Post-Anesthesia Care

Symptoms, Diagnosis, and Management

Edited by

James W. Heitz, MD

Associate Professor of Anesthesiology and Medicine, Sidney Kimmel Medical College, Thomas Jefferson University; Medical Director, Post-Anesthesia Care Unit, Thomas Jefferson University Hospital, Philadelphia, PA, USA
To my wife, Terry, whose understanding makes it possible and whose love makes it all worthwhile.
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Contributors

Gadi Arzanipour, DO
Staff Anesthesiologist, Providence Tarzana Medical Center, Tarzana, CA, USA

Stephen O. Bader, MD
Staff Anesthesiologist, Northstar Anesthesia, Heritage Valley Health Systems, Beaver, PA, USA

Jaime Baratta, MD
Associate Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Donald Baumann, DO
Assistant Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Michelle Beam, DO, MBA
Assistant Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

David Beausang, MD
Instructor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Ashley Caplan, DO
Staff Anesthesiologist, United Anesthesia Services, P.C., Bryn Mawr, PA, USA

Min J. Chun, MD
Staff Anesthesiologist, United Anesthesia Services, P.C., Bryn Mawr, PA, USA

Erika Davis, MD
Resident in Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA, USA

Elia S. Elia, MD
Clinical Associate Professor, Department of Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA, USA

Marc Fisicaro, MD
Clinical Assistant Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Peter Jonathan Gambino, DO
Staff Anesthesiologist, Tift Regional Medical Hospital, Tifton, GA, USA

Kishor Gandhi, MD, MPH, CPE
Staff Anesthesiologist, University Medical Center of Princeton, Plainsboro Township, NJ, USA

Jordan E. Goldhammer, MD
Assistant Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Adam W. Green, MD
Staff Anesthesiologist, Mercy Hospital Northwest Arkansas, Rogers, AR, USA

Zvi Grunwald, MD
The James D. Wentzler Professor and Chair, Department of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Andrea M. Hages, DO, USAF, MC
Assistant Professor in Anesthesiology, F. Edward Hébert School of Medicine, Uniformed Services University of the Health Sciences, Landstuhl Regional Medical Center, Landstuhl, Germany
List of contributors

Yousef Hamdeh, MD
House Officer in Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA, USA

James W. Heitz, MD, FACP
Associate Professor of Anesthesiology and Medicine Sidney Kimmel Medical College, Thomas Jefferson University; Medical Director, Post-Anesthesia Care Unit, Thomas Jefferson University Hospital, Philadelphia, PA, USA

Jeremy L. Hensley, MD
Instructor, Department of Anesthesiology and Critical Care, Hospital of the University of Pennsylvania, Philadelphia, PA, USA

Brian Hipszer, PhD
Distinguished Algorithm Engineer, Critical Care, Edwards Lifesciences, Irvine, CA, USA

George Hsu, MD
Clinical Assistant Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

H. Jane Huffnagle, DO, FAOCA
Clinical Professor of Anesthesiology and Obstetrics & Gynecology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Suzanne Huffnagle, DO, FAOCA
Clinical Professor of Anesthesiology and Obstetrics & Gynecology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Jeffrey I. Joseph, DO
Professor, Vice Chairman, and Director of Research, Department of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University; Director, Jefferson Artificial Pancreas Center & Anesthesiology Program for Translational Research, Philadelphia, PA, USA

Brian Lai, MD
Resident in Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Lisa Luyun, MD
Staff Anesthesiologist, United Anesthesia Services, P.C., Bryn Mawr, PA, USA

Julie P. Ma, MD
Instructor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Emily J. MacKay, DO
Resident in Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA, USA

Niels D. Martin, MD, FACS
Assistant Professor of Surgery; Co-Medical Director, Surgical Intensive Care Unit, University of Pennsylvania, Perelman School of Medicine, Philadelphia, PA, USA

Eric Massey, MD
Instructor, West Virginia University School of Medicine, Department of Anesthesiology, Morgantown, WV, USA

Ryan P. Maxwell, DO
Cardiac Anesthesiologist, United Anesthesia Services, P.C., Bryn Mawr, PA, USA

Michelle McMaster, MD
Staff Anesthesiologist, Fox Chase Cancer Center, Philadelphia, PA, USA

Michele Mele, MD
Instructor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Zara Y. Mergan, MD
Fellow in Chronic Pain, Department of Anesthesiology, Thomas Jefferson University, Philadelphia, PA, USA
List of contributors

Boris Mraovic, MD
Associate Professor of Clinical Anesthesiology, Department of Anesthesiology and Perioperative Medicine, University of Missouri, Columbia, MO, USA

Robert F. Olszewski Jr., MD
Attending Anesthesiologist, Christiana Care Health System, Wilmington, DE, USA

Glen D. Quigley, MD, MBA
Fellow in Adult Cardiothoracic Anesthesiology, NYU Langone Medical Center, New York, NY, USA

Philippa Ratcliffe, RN, MA, CPAN
Nurse Manager, Post Anesthesia Care Unit, Thomas Jefferson University Hospital, Philadelphia, PA, USA

Nicole Renaldi, DO
Instructor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Eric S. Schwenk, MD
Assistant Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Megan J. Sharpe, MD
Resident in Anesthesiology, Thomas Jefferson University Hospital, Philadelphia, PA, USA

Allan F. Simpao, MD
Assistant Professor of Anesthesiology and Critical Care, Department of Anesthesiology and Critical Care Medicine, The Children’s Hospital of Philadelphia, Philadelphia, PA, USA

Benjamin Vaghari, MD
Staff Anesthesiologist, Holy Cross Anesthesia Associates, Wheaton, MD, USA

John T. Wenzel, MD
Fellow, Department of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Michael Jon Williams, MD
Assistant Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Elizabeth Wolo, MD
Assistant Professor of Anesthesiology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA

Jon Zhou, MD
Pain Medicine Fellow, Department of Anesthesiology and Pain Medicine, University of California, Davis, CA, USA
Preface
James W. Heitz

"If America had contributed nothing more to the stock of human happiness than anesthetics, the world would owe her an everlasting debt of gratitude."[1]

Samuel D. Gross, MD
Professor of Surgery (1856–1882)
Jefferson Medical College

The development of the Post-Anesthesia Care Unit (PACU) is a relatively recent phenomenon, but its historical origins pre-date modern anesthesia. As early as 1801, the Newcastle Infirmary in the UK utilized two rooms adjacent to the operating room for patients after surgery or otherwise deemed to be very ill. This nascent Intensive Care Unit may have been the first recovery room, but recovery was only from the surgery, since anesthesia was not administered. William T. G. Morton’s public demonstration of ether at the Massachusetts General Hospital in 1846 ushered in the era of modern anesthesia, and when this was combined with asepsis, the era of modern surgery emerged. Areas near operating rooms quickly became utilized for the induction of general anesthesia, but the benefits of specialized areas for the recovery of patients were not as rapidly recognized. In 1875, plans for the construction for The Johns Hopkins University Hospital in Baltimore included two recovery rooms adjacent to the operating rooms, but many hospitals continued to be designed up until the Second World War without dedicated recovery areas.[2]

In 1942, Dr. John Silas Lundy created the first modern PACU at the Mayo Clinic in Rochester, New York.[3] He termed this area the “post-anesthesia observation unit.” At that time, the recovery room was seen as an area of the hospital where patients could be observed after surgery for untoward complications which might be more efficiently treated in an area near the operating rooms. The importance of a dedicated recovery area was soon validated, by the findings of the Anesthesia Study Commission of the Philadelphia County Medical Society in 1947 which reported that at least one-third of perioperative fatalities were potentially preventable by more vigilant monitoring.[4] Most of these were respiratory-related events requiring prompt intervention to save lives.

As surgical volume, complexity, and patient co-morbidity have increased, the PACU continues to develop, and care has replaced observation. Simply observing patients after surgery is no longer sufficient. The modern PACU now serves a multidisciplinary intensive care unit, functioning simultaneously as a recovery area for both inpatient and outpatient surgeries and more recently as a recovery area for the increasing number of procedures performed in satellite areas. It is an area to perform minor procedures such as electroconvulsive therapy, epidural blood patches, peripheral nerve blocks, and transesophageal echocardiography; a pre-procedure holding area;
and an overflow resource for the other intensive care units.\[5\] This has prompted the light-hearted proposal that the PACU acronym might better stand for “Put All you Can in the Unit.”\[6\] Today, the contemporary PACU may straddle the division of past and present by simultaneously being on the forefront of modern medical care while often being the last unit in the hospital to retain an open ward design.

The early postoperative period has become a watershed, where the care of the surgical patient may be shared by surgeons, anesthesiologists, hospitalists, general internists, subspecialists, physician assistants, advanced practice nurses, and registered nurses. Each has his or her own area of expertise and interest, but none a truly comprehensive perspective of perioperative medicine.

While admittance to the PACU marks the transition from intraoperative to postoperative care for the surgical patient, it is not the “finish line” for surgery. Only about 5% of perioperative deaths occur in the operating room or the early perioperative period,\[7\] so much of the perioperative risk still lies ahead for the surgical patient arriving in the PACU. The anesthetic has usually ended by the time the patient arrives at the PACU, but 1 in 14 malpractice suits brought against US anesthesiologists arise from events that occur after the patient leaves the operating room.\[8\]

As many as one-third of patients have some sort of complication needing to be addressed in the initial hours after surgery,\[9\] and adequacy of treatment may profoundly affect overall outcome. A large retrospective study of the multicenter database maintained by the American College of Surgeons National Surgical Quality Improvement Program revealed a large institutional variation in mortality, but not in overall complication rate.\[10\] Timely diagnosis and effective management of postoperative complications is important for improving outcomes and reducing surgical mortality.

Many postoperative complications are either caused or influenced by iatrogenic factors, obscuring diagnosis and necessitating therapy specific to the perioperative period. Familiarity with the different clinical presentation of perioperative complications is just as important as dedicated recovery areas to optimal outcomes.

By taking an approach to complications based upon signs and symptoms seen in the early postoperative period among adult patients undergoing non-cardiac surgery, this book is intended to aid the practitioner in the clinical management of surgical patients during this potentially turbulent period of their care. No single reference could comprehensively review all the complications that may be encountered after surgery, and an attempt to create one would produce an unwieldy reference unlikely to be clinically useful. This volume emphasizes the most common and most serious complications, as well as complications with presentations unique to the postoperative period. Particular concerns specific to subspecialty patients, including patients requiring postoperative mechanical ventilation, pediatric patients, patients with implantable cardiac devices, morbidly obese patients, and the complex pain patient, are presented in chapters near the end. It is our hope that this reference is useful to the variety of providers caring for surgical patients after surgery.
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References


