN. Accessed April 12, 2023. https://www.aorn.org/guidelines-resources/tool-kits/fire-safety.

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.

25. Miller KA, Goldman MP, Nagler J. Management of the difficult airway. *Pediatr Emerg Care*. 2023;39:192–200.
26. Apfelbaum JL, Hagberg CA, Connis RT, et al. 2022 American Society of Anesthesiologists Practice Guidelines for management of the difficult airway. *Anesthesiology*. 2022;136:31–81.
27. Bhananker SM, Posner KL, Cheney FW, Caplan RA, Lee LA, Domino KB. Injury and liability associated with monitored anesthesia care: a closed claims analysis. *Anesthesiology*. 2006;104:228–234.
28. Barrington MJ, Uda Y. Did ultrasound fulfill the promise of safety in regional anesthesia? *Curr Opin Anaesthesiol*. 2018;31:649–655.
29. Lee LA, Posner KL, Kent CD, Domino KB. Complications associated with peripheral nerve blocks: lessons from the ASA closed claims project. *Int Anesthesiol Clin*. 2011;49:56–67.
30. Saba R, Brovman EY, Kang D, Greenberg P, Kaye AD, Urman RD. A contemporary medicolegal analysis of injury related to peripheral nerve blocks. *Pain Physician*. 2019;22:389–400.
31. Grant I, Brovman EY, Kang D, Greenberg P, Saba R, Urman RD. A medicolegal analysis of positioning-related perioperative peripheral nerve injuries occurring between 1996 and 2015. *J Clin Anesth*. 2019;58:84–90.
32. Silber JH, Rosenbaum PR, Reiter JG, et al. The safety of performing surgery at ambulatory surgery centers versus hospital outpatient departments in older patients with or without multimorbidity. *Med Care*. 2023;61:328–337.
33. Moon TS, Joshi GP. Are morbidly obese patients suitable for ambulatory surgery? *Curr Opin Anaesthesiol*. 2016;29:141–145.
34. Joshi GP, Ahmad S, Riad W, Eckert S, Chung F. Selection of obese patients undergoing ambulatory surgery: a systematic review of the literature. *Anesth Analg*. 2013;117:1082–1091.
35. Seyni-Boureima R, Zhang Z, Antoine MMLK, Antoine-Frank CD. A review on the anesthetic management of obese patients undergoing surgery. *BMC Anesthesiol*. 2022;22:98.
36. Joshi GP, Ankichetty SP, Gan TJ, Chung F. Society for Ambulatory Anesthesia consensus statement on preoperative selection of adult patients with obstructive sleep apnea scheduled for ambulatory surgery. *Anesth Analg*. 2012;115:1060–1068.
37. Joshi GP, Chung F, Vann MA, et al; Society for Ambulatory Anesthesia. Society for Ambulatory Anesthesia consensus statement on perioperative blood glucose management in diabetic patients undergoing ambulatory surgery. *Anesth Analg*. 2010;111:1378–1387.
38. Kachalia A, Sands K, Van Niel M, et al. Effects of a communication-and-resolution program on hospitals' malpractice claims and costs. *Health Aff (Millwood)*. 2018;37:1836–1844.

Downloaded from http://journals.lww.com/anesthesia-analgesia by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC4/OAVpDDa8K2+Ya6H515kE= on 08/29/2024

Copyright © 2024 International Anesthesia Research Society. Unauthorized reproduction of this article is prohibited.