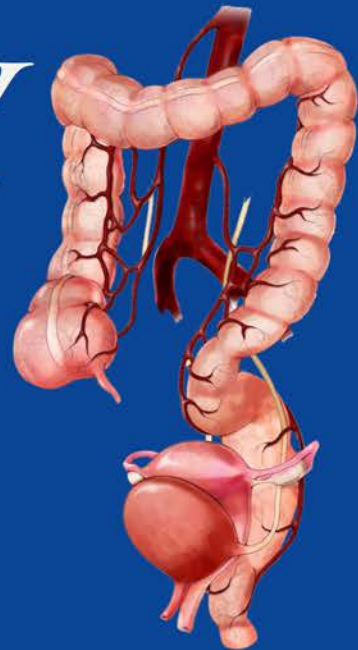


PEDIATRIC COLORECTAL AND PELVIC SURGERY

CASE STUDIES



VICTORIA A. LANE • RICHARD J. WOOD
CARLOS RECK-BURNEO • MARC A. LEVITT

Pediatric Colorectal and Pelvic Surgery

Case Studies



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Pediatric Colorectal and Pelvic Surgery

Case Studies

Victoria A. Lane, MBChB, MRCS

**Nationwide Children's Hospital
Columbus, Ohio, USA**

**Leeds Children's Hospital, Leeds General Infirmary
Leeds, United Kingdom**

Richard J. Wood, MD

**Nationwide Children's Hospital
The Ohio State University College of Medicine
Columbus, Ohio, USA**

Carlos A. Reck-Burneo, MD

**Nationwide Children's Hospital
Columbus, Ohio, USA**

**Medical University of Vienna
General Hospital Vienna (AKH)
Vienna, Austria**

Marc A. Levitt, MD

**Nationwide Children's Hospital
The Ohio State University College of Medicine
Columbus, Ohio, USA**



CRC Press

Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

© 2017 by Taylor & Francis Group, LLC
CRC Press is an imprint of Taylor & Francis Group, an Informa business

No claim to original U.S. Government works

Printed on acid-free paper

International Standard Book Number-13: 978-1-1380-3177-7 (Pack- Hardback and Ebook)

This book contains information obtained from authentic and highly regarded sources. While all reasonable efforts have been made to publish reliable data and information, neither the author[s] nor the publisher can accept any legal responsibility or liability for any errors or omissions that may be made. The publishers wish to make clear that any views or opinions expressed in this book by individual editors, authors or contributors are personal to them and do not necessarily reflect the views/opinions of the publishers. The information or guidance contained in this book is intended for use by medical, scientific or health-care professionals and is provided strictly as a supplement to the medical or other professional's own judgement, their knowledge of the patient's medical history, relevant manufacturer's instructions and the appropriate best practice guidelines. Because of the rapid advances in medical science, any information or advice on dosages, procedures or diagnoses should be independently verified. The reader is strongly urged to consult the relevant national drug formulary and the drug companies' and device or material manufacturers' printed instructions, and their websites, before administering or utilizing any of the drugs, devices or materials mentioned in this book. This book does not indicate whether a particular treatment is appropriate or suitable for a particular individual. Ultimately it is the sole responsibility of the medical professional to make his or her own professional judgements, so as to advise and treat patients appropriately. The authors and publishers have also attempted to trace the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission to publish in this form has not been obtained. If any copyright material has not been acknowledged please write and let us know so we may rectify in any future reprint.

Except as permitted under U.S. Copyright Law, no part of this book may be reprinted, reproduced, transmitted, or utilized in any form by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying, microfilming, and recording, or in any information storage or retrieval system, without written permission from the publishers.

For permission to photocopy or use material electronically from this work, please access www.copyright.com (<http://www.copyright.com/>) or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. CCC is a not-for-profit organization that provides licenses and registration for a variety of users. For organizations that have been granted a photocopy license by the CCC, a separate system of payment has been arranged.

Trademark Notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

Visit the Taylor & Francis Web site at
<http://www.taylorandfrancis.com>

and the CRC Press Web site at
<http://www.crcpress.com>

Contents

Foreword	ix
Preface	xi
Contributors	xiii
Acknowledgements	xv
Anorectal malformations (ARM) and the ARM continence index	xvii
PART I ANORECTAL MALFORMATIONS—PRIMARY	1
1 Diagnosis of an anorectal malformation	3
2 Algorithms for the care of an ARM patient	19
3 Anorectal malformation newborn: Case study	23
4 Neonatal colostomy no. 1: Case study	25
5 Newborn colostomy no. 2: Case study	27
6 Newborn with ARM and a urologic problem: Case study	29
7 What size does the anus need to be? Anal Hegar sizing: Case study	33
8 Newborn male with no anal opening and meconium in the urinary stream: Case study	35
9 Newborn who has failed to pass meconium: Case study	37
10 Infant with ARM with a reported no fistula defect—Definitive reconstruction technical details: Case study	43
11 Male anorectal malformation: Case study	49
12 Distal colostogram showing a very short distal segment: Case study	51
13 Newborn with an anorectal malformation: Case study	55
14 Four-month-old with difficulty stooling: Case study	57
15 Three-month-old female with a possible anorectal malformation: Case study	59
16 H-type rectovaginal fistula: Case study	63
17 Female ARM preoperative and operative management: Case study	67
18 Neonatal evaluation of a child with ARM: Case study	79
19 Distal colostogram: Technical points	87
20 Newborn ARM: Perineal exam quiz	91
PART II ANORECTAL MALFORMATIONS—REOPERATIONS	95
21 Anteriorly located anus following anoplasty: Case study	97
22 Anorectal malformation—Postoperative problem: Case study	101
23 Anorectal malformation—Rectal prolapse and soiling: Case study	105
24 Anorectal malformation—Long-term: Case study	109
25 Postoperative complication—Mislocated anus: Case study	115
26 Postoperative complication—Female anorectal malformation: Case study	117
27 Postoperative complication—No medical history in an ARM patient: Case study	119
28 Postoperative complication—Recto-perineal fistula: Case study	121

29	Postoperative complication—Redo surgery: Case study	123
30	Postoperative complication: Case study	125
31	Redo surgery in anorectal malformations	127
PART III HIRSCHSPRUNG DISEASE (HD)—PRIMARY		129
32	Hirschsprung disease newborn algorithm	131
33	Enterocolitis scoring system	133
34	Genetics: Case study	137
35	Radiology of a newborn with distal bowel obstruction: Case study	141
36	Pathology—Patient with possible Hirschsprung disease: Case study	143
37	Hirschsprung disease—Operative planning and considerations: Case study	153
38	Total colonic Hirschsprung disease	155
39	Transanal-only approach—Technical steps: Case study	157
40	Pull-through procedure for Hirschsprung disease: Case study	163
41	Examination of a Hirschsprung patient: Case study	167
42	Obstructive symptoms in a Hirschsprung patient: Case study	169
PART IV HIRSCHSPRUNG DISEASE POST-OPERATIVE ASSESSMENT CASES		171
43	Evaluation algorithm for the problematic Hirschsprung patient	173
44	Problematic pull-through—Postoperative enterocolitis: Case study	175
45	Problematic pull-through—A patient who originally presented with cecal perforation: Case study	177
46	Recurrent Hirschsprung-associated enterocolitis: Case study	179
47	Problematic postoperative Hirschsprung patient: Case study	181
48	Redo surgery for Hirschsprung disease: Case study	185
49	Enterocolitis after a Hirschsprung pull-through: Case study	187
50	Six-year-old boy with known Hirschsprung's, trisomy 21, and obstructive symptoms: Case study	189
51	Two-year-old child with known Hirschsprung's, now with failure to thrive: Case study	193
52	Seven-year-old boy with a history of Hirschsprung disease: Case study	197
53	Twelve-year-old boy who underwent a Duhamel pull-through: Case study	201
PART V FECAL INCONTINENCE AND CONSTIPATION		205
54	Introduction to bowel management	207
55	Idiopathic/functional constipation: Management algorithm	213
56	Patient with an anorectal malformation and Tethered cord: Case study	215
57	Anorectal malformation and soiling: Case study	219
58	Bowel management—Appendicostomy flush: Case study	223
59	Bowel management—Antegrade flush: Case study	227
60	Patient with functional constipation and failed medical management: Case study	231
61	Bowel management for fecal incontinence: Case study	235
62	Rectovestibular fistula and soiling: Case study	239
63	Bowel management program for soiling: Case study	243
64	Rectal prolapse: Case study	247
65	Functional constipation: Case study	249



66	Bowel management for a patient with spina bifida: Case study	253
67	Bowel management program in a patient with prune belly syndrome: Case study	257
68	Constipation in a five-year-old girl: Case study	259
69	Surgical options following medical management failure: Case study	261
70	Colonic motility evaluation: Case study	265
71	Bowel management—A problem related to the treatment: Case study	269
Index		271



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>



Foreword

It is indeed an honor and a pleasure for me to write the foreword to our son Marc's book written with his colleagues Victoria Lane, Carlos Reck, and Richard Wood. Marc has indicated that the case-based teaching method that I have used with my co-author, Howard Weiner, since 1971, for *Neurology for the House Officer* (translated into eight foreign languages), *Case Studies in Neurology for the House Officer*, and in our annual neurology course served as a stimulus for the current endeavor. Over a cumulative 70 years of teaching, we found that teaching by specific illustrative cases was the most effective method for producing lasting retention of clinical knowledge. I hope that this book proves helpful in educating other pediatric caregivers, but most importantly that it helps solve pediatric colorectal and pelvic surgical problems in children from all over the world.

Lawrence P. Levitt, MD

*Professor Emeritus of Neurology
Lehigh Valley Hospital, Allentown, PA, USA*



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Preface

The book is intended to teach the key principles in the management of colorectal and pelvic diagnoses through case-based presentations. We believe it will be valuable for all members of the management team that cares for children with these problems, including the surgeon, the pediatrician, the gastroenterologist, the neonatologist, the nurse, the pediatric surgical trainee, and the medical student.

The book encompasses the wide range of complex colorectal issues, including:

- Primary diagnosis, management, radiology, and histopathology of Hirschsprung disease
- Primary diagnosis, management, and radiology of anorectal malformations
- Bowel management for fecal incontinence in a variety of patient groups
- The problematic post-operative Hirschsprung disease, and anorectal malformation
- Operative techniques including pitfalls and challenges

We hope that this book will serve as an educational tool for those treating children with colorectal and pelvic problems and will therefore help to improve the care provided and reduce the morbidity seen in this group of patients.

And, to our families for their tireless support, devotion, and love—we thank you.

Victoria A. Lane
Richard J. Wood
Carlos A. Reck-Burneo
Marc A. Levitt





Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>



Contributors

We are grateful to the colleagues listed below for their contributions to this book.

Abbey Ballard, RN, BSN

Center for Colorectal and Pelvic Reconstruction
Nationwide Children's Hospital
Columbus, Ohio

D. Gregory Bates, MD

Assistant Chief and Chief of Clinical Operations
Department of Radiology
Children's Hospital and Children's Radiological
Institute
Clinical Associate Professor of Radiology
The Ohio State University College of Medicine and
Public Health
Columbus, Ohio

Ashley Bober, RN, BSN

Center for Colorectal and Pelvic Reconstruction
Nationwide Children's Hospital
Columbus, Ohio

Julie Choueiki, MSN, RN, CPEN

Center for Colorectal and Pelvic Reconstruction
Nationwide Children's Hospital
Columbus, Ohio

Onnalisa Nash, MSN, CPNP

Center for Colorectal and Pelvic Reconstruction
Nationwide Children's Hospital
Columbus, Ohio

Kaleigh B. Peters, MS, APN, NP-C

Center for Colorectal and Pelvic Reconstruction
Nationwide Children's Hospital
Columbus, Ohio

Meghan Peters, RN, BSN

Center for Colorectal and Pelvic Reconstruction
Nationwide Children's Hospital
Columbus, Ohio

Vinay Prasad, MD, FASCP, FCAP

Director of Surgical Pathology
Director of Pediatric GI Pathology
Nationwide Children's Hospital
Columbus, Ohio

Clare Skerritt, MBBS, MSc, MRCS (England)

Pediatric Surgical Registrar
Evelina London Children's Hospital
London, United Kingdom

Stephanie Vyrostek, RN, BSN

Center for Colorectal and Pelvic Reconstruction
Nationwide Children's Hospital
Columbus, Ohio

Andrea Wagner, MS, CPNP

Center for Colorectal and Pelvic Reconstruction
Nationwide Children's Hospital
Columbus, Ohio



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>