

From the Operating Room to the Courtroom: Wrong-Site Surgery

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Abstract

Aim: This study aimed to analyze wrong-site surgery cases reported in Supreme Court decisions and the media in Türkiye, identifying their characteristics and legal implications from a forensic medicine perspective.

Methods: A retrospective review was conducted using the legal database lexpera.com.tr and Google News search engine. Keywords such as “wrong-site surgery” and equivalent Turkish terms were used to identify cases between 2010 and 2025. A total of 22 cases meeting inclusion criteria were analyzed. Descriptive statistics were performed using SPSS v21.0.

Results: The analysis revealed that the highest proportion of cases (45.5%) were associated with the orthopedics specialty. The most common surgical sites were lower (31.8%) and upper extremities (22.7%). Wrong-site surgery was most frequently reported in public hospitals (45.5%). Legal analysis revealed that several decisions initially favoring physicians at local courts were overturned in Supreme Courts, mostly in favor of patients.

Conclusions: Wrong-site surgery remains a critical patient safety issue in Türkiye, particularly in orthopedic and high-volume surgical settings. Findings suggest that existing protocols alone are insufficient; effective implementation, regular audits, mandatory time-out compliance, and strengthening safety culture through structured training programs are essential for prevention.

Keywords: Wrong-Site Surgery; Patient Safety; Surgical Safety Checklist; Medico-Legal Analysis

1. Introduction

In recent years, the increasing incidence of medical malpractice cases has emerged as a significant concern in healthcare services. Such cases may lead to severe and often irreversible physical and psychological consequences for patients, while also imposing substantial criminal, financial, and administrative liabilities on physicians and healthcare institutions. The literature identifies various contributing factors to malpractice, including insufficient professional knowledge and experience, communication failures, errors in diagnostic and therapeutic processes, structural deficiencies within the healthcare system, excessive workload, and noncompliance with patient safety protocols.^{1,2} In this context, malpractice should be regarded as a multidimensional and systemic problem.

Wrong-site surgeries (WSS) are also among the important causes of malpractice and are generally defined as a serious patient safety issue categorized as a “definitely preventable error”.^{3,4} Data on the actual incidence of such errors varies. In US data, WSS is the most common type of surgical error among all “absolutely preventable errors”. Overall, a rate of 0.09–4.5 per 10,000 procedures has been reported, with some studies indicating approximately 1 event per 100,000 procedures when looking at the median.^{5–7}

WSS has been most frequently reported in orthopaedic and spinal surgery^{5,8} and has also been identified as a significant risk factor in urological procedures.⁹ WSS has occasionally been observed in

various specialties. In ophthalmic surgery, wrong-site procedures have been documented, particularly in cataract and paediatric ophthalmology.¹⁰ Wrong-site practices are not confined solely to surgical specialties but also extend to various clinical disciplines, including radiology, where such errors may occur during diagnostic or interventional procedures. This highlights that the problem is not limited to operative fields but represents a broader patient safety concern across different areas of medical practice.¹¹ The main causes of WSS include non-compliance with protocols, deficiencies in marking and verification processes, and communication errors.^{5,8}

The Ministry of Health in Turkey has made the implementation of surgical safety checklists mandatory as part of the “Quality Standards in Healthcare. In line with this, it has standardised patient, side, and procedure verification processes, as well as labelling practices, prior to surgery.¹² These procedures, implemented in Turkey as a national adaptation of the World Health Organization (WHO) Surgical Safety Checklist^{13,14}, play a critical role in preventing such incidents.

Despite all regulations and the Ministry of Health's vigilance regarding this issue, this undesirable situation not only causes serious medical and psychological harm to patients but also has profound legal, reputational, and emotional effects on physicians and institutions. In this context, examining cases of WSS, which we can refer to

as “site surgery”, is of great importance both from the perspective of patient safety and from the perspective of malpractice risk management. In our study, Supreme Court decisions and cases reported in the press concerning WSS in Turkey will be analysed to reveal the characteristics and causes of these cases; these findings will be evaluated within the framework of patient safety and malpractice risk management. This study was conducted with the aim of examining the causes and consequences of WSS thereby contributing to physicians’ efforts to take necessary precautions and highlighting the potential legal implications that may arise.

2. Materials and Methods

An online search was conducted on the legal database *lexpera.com.tr* and the news aggregator *news.google.com* on September 06, 2025, using the Turkish keywords “hatalı taraf ameliyatı (wrong-site surgery)” “hatalı taraf operasyonu (wrong-site operation)” “sağ yerine sol ameliyat (left-sited surgery instead of right-sited surgery)” and “sol yerine sağ ameliyat (right-sited surgery instead of left-sited surgery)”. All cases that had been the subject of legal proceedings or media reports due to wrong-site surgery, with adequate information available about the event, were included in the study. The search was limited to the years 2010–2025, based on the publication dates of the news reports and the decision dates of the court rulings. Within this scope, a total of 22 wrong-site surgery (WSS) cases reported in court decisions and news articles were included in the study (Figure 1).

Statistical analyses were performed using the SPSS (Statistical Package for the Social Sciences) version 21.0 software package. Descriptive statistics were used in our study, and categorical variables were presented as counts and percentages.

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The study was initiated following the approval of the Afyonkarahisar Health Sciences University Non-Interventional Clinical Research Ethics Committee, dated 05 September 2025 and numbered 2025/11. All procedures were conducted in accordance with the principles of the Declaration of Helsinki.

3. Results

Ten of the cases included in our study were court decisions, while 12 were internet news reports. Of the court decisions, 5 were from the Council of State, 4 were from the Court of Cassation, and 1 was from the Court of Jurisdictional Disputes. Of the 14 cases with gender information, 57.2% were female (n=8) and 42.8% were male (n=6).

Among the specialties encountering allegations of WSS, orthopaedics ranks first with 45.5 % (n=10) (Table 1).

Lower extremity surgery ranked first among surgical procedures performed, followed by upper extremity surgery (Table 2).

The most frequent claims of WSS occur in public hospitals (45.5%), while university and educational research hospitals (31.8%) rank second.

Of the 10 cases evaluated in local courts, a decision on the merits of the case was rendered in 7. Among these, two rulings were in favor of the physician (one acquittal and one dismissal on the merits; Cases 2 and 3); however, both were overturned by Supreme Courts to the physician’s detriment. Of the five decisions against the

physician, three (Cases 1, 6, and 7) were upheld by Supreme Courts as adverse to the physician, while two (Cases 5 and 8) were overturned on the grounds of requiring a “new expert report” and “granting the defendant the right to defense” (Table 4).

Table 1

Distribution of cases by department.

Specialties	n (%)
Orthopaedics	10 (45.5)
Ophthalmology	3 (13.6)
General Surgery	3 (13.6)
Obstetrics and Gynaecology	2 (9.1)
Urology	1 (4.5)
Plastic surgery	1 (4.5)
Pediatric Surgery	1 (4.5)
Neurosurgery	1 (4.5)

Table 2

Distribution of cases according to surgical sites

Surgical Sites	n (%)
Lower Extremity	7 (31.8)
Upper Extremity	5 (22.7)
Eye	3 (13.6)
Undescended Testicle/Varicocele	2 (9.1)
Inguinal Hernia	2 (9.1)
Ovary	2 (9.1)
Kidney	1 (4.5)

Table 3

Distribution of cases by hospital type

Type of Hospital	n (%)
Public Hospital	10 (45.5)
University/ERH	7 (31.8)
Private Hospital	3 (13.6)
No information	2 (9.1)

*ERH: Educational Research Hospital

4. Discussion

WSS, classified in the international literature as a “never event” (an absolutely preventable event), is one of the most serious preventable errors in patient safety. In our study, a total of 22 cases were identified by reviewing Supreme Court decisions and news reports in Turkey. This method is unique in that it reveals not only the clinical dimension of WSS, but also its legal and social implications.

In our study, it was determined that 57.2% of cases with available gender information were female. Similarly, the literature reports that female cases are in the majority. For example, a 10-year retrospective insurance data study conducted in France reported that women accounted for 52% of claims related to wrong-site/wrong-organ/wrong-procedure surgical errors.¹⁵ In the United States, 51.5% of 68 WSS cases examined between 2013 and 2020 were reported to be women.⁸ Similarly, another large-scale analysis evaluating 1,166 cases found that 51% were women.¹⁶

Table 4

Distribution of facts in Supreme Court rulings by medical specialty, surgical area, and the reasoning behind the decisions of local and Supreme Courts

Case no	Source	Physician specialty	Operational area	Local Court	Supreme Court Decision	Justification
1	Court of Cassation	Orthopaedics	Lower extremity	Compensation	Reversal	a
2	Court of Cassation	Orthopaedics	Lower extremity	Dismissal on the merits	Reversal	b
3	Court of Cassation	Pediatric surgery	Testicle	Acquittal	Reversal	c
4	Court of Cassation	General surgery	Inguinal hernia	d	Approval	
5	Council of State	Orthopaedics	Upper extremity	Compensation	Reversal	e
6	Council of State	Orthopaedics	Upper extremity	Compensation	Approval	
7	Council of State	Ophthalmology	Eye	Compensation	Approval	
8	Council of State	Plastic surgery	Upper extremity	Decision to prosecute	Reversal	f
9	Council of State	Urology	Testicle	Statute of limitations	Reversal	g
10	Court of Jurisdictional Disputes	Obstetrics and Gynaecology	Ovary	Dismissal on procedural grounds	Reversal	h

aNon-pecuniary damages should be increased

bCompensation should be awarded

cA conviction should be rendered

dThe lawsuit should be filed against the administration

eThe defendant should be granted the right to defense

fA new expert report should be obtained

g The statute of limitations should commence not from the date of the surgery, but from the time when it is actually understood that a wrongful surgical procedure was performed

h An action for the annulment of waiver should be filed before the administrative court

These findings consistently show that women constitute more than half of the cases in different studies, highlighting the need for further investigation with larger series to determine whether WSS constitutes a distinct risk group in terms of gender.

In our study, allegations of WSS were found to occur most frequently in public hospitals (45.5%), followed by university and training and research hospitals (31.8%). This finding is consistent with the fact that the majority of surgical procedures in Turkey are performed in public hospitals.¹⁷ Factors such as high case volume, heavy workload, and staff shortages may hinder the effective implementation of patient safety protocols in public institutions. A similar risk is also present in university and training and research hospitals; indeed, a large-scale observational study conducted in the Netherlands¹⁸ demonstrated that compliance with the time-out procedure aimed at preventing WSS was significantly lower in academic (university) hospitals compared to general and teaching hospitals. The researchers emphasized that this difference was related not to hospital size, but rather to organizational structure, safety culture, and staff awareness. The relatively lower number of cases in private hospitals can be explained by reduced patient density and stricter internal audit mechanisms. These findings highlight the importance of strengthening patient safety culture and ensuring more effective implementation of surgical control protocols in both university and public hospitals at the national and international levels.

Wrong-site procedures are predominantly observed in surgical specialties, with orthopedics being the field in which such errors occur most frequently.¹⁵ In our study, the majority of cases were found to involve orthopedic procedures. This finding, as frequently emphasized in the literature, indicates that orthopedic surgery is among the specialties most prone to WSS. Several factors may account for this: the symmetrical anatomy of the upper and lower extremities facilitates site confusion; the high volume of orthopedic surgical interventions increases case numbers; emergency conditions such as trauma may lead to the omission of control steps; and intraoperative changes in patient positioning can create

opportunities for laterality errors. The prominence of orthopedic procedures, particularly those involving the upper and lower extremities, in our study is therefore consistent with these factors as well as with international literature.^{4,8,15} In clinical specialties, wrong-site procedures are relatively rare. However, radiological reporting and interventions stand out as the areas in which such errors are more frequently observed compared to other clinical disciplines.¹¹ Consistent with this, our study did not identify any wrong-site applications attributed to clinical specialties in either judicial decisions or news reports.

In operating rooms, heavy workload and breakdowns in team communication may lead to incomplete implementation of marking and the 'time-out' (right patient-right site-right procedure) protocols. Among the most important measures to prevent WSS is the preoperative 'time-out' procedure. Time-out is a critical safety step in which the surgical team pauses immediately before the operation to verbally confirm the patient's identity, the planned procedure, and the surgical site. This practice constitutes a core component of both the WHO Surgical Safety Checklist and the Universal Protocol developed by The Joint Commission.¹⁹ Reviews in the literature emphasize that poor compliance with the time-out procedure—whether by rushing through the process or by insufficient team participation—significantly increases the risk of WSS.²⁰ Furthermore, some studies have shown that variations in the type of surgical interventions and inconsistencies in protocol adherence are associated with WSS.²¹ Therefore, the complete and standardized implementation of time-out practices is of critical importance for fostering a culture of patient safety.

The Supreme Court decisions examined in our study reveal the legal dimension WSS cases. A substantial proportion of judgments rendered by local courts were overturned by the Supreme Court on either procedural or substantive grounds. Notably, acquittals or dismissals issued in favor of physicians were frequently reversed by the Supreme Court in favor of awarding compensation or rendering convictions. This pattern indicates that WSS is generally interpreted by the judiciary in favor of the patient. In addition, the reversal of

certain cases on the grounds of obtaining a new expert report or ensuring the defendant's right to defense underscores both the critical role of expert opinions in the judicial process and the need for their standardization. In one case, the ruling that the statute of limitations should begin not from the date of surgery but from the time the wrongful surgical procedure was discovered represents another example of patient-oriented expansive interpretation. Overall, these findings demonstrate that in WSS cases, the general tendency of the Supreme Court is to safeguard patient rights, highlighting the significant legal risks faced by physicians.

WSS is among the most serious complications categorized as "entirely preventable" from a patient safety perspective. In our study, the analysis of Supreme Court decisions and cases reported in the media revealed that this issue encompasses not only clinical, but also legal and societal dimensions. The predominance of orthopedic procedures and extremity surgeries in our findings is consistent with high-risk groups reported in the literature. The concentration of WSS in public and university hospitals points to the influence of workload and organizational factors on the implementation of patient safety protocols.

The results indicate that the mere existence of protocols is not sufficient to prevent WSS. For a more effective prevention strategy, it is recommended that standards be reinforced at the policy level, regular auditing mechanisms be implemented, and practical training programs for clinicians be made mandatory.

This study has certain limitations. The retrospective nature of the research has meant that the available data is limited to accessible court decisions and news sources. Court decisions do not always contain all the details of the case and, in some instances, focus solely on the legal assessment, which has restricted the detailed analysis of the clinical and procedural aspects of the cases. Furthermore, the possibility that news reports may have been prepared in a subjective or biased manner could potentially affect the objectivity of the data. Therefore, these limitations must be taken into account when interpreting the findings.

Statement of ethics

This study was approved by Ethics committee of Afyonkarahisar University of Health Sciences(2025-566).

genAI

No artificial intelligence-based tools or generative AI technologies were used in this study. The entire content of the manuscript was originally prepared, reviewed, and approved by both authors.

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Conflict of interest statement

The authors declare that they have no conflict of interest.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Author contributions

Z.L.: Study design, literature review, data analysis, manuscript writing, review and editing

A.I.: Study design, data collection, statistical analysis, manuscript writing

U.K.: Study design, data collection, manuscript writing, review and editing

References

- Walker LE, Shapiro D, Akl S. Malpractice and Risk Management. Walker LE, Shapiro D, Akl S, editors. Introduction to Forensic Psychology: Clinical and Social Psychological Perspectives. 2020;365-73. [\[Crossref\]](#)
- Alim Usemah S, Dame Panjaitan J. Analyst Types of Malpractice In Health Law. Int J Soc Res. 2024 June 22;2(3):130-40. [\[Crossref\]](#)
- Bowman CL, De Gorter R, Zaslow J, Fortier JH, Garber G. Identifying a list of healthcare 'never events' to effect system change: a systematic review and narrative synthesis. BMJ Open Qual. 2023 June 22;12(2):e002264. [\[Crossref\]](#)
- Moshtaghi O, Haidar YM, Sahyouni R, Moshtaghi A, Ghavami Y, Lin HW, et al. Wrong-Site Surgery in California, 2007-2014. Otolaryngol--head neck surg. 2017 July;157(1):48-52. [\[Crossref\]](#)
- Lee SH, Kim JS, Jeong YC, Kwak DK, Chun JH, Lee HM. Patient Safety in Spine Surgery: Regarding the Wrong-Site Surgery. Asian Spine J. 2013;7(1):63. [\[Crossref\]](#)
- DeVine JG, Chutkan N, Gloystein D, Jackson K. An Update on Wrong-Site Spine Surgery. Glob Spine J. 2020 Jan 1;10(1_suppl):41S-44S. [\[Crossref\]](#)
- DeVine J, Chutkan N, Norvell DC, Dettori JR. Avoiding Wrong Site Surgery: A Systematic Review. Spine. 2010 Apr 20;35(9S):S28. [\[Crossref\]](#)
- 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 May 1;49(5):265-73. [\[Crossref\]](#)
- Gadelkareem RA. Experience of a Tertiary-Level Urology Center in the Clinical Urological Events of Rare and Very Rare Incidence. I. Surgical Never Events: 1. Urological Wrong-Surgery Catastrophes and Disabling Complications. Curr Urol. 2018 Feb;11(2):73-8. [\[Crossref\]](#)
- Maloley L, Morgan LA, High R, Suh DW. Wrong-Site Surgery in Pediatric Ophthalmology. J Pediatr Ophthalmol Strabismus. 2018 May 1;55(3):152-8. [\[Crossref\]](#)
- Christensen JD, Hutchins GC, McDonald CJ. Computer automated detection of head orientation for prevention of wrong-side treatment errors. AMIA Annu Symp Proc. 2006;2006:136-40.
- Sağlık Hizmetleri Genel Müdürlüğü, Sağlıkla Kalite ve Akreditasyon Daire Başkanlığı. Güvenli Cerrahi Uygulama Rehberi [Internet]. 2. Baskı. Ankara; 2015 [cited 2025 Aug 25]. Available from: <https://dosyamerkez.saglik.gov.tr/Eklenti/3741/0/4guvenlicerrahirehberipdf.pdf>
- Safe surgery [Internet]. [cited 2025 Aug 25]. Available from: <https://www.who.int/teams/integrated-health-services/patient-safety/research/safe-surgery>
- WHO Patient Safety, World Health Organization. WHO guidelines for safe surgery 2009: safe surgery saves lives. Safe surgery saves lives. 2009 Dec 31 [cited 2025 Aug 23]. Available from: <https://www.who.int/publications/i/item/9789241598552>
- Vacheron CH, Acker A, Autran M, Fuz F, Piriou V, Friggeri A, et al. Insurance Claims for Wrong-Side, Wrong-Organ, Wrong-Procedure, or Wrong-Person Surgical Errors: A Retrospective Study for 10 Years. Journal of Patient Safety. 2023 Jan;19(1):e13. [\[Crossref\]](#)
- Taylor MA, Yonash RA. Risk Factors for Wrong-Site Surgery: A Study of 1,166 Reports of Informed Consent and Schedule Errors. Patient Safety [Internet]. 2024 July 31 [cited 2025 Aug 26];6(1). Available from: <https://patientsafetyjournal.com/article/117084-risk-factors-for-wrong-site-surgery-a-study-of-1-166-reports-of-informed-consent-and-schedule-errors>[\[Crossref\]](#)
- T.C. Sağlık Bakanlığı, Sağlık Bilgi Sistemleri Genel Müdürlüğü. Sağlık İstatistikleri Yıllığı - 2023 [Internet]. Ankara; 2025. 196 p. Available from: <https://www.saglik.gov.tr/TR-84930/saglik-istatistikleri-yilliklari.html>
- Van Schoten SM, Kop V, De Blok C, Spreeuwenberg P, Groenewegen PP, Wagner C. Compliance with a time-out procedure intended to prevent wrong surgery in hospitals: results of a national patient safety programme in the Netherlands. BMJ Open. 2014 July;4(7):e005075. [\[Crossref\]](#)
- Haynes AB, Weiser TG, Berry WR, Lipsitz SR, Breizat AHS, Dellinger EP, et al. A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population. New England Journal of Medicine. 2009 Jan 29;360(5):491-9. [\[Crossref\]](#)
- Papadakis M, Meiwandi A, Grzybowski A. The WHO safer surgery checklist time out procedure revisited: Strategies to optimise compliance and safety. Int J Surg. 2019 Sept 1;69:19-22. [\[Crossref\]](#)
- Gloystein DM, Heiges BA, Schwartz DG, DeVine JG, Spratt D. Innovative Technology System to Prevent Wrong Site Surgery and Capture Near Misses: A Multi-Center Review of 487 Cases. Front Surg [Internet]. 2020 Oct 23 [cited 2025 Aug 26];7. Available from: <https://www.frontiersin.org/journals/surgery/articles/10.3389/fsurg.2020.563337/full>[\[Crossref\]](#)