

The ASCRS Textbook of Colon and Rectal Surgery

The ASCRS Textbook of Colon and Rectal Surgery

Senior Editors

Bruce G. Wolff, MD, FASCRS
James W. Fleshman, MD, FASCRS
David E. Beck, MD, FASCRS
John H. Pemberton, MD, FASCRS
Steven D. Wexner, MD, FASCRS

Associate Editors

James M. Church, BSc, MBChB, MMed Sci, FASCRS
Julio Garcia-Aguilar MD, PhD, FASCRS
Patricia L. Roberts, MD, FASCRS
Theodore J. Saclarides, MD, FASCRS
Michael J. Stamos, MD, FASCRS



Senior Editors

Bruce G. Wolff, MD, FASCRS
James W. Fleshman, MD, FASCRS
David E. Beck, MD, FASCRS
John H. Pemberton, MD, FASCRS
Steven D. Wexner, MD, FASCRS

Associate Editors

James M. Church, BSc, MBChB, MMed Sci,
FASCRS
Julio Garcia-Aguilar MD, PhD, FASCRS
Patricia L. Roberts, MD, FASCRS
Theodore J. Saclarides, MD, FASCRS
Michael J. Stamos, MD, FASCRS

Library of Congress Control Number: 2006923505

ISBN-10: 0-387-24846-3

ISBN-13: 978-0387-24846-2

Printed on acid-free paper.

© 2007 Springer Science+Business Media, LLC

All rights reserved. This work may not be translated or copied in whole or in part without the written permission of the publisher (Springer Science+Business Media, LLC, 233 Spring Street, New York, NY 10013, USA), except for brief excerpts in connection with reviews or scholarly analysis. Use in connection with any form of information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed is forbidden.

The use in this publication of trade names, trademarks, service marks, and similar terms, even if they are not identified as such, is not to be taken as an expression of opinion as to whether or not they are subject to proprietary rights.

While the advice and information in this book are believed to be true and accurate at the date of going to press, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

9 8 7 6 5 4 3 2 1

springer.com

Senior Editors

Bruce G. Wolff, MD, FASCRS

Professor of Surgery, Mayo Clinic College of Medicine, Chairman, Division of Colon and Rectal Surgery, Mayo Clinic Foundation, Rochester, MN, USA

James W. Fleshman, MD, FASCRS

Professor of Surgery, Chief, Section of Colorectal Surgery, Washington University School of Medicine, St. Louis, MO, USA

David E. Beck, MD, FASCRS

Chairman, Department of Colon and Rectal Surgery, Ochsner Clinic Foundation, New Orleans, LA, USA

John H. Pemberton, MD, FASCRS

Professor of Surgery, Mayo Clinic College of Medicine, Consultant, Colon and Rectal Surgery, Mayo Clinic and Mayo Foundation, Rochester, MN, USA

Steven D. Wexner, MD, FASCRS

Chief of Staff, Cleveland Clinic Florida, Weston, FL, USA

Associate Editors

James M. Church, BSc, MBChB, MMed Sci, FASCRS

Victor W. Fazio Chair of Colorectal Surgery, Department of Colorectal Surgery, Cleveland Clinic Foundation, Cleveland, OH, USA

Julio Garcia-Aguilar MD, PhD, FASCRS

Professor of Surgery, Chief, Section of Colon and Rectal Surgery, Department of Surgery, University of California, San Francisco, San Francisco, CA, USA

Patricia L. Roberts, MD, FASCRS

Chair, Department of Colon and Rectal Surgery, Lahey Clinic, Associate Professor of Surgery, Tufts University School of Medicine, Boston, MA, Department of Colon and Rectal Surgery, Lahey Clinic, Burlington, MA, USA

Theodore J. Saclarides, MD, FASCRS

Professor of Surgery, Head, Section of Colon and Rectal Surgery, Rush University Medical Center, Chicago, IL, USA

Michael J. Stamos, MD, FASCRS

Professor of Surgery, Chief, Division of Colon and Rectal Surgery, Department of Surgery, University of California, Irvine Medical Center, Orange, CA, USA

Foreword

This text was developed under the aegis of the American Society of Colon and Rectal Surgeons (ASCRS). It represents an attempt to cover the field of colon and rectal surgery with input from expert surgeons who have, in one way or another, shown special interest or expertise in specific areas of the specialty.

The book will hopefully serve as a source of useful information and perhaps even guidance to surgeons whose practice is confined to the specialty of colon and rectal surgery, and also to general surgeons, surgery residents, and medical students with an interest in surgery.

The finished product represents significant efforts from authors who have taken time from their busy schedules to set into writing their often unique perspectives. I know for certain that no author of any chapter in this book has a light schedule, but that fact validates each author's selection for authorship.

Special acknowledgment is due the editors, Bruce Wolff, David Beck, John Pemberton, and Steven Wexner. This project simply would not have come together without their efforts on many levels.

Finally, Jim Fleshman must be singled out for special recognition. The idea of an ASCRS-sponsored text began with Jim—an idea that he advocated, developed, nurtured, and forced until it became realized in the substance you now hold.

Robert Fry, MD
Emilie and Roland deHellebranth
Professor of Surgery
Chief, Division of Colon and Rectal Surgery
The Hospital of the University of Pennsylvania

Preface

The ASCRS Textbook was conceived as a means of providing state of the art information to residents in training and fully trained surgeons seeking recertification. The textbook also supports the mission of the American Society of Colon and Rectal Surgeons (ASCRS) to be the world's authority on colon and rectal disease. The combination of junior and senior authors selected from the membership of the ASCRS for each chapter will provide a comprehensive summary of each topic and allow the touch of experience to focus and temper the material. This approach should provide the reader with a very open-minded, evidence-based approach to all aspects of colorectal disease.

The Editorial Committee of the book has been designed to be a rotating group of experts selected by the ASCRS Executive Council. It has been my distinct pleasure and honor to work with this edition's editors and associate editors. They have sacrificed time and energy with patience to achieve what I believe to be the next gold standard in accumulated knowledge regarding the entire breadth of colorectal surgery. The idea for the book was originally Dr. Bruce Wolff's. The table of contents was intentionally based on the Core Curriculum established by the Association of Program Directors in Colon and Rectal Surgery. The Practice Parameters developed by the ASCRS Standards Committee have been incorporated into the appropriate chapters. The proceeds from the textbook and related publications will be utilized by the ASCRS Executive Council to sponsor the Research and Education Foundation of the society. This is truly an ASCRS effort.

As future editions continue the effort started with this first edition, I hope the fellows and members of ASCRS and trainees at all levels realize that this is the definitive source of knowledge in colon and rectal surgery. I am honored to have been a small part of such a monumental achievement. Dr. Robert Fry, as President of the ASCRS at the time of the textbook's inception, is to be congratulated for looking to the future and seeing the potential of such a project. I must also thank my wife Linda for her support during this effort and my administrative staff (Liz Nordike at Washington University and Beth Campbell, Laura Gillan D. Zerega, and Paula Callaghan at Springer) for all their effort toward completing the book.

James W. Fleshman, MD, FASCRS
August 2006

Contents

Foreword by <i>Robert Fry</i>	vii
Preface	ix
Contributors	xv
1 Anatomy and Embryology of the Colon, Rectum, and Anus	1
<i>José Marcio Neves Jorge and Angelita Habr-Gama</i>	
2 Physiology: Colonic	23
<i>Tracy L. Hull</i>	
3 Anal Physiology	33
<i>Susan M. Parker and John A. Collier</i>	
4 Physiologic Testing	40
<i>Lee E. Smith and Garnet J. Blatchford</i>	
5 Diagnostic Evaluations—Endoscopy: Rigid, Flexible Complications	57
<i>Santhat Nivatvongs and Kenneth A. Forde</i>	
6 Diagnostic Evaluations—Radiology, Nuclear Scans, PET, CT Colography	69
<i>Matthew G. Mutch, Elisa H. Birnbaum, and Christine O. Menias</i>	
7 Endoluminal Ultrasound	101
<i>Donald G. Kim and W. Douglas Wong</i>	
8 Preoperative Management—Risk Assessment, Medical Evaluation, and Bowel Preparation	116
<i>Conor P. Delaney and John M. MacKeigan</i>	
9 Postoperative Management: Pain and Anesthetic, Fluids and Diet	130
<i>Tracey D. Arnell and Robert W. Beart, Jr.</i>	
10 Postoperative Complications	141
<i>David W. Dietz and H. Randolph Bailey</i>	
11 Benign Anorectal: Hemorrhoids	156
<i>José R. Cintron and Herand Abcarian</i>	

12	Benign Anorectal: Anal Fissure	178
	<i>Sharon L. Dykes and Robert D. Madoff</i>	
13	Benign Anorectal: Abscess and Fistula	192
	<i>Carol-Ann Vasilevsky and Philip H. Gordon</i>	
14	Benign Anorectal: Rectovaginal Fistulas	215
	<i>Ann C. Lowry and Barton Hoexter</i>	
15	Pilonidal Disease and Hidradenitis Suppurativa	228
	<i>Jeffery M. Nelson and Richard P. Billingham</i>	
16	Perianal Dermatology and Pruritus Ani	240
	<i>Charles O. Finne</i>	
17	Sexually Transmitted Diseases	256
	<i>Charles B. Whitlow and Lester Gottesman</i>	
18	Benign Colon: Diverticular Disease	269
	<i>Alan G. Thorson and Stanley M. Goldberg</i>	
19	Colonic Volvulus	286
	<i>Michael D. Hellinger and Randolph M. Steinhagen</i>	
20	Lower Gastrointestinal Hemorrhage	299
	<i>Frank G. Opelka, J. Byron Gathright, Jr., and David E. Beck</i>	
21	Endometriosis	308
	<i>Michael J. Snyder and Steven J. Stryker</i>	
22	Colon and Rectal Trauma and Rectal Foreign Bodies	322
	<i>Demetrios Demetriades and Ali Salim</i>	
23	Colorectal Cancer: Epidemiology, Etiology, and Molecular Basis	335
	<i>Nancy N. Baxter and Jose G. Guillem</i>	
24	Screening for Colorectal Neoplasms	353
	<i>Thomas E. Read and Philip F. Caushaj</i>	
25	Polyps	362
	<i>Marcus J. Burnstein and Terry C. Hicks</i>	
26	Polyposis Syndromes	373
	<i>Robin K. S. Phillips and Susan K. Clark</i>	
27	Colon Cancer Evaluation and Staging	385
	<i>Eric G. Weiss and Ian Lavery</i>	
28	Surgical Management of Colon Cancer	395
	<i>Anthony J. Senagore and Robert Fry</i>	
29	The Preoperative Staging of Rectal Cancer	405
	<i>Jonathan E. Efron and Juan J. Nogueras</i>	

30	Surgical Treatment of Rectal Cancer	413
	<i>Ronald Bleday and Julio Garcia-Aguilar</i>	
31	Adjuvant Therapy for Colorectal Cancer	437
	<i>Judith L. Trudel and Lars A. Pählman</i>	
32	Colorectal Cancer Surveillance	446
	<i>Brett T. Gemlo and David A. Rothenberger</i>	
33	Management of Locally Advanced and Recurrent Rectal Cancer	450
	<i>Robert R. Cima and Heidi Nelson</i>	
34	Colorectal Cancer: Metastatic (Palliation)	462
	<i>Michael D'Angelica, Kamran Idrees, Philip B. Paty, and Leslie H. Blumgart</i>	
35	Anal Cancer	482
	<i>Mark Lane Welton and Madhulika G. Varma</i>	
36	Presacral Tumors	501
	<i>Eric J. Dozois, David J. Jacofsky, and Roger R. Dozois</i>	
37	Miscellaneous Neoplasms	515
	<i>Richard Devine and Marc Brand</i>	
38	Hereditary Nonpolyposis Colon Cancer	525
	<i>Lawrence C. Rusin and Susan Galandiuk</i>	
39	Inflammatory Bowel Disease: Diagnosis and Evaluation	543
	<i>Walter A. Koltun</i>	
40	Medical Management of Inflammatory Bowel Disease	555
	<i>Stephen B. Hanauer, Wee-Chian Lim, and Miles Sparrow</i>	
41	Surgical Management of Ulcerative Colitis	567
	<i>Phillip R. Fleshner and David J. Schoetz, Jr.</i>	
42	Surgery for Crohn's Disease	584
	<i>Scott A. Strong</i>	
43	Less-common Benign Disorders of the Colon and Rectum	601
	<i>Walter E. Longo and Gregory C. Oliver</i>	
44	Intestinal Stomas	622
	<i>Bruce A. Orkin and Peter A. Cataldo</i>	
45	Stoma Complications	643
	<i>Neil Hyman and Richard Nelson</i>	
46	Incontinence	653
	<i>Cornelius G. Baeten and Han C. Kuijpers</i>	
47	Rectal Prolapse	665
	<i>Anthony M. Vernava, III and David E. Beck</i>	

48	Constipation	678
	<i>Amanda Metcalf and Howard Michael Ross</i>	
49	Pelvic Floor Disorders	687
	<i>Frank J. Harford and Linda Brubaker</i>	
50	Laparoscopy	693
	<i>Peter W. Marcello and Tonia Young-Fadok</i>	
51	Pediatric: Hirschsprung's, Anorectal Malformations, and Other Conditions	713
	<i>Alberto Peña and Marc Sher</i>	
52	Healthcare Economics	727
	<i>David A. Margolin and Lester Rosen</i>	
53	Ethical and Legal Considerations	735
	<i>Ira J. Kodner; Mark Siegler; Daniel M. Freeman, and William T. Choctaw</i>	
54	Critically Reviewing the Literature for Improving Clinical Practice	764
	<i>Clifford Y. Ko and Robin McLeod</i>	
55	Surgical Education: A Time for Change	779
	<i>Clifford L. Simmang and Richard K. Reznick</i>	
56	Legal Considerations	786
	<i>Michael J. Meehan</i>	
Index	795	

Contributors

Herand Abcarian, MD

Turi Josefsen Professor and Head, Department of Surgery, University of Illinois at Chicago Medical Center, Chicago, IL, USA

Tracey D. Arnell, MD

Assistant Professor, Department of Surgery, Division of General Surgery, Section of Colon and Rectal Surgery, Columbia University New York-Presbyterian Hospital Columbia Campus, New York, NY, USA

Cornelius G. Baeten, PhD

Professor, Department of Surgery, University Hospital Maastricht, Maastricht, The Netherlands

H. Randolph Bailey, MD

Clinical Professor, Department of Surgery, University of Texas Health Science Center, Houston, Houston, TX, USA

Nancy N. Baxter, MD, PhD

Assistant Professor, Department of Surgery, University of Minnesota, Fairview–University Medical Center, Minneapolis, MN, USA

Robert W. Beart, Jr., MD

Professor and Chairman, Department of Colorectal Surgery, University of Southern California, Keck School of Medicine, Los Angeles, CA, USA

David E. Beck, MD

Chairman, Department of Colon and Rectal Surgery, Ochsner Clinic Foundation, New Orleans, LA, USA

Richard P. Billingham, MD

Clinical Professor, Department of Surgery, University of Washington, Seattle, WA, USA

Elisa H. Birnbaum, MD

Department of Colon and Rectal Surgery Washington University School of Medicine, St. Louis, MO, USA

Garnet J. Blatchford, MD

Clinical Assistant Professor, Department of Surgery, Creighton University Omaha, NE, USA

Ronald Bleday, MD

Associate Professor, Department of Surgery, Brigham and Women's Hospital, Boston, MA, USA

Leslie H. Blumgart, MD

Professor, Department of Surgery, Hepatobiliary Service, Weill Medical College of Cornell University, Memorial Sloan-Kettering Cancer Center, New York, NY, USA

Marc Brand, MD

Assistant Professor, Department of Surgery, Director, Colorectal Surgical Research, Director, Sandra Rosenberg Registry for Hereditary and Familial Colon Cancer, Department of General Surgery, Section of Colorectal Surgery, Rush University Medical Center, Chicago, IL, USA

Linda Brubaker, MD

Professor, Departments of Obstetrics and Gynecology and Urology, Loyola University Medical Center, Maywood, IL, USA

Marcus J. Burnstein, MD, MSc

Associate Professor, Department of Surgery, University of Toronto, St. Michael's Hospital, Toronto, Ontario, Canada

Peter A. Cataldo, MD

Associate Professor, Department of Colon and Rectal Surgery/General Surgery, University of Vermont College of Medicine, Fletcher Allen Health Care, South Burlington, VT, USA

Philip F. Caushaj, MD

Chair, Department of Surgery, Western Pennsylvania Hospital, Clinical Campus of Temple University School of Medicine, Professor and Vice Chair, Department of Surgery, Temple University School of Medicine, Adjunct Professor of Surgery, University of Pittsburgh School of Medicine, Clinical Professor of Surgery, Lake Erie College of Osteopathic Medicine, Pittsburgh, PA, USA

William T. Choctaw, MD, JD

Clinical Faculty, Chief of Surgery, University of Southern California Keck School of Medicine, Citrus Valley Medical Center, St. Covina, CA, USA

James M. Church, BSc, MBChB, MMed Sci

Victor W. Fazio Chair of Colorectal Surgery, Department of Colorectal Surgery, Cleveland Clinic Foundation, Cleveland, OH, USA

Robert R. Cima, MD

Assistant Professor, Department of Surgery, Division of Colon and Rectal Surgery, Mayo Clinic College of Medicine, Mayo Clinic, Rochester, MN, USA

José R. Cintron, MD

Associate Professor, Department of Surgery, University of Illinois at Chicago Medical Center, Chicago, IL, USA

Susan K. Clark, MD

Consultant Colorectal Surgeon, Royal London Hospital, Center for Academic Surgery, Whitechapel, London, UK

John A. Collier, MD

Senior Staff, Colon and Rectal Surgeon, Lahey Clinic; Assistant Clinical Professor, Department of Surgery, Tufts University School of Medicine, Department of Colon and Rectal Surgery, Burlington, MA, USA

Michael D'Angelica, MD

Assistant Professor, Assistant Attending, Department of Surgery, Hepatobiliary Division, Cornell University, Weill Medical College, Memorial Sloan-Kettering Cancer Center, New York, NY, USA

Conor P. Delaney, MD, PhD

Staff Surgeon, Department of Colorectal Surgery and Minimally Invasive Surgery, Cleveland Clinic Foundation, Cleveland, OH, USA

Demetrios Demetriades, MD PhD

Professor, Department of Surgery, Director, Division of Trauma/SICU, University of Southern California, Los Angeles County and University of Southern California Trauma Center, Sierra Madre, CA, USA

Richard Devine, MD

Professor, Department of Colon and Rectal Surgery, Mayo Clinic, Rochester, MN, USA

David W. Dietz, MD

Assistant Professor, Section of Colon and Rectal Surgery, Washington University School of Medicine, Barnes-Jewish Hospital, St. Louis, MO, USA

Eric J. Dozois, MD

Assistant Professor, Department of Colon and Rectal Surgery, Mayo Medical School, Mayo Clinic; Saint Marys Hospital, Rochester, MN, USA

Roger R. Dozois, MD

Professor (Emeritus), Division of Colon and Rectal Surgery, Mayo Medical School, Rochester, MN, USA

Sharon L. Dykes, MD

Adjunct Instructor, Department of Surgery, University of Minnesota, St. Paul, MN, USA

Jonathan E. Efron, MD

Cleveland Clinic Florida, Naples, FL, USA

Charles O. Finne, MD

Adjunct Professor, Division of Colon and Rectal Surgery, University of Minnesota, Minneapolis, MN, USA

James W. Fleshman, MD

Professor of Surgery, Chief, Section of Colorectal Surgery, Washington University School of Medicine, St. Louis, MO, USA

Phillip R. Fleshner, MD

Program Director, Colorectal Surgery Residency, Division of Colorectal Surgery, Cedars-Sinai Medical Center, Associate Clinical Professor of Clinical Surgery, UCLA School of Medicine, Los Angeles, CA, USA

Kenneth A. Forde, MD

José M. Ferrer Professor, Department of Surgery, Columbia University College of Physicians and Surgeons, New York Presbyterian Hospital, New York, NY, USA

Daniel M. Freeman, AB, JD

3224 Brooklawn Court, Chevy Chase, MD, USA

Robert Fry, MD

Emilie and Roland deHellebranth, Professor, Chief, Division of Colon and Rectal Surgery, University of Pennsylvania, Philadelphia, PA, USA

Susan Galandiuk, MD

Professor, Department of Surgery, University of Louisville School of Medicine, Louisville, KY, USA

Julio Garcia-Aguilar, MD, PhD

Professor of Surgery, Chief, Section of Colorectal Surgery, Department of Surgery, University of California, San Francisco, CA, USA

J. Byron Gathright, Jr., MD

Professor (Clinical), Department of Surgery; Emeritus Chairman, Department of Colon and Rectal Surgery, Ochsner Clinic Foundation, New Orleans, LA, USA

Brett T. Gemlo, MD

Assistant Adjunct Professor, Department of Surgery, University of Minnesota, St. Paul, MN, USA

Stanley M. Goldberg, MD

Clinical Professor, Department of Surgery, Division of Colorectal Surgery, University of Minnesota, Abbott Northwestern and Fairview Southdale, Minneapolis, MN, USA

Philip H. Gordon, MD

Professor, Department of Surgery and Oncology, McGill University, Montreal, Quebec, Canada

Lester Gottesman, MD

Associate Professor, Department of Colon and Rectal Surgery, Columbia University, St. Luke's Roosevelt Hospital Center, New York, NY, USA

Jose G. Guillem

Memorial Sloan Kettering Cancer Center, New York, NY, USA

Angelita Habr-Gama, MD

Professor, Department of Gastroenterology–Discipline of Coloproctology, University of São Paulo Medical School, Hospital Das Clínicas, São Paulo, Brazil

Stephen B. Hanauer, MD

Professor, Departments of Medicine and Clinical Pharmacology, Section of Gastroenterology, University of Chicago, Chicago, IL, USA

Frank J. Harford

Professor, Department of Surgery, Loyola University Medical Center, Maywood, IL, USA

Michael D. Hellinger, MD

Associate Professor, Department of Clinical Surgery, Chief, Division of Colon and Rectal Surgery, DeWitt Daughtry Family Department of Surgery, University of Miami, Miller School of Medicine, University of Miami, Sylvester Comprehensive Cancer Center, Miami, FL, USA

Terry C. Hicks, MD

Ochsner Clinic, New Orleans, LA, USA

Barton Hoexter, MD

1000 Northern Boulevard, Great Neck, NY, USA

Tracy L. Hull, MD

Staff Colorectal Surgeon, Department of Colon and Rectal Surgery, Cleveland Clinic Foundation, Cleveland, OH, USA

Neil Hyman, MD

Professor, Department of Surgery; Chief, Division of General Surgery, University of Vermont College of Medicine, Fletcher Allen Healthcare, Burlington, VT, USA

Kamran Idrees, MD

Colorectal Clinical Fellow, Department of Colorectal Surgery Service, Memorial Sloan-Kettering Cancer Center, New York, NY, USA

David J. Jacofsky, MD

Assistant Professor, Department of Orthopedics, Mayo Clinic School of Medicine, Rochester, MN, USA

José Marcio Neves Jorge, MD

Associate Professor, Department of Gastroenterology, Division of Coloproctology, University of São Paulo Medical School, Hospital Das Clínicas, São Paulo, Brazil

Donald G. Kim, MD

Staff Colon and Rectal Surgeon, Ferguson Clinic, Grand Rapids, MI, USA

Clifford Y. Ko, MD, MS

Associate Professor, Department of Surgery, UCLA School of Medicine, West Los Angeles VA Medical Center, Los Angeles, CA, USA

Ira J. Kodner, MD

Solon and Bettie Gershman Professor, Department of Colon and Rectal Surgery, Washington University in St. Louis, Barnes-Jewish Hospital, St. Louis, MO, USA

Walter A. Koltun, MD

Peter and Marshia Carlino Chair in IBD, Professor of Surgery, Chief, Division of Colon and Rectal Surgery, Pennsylvania State University, Milton S. Hershey Medical Center, Hershey, PA, USA

Han C. Kuipers, MD, PhD

Department of Gastrointestinal Surgery, Gelderse Vallei Ziekenhuis, Gelderland, The Netherlands

Ian Lavery, MD

Cleveland Clinic, Cleveland, OH, USA

Wee-Chian Lim, MBBS, M.Med(Int. Med.), MRCP(UK)

Consultant, Department of Gastroenterology, Tan Tock Seng Hospital, Singapore

Walter E. Longo, MD

Professor, Department of Surgery, Chief, Section of Gastrointestinal Surgery, Director of Colon and Rectal Surgery, Program Director in Surgery, Yale University, New Haven, CT, USA

Ann C. Lowry, MD

Adjunct Professor and Program Director, Department of Surgery, Division of Colon and Rectal Surgery, University of Minnesota, St. Paul, MN, USA

John M. MacKeigan, MD

Associate Clinical Professor, Department of Surgery, Michigan State University School of Human Medicine, Spectrum, St. Mary's and Metropolitan Hospital, Grand Rapids, MI, USA

Robert D. Madoff, MD

Adjunct Professor, Department of Surgery, University of Minnesota, St. Paul, MN, USA

Peter W. Marcello, MD

Assistant Professor of Surgery, Tufts University School of Medicine, Boston, MA; CRS Department, Lahey Clinic, Burlington, MA, USA

David A. Margolin, MD

Department Colon and Rectal Surgery, Ochsner Main Campus, New Orleans, LA, USA

Robin McLeod, MD

Professor, Department of Surgery and Health Policy, Management and Evaluation, University of Toronto; Head, Division of General Surgery, Mount Sinai Hospital, Toronto, Ontario, Canada

Michael J. Meehan, AB, JD

Assistant Secretary and Associate Counsel, Cleveland Clinic Foundation, Office of General Counsel, Lyndhurst, OH, USA

Christine O. Menias, MD

Assistant Program Director, Co-Director of Body Computed Tomography, Department of Diagnostic Radiology, Washington University, St. Louis, MO, USA

Amanda Metcalf, MD

Professor, Department of Surgery, University of Iowa, Iowa City, IA, USA

Matthew G. Mutch, MD

Assistant Professor, Department of Surgery, Section of Colon and Rectal Surgery, Washington University School of Medicine, Barnes-Jewish Hospital, St. Louis, MO, USA

Heidi Nelson, MD

Professor, Department of Surgery, Mayo Medical School, Mayo Clinic College of Medicine; Chair, Division of Colon and Rectal Surgery, Mayo Clinic–Rochester, Rochester, MN, USA

Jeffery M. Nelson, MD

General Surgery Clinic, Walter Reed Army Medical Center, Washington, DC, USA

Richard Nelson, MD

Consultant Surgeon, Department of General Surgery, Northern General Hospital, Sheffield, UK

Santhat Nivatvongs, MD

Professor, Department of Surgery, Mayo Medical School, Mayo Clinic, Rochester, MN, USA

Juan J. Nogueras, MD

Cleveland Clinic Florida, Weston, FL, USA

Gregory C. Oliver, MD

Associate Clinical Professor, Department of Colon and Rectal Surgery, Robert Wood Johnson Medical School, University of Medicine and Dentistry of New Jersey, Edison, NJ, USA

Frank G. Opelka, MD

Associate Dean of Health Care Quality and Safety, Professor of Surgery, Louisiana State HSC, New Orleans, LA, USA

Bruce A. Orkin, MD

Professor of Surgery, Division of Colon and Rectal Surgery, George Washington University, Washington, DC, USA

Lars A. Pålman, PhD, MD

Professor, Department of Surgical Sciences, Section of Surgery, Uppsala University, Uppsala, Sweden

Susan M. Parker, MD

606 24 Avenue South, Minneapolis, MN, USA

Philip B. Paty, MD

Associate Professor and Associate Attending, Department of Surgery, Weill Medical College of Cornell University, Memorial Sloan-Kettering Cancer Center, New York, NY, USA

John H. Pemberton, MD

Professor of Surgery, Mayo Clinic College of Medicine, Consultant, Colon and Rectal Surgery, Mayo Clinic and Mayo Foundation, Rochester, MN, USA

Alberto Peña, MD

Professor, Department of Surgery, Division of Pediatric Surgery, Albert Einstein College of Medicine, Schneider Children's Hospital, NSLIJ Health System, New Hyde Park, NY, USA

Robin K. S. Phillips, MBBS, MS

Professor, Department of Colorectal Surgery, Imperial College, London, St. Mark's Hospital, Harrow, UK

Thomas E. Read, MD

Chief, Division of Colon and Rectal Surgery, Western Pennsylvania Hospital, Clinical Campus of Temple University School of Medicine; Associate Professor, Department of Surgery, Temple University School of Medicine, Pittsburgh, PA, USA

Richard K. Reznick, MD, MEd

Professor and Chair, Department of Surgery, University of Toronto, Toronto, Ontario, Canada

Patricia L. Roberts, MD

Chair, Department of Colon and Rectal Surgery, Lahey Clinic, Associate Professor of Surgery, Tufts University School of Medicine, Boston MA; Department of Colon and Rectal Surgery, Lahey Clinic, Burlington, MA, USA

Lester Rosen, MD

Professor, Department of Colon and Rectal Surgery, Pennsylvania State University, Hershey Medical Center, Allentown, PA, USA

Howard Michael Ross, MD

Assistant Professor, Department of Surgery, Director, Surgery Student Education, Director, Laparoscopic Colon and Rectal Surgery, University of Pennsylvania School of Medicine, Philadelphia, PA, USA

David A. Rothenberger, MD

Professor, Department of Surgery, University of Minnesota Cancer Center, Minneapolis, MN, USA

Lawrence C. Rusin, MD

Senior Staff, Lahey Clinic, Assistant Clinical Professor, Department of Colon and Rectal Surgery, Tufts School of Medicine, Burlington, MA, USA

Theodore Saclarides, MD

Professor of Surgery, Head, Section of Colon and Rectal Surgery, Rush University Medical Center, Chicago, IL, USA

Ali Salim, MD

Assistant Professor, Department of Surgery, University of Southern California Keck School of Medicine, Los Angeles, CA, USA

David J. Schoetz, Jr., MD

Chairman Emeritus, Professor, Department of Surgery, Tufts University School of Medicine; Department of Colon and Rectal Surgery, Lahey Clinic, Burlington, MA, USA

Anthony J. Senagore, MD

Professor and Chairman, Department of Surgery, Medical University of Ohio, Toledo, OH, USA

Mark Sher, MD

Assistant Clinical Professor, Department of Colon and Rectal Surgery, Albert Einstein College of Medicine, Long Island Jewish Medical Center, New Hyde Park, NY, USA

Mark Siegler, MD

Lindy Bergman Distinguished Service Professor, Department of Medicine and Surgery, University of Chicago, Chicago, IL, USA

Clifford L. Simmang, MD, MS

Medical Center of Plano, Plano, TX, USA

Lee E. Smith, MD

Professor, Department of Surgery, Georgetown University, Washington Hospital Center, Washington, DC, USA

Michael J. Snyder, MD

Program Director, Department of Colon and Rectal Surgery, University of Texas Medical School at Houston, Houston, TX, USA

Miles Sparrow, MB.BS

Inflammatory Bowel Disease Fellow, Department of Gastroenterology, Mount Sinai School of Medicine, New York, NY, USA

Michael J. Stamos, MD

Professor of Surgery, Chief, Division of Colon and Rectal Surgery, Department of Surgery, University of California, Irvine School of Medicine, Orange, CA, USA

Randolph M. Steinhagen, MD

Associate Professor, Department of Surgery, Division of Colon and Rectal Surgery, Mount Sinai School of Medicine, New York, NY, USA

Scott A. Strong, MD

Staff Surgeon, Department of Colorectal Surgery, The Cleveland Clinic Foundation, Cleveland, OH, USA

Steven J. Stryker, MD

Professor, Department of Clinical Surgery, Northwestern University, The Feinberg School of Medicine, Chicago, IL, USA

Alan G. Thorson, MD

Clinical Associate Professor, Department of Surgery, Program Director, Section of Colon and Rectal Surgery, Creighton University School of Medicine; Clinical Associate Professor, Department of Surgery, University of Nebraska College of Medicine, Omaha, NE, USA

Judith L. Trudel, MD, MSc, MHPE

Adjunct Associate Professor, Department of Surgery, University of Minnesota, St. Paul, MN, USA

Madhulika G. Varma, MD

Assistant Professor, Department of Surgery, University of California, San Francisco, San Francisco, CA, USA

Carol A. Vasilevsky, MDCM

Assistant Professor, Departments of Surgery and Oncology, McGill University, Montreal, Quebec, Canada

Anthony M. Vernava, III, MD

Vice Chairman of Clinical Affairs, Professor, Department of Colorectal Surgery, University of Rochester Medical Center, Rochester, NY, USA

Eric Weiss, MD

Director of Surgical Endoscopy, Residency Program Director, Cleveland Clinic Florida, Department of Colorectal Surgery, Weston, FL, USA

Mark Lane Welton, MD

Associate Professor, Chief, Department of Colon and Rectal Surgery, Stanford University, Stanford, CA, USA

Steven D. Wexner, MD

Professor, Department of Surgery, Ohio State University Health Sciences Center; Clinical Professor, Department of Surgery, University of Florida College of Medicine; Professor of Biomedical Sciences, Charles E. Schmitt College of Science at Florida Atlantic University; and Chairman and Chief of Staff, Department of Colorectal Surgery, 21st Century Oncology Chair in Colorectal Surgery, Chief of Staff, Cleveland Clinic Florida, Weston, FL, USA

Charles B. Whitlow, MD

Ochsner Clinic Foundation, Department of Colon and Rectal Surgery, New Orleans, LA, USA

Bruce G. Wolff, MD

Professor of Surgery, Mayo Clinic College of Medicine, Chairman, Division of Colon and Rectal Surgery, Mayo Clinic Foundation, Rochester, MN, USA

W. Douglas Wong, MD

Associate Professor, Department of Surgery, Cornell University Medical Center;
Chief, Co-rectal Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center,
New York, NY, USA

Tonia M. Young-Fadok, MD, MS

Associate Professor, Department of Surgery, Mayo Clinic College of Medicine; Chair, Division
of Colon and Rectal Surgery, Mayo Clinic Arizona, Scottsdale, AZ, USA