

Mortality in Outpatient Surgery

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Background: The American Association for Accreditation of Ambulatory Surgery Facilities (AAAASF) has reported statistics on morbidity and mortality for facilities that it accredits based on an analysis of unanticipated sequelae and surgical mortality. Data acquired through the first Internet-Based Quality Assurance and Peer Review reporting system (IBQAP) were reviewed and published in 2004. This article reports the accumulated data in the IBQAP through June of 2006, analyzing death associated with procedures performed in facilities approved by the AAAASF. With the exception of some statistics on the Medicare-aged population, there are few data reported in the literature related to deaths in outpatient surgery.

Methods: The IBQAP, designed in 1999 by the AAAASF, mandates biannual reporting of all unanticipated sequelae and random case reviews by all surgeons operating in AAAASF-accredited facilities. Surgical log numbers, whose entry is required, allow for tabulation of the number of cases and procedures performed by individual reporting surgeons.

Results: In this review of data collected using the IBQAP from January of 2001 through June of 2006, there were 23 deaths in 1,141,418 outpatient procedures performed. Pulmonary embolism caused 13 of the 23 deaths. Only one death occurred as the result of an intraoperative adverse event.

Conclusions: A pulmonary embolism may occur after any operative procedure, whether it is performed in a hospital, an ambulatory surgery center, or a physician's office-based surgery facility. The procedure most commonly associated with death from pulmonary embolism in an office-based surgery facility is abdominoplasty. The frequency of pulmonary embolism associated with abdominoplasty warrants further study to determine predisposing factors, understand its cause, and introduce guidelines to prevent its occurrence. (*Plast. Reconstr. Surg.* 122: 245, 2008.)

The American Association for Accreditation of Ambulatory Surgery Facilities (AAAASF) has reported statistics on morbidity and mortality for facilities that it accredits based on an analysis of unanticipated sequelae and surgical mortality.^{1,2} Data acquired through the first Internet-Based Quality Assurance and Peer Review reporting system (IBQAP) were reviewed and published in 2004. A total of 1378 significant unanticipated sequelae and 8 postoperative deaths were documented in 411,617 procedures performed over a 2-year period from 2001 through 2002.¹ The total

number of procedures was determined by multiplying the number of cases by 1.4, the average number of procedures per case.

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The procedure most commonly associated with death from pulmonary embolism in an office-

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DOI: 10.1097/PRS.0b013e31817747fd

Disclosure: None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this article.

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OVERVIEW OF MORTALITY IN OUTPATIENT SURGERY

Mortality statistics for outpatient surgery are difficult to analyze because of differences in the preexisting general health of patients, the age of patients studied, and the type and number of procedures performed. The majority of outpatient procedures are performed in freestanding or office-based surgery centers in states that do not require accreditation or licensure of outpatient surgery facilities. As a result, there are few reports on surgery outcome data.³⁻⁵

Before the development by the AAAASF of the IBQAP program in 1999,¹ there was no centrally accessible data acquisition system for outpatient surgery. As a consequence of this lack of centralized reporting, there are few published data relative to postsurgical morbidity and mortality within the first 30 days after surgery from either hospital-based, office-based, or freestanding outpatient surgery facilities.^{2,6-12}

In 2004, a study of data obtained from the AAAASF IBQAP program documented eight deaths in 411,617 procedures, or 1.94 deaths per 100,000 procedures.¹ These office-based surgery center procedures, performed in AAAASF-accredited facilities, were captured over a 2-year period from 2001 to 2002.

The current study using the AAAASF reporting system, from January of 2001 through June of 2006, reveals 23 deaths in 1,141,418 procedures,

or 2.02 deaths per 100,000 procedures. Thirteen of the 23 deaths (57 percent) were from pulmonary embolism. Only one death occurred as a result of an intraoperative adverse event.

DEATHS

Procedures

The procedure most frequently associated with postoperative mortality is abdominoplasty, followed by face-lift surgery in combination with other related procedures (Fig. 1). Nine of the 12 deaths associated with an abdominoplasty had one or more additional procedures performed at the same time (three patients had one additional procedure, three patients had two). Four of the abdominoplasty patients who died had liposuction as one of the other procedures performed.

CASES

Pulmonary Embolism

Pulmonary embolism accounted for 13 of the 23 deaths (57 percent) reported during the 5½-year period (Fig. 2).

Postoperative Medication Abuse

Three patients died as a result of abuse of postoperative pain medications. The first patient was a 53-year-old Hispanic woman who underwent a mastopexy and removal of breast implants under intravenous sedation. She was seen on the first and fourth postoperative days. There was no indication of postoperative sequelae during those visits. On the fifth postoperative day, she was found dead in her bedroom. There was a history of drug abuse. The suspected cause of death was a pain medication overdose.

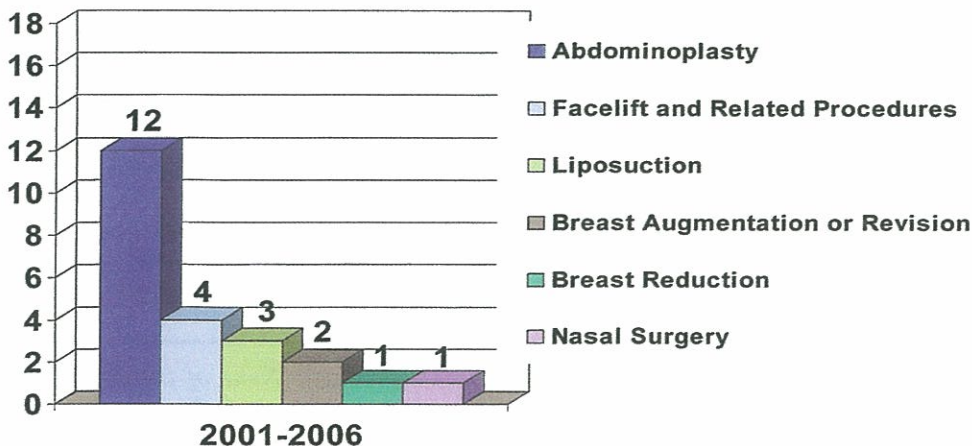


Fig. 1. Bar chart showing the 23 deaths by procedure.

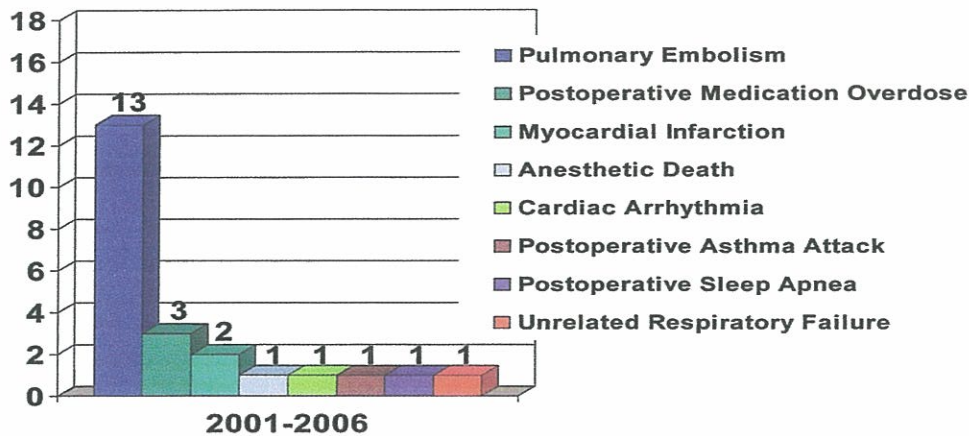


Fig. 2. Bar chart showing the cause of death.

The second patient was a 57-year-old Caucasian woman, who also had a history of drug abuse. She was found dead on the second postoperative day. She had been wearing a fentanyl patch and postoperatively took an unknown quantity of Vicodin orally.

The third patient was a 62-year-old Caucasian woman who died on the second postoperative day after having a face lift with multiple associated procedures. The nurse responsible for her care noted the patient to be somnolent on the evening of her operation. The patient's pain management consisted of the administration of Vicodin and a fentanyl patch. She stopped breathing on the morning of the second postoperative day. She was admitted to the intensive care unit at a nearby hospital, but died as a result of respiratory failure. The suspected cause of her death was a drug overdose leading to respiratory failure.

Myocardial Infarction

A 54-year-old Caucasian woman died 2 days after having an abdominoplasty and liposuction of the back. An autopsy revealed a myocardial infarction.

A second patient, a 45-year-old Caucasian woman, died 3 weeks after abdominoplasty and breast augmentation from ischemic heart disease. There was no known history of cardiac disease before surgery.

Arrhythmia

A 65-year-old Caucasian woman developed an arrhythmia 24 hours after surgery. An autopsy revealed no evidence of myocardial infarction, pulmonary embolism, or medication over-

dose. There was no history of cardiac arrhythmia before surgery.

Intraoperative Anesthetic Adverse Event

A 67-year-old Caucasian woman underwent a face-lift procedure under intravenous sedation. The operating surgeon, without the assistance of a certified registered nurse anesthetist or anesthesiologist, administered propofol, fentanyl, and midazolam. During the procedure, the patient developed hypotension and bradycardia. She underwent resuscitation and was transferred to a hospital, dying 15 days after admission. On April 14, 2004, the American Association of Nurse Anesthetists and the American Society of Anesthesiologist made the following statement jointly:

“Whenever Propofol is used for sedation/anesthesia, it should be administered only by persons trained in the administration of general anesthesia, who are not simultaneously involved in these surgical or diagnostic procedures. This restriction is concordant with specific language in the Propofol package insert, and failure to follow these recommendations could put patients at increased risk of significant injury or death.”

AAAASF standards now require that the use of propofol be limited to class C facilities accredited for the administration of general anesthesia, or those accredited for the provision of the use of propofol under the direct supervision of an anesthesiologist or certified registered nurse anesthetist.

Asthma

On the evening of her surgery, a 32-year-old Caucasian woman died after a breast augmenta-