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Analysis of Closed Malpractice Claims in Anesthesia Practices From 2009 to 2022: A Retrospective Study

2009-2022 Yılları Arasında Anestezi Pratiklerinde Kapalı Malpraktis İddialarının Analizi: Retrospektif Çalışma

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ABSTRACT Objective: This retrospective study aims to comprehensively analyze closed malpractice claims related to anesthesia procedures in Türkiye from 2009 to 2022. The study seeks to identify the most common causes of anesthesia-related malpractice claims, evaluate patient outcomes, and assess the legal decisions made in these cases. **Material and Methods:** A total of 101 cases were analyzed based on factors such as the cause of each case, the final condition of the patient, court decisions, and anesthesia-related complications. The data were collected from publicly accessible legal databases and evaluated statistically to determine significant trends. **Results:** The findings indicate that intraoperative complications and postoperative mortality are the most frequent issues, with 25.7% of cases linked to surgical complications. Anesthesia-related intraoperative cardiac arrests accounted for 23.8% of cases. Among the patients involved, 64.4% had died, and 63.4% of cases were determined to involve negligence. Despite these findings, there was no statistically significant difference in mortality rates between cases with and without negligence ($p>0.05$). The study also highlights a rising trend in anesthesia-related malpractice cases in recent years, emphasizing the importance of adopting enhanced monitoring techniques and improving professional training programs. **Conclusion:** This study identifies critical vulnerabilities in anesthetic practices, underlining the need for improved clinical protocols, better intraoperative monitoring, and enhanced post-anesthetic care. Increased focus on patient safety measures, adherence to evidence-based guidelines, and the regular training of healthcare professionals can significantly reduce the frequency of preventable anesthesia-related complications. Future research should explore strategies to mitigate malpractice risks and improve the overall quality of anesthetic care.

Keywords: Malpractice; anesthetic management; intraoperative complications

ÖZET Amaç: Bu retrospektif çalışma, 2009'dan 2022'ye kadar Türkiye'de anestezi prosedürleriyle ilgili kapatılan malpraktis iddialarını kapsamlı bir şekilde analiz etmeyi amaçlamaktadır. Çalışma, anesteziyle ilgili malpraktis iddialarının en yaygın nedenlerini belirlemeyi, hasta sonuçlarını değerlendirmeyi ve bu vakalarda verilen yasal kararları değerlendirmeyi amaçlamaktadır. **Gereç ve Yöntemler:** Her bir vakanın nedeni, hastanın son durumu, mahkeme kararları ve anesteziyle ilgili komplikasyonlar gibi faktörlere göre toplam 101 vaka analiz edildi. Veriler, kamuya açık yasal veri tabanlarından toplandı ve önemli eğilimleri belirlemek için istatistiksel olarak değerlendirildi. **Bulgular:** Bulgular, intraoperatif komplikasyonların ve postoperatif mortalitenin en sık karşılaşılan sorunlar olduğunu, vakaların %25,7'sinin cerrahi komplikasyonlarla bağlantılı olduğunu göstermektedir. Anestezi ile ilgili intraoperatif kardiyak arrestler vakaların %23,8'ini oluşturmaktadır. Dâhil olan hastalar arasında %64,4'ü ölmüş ve vakaların %63,4'ünün ihmal içerdiği belirlenmiştir. Bu bulgulara rağmen, ihmali olan ve olmayan vakalar arasında ölüm oranlarında istatistiksel olarak anlamlı bir fark yoktu ($p>0,05$). Çalışma ayrıca son yıllarda anesteziyle ilgili malpraktis vakalarında artan bir eğilime dikkat çekerek, gelişmiş izleme tekniklerinin benimsenmesinin ve profesyonel eğitim programlarının iyileştirilmesinin önemini vurgulamaktadır. **Sonuç:** Bu çalışma, anestezi uygulamalarındaki kritik zaafları belirleyerek, iyileştirilmiş klinik protokollere, daha iyi intraoperatif izlemeye ve geliştirilmiş anestezi sonrası bakıma olan ihtiyacın altını çizmektedir. Hasta güvenliği önlemlerine daha fazla odaklanılması, kanıta dayalı yönergelere uyulması ve sağlık çalışanlarının düzenli olarak eğitilmesi, önlenebilir anesteziyle ilgili komplikasyonların sıklığını önemli ölçüde azaltabilir. Gelecekteki araştırmalar, malpraktis risklerini azaltma ve anestezi bakımının genel kalitesini iyileştirme stratejilerini araştırmalıdır.

Anahtar Kelimeler: Malpraktis; anestezi yönetimi; intraoperatif komplikasyonlar

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Malpractice, by definition, refers to "the failure of a professional to perform their duties with the knowledge and skill that would be expected of a reasonably prudent member of the same profession under similar circumstances, resulting in harm to the recipient of the service".[1] While this definition is applicable across all professions, it is most commonly associated with healthcare professionals and is often used synonymously with the term "medical malpractice." In this context, malpractice can be defined as "the failure of a physician or healthcare provider to adhere to standard practices during diagnosis and treatment, resulting in harm due to insufficient skill or failure to provide appropriate care".[2]

There has been a significant rise in medical malpractice cases filed globally, particularly in our country.[3,4] Cases related to malpractice claims influence physicians' specialty choices, the practice of defensive medicine, and the overall provision of healthcare services.

This study examines decisions from the Court of Cassation, the Council of State, and the Constitutional Court through publicly accessible online platforms. The aim is to identify cases related to malpractice in anesthesiology, explore situations deemed errors, and analyze the rulings issued in these cases.

MATERIAL AND METHODS

The study was designed as a retrospective analysis following the decision assigned [date: July 3, 2024, no: TABED1-24-369] by the Ethics Committee at Ankara Bilkent City Hospital and was conducted in accordance with the principles of the Helsinki Declaration.

We conducted an analysis of closed malpractice claims spanning the years 2009 to 2022 for our study. The research was conducted by examining the decisions accessed through the keywords "anesthesia" on the following websites: https://karararama.yargitay.gov.tr/, https://karararama.danistay.gov.tr/ and https://www.anayasa.gov.tr/tr/kararlar-bilgi-bankasi/.

The examined case outcomes were categorized according to the cause of the claims, the patient's final condition, the court decision, and anesthesia-related factors. Due to the nature of the legal database used, detailed clinical information regarding patient demographics, types of surgeries, and hospital characteristics (such as institutional type or level of care) was inaccessible because of confidentiality concerns related to defendant and plaintiff information. As a result, it was not possible to systematically classify cases by surgery type or hospital setting. The analysis was limited to data explicitly mentioned in legal documents, which often lacked standard clinical or institutional identifiers.

STATISTICAL ANALYSIS

Data were described using frequencies and percentages. The chi-square test was used for group comparisons of nominal variables (in cross-tabulations).

IBM SPSS version 20 (Chicago, IL, USA) was used for statistical analyses, and a significance level of $p<0.05$ was considered statistically significant.

RESULTS

A total of 263 cases' court decisions were identified. One hundred one cases were filed against anesthesia practitioners, while expert opinions were requested in the remaining 162 cases. The study included 101 cases filed and finalized between 2009 and 2022. It was determined that 25.7% of cases were due to intraoperative complications and postoperative deaths.

It was determined that 23.8% of anesthesia-related cases were due to intraoperative cardiac arrest (Table 1).

The analysis of anesthesia-related malpractice cases identified intraoperative cardiac arrest as the most common cause, occurring in 23.8% of cases. Following this, nerve injury was cited in 13.9% of instances. Other significant contributors included insufficient recovery at 15.8% and insufficient ventilation at 10.6%. Additionally, complications like malignant hyperthermia and errors related to wrong use of drugs or incorrect blood transfusion each accounted for 2% of cases, while esophageal rupture was noted in 3%. Other causes included delayed or insufficient intervention and cardiac arrest due to insufficient monitoring, both at 3%. The analysis also highlighted rare but severe complications, such as tracheal rupture, vision loss, and hearing loss, each occurring in 1% of cases, underscoring the potential for infrequent yet serious adverse events in anesthesia practice (Table 2).

TABLE 1: Distribution of case causes and decision years

Category	n	%
Cause of case		
Complication during surgery	26	25.7
Complication after surgery	17	16.8
Death during surgery	16	15.8
Death after surgery	26	25.7
Arrest during surgery	4	4.0
Cauda equina syndrome	4	4.0
Maternal death	6	5.9
Infant death	2	2.0
Decision years		
2009	2	2.0
2010	1	1.0
2012	3	3.0
2013	4	4.0
2014	8	7.9
2015	12	11.9
2016	13	12.9
2017	12	11.9
2018	7	6.9
2019	11	10.9
2020	11	10.9
2021	14	13.9

It was found that 64.4% of patients had died, and 63.4% of cases resulted in a guilty verdict (Table 3).

There was no significant difference in survival rates of patients between faulty and non-faulty cases ($p>0.05$) (Table 4).

A comparison of intraoperative and postoperative complications revealed that defective cases had a significantly higher incidence of intraoperative complications at 31.2%, compared to 16.2% in non-defective cases. Interestingly, postoperative deaths were similarly distributed between the 2 groups, with 37.8% occurring in non-defective cases and 18.8% in defective ones. Among intraoperative deaths, 18.8% were associated with faulty cases, and intraoperative cardiac arrests were notably more prevalent in defective cases, occurring in 4.7% of these instances. Conversely, cauda equina syndrome was more frequently reported in non-defective cases at 8.1%, while only 1.6% of defective cases experienced this syndrome. Additionally, although anesthesiologists did not identify defects in cases of stillbirth, defects were more commonly noted in maternal deaths, with a prevalence of 6.2% (Table 5).

TABLE 2: Anesthesia-related causes of cases

Anesthesia-Related Causes	n	%
Hearing loss	1	1.0
Cauda equina syndrome	2	2.0
Pulmonary edema during surgery	1	1.0
Encephalitis after surgery	1	1.0
Arm amputation after vascular access attempt on the hand	1	1.0
Dental damage after intubation	1	1.0
Absence from duty	1	1.0
Vision loss	1	1.0
Intraoperative complications due to incomplete patient history	1	1.0
Anaphylaxis after induction	1	1.0
Intraoperative arrest	24	23.8
Malignant hyperthermia	2	2.0
Unknown cause	3	3.0
Esophageal rupture	3	3.0
Insufficient pre-anesthetic evaluation	1	1.0
Nerve injury	14	13.9
Meningitis after spinal anesthesia	1	1.0
Tracheal rupture	1	1.0
Vocal cord paralysis	1	1.0
Burn injury	1	1.0
Wrong use of drugs	2	2.0
Incorrect blood transfusion	2	2.0
Insufficient recovery	16	15.8
Arrest due to insufficient monitoring and evaluation	3	3.0
Insufficient intervention	3	3.0
Insufficient ventilation	11	10.6
Death after referral due to lack of ICU availability	1	1.0

ICU: Intensive Care Unit

TABLE 3: Patients' final conditions

Final Condition	n	%
Deceased	65	64.4
Alive	14	13.9
Alive with loss of workability	19	18.8
Alive with disability	2	2.0
Hoarseness	1	1.0
Final Status		
Deceased	65	64.4
Alive	36	35.6
Verdict		
No-fault	37	36.6
Faulty	64	63.4

TABLE 4: Comparison of patients' final conditions in faulty and no-fault cases

	No-fault		Faulty		
Verdict	**n**	**%**	**n**	**%**	**p value**
Deceased	26	70.3	39	60.9	0.345(c)
Alive	11	29.7	25	39.1	

c: Chi-square tests

TABLE 5: Distribution of case causes in faulty and no-fault cases

	No-fault		Faulty	
Cause of case	**n**	**%**	**n**	**%**
Intraoperative complication	6	16.2	20	31.2
Postoperative complication	5	13.5	12	18.8
Intraoperative death	4	10.8	12	18.8
Postoperative death	14	37.8	12	18.8
Intraoperative cardiac arrest	1	2.7	3	4.7
Cauda equina syndrome	3	8.1	1	1.6
Maternal death	2	5.4	4	6.2
Stillbirth	2	5.4	0	0

DISCUSSION

This study provides valuable insights into malpractice cases related to surgical and anesthetic practices in Türkiye between 2009 and 2022. The findings underscore the significant burden of intraoperative and postoperative complications, accounting for 51.4% of the cases. In particular, intraoperative deaths and arrests (23.8%) and postoperative deaths (25.7%) highlight the critical need for enhanced safety measures during and after surgical procedures.

Anesthetic complications, including intraoperative arrests, insufficient ventilation, and nerve damage, were prominent contributors to cases. These findings align with global trends, where errors in anesthetic management often lead to adverse outcomes. Notably, 64.4% of the patients were deceased, emphasizing the severe nature of these cases. Furthermore, 63.4% of cases resulted in a finding of negligence, reflecting a significant legal and professional risk for healthcare providers.

No statistically significant difference in mortality rates was observed between negligent and non-negligent cases ($p>0.05$). This may indicate that while errors or omissions are often present, patient outcomes can also be influenced by other factors, such as underlying health conditions or procedural complexity.

The distribution of cases over time shows a gradual increase in cases, with a peak in recent years. This trend may reflect increased awareness of patient rights, better access to legal resources, or rising expectations for healthcare quality. It also underscores the importance of continuous professional education and the adoption of robust protocols to minimize errors and improve patient outcomes.

Recent studies highlight that the quality of anesthesia documentation is crucial in malpractice litigation. Wilbanks et al. noted that inadequate documentation can weaken legal defenses and suggest substandard care, regardless of actual negligence.[5] Their closed claims analysis found that incomplete perioperative records, notably missing vital sign trends and anesthesia events, were linked to poor legal outcomes.

Respiratory events are the primary cause of anesthesia-related deaths and brain injuries, as reported in the study by Cheney et al. This finding aligns with our research, which indicates that intraoperative cardiac arrest is the most common cause of anesthesia-related malpractice cases, accounting for 23.8%.[6]

Previous analyses by the American Society of Anesthesiologists (ASA) show that respiratory events are among the most common preventable causes of anesthesia-related claims. MacRae noted that claims related to inadequate ventilation and difficult airway management remain prevalent, despite advancements in monitoring and protocols.[7]

In their study, Ertan et al. highlighted that insufficient preoperative preparation was the primary reason for malpractice cases concerning anesthesia. While our study also noted poor preoperative evaluation, it's important to emphasize that it was not the predominant issue in our cases. This underscores the need for a comprehensive approach to enhance patient safety and minimize potential legal risks.[8]

According to the U.S. closed claims analysis by Metzner et al. anesthesia procedures performed in re-

mote locations carry higher risks due to limited equipment availability and restricted emergency intervention capabilities. Similarly, our study identified intraoperative cardiac arrest and insufficient ventilation as the most common anesthesia-related complications. These findings highlight the necessity of developing standardized protocols to ensure patient safety in anesthesia applications. Improving intraoperative monitoring, increasing access to emergency intervention tools, and enhancing the competency of anesthesia teams through continuous training are crucial measures to mitigate risks and reduce malpractice claims.[9]

A systematic review by Braz et al. identified several key risk factors for perioperative mortality, including patient comorbidities (especially ASA III-V), male gender, emergency surgeries, and the use of general anesthesia.[10] Importantly, airway-related complications and cardiovascular events were the leading causes of deaths attributed to anesthesia. These findings align with our own data, which indicate that intraoperative cardiac arrest was the most frequently reported adverse outcome.

Arbous et al. showed that specific aspects of anesthesia management, such as the absence of a senior anesthesiologist during induction and insufficient documentation of neuromuscular recovery, were significantly linked to higher mortality rates. This highlights the importance of following evidence-based practices and standardized protocols to reduce risks.[11]

Ranum et al. examined claims from a significant U.S. malpractice insurer and found systemic issues like inadequate supervision, poor teamwork, and faulty communication significantly contributed to adverse outcomes. These institutional shortcomings, often underreported, are essential for understanding the root causes of preventable harm.[12]

Our study has several strengths, including analyzing a substantial number of cases (n=263) over 13 years from 2009 to 2022. This extensive dataset allowed us to identify significant trends and patterns in anesthesia malpractice cases, and we drew valuable data from a legal platform. We carefully categorized these cases according to the reasons for law cases, patient outcomes, anesthesia-related factors, and law case decisions, which facilitated a thorough examination of the contributing elements. By focusing specifically on anesthesia-related complications, we were able to pinpoint critical areas for improvement in anesthesia practices, including intraoperative monitoring, anesthesia assessments, and postoperative care. These insights can significantly inform clinical guidelines and training programs moving forward.

The study has several limitations that affect the generalizability and robustness of its findings. First, it relies exclusively on data from Türkiye, which means that the results may not apply to other countries due to variations in legal systems, cultural contexts, and healthcare practices. The absence of a control group, such as uncomplicated cases, complicates efforts to establish causal relationships and assess the relative risks associated with specific anesthesia practices. Moreover, some legal records lack detailed descriptions of clinical events, making it challenging to comprehensively understand the factors contributing to complications. Furthermore, various external influences, including expert witness testimony and legal precedents, can affect court decisions, potentially introducing bias into the findings.

The legal documents reviewed in this study did not consistently include detailed clinical data, such as patient demographics, types of surgical procedures, or hospital characteristics. However, systemic and institutional factors may contribute to malpractice. The lack of standardized information regarding hospital type, administrative structure, staffing levels, and equipment adequacy means that these variables could not be evaluated systematically. Therefore, future research should incorporate more comprehensive datasets to explore the impact of organizational conditions on anesthesia-related claims.

CONCLUSION

The study highlights critical risk factors associated with surgical and anesthetic malpractice cases. To mitigate these risks, emphasis should be placed on improving preoperative evaluations, intraoperative monitoring, and postoperative care. Regular training for healthcare professionals, adherence to evidence-based guidelines, and the implementation of safety

protocols are essential to reducing the incidence of preventable complications.

Addressing these challenges necessitates a multidisciplinary approach that enhances communication among healthcare providers, patients, and legal entities. Future studies should investigate interventions that could effectively lower malpractice claims and improve patient safety, fostering trust in the healthcare system.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Oya Kılcı, Betül Güven Aytaç;* ***Design:*** *Oya Kılcı, Feryal Korkmaz Akçay;* ***Control/Supervision:*** *Özlem Balkız Soyal, Betül Güven Aytaç;* ***Data Collection and/or Processing:*** *Feryal Korkmaz Akçay, Betül Güven Aytaç;* ***Analysis and/or Interpretation:*** *Oya Kılcı, Özlem Balkız Soyal;* ***Literature Review:*** *Feryal Korkmaz Akçay, Betül Güven Aytaç, Oya Kılcı;* ***Writing the Article:*** *Oya Kılcı, Betül Güven Aytaç;* ***Critical Review:*** *Özlem Balkız Soyal, Feryal Korkmaz Akçay;* ***References and Fundings:*** *Oya Kılcı;* ***Materials:*** *Oya Kılcı.*

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