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Patient Safety in Accredited Office Surgical Facilities [Articles]

Morello, Daniel C. M.D.; Colon, Gustavo A. M.D.; Fredricks, Simon M.D.; Iverson, Ronald E. M.D.; Singer, Robert M.D.

White Plains, N.Y., Metairie, La., Houston, Texas, and Pleasanton and La Jolla, Calif.

10 Chester Avenue; White Plains, N.Y. 10601

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Abstract [TOP](#)

The medical profession is besieged by concerns about cost containment. This in turn has focused attention on the use of ambulatory surgical facilities. However, the costs of hospital outpatient surgery programs usually prevent them from being competitive when compared with the costs of using office surgical facilities. To address the question of patient safety in office surgical facilities, the American Association for Accreditation of Ambulatory Surgery Facilities (AAAASF) sent a questionnaire to its accredited facilities. Two-hundred and forty-one (57.7 percent) of the 418 accredited facilities returned the anonymous questionnaires, a very high response rate. Of interest are the following findings: 400,675 operative procedures were reported during a 5-year period. Significant complications (hematoma, hypertensive episode, wound infection, sepsis, hypotension) were infrequent, occurring in 1 in every 213 cases. Return to the operating room within 24 hours and preventive hospitalization were less frequent. A death occurred in 1 in 57,000 cases (0.0017 percent). The overall risk is comparable in an accredited office (plastic surgical facility) and in a free-standing or hospital ambulatory surgical facility. This study documents an excellent safety record for plastic surgery done in accredited office surgical facilities by board-certified plastic surgeons.

The medical profession is besieged by concerns about cost containment. This in turn has focused attention on the use of ambulatory surgical facilities. In fact, the American Hospital Association projected that as much as 75 percent of all surgery would be done on an outpatient basis in 1995.

The rapidly escalating costs of hospital surgical care and the relative shortage of adequate and convenient hospital operating room time contributed to the initial impetus for office plastic surgery. Although many hospitals have now developed outpatient surgical programs, their administrative and other costs usually prevent them from being cost competitive when compared with office surgical facilities.

In 1991, congressional hearings held by the House Subcommittee on Regulation, Business Opportunities and Energy, chaired by Representative Ron Wyden, focused on the question of safety of surgery done in office facilities. Recently, the media have directed their attention to the same issue.

Plastic surgeons have been instrumental in providing outpatient surgical services in a private setting. A recent survey of members of the American Society for Aesthetic Plastic Surgery (ASAPS) indicated that 48.7 percent of members perform their aesthetic surgery in an office surgical facility.¹

The American Association for Accreditation of Ambulatory Surgery Facilities (AAAASF) was incorporated in 1980 as an independent entity to ensure patient safety in office-based surgery. It is currently the largest accrediting organization for office-based surgical facilities. Surgeons working in AAAASF-accredited facilities must be board-certified and have equivalent hospital surgical privileges.

To address the question of patient safety in office surgery facilities, the AAAASF commissioned a research project with the following goals:

1. To identify and quantify complications related to such surgeries
2. To derive summary information about deaths that occurred during or immediately following such surgeries
3. To compare these mortality and morbidity data with outpatient surgery data compiled by other entities/agencies

Materials and Methods [TOP](#)

Article Outline

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A census study (see [Appendix](#)) was mailed to all 418 AAAASF-accredited surgical facilities. To optimize the response rate, a repeated mailing of the same questionnaire was done several weeks later to those facilities which had not responded. A total of 241 adequately completed questionnaires was received, an exceptionally high response rate of 57.7 percent. The mailing and collation of data were conducted by an independent health care consultant organization, Chalana, Inc.

Results [TOP](#)

The tabulated responses yielded a total of 400,675 surgical procedures over the 5-year period from January 1, 1989 to December 31, 1993. Of these, 253,355 were aesthetic procedures (63.2 percent) and 147,320 were reconstructive in nature (36.8 percent).

Complications and Sequelae [TOP](#)

A breakdown of reported complications is included in [Table I](#). Complications numbered 1877, or 1 in 213 procedures (an incidence of 0.47 percent). Hemorrhagic episodes such as intraoperative or postoperative hematoma comprised 965 cases, or 1 in every 415 procedures (an incidence of 0.24 percent). Hypertensive episodes represented 414 cases, or 1 in 968 procedures (an incidence of 0.1 percent). Infection (major wound infection or sepsis) accounted for 350 cases, or 1 in 1145 procedures (an incidence of 0.09 percent). Intraoperative and postoperative hypotension occurred in 148 cases, or 1 in 2707 procedures (an incidence of 0.04 percent).

TABLE I Complications

TABLE I Complication...

Other Indicators [TOP](#)

Other factors assessed were return to the operating room (various reasons, comprising complications listed above) and precautionary hospitalization. These two indicators are listed separately from complications to avoid duplication. Return to the operating room within 24 hours of the original procedure was reported in 530 cases (1 in 756 cases, 0.13 percent), and precautionary hospitalization was elected in 126 cases, occurring in 1 in 3180 procedures (0.03 percent). The majority of patients who were either returned to the operating room or hospitalized had experienced a complication, as listed above.

Deaths [TOP](#)

Seven deaths were encountered ([Table II](#)), for an incidence of 0.0017 percent, or less than 1 in 57,000 procedures. The ages of these patients were not specified. Two deaths occurred in association with acute occlusion of the left anterior descending coronary artery, one during an elective augmentation mammoplasty and another 4 hours following elective rhinoplasty.

TABLE II Mortality

TABLE II Mortality...

Three deaths were related to intraoperative anesthetic complications (1 in 133,558 procedures). Diffuse cerebral hypoxia occurred during an abdominoplasty, leading to death 11 days later. A tension pneumothorax occurred during an augmentation mammoplasty, with death resulting 4 hours later. A cardiorespiratory arrest led to death at an unspecified time after a carpal tunnel decompression.

One patient died as a result of a cerebrovascular accident 3 days after rhytidectomy and forehead lift. No details were provided on the seventh case.

Discussion [TOP](#)

Two studies have demonstrated that ambulatory surgical centers provide a level of safety comparable with that of hospital surgery.^{2,3} Otherwise, it appears that little data collection has been done routinely in the health care delivery industry regarding the safety of ambulatory surgical procedures and facilities, whether hospital- or office-based.

Natof's³ prospective study from a single ambulatory surgical center reviewed 13,433 procedures with 14-day follow-up. Hemorrhage occurred in 74 patients (1 in 182, 0.55 percent). Infection was reported in 10 patients (1 in 1343, 0.074 percent). No deaths occurred, and 16 patients were transferred to the hospital (1 in 840, 0.12 percent).

A prospective outcome study of 45,090 ambulatory surgical procedures by Warner et al.⁵ of the Mayo Clinic was done to determine the incidence and time sequence of mortality and major morbidity after ambulatory surgery. Patient follow-up was over 95 percent at 1 month. Thirty-three patients were listed as having had major morbidity (1 in 1366 procedures), and there were 4 deaths (1 in 11,273). Two deaths were from myocardial infarction and two from automobile accidents. Analysis of major morbidity was confined to four conditions, which included 14 myocardial infarcts, 7 central nervous system problems, 5 pulmonary emboli, and 5 respiratory failures. The figures for the first three types of morbidity fell within the predicted range of incidence for a similar, unoperated population, leading to the conclusion that ambulatory surgery and concurrent anesthesia did not place patients in the study at increased risk. While most procedures lasted 1 hour or less, the studied population did include older age groups (mean age 57.8 years, range 18 to 96 years) and all ASA classes* (25 percent were ASA class 3). Infection and hemorrhage were not included.

Reports of ambulatory surgical outcomes over a short time frame tend to underestimate the incidence of complications. In the Mayo Clinic study, with a 1-month postoperative follow-up, 39 percent of all major morbidity and both deaths from medical conditions occurred more than 48 hours after ambulatory surgery. Because of the nature of private office plastic surgery, it is assumed that, as in the Mayo Clinic study, nearly 100 percent patient follow-up regarding perioperative complications and mortality was present in the AAAASF study.

Differences between the Mayo Clinic study and the AAAASF study include the length of surgical procedures, and the age and health status of the patient populations. Many of the surgical procedures reported in our study were longer than 60 minutes, and it can be inferred that many lasted 4 to 5 hours, a much longer duration than in those analyzed for the Mayo Clinic study. In general, patients undergoing office plastic surgery tend to be in a middle-age range and to be primarily ASA class I and II. These differences render comparisons difficult, but both studies demonstrate a very low risk of morbidity and mortality associated with ambulatory surgery.

One section of a recent study on anesthetic practice in ambulatory plastic surgery by Courtiss et al.⁴ addressed perioperative complications somewhat differently than the AAAASF study. Respondents were surveyed and complications reported as a percentage of surgeons who *had ever experienced these complications in their cumulative career experience*. Thirteen percent of respondents reported having encountered a respiratory arrest, 8 percent an unplanned intubation, 3 percent an intravascular injection of local anesthetic, and 1.1

percent a death. However, no data regarding incidence of complications can be derived from that study.

As in the Courtiss et al. article, the AAAASF study was a census survey, and statistical analysis is unnecessary; the results speak for themselves. However, we believe that the high response to this voluntary survey is a strong validation that safety is exceptionally important to member facilities.

Conclusion [TOP](#)

This study documents an excellent safety record for plastic surgery done in accredited office surgical facilities by board-certified plastic surgeons, and we conclude that the overall risk is very low. No comparable compilation of data on complications and sequelae associated with office plastic surgery exists.

Daniel C. Morello, M.D.

10 Chester Avenue; White Plains, N.Y. 10601

Acknowledgments [TOP](#)

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Footnotes [TOP](#)

American Society of Anesthesiologists Physical Status Classification: class 1, healthy patient; class 2, mild systemic disease, no functional limitation; class 3, severe systemic disease, definite functional limitation; class 4, severe systemic disease, constant threat to life; class 5, moribund, unlikely to survive 24 hours. [\[Context Link\]](#)

REFERENCES [TOP](#)

1. Membership Audit, American Society for Aesthetic Plastic Surgery, Inc., Spring 1993. [\[Context Link\]](#)
2. Duncan, P. G., and Cohen, M. M. Are anesthetic complications predictable in day surgical practice? *Anesth. Analg.* 74: S76, 1992. [\[Context Link\]](#)
3. Natof, H. E. Complications associated with ambulatory surgery. *J.A.M.A.* 244: 1116, 1980. [\[Medline Link\]](#) [\[CrossRef\]](#) [\[Context Link\]](#)
4. Courtiss, E. H., Goldwyn, R. M., Joffe, J. M., and Hannenberg, A. A. Anesthetic practices in ambulatory aesthetic surgery. *Plast. Reconstr. Surg.* 93: 792, 1994. [\[CrossRef\]](#) [\[Context Link\]](#)
5. Warner, M. A., Shields, S. E., and Chute, C. G. Major morbidity and mortality within 1 month of ambulatory surgery and anesthesia. *J.A.M.A.* 270: 1437, 1993. [\[CrossRef\]](#) [\[Context Link\]](#)

Appendix: Membership Experience Survey (American Association for Accreditation of Ambulatory Surgery Facilities, Inc.) [TOP](#)

Please respond to questions in this brief questionnaire as completely and accurately as possible. Return the completed questionnaire to the project director in the envelope provided within 7 working days.

Note: If you operate in more than one accredited facility, please duplicate the questionnaire and answer all questions separately for each facility.

Year in which your facility opened:

19_____

Number of surgeries performed during the 60 months (5 years) ended December 31, 1993:

A. Five-year total for facility: _____

B. Five-year total per surgeon:

Surgeon no. 1 _____

Surgeon no. 2 _____

Surgeon no. 3 _____

Surgeon no. 4 _____

Surgeon no. 5 _____

Surgeon no. 6 _____

C. Five-year total of aesthetic procedures performed: _____

D. Five-year total of reconstructive procedures performed: _____

Note: C + D should = A.

Please list each organization by which your surgical facility is licensed and/or accredited:

During the 5-year period, were there one or more deaths in your facility? If no, please proceed to Question 5; if yes, please complete the following:

A. Total deaths, 5-year period: _____

Provide the following information on each death, making additional copies of this sheet as needed:

Procedure performed

Cause of death (specify)

Elapsed time between surgery completion and death:

Hours: _____ Days: _____

Please indicate, if possible, one of the following categories for, and timing of, complication related to the death:

Anesthetic complication

Intraoperative

Postoperative

Cardiac complication

Intraoperative

Postoperative

Pulmonary complication

Intraoperative

Postoperative

Were there complications among patients treated in your facility during the 5-year period?

Yes No

If answer is no, your questionnaire is complete; if yes, please complete the remaining sections of Question 5:

Use this sheet to provide total complications in each category, placing totals inside parentheses. Then please make additional copies of this page for your use in providing the breakout information on each of the complications included in your total.

Infection

a. Major wound or

b. Sepsis

Bleeding

a. Intraoperative or

b. Postoperative

Returns to the operating room with anesthesia:

a. Within 24 hours

b. Within 48 hours

Hospitalization within 24 hours:

Specify: _____

Shock (hypotension)

a. Intraoperative or

b. Postoperative

Hypertension

a. Intraoperative or

b. Postoperative [\[Context Link\]](#)

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Citing Articles [TOP](#)



Office Surgery Safety: The Myths and Truths behind the Florida Moratoria-Six Years of Florida Data.

Plastic & Reconstructive Surgery. 118(3):777-785, September 1, 2006.

Clayman, Mark A. M.D.; Seagle, Brent M. M.D.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(179 K\)\]](#)



Certificate-of-Need Regulation in Outpatient Surgery and Specialty Care: Implications for Plastic Surgeons.

Plastic & Reconstructive Surgery. 116(4):1103-1111, September 15, 2005.

Pacella, Salvatore J. M.D., M.B.A.; Comstock, Matthew B.B.A.; Kuzon, William M. Jr M.D., Ph.D.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(167 K\)\]](#)



Analysis of Outpatient Surgery Center Safety Using an Internet-Based Quality Improvement and Peer Review Program.

Plastic & Reconstructive Surgery. 113(6):1760-1770, May 2004.

Keyes, Geoffrey R. M.D.; Singer, Robert M.D.; Iverson, Ronald E. M.D.; McGuire, Michael M.D.; Yates, James M.D.; Gold, Alan M.D.; Thompson, Dennis M.D.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(1.6 M\)\]](#)



One Nurse's Experience in Obtaining Joint Commission Accreditation for Office-Based Surgery Centers.

Plastic Surgical Nursing. 24(2):48-50, April/May/June 2004.

Anello, Susan A. RN, BSN, CPSN, CNOR

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(50 K\)\]](#)



DON'T TRY THIS AT HOME: LIPOSUCTION IN THE KITCHEN BY AN UNQUALIFIED PRACTITIONER LEADS TO DISASTROUS COMPLICATIONS.

Plastic & Reconstructive Surgery. 113(1):460-461, January 2004.

Desrosiers, Arthur E. III, M.D.; Grant, Robert T. M.D.; Breitbart, Arnold S. M.D.

[\[Fulltext\]](#) [\[PDF \(4.92 M\)\]](#)



Safety and Efficacy in an Accredited Outpatient Plastic Surgery Facility: A Review of 5316 Consecutive Cases; H. Steve Byrd, M.D., Fritz E. Barton, M.D., Harry H. Orenstein, M.D., Rod J. Rohrich, M.D., A. Jay Burns, M.D., P. Craig Hobar, M.D., and M. Scott Haydon, M.D.

Plastic & Reconstructive Surgery. 112(2):642-644, August 2003.

Singer, Robert M.D.

[\[Fulltext\]](#) [\[PDF \(64 K\)\]](#)



Safety and Efficacy in an Accredited Outpatient Plastic Surgery Facility: A Review of 5316 Consecutive Cases.

Plastic & Reconstructive Surgery. 112(2):636-641, August 2003.

Byrd, H. Steve M.D.; Barton, Fritz E. M.D.; Orenstein, Harry H. M.D.; Rohrich, Rod J. M.D.; Burns, A. Jay M.D.; Hobar, P. Craig M.D.; Haydon, M. Scott M.D.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(115 K\)\]](#)



Advances in office-based anesthesia.

Current Opinion in Anaesthesiology. 16(4):421-427, August 2003.

Hausman, Laurence M.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(105 K\)\]](#)



Safety and Efficacy of Office-Based Surgery with Monitored Anesthesia Care/Sedation in 4778 Consecutive Plastic Surgery Procedures; George Bitar, M.D., William Mullis, M.D., William Jacobs, M.D., David Matthews, M.D., Michael Beasley, M.D., Kevin Smith, M.D., Paul Watterson, M.D., Stanley Getz, M.D., Peter Capizzi, M.D., and Felmont Eaves, III, M.D.

Plastic & Reconstructive Surgery. 111(1):157-158, January 2003.

Iverson, Ronald E. M.D.

[\[Fulltext\]](#) [\[PDF \(50 K\)\]](#)



Safety and Efficacy of Office-Based Surgery with Monitored Anesthesia Care/Sedation in 4778 Consecutive Plastic Surgery Procedures.

Plastic & Reconstructive Surgery. 111(1):150-156, January 2003.

Bitar, George M.D.; Mullis, William M.D.; Jacobs, William M.D.; Matthews, David M.D.; Beasley, Michael M.D.; Smith, Kevin M.D.; Watterson, Paul M.D.; Getz, Stanley M.D.; Capizzi, Peter M.D.; Eaves, Felmont III, M.D.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(714 K\)\]](#)



Patient Safety in Office-Based Surgery Facilities: I. Procedures in the Office-Based Surgery Setting by Ronald E. Iverson, M.D.

Plastic & Reconstructive Surgery. 110(5):1343-1344, October 2002.

the ASPS Task Force on Patient Safety in Office-based Surgery Facilities; Morello, Daniel C. M.D.

[\[Fulltext\]](#) [\[PDF \(320 K\)\]](#)



Body Mass Index: Risk Predictor for Cosmetic Day Surgery.

Plastic & Reconstructive Surgery. 108(2):556-561, August 2001.

de Jong, Rudolph H. M.D.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(422 K\)\]](#)



Lipoplasty Claims Experience of U.S. Insurance Companies.

Plastic & Reconstructive Surgery. 107(5):1285-1291, April 15, 2001.

Bruner, Jack G. M.D.; de Jong, Rudolph H. M.D.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(114 K\)\]](#)



General Anesthesia in an Office-Based Plastic Surgical Facility: A Report on More than 23,000 Consecutive Office-Based Procedures under General Anesthesia with No Significant Anesthetic Complications by Steven M. Hoefflin, M.D., John B. Bornstein, M.D., Martin Gordon, M.D.

Plastic & Reconstructive Surgery. 107(1):252-253, January 2001.

Singer, Robert M.D.

[\[Fulltext\]](#) [\[PDF \(68 K\)\]](#)



Safety of Outpatient Surgery: Is Mandatory Accreditation of Outpatient Surgery Centers Enough?

Plastic & Reconstructive Surgery. 107(1):189-192, January 2001.

Rohrich, Rod J. M.D.; White, and Paul F. Ph.D., M.D.

[\[Fulltext\]](#) [\[PDF \(81 K\)\]](#)



Fatal Outcomes from Liposuction: Census Survey of Cosmetic Surgeons.

Plastic & Reconstructive Surgery. 105(1):436-446, January 2000.

Grazer, Frederick M. M.D.; de Jong, Rudolph H. M.D.

[\[Abstract\]](#) [\[Fulltext\]](#) [\[PDF \(189 K\)\]](#)

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