BOWEL OBSTRUCTION

Differential Diagnosis and Clinical Management

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John P. Welch, M.D.

Hartford, Connecticut

1990

W.B. SAUNDERS COMPANY

Harcourt Brace Jovanovich, Inc.

Philadelphia ■ London ■ Toronto ■ Montreal ■ Sydney ■ Tokyo

W. B. SAUNDERS COMPANY
Harcourt Brace Jovanovich, Inc.

The Curtis Center
Independence Square West
Philadelphia, PA 19106

Library of Congress Cataloging-in-Publication Data

Welch, John P. (John Paton), 1942–

Bowel obstruction : differential diagnosis and clinical management / John P. Welch.

p. cm.

1. Intestines—Obstructions. I. Title. [DNLM: 1. Intestinal Obstruction—diagnosis. 2. Intestinal Obstruction—therapy. WI 460 W4392b]

RC862.02W42 1990 616.3'42—dc20

DNLM/DLC for Library of Congress 89–10227 CIP

ISBN 0–7216–1963–0

Editor: Edward Wickland
Designer: Dorothy Chattin
Production Manager: Bill Preston
Manuscript Editor: Tom Gibbons
Illustration Coordinator: Brett MacNaughton
Indexer: Ella Shapiro
Cover Designer: Maureen Sweeney

Bowel Obstruction: Differential Diagnosis and Clinical Management ISBN 0–7216–1963–0

Last digit is the print number: 9 8 7 6 5 4 3 2 1

CF9111/21

肠梗阻

《鉴别诊断与临床处理》

(英5—4/363)

C—002650

ISBN (0—7216—1963—0)

Dedicated to
my wife Marylouise and our children, Evan and Tyler,
for their patience and understanding
and
my parents, Claude and Phyllis,
who always encouraged me to take on new endeavors
and to go beyond what I thought possible

Contributors

G. Peter Bloom, M.D., F.A.C.S.
Attending Surgeon, Department of Surgery, Hartford Hospital, Hartford, Connecticut.
Associate Clinical Professor, Department of Surgery, University of Connecticut School of Medicine, Farmington, Connecticut.
Hernias Causing Bowel Obstruction

Peter J. Deckers, M.D., F.A.C.S.
Director, Department of Surgery, Hartford Hospital, Hartford, Connecticut.
Senior Staff Member, St. Francis Hospital and Medical Center, and Attending Staff Member, John Dempsey Hospital.
Murray-Heilig Professor and Chairman, Department of Surgery, University of Connecticut School of Medicine, Farmington, Connecticut.
Postoperative Small Bowel Obstruction

Michael M. Fuenfer, M.D., F.A.A.P.
Assistant Professor, Department of Surgery, Division of Emergency Medicine, University of Connecticut School of Medicine, Farmington, Connecticut.
Intestinal Obstruction in the Pediatric Patient

Jonathan A. Hammond, M.D.
Chief Resident, Department of Surgery, Hartford Hospital, Hartford, Connecticut.
Postoperative Small Bowel Obstruction

Donald W. Hight, M.D., F.A.C.S., F.A.A.P.
Director, Section of Pediatric Surgery, Department of Surgery, Hartford Hospital, Hartford, Connecticut.
Associate Clinical Professor, Departments of Surgery and Pediatrics, University of Connecticut School of Medicine, Farmington, Connecticut.
Intestinal Obstruction in the Pediatric Patient

Stuart K. Markowitz, M.D.

Assistant Staff Radiologist, Department of Radiology, Section Chief, Gastrointestinal Radiology, Hartford Hospital, Hartford, Connecticut.

Assistant Professor of Radiology, University of Connecticut School of Medicine, Farmington, Connecticut.

Radiologic Diagnosis

Rocco Orlando III, M.D., F.A.C.S.

Co-Director, Surgical Intensive Care Unit, Department of Surgery, Hartford Hospital, Hartford, Connecticut.

Assistant Professor, Department of Surgery, University of Connecticut School of Medicine, Farmington, Connecticut.

Intussusception in Adults

John C. Russell, M.D., F.A.C.S.

Chief, Department of Surgery, New Britain General Hospital, New Britain, Connecticut.

Associate Professor and Associate Chairman, Department of Surgery, and Assistant Dean for Medical Education, University of Connecticut School of Medicine, Farmington, Connecticut.

Pathophysiology of Bowel Obstruction; Motility Disorders; Intestinal Ischemia

John P. Welch, M.D., F.A.C.S.

Attending Surgeon, Department of Surgery, Hartford Hospital, Hartford, Connecticut.

Associate Professor, Department of Surgery, University of Connecticut School of Medicine, Farmington, Connecticut.

History; Pathophysiology of Bowel Obstruction; General Considerations and Mortality; Intestinal Intubation; Adhesions; Motility Disorders; Hernias Causing Bowel Obstruction; Intestinal Ischemia; Inflammatory Causes of Small Bowel Obstruction; Obturation Obstruction; Small Bowel Tumors; Operative Techniques, Decisions, and Complications; Miscellaneous Causes of Small Bowel Obstruction; Perioperative Techniques and Decisions; Carcinoma of the Colon; Volvulus; Diverticular Disease; Megacolon in Adults; Constipation; Infectious Diseases; Extrinsic Causes; Intrinsic Causes; Miscellaneous Disorders

Frederick M. H. Ziter, Jr., M.D.

Senior Staff Radiologist and Program Director, Department of Radiology, Hartford Hospital, Hartford, Connecticut.

Associate Clinical Professor, Department of Radiology, University of Connecticut School of Medicine, Farmington, Connecticut.

Radiologic Diagnosis

Foreword

Surgery has been defined, not entirely facetiously, as the art of making decisions on the basis of incomplete information. The treatment of a patient with bowel obstruction epitomizes this art. Bowel obstruction is a clinical diagnosis, and its proper management requires expert clinical skills. In this day of increasing specialization, it still remains in the domain of the general surgeon. In spite of their ever-increasing abilities and territories, neither the gastroenterologist, general internist, or pediatrician nor the invasive radiologist have much to offer for the relief of acute obstruction, and they are usually most willing to transfer responsibility for management.

Acceptance of that responsibility places a heavy burden upon the surgeon. Prospective trials, chi-square analyses, and modern imaging techniques offer little help. Plain radiographs of the abdomen are more valuable than nuclide scans, ultrasound, computed tomography, or magnetic resonance imaging in most cases. The standard blood tests are notoriously unreliable in differential diagnosis or in documenting urgency.

A careful clinical history and physical examination, with emphasis on the medical events of the past and the earliest symptoms of the present illness, will do more than any laboratory test to separate obstruction from inflammation and to dictate priorities. Inexperienced clinicians do poorly with this disease in spite of great talent and wide reading.

Why is diagnosis so difficult? Perhaps because there is such a wide range of causes for dynamic and adynamic ileus and for mechanical and functional obstruction (e.g., tumor, inflammation, scar tissue, obturation, hernia, medication, congenital anomalies, pregnancy, radiation injury, and a myriad of metabolic and vascular problems). Perhaps because the signals of visceral distress vary so widely from patient to patient. Perhaps because there are many degrees of obstruction ranging from partial to total, from chronic to acute, and from proximal to distal. Lastly, perhaps because a dependence upon diagnostic technology has allowed, and even promoted, a blunting of the clinical skills of the modern practitioner.

If diagnosis demands much, management demands more. There have been four great advances in the treatment of patients with bowel obstruction—two in the last century and two in the early decades of this century. Anesthesia and asepsis allowed safe laparotomy; gastrointestinal intubation and an appreciation of the importance of restoration of fluid volume have allowed sufficient resuscitation to permit operative correction. Recent advances have made relatively minor contributions. Certainly, the

sophistication of metabolic and cardiorespiratory support measures has made a critical difference to a few patients, but the majority are served best by clinical decision-making that is not yet reducible to published algorithms. The use of nasogastric suction is illustrative. A properly placed tube will surely help to prevent pulmonary aspiration and will do much to relieve patient discomfort. However, it may also delay diagnosis and postpone treatment, thereby adding to morbidity in some cases.

What, then, is the role of a new book on this subject? Dr. Welch and his colleagues have performed an important service by bringing together in encyclopedic fashion what is known about the pathophysiology, the etiology, and the diagnosis and treatment of the many diseases that are associated with bowel obstruction. Perhaps the only subject not comprehensively covered in this volume is prevention. Measures such as early resection of the inflamed appendix, proper handling of the perineal wound after resection of the rectum, the use of modern sutures and techniques in the closure of abdominal wounds, and the elective repair of abdominal and groin hernias exemplify techniques to avoid future obstruction. The authors have neglected little else in this fine monograph.

Armed with the information in this book, a clinician who remains close to the patient's bedside will manage most patients well. He or she will be prepared for both the common and the uncommon causes of obstruction and will be able to put in current perspective the priorities of intubation, resuscitation, observation, and operation. The accompanying extensive references will be of great use to the scholar who wishes to pursue any aspect of this common but difficult condition.

JAMES H. FOSTER, M.D.
Professor, Department of Surgery
University of Connecticut School
of Medicine
Farmington, Connecticut

Acknowledgments

Completion of this book would not have been possible without a number of people. It goes without saying that my immediate family needed to tolerate the years of research and writing, the piles of references and books, and the long hours at the word processor. The voluminous literature in the field was a challenge to assimilate and collate.

Dr. James H. Foster, Professor of Surgery and one of my most respected colleagues, originally encouraged me to begin this project. I trust that some of his excellent teaching abilities and clinical judgment have been reflected in these pages.

The original illustrations were drawn by Eleanore Kolouch, A.M.I., who spent considerable time and effort creating detailed renditions of anatomic regions and more subjective clinical situations. She continuously reviewed her illustrations with me until all the details were perfected.

People in the Audiovisual Department of Hartford Hospital who provided support included Betty Fanska (secretary), Joseph Driscoll III (photographer), and Margaret Bliss (Director). Patricia Magerowski also contributed several illustrations. The Department of General Surgery at Hartford Hospital, under the leadership of Dr. Peter J. Deckers, generously provided funds supporting the original illustrations, for which I am much indebted. Several of my colleagues also contributed x-rays or operative photographs of unusual forms of intestinal obstruction. Dr. Elsa Hirvella kindly reviewed Chapter 11. Finally, the contributors provided excellent chapters that more than met the original objectives of the book.

The medical librarians at Hartford Hospital and the vast facilities at the University of Connecticut School of Medicine's library were invaluable in providing references and photocopying services. Special thanks go to Louise White, Kelly Daigle, and Deborah Lathrop at the Hartford Hospital Medical Library. Clinical librarians Suzanne Larue and Jonathan Lord performed literature searches. The Historical Library at the Hartford Medical Society provided direct access to many of the references discussed in Chapter 1.

Several editors at W.B. Saunders, including Ed Wickland, Jr. in the later stages, were patient, encouraging, and professional. Their expertise was very apparent from the beginning, and I learned much from their comments.

Finally, special recognition goes to Joanne D'Aprile, medical transcriptionist in the Research Division of the Department of Surgery at the University of Connecticut School of Medicine, who transcribed and organized the text from my notes. She paid scrupulous attention to accuracy in both the text and the reference lists. She also provided repeated encouragement in the "down" stages of the writing, when everything appeared to stagnate. I can never thank her enough for all that she has done.

JOHN P. WELCH, M.D.

Preface

The stimulus for this book has been my personal involvement with seriously ill patients suffering from intestinal obstruction, together with a desire to study and analyze an important gastrointestinal problem in depth. It is apparent that the most rapid advances were made in this field between 50 and 100 years ago. Today, certain problems—especially strangulation obstruction, mesenteric ischemia, and acute large bowel obstruction—continue to challenge the abdominal surgeon.

The following pages are meant to serve as a reference source for students, residents, and practicing physicians and surgeons alike. Although the treatise on intestinal obstruction written by the surgical giant Owen Wangensteen is humbling to read, this monograph is intended to partially fill the gap with assimilated data that have appeared over the past three decades.

The following pages are divided into three major parts. General principles involving the pathophysiology, diagnosis, and treatment of diseases of the small and large bowel are discussed in the first 11 chapters. Although the emphasis is on mechanical forms of obstruction in adults, motility disorders are discussed in Chapter 7 and pediatric forms of obstruction in Chapter 8. An analysis of the clinical aspects of small bowel obstruction is presented in Chapters 12 through 17, and the final section (Chapters 18 through 27) is confined to discussions of large bowel obstruction. Gastric forms of obstruction are not considered in detail.

Bowel obstruction is a disease managed primarily by general surgeons, and Chapters 16 and 18 concentrate on the intraoperative decisions and technical maneuvers involved in treating patients with small and large bowel obstruction. It is hoped that the remainder of the book will serve both as a source of information and as a primer in the practical management of both "garden variety" and unusual problems. In the final analysis, however, successful management of complex cases of intestinal obstruction reflects factors that no written summary can provide: a high-quality surgical training, repeated operative and perioperative experience, judgment, attention to detail, and compassion for the patient.

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PART ONE

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