

ORIGINAL ARTICLE

## *Medical liability in anesthesiology. Greek courts decisions analysis*

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### ABSTRACT

**Introduction:** The physician's liability during the performance of the medical act is controlled by the law.

**Purpose:** The purpose of our research was to analyze published court decisions cases concerning malpractice in anesthesiology and the causes of death and injury attributed to anesthesia before and after the safe anesthesia guidelines implementation.

**Material/Methods:** Published court decisions from 1973 to 2020 were searched in the legal information banks.

**Results:** 75 out of 455 court decisions retrieved concerned anesthesiologists or anesthesiologists and surgeons. Thirty-nine (39) decisions concerned convictions of manslaughter of twenty-three (23) patients, seventeen (17) adults and six (6) minors. Fourteen (14) decisions concerned bodily harm and nine (9) concerned compensation for mental pain, bodily harm, or death. Seven (7) decisions were acquittals. The most common causes of negligent homicide were difficult intubation, airway obstruction and encephalopathy.

**Conclusion:** Medicine and law use different methodological tools. Doctors lack knowledge about legal procedures, while judges lack medical knowledge. In order to solve these problems, it is necessary that judicial officers are educated in medical matters and doctors are trained in judicial matters of medical negligence.

*Keywords:* medical liability, anesthesiology

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### INTRODUCTION

The definition of medical act was established in Greece by the first article of Code of

Medical Ethics (Law 3418/2005), which states that a medical act is an act that aims at the prevention, diagnosis, treatment and

restoration of human health by any scientific method.

The physician's liability during the performance of the medical act is legally controlled and the justice, in order to control this liability, uses as a criterion whether the undesirable effect of the medical behavior is due fundamentally recognized rules of medical science violation and whether this behavior is in accordance with the objectively required duty of custody. [1-3]

Under this light, medical behavior as an action or omission is legally controlled and includes the patient's informed consent in a language that must be understood by them and concerns the choice of a therapeutic act or method with the development of advantages and disadvantages, the risk of major complications and, in case the patient wishes full information, reporting of the most rare or minor complications. In case of unconsciousness of the patient or their incapacity of legal action the above information should be explained to their relatives. [1-3]

The medical act is additionally regulated by the rules of medical art and science, as they are determined by the guidelines of the respective scientific societies and the international medical practice, aiming at the average prudent doctor of the specialty. [3-5]

Medicine and law approach things separately, according to different rules and using different methodological tools. Medicine is a science of probability, where the most correct medical behavior does not necessarily mean a successful result. The delimitation and

evaluation of medical liability is one of the most difficult problems in the field of justice and the fate of a doctor is often judged by such judicial involvement.

Analysis of misconduct during anesthesia can provide a detailed picture of the causes of patient mortality and morbidity.

The purpose of our research was to analyze alleged medical errors by Anesthesiologists through published court decisions cases, to study the causes of death and injury attributed to anesthesia and observe whether the safe anesthesia guidelines that were fully implemented in 2004 resulted in a reduction in adverse events.

Moreover, to study how these cases were judged by justice and the criteria used to judge whether the medical operation was performed correctly or not, in order to conclude to the attribution of responsibility.

## MATERIAL AND METHODS

Published court decisions of criminal, civil, administrative and disciplinary content, from 1973 to 2020 were searched in the legal information banks Nomos, Sakkoulas-online.gr and Bank of the Athens Bar Association and in legal magazines, such as Nomiko Vima, Hellenic Justice, Criminal Chronicles, Criminal Justice.

Age of the patients, sex, date of the operation and causes that led to the adverse outcome were recorded.

**Table 1.** Cases of Anesthesiologist negligence. Sex, age and ASA classification of the patients.

<b>SEX</b>	Male (10)	Female (21)
<b>AGE</b>	Adults (25)	Minors (6)
<b>MEAN AGE</b>	Male 51,6 +/- 28	Female 29,3 +/- 16,2
<b>ASA</b>	I-II (28)	III (3)

The court decisions were analyzed by an expert, specialist Anesthesiologist and University Professor on the causes of death and the rightfulness of the court decision in collaboration with the lawyers of the investigation.

There was also recorded whether the deaths were due to non-compliance with the instructions for safe anesthesia, such as the patient's informed consent, preoperative examination, the presence of one specialist anesthesiologist and one registered nurse in each operating room, control of anesthesia machines, supervision by a specialist during anesthesia administration by a trainee, continuous vital functions monitoring and continuous monitoring of the patient by the anesthesiologist.

## RESULTS

A total of 455 court decisions were retrieved, out of which 75 (16,048%) concerned anesthesiologists or anesthesiologists and surgeons. Thirty-nine (39) decisions, ratified by Criminal Courts of substance or Courts of Cassation, concerned convictions of negligent homicide of twenty-three (23) patients, seventeen (17) adults and six (6) minors. Age, sex, and ASA classification of the patients are demonstrated in Table 1.

Fourteen (14) decisions concerned bodily harm, to seven (7) patients and nine (9) concerned compensation for mental pain, bodily harm, or death. One (1) decision concerned a conviction for breach of duty. One (1) concerned the cessation of criminal proceedings, due to statute of limitations. Seven (7) decisions were acquittals. The rest concerned either appeals or trial referring to Courts of substance.

## Cases of medical negligence

Causes of negligent homicide and bodily harm are shown in Table 2. Death due to airway obstruction in minors was attributed to insufficient follow-up by the Anesthesiologist of 3 children during MRI scanning, whereas the tension pneumothorax was attributed to the use of an old type machine, while the anesthesiologist was not present.

In adults, in one of the cases of difficult intubation leading to posterior pharyngeal hematoma, a tracheotomy was attempted by the surgeon, resulting in carotid and jugular vein rupture. The poor outcome of airway obstruction in adults intraoperatively or postoperatively was due to poor management of anesthesia, high doses of intravenous anesthetics, inadequate monitoring, premature intubation, or aspiration during

**Table 2.** Causes and number of cases of death and bodily harm

<b>Causes of negligent homicide in minors</b>	<b>N (=6)</b>
Difficult intubation-tracheal perforation	1
Tension Pneumothorax	1
Airway obstruction	3
High narcotics dosage	1
<b>Causes of negligent homicide in adults</b>	<b>N (=17)</b>
Difficult intubation	3
Airway obstruction	4
N <sub>2</sub> O poisoning	2
Excessive fluid administration during laparoscopy	1
Aspiration (Laryngeal Mask use)	1
High narcotics dosage	1
Epidural anesthesia complications	2
Post hemorrhagic shock	3
<b>Bodily Harm</b>	<b>N (=8)</b>
Encephalopathy	4
Paraplegia	2
Nerve damage	2

anesthesia administration in a parturient using a laryngeal mask.

N<sub>2</sub>O poisoning was due to the use of old type anesthesia machines that did not support O<sub>2</sub> deficiency ventilator monitoring.

The poor outcome after an epidural anesthesia on a parturient was due to either application of the technique on a contraindicated patient (bicuspid stenotic aortic valve), or a delayed epidural hematoma treatment, leading to paraplegia. Lack of detailed inform was also documented in the latter case. In two more cases, subarachnoid administration of epidural dosage was the cause of bodily harm, where in the first case migration of the epidural catheter to subarachnoid space resulted in the third dose given by a nurse being lethal, while in the

second it resulted in cauda equina syndrome manifestation.

In two cases, poor outcome was also attributed to the fact that anesthesia administration was assigned to a trainee.

In the cases of encephalopathy in four (4) patients the causes were difficulty in ventilation, lack of monitoring, difficult intubation leading to hypoxemia, or cardiac arrest. In the latter case the anesthesiologist was not present as he was in charge in two different operating rooms.

In one case after 2004, tension pneumothorax occurred due to the use of an old type anesthesia machine, while the anesthesiologist was not present.

The Anesthesia Safety Guidelines, issued in 1997 and fully implemented in 2004, were not

followed in 16 (69.6%) patients who died before their implementation, compared to 7 who died after 2004. Pecuniary compensation of 60.000 - 300.000 Euros was imposed in nine cases.

### Acquittal decisions

The anesthesiologist was acquitted in seven (7) cases:

1) In the case of vascular rupture, leading to hemorrhagic shock and hemoperitoneum during laparoscopic cholecystectomy. The court initially focused on undocumented and incorrect lidocaine administration, not the cause of the shock, and convicted the Anesthesiologist. The medical examiner's testimony that the blood in the abdomen was due to infiltration of blood through a septum during open-chest resuscitation also contributed to this decision. The Anesthesiologist appealed to the Supreme Court and the verdict was overturned on lack of reasoning in relation to the facts accepted by the Court of Appeals as proven for the liability of the anesthesiologist.

2) In the case of intraoperative myocardial infarction in a coronary patient.

3) In a case of death due to post hemorrhagic shock of a terrorist attack victim. Two Anesthesiologists were convicted at first instance.

4) In the case of death of a patient with lower extremity embolism and multiple organ failure.

5) In two cases of death from N<sub>2</sub>O poisoning, the two anesthesiologists who administered anesthesia were acquitted, but the department directors were convicted for omitting to check the old machines that had not been in use for 2.5 years.

6) In case of death of a patient with cancer and metastasis who underwent surgery for large intrapelvic tumor (group acquittal).

7) In the death of a minor with thrombocytopenic purpura from postoperative spastic quadriplegia. Possible surgeon involvement.

### DISCUSSION

In our study, 21 patients, the majority of whom were young people, lost their lives due to the negligence of the Anesthesiologist. Although there are inherent limitations in the analysis of court decisions, our research has identified significant anesthetic complications and mechanisms.

The implementation of the guidelines for safe anesthesia (Government Gazette 1044 B/ 3-12-1997), as well as the guidelines in airway management seem to have played an important role in the reduction of deaths after 2004. More factors towards the better outcome were the higher training quality of anesthesiologists, most of whom now had 5 years of training instead of 3, the use of modern equipment during anesthesia administration and the use of newer, safer anesthetic drugs with a shorter duration of action. In a study by Lee et al, the introduction of capnometer and pulse

oximetry reduced the severity of damage in claims of poor anesthesia. [6]

The most common causes of negligent homicide were difficult intubation, airway obstruction and encephalopathy. Our results are compared to those in international literature.

Peterson suggested that the application of the airway guidelines from 1993 to 1999 resulted in a reduction in claims compared to the period 1985-1992. Cases of difficult airway management, death and encephalopathy were more common during anesthesia induction (67%), 15% during surgery, 12% upon awakening, and 5% during resuscitation. Persistent intubation efforts were associated with death / encephalopathy. [7]

In Ranum's study of 607 closed claims for the years 2007 - 2012, the incidence of death was 18.3%, organ damage 12.7%, cardiac arrest 10.7% and nerve damage 13.5%. Organized surgery centers had a lower death rate (12%) than 100-bed hospitals. Obesity was identified as an independent risk factor leading to a claim. The average monetary compensation was \$ 309,066. [8]

Olivar studied the closed court decisions in the US of anesthetized trauma patients who underwent surgery after an injury. The study found that patient claims rates were significantly lower for the years 1990-2005 compared to 1985-2005. The results supported the involvement of anesthesiologists in multidisciplinary trauma care and other organized systems. [9]

In pediatric patients, respiratory complications were associated with half of the malpractice claims from the 1970s to the 1980s in the ASA Closed Claims Database. [10]

In Jimenez's study, there was a decrease in the incidence of claims due to death/encephalopathy, and due to insufficient ventilation/ oxygenation in pediatric patients from 1973 to 2000. However, allegations of death (41%) and encephalopathy (21%) remained the predominant injuries in pediatric anesthesia claims in the 1990s. Half of the cases concerned patients younger than 3 years old and ASA 3-5 class patients represented less than 20% of the cases. [10]

In our study, two patients died after epidural anesthesia and four suffered neurological damage. In a study by Lienhart in 41 claims for death / nerve damage in patients treated in Paris University hospitals from 1977 to 1994 the most common problems were neurological complications of subarachnoid or epidural anesthesia (24,4%), and the consequences of difficult intubation or aspiration of gastric content (12.2%). [11]

In Kent's study the allegations of malpractice in orthopedic surgeries (1592 claims during 2000-2013) mainly concerned nerve lesions (26%), lesions from local anesthesia (26%) and lesions from other types of anesthesia 14%. Nine out of ten patients with claims for epidural hematomas received anticoagulants and all had serious long-term injuries, while the diagnosis and treatment of the lesion was significantly delayed in most cases. Central ischemic lesions in patients who underwent

surgery in a semi-sitting position did not occur exclusively in patients considered high risk for ischemic stroke. [12]

In Saba's research on 62 claims from 2006 to 2016 related to local anesthesia, most were classified as permanent minor injuries. The largest number of claims concerned injuries of the brachial plexus due to intercostal occlusion in shoulder surgery. Damages from femoral and sciatic nerve blockages were the most common to have resulted in compensation. Factors identified to have contributed to the injuries were the Anesthesiologist's "technical knowledge / performance", followed by the "pre-existing injury or root disease". [13]

Huang researched 45 claims from 2007 to 2016 of patients aged 6 to 82 years for lesions following subarachnoid or epidural anesthesia. Compensation was incurred at 20% of the claims. The largest number of claims concerned residual weakness and root disease due to epidural anesthesia. The biggest contributor to these injuries was the Anesthesiologist's "technical knowledge / performance" followed by "missing or inadequate documentation". [14]

Aïssou examined the neurological complications of regional anesthesia by experts and the conclusions of the Regional Conciliation and Compensation Committee and analyzed the records of the complications of regional anesthesia between 2003 and 2008. Bodily harm cases assessed were highly variable. The Regional Conciliation and Compensation Committee generally followed the opinions of experts, except in some cases

where the evidence allowed a different opinion without requiring a differential assessment. In conclusion, the appointment of experts does not appear to have affected the damage assessment, but may change the balance between causes of damage and not damage in favor of the latter. [15]

### **Legal approach**

In most cases the conviction was correct, according to the expert of the investigation. However, in four cases of death, bodily harm and acquittals, there was a misjudgment.

The primary and secondary conviction of an anesthesiologist in cases of hemorrhagic shock in laparoscopic cholecystectomy, despite the fact that there was a blood-peritoneum is particularly impressive. The judges did not focus on the cause of the shock, which could have only been treated surgically, but focused on the misuse of lidocaine, which was not listed in the chart. The opinions of the medical examiners and two anesthesiologists on the prohibited administration of lidocaine in atrioventricular block played an important role in the conviction. This decision was annulled for lack of reasoning in relation to the facts accepted by the Court of Appeal for the guilt of the Anesthesiologist. According to the court data, the accused Anesthesiologist underwent many years of judicial suffering, resulting in mental ordeal, moral damage, consumption of valuable time, reduction of her personality and significant financial burden.

In the case of N<sub>2</sub>O poisoning the bad outcome was due to the use of an old type anesthesia machine that did not have monitoring of the outgoing O<sub>2</sub> from the ventilator, while there was a possibility of malfunction of the flowmeter O<sub>2</sub> indicator, which corresponds to the experience of our research expert. For the death of the two patients, the two anesthesiologists who administered anesthesia were acquitted and the anesthesiology department directors were convicted, after putting into operation the anesthesia machines that had not been used for 2.5 years. The assignment of this type of responsibility to the Directors of the Anesthesiology Department is not in line with their duties and knowledge but relates exclusively to the responsibility of the respective technical service of control and maintenance of these machines.

It is also worth mentioning the conviction of two Orthopedic Surgeons and two Anesthesiologists in the event of death from multiorgan failure due to hemorrhagic shock during surgery for multiple injuries after a terrorist attack. The anesthesiologists were convicted because they did not make it indisputable to the surgeons to know that the patient was in a state of "shock" and did not demand for the surgery to be ceased. This decision was overturned by the Supreme Court and the Court of Appeal, which ruled after the referral, acquitted the Anesthesiologists and the Orthopedic Surgeons.

Finally, in Athens Multi-Member Court of First Instance 2137/2003 decision, pecuniary compensation due to mental pain was

awarded to the husband and parents of a young patient who died through the fault of the Anesthesiologist during intubation, with tracheal perforation and inability to ventilate. However, the Gynecologist was also convicted, as he could not prove that he was not guilty. However, with the decision 13874/2009 of the Three-Member Criminal Court of Athens, it became clear that the surgeon is responsible for the Surgery, whereas the Anesthesiologist is responsible for the administration of anesthesia and the maintenance of vital functions.

These decisions have troubled the Anesthesiology community in terms of justice perspective concerning the operation of Anesthesiologists.

The judicial fate of the doctors involved in justice becomes unfavorable as the doctors do not have knowledge about the existing legal and in general legal procedures and the way of approaching their investigated responsibility by the judicial bodies. [16]

It should be noted, however, that judges do not have the technical medical knowledge to approach the relevant issues and the function of the physician in the execution of the medical act.

In order to solve these problems, we consider necessary that judicial officers are educated in medical matters and doctors are trained in judicial matters of medical negligence research. Finally, institutions / expert groups consisted by doctors of respective specialties should be set up for the preliminary investigation of cases of alleged medical negligence before reaching justice, but also for

their assistance in the evidentiary process, when they are brought to justice [17].

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ΑΝΑΣΚΟΠΗΣΗ

## Ιατρική ευθύνη αναισθησιολόγου. Ανάλυση δικαστικών αποφάσεων

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### ΠΕΡΙΛΗΨΗ

**Εισαγωγή:** Η ιατρική ευθύνη κατά την εκτέλεση της ιατρικής πράξης ρυθμίζεται από το νόμο.

**Σκοπός:** Σκοπός της έρευνάς μας ήταν η ανάλυση των δημοσιευμένων δικαστικών αποφάσεων που αφορούν σε φερόμενα ιατρικά σφάλματα στην αναισθησιολογία και των αιτιών θανάτων και σωματικών βλαβών που αποδόθηκαν στην αναισθησία πριν και μετά την εφαρμογή των οδηγιών χορήγησης ασφαλούς αναισθησίας.

**Υλικό/Μέθοδος:** Αναζητήθηκαν δημοσιευμένες δικαστικές αποφάσεις σε τράπεζες νομικής πληροφόρησης μεταξύ των ετών 1973 και 2020.

**Αποτελέσματα:** Από τις 455 αποφάσεις που ανευρέθηκαν, οι 75 αφορούσαν αναισθησιολόγους και χειρουργούς. Τριάντα εννέα (39) αφορούσαν καταδικαστικές αποφάσεις για ανθρωποκτονία από αμέλεια είκοσι τριών (23) ασθενών, δεκαεφτά (17) ανηλίκων και έξι (6) ανηλίκων. Δεκατέσσερις αποφάσεις αφορούσαν σωματικές βλάβες και εννέα (9) αποζημίωση για ψυχική οδύνη, σωματική βλάβη ή θάνατο. Οι πιο κοινές αιτίες ανθρωποκτονίες από αμέλεια ήταν δύσκολη διασωλήνωση, απόφραξη αεραγωγού και εγκεφαλοπάθεια.

**Συμπεράσματα:** Η ιατρική και η νομική επιστήμη χρησιμοποιούν διαφορετική μεθοδολογία. Οι ιατροί αγνοούν τις νομικές διαδικασίες, ενώ οι δικαστικοί δε διαθέτουν ιατρικές γνώσεις. Για την επίλυση αυτών των προβλημάτων, είναι σκόπιμο οι δικαστικοί λειτουργοί να επιμορφώνονται σε ιατρικά θέματα και οι ιατροί σε νομικές παραμέτρους της ιατρικής αμέλειας.

*Λέξεις ευρετηρίου:* ιατρική ευθύνη, αναισθησιολογία, δικαστικές αποφάσεις

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