

Volume II

Mastery of Surgery

Edited by

Lloyd M. Nyhus, M.D.

Warren H. Cole Professor and Head, Department of Surgery,
University of Illinois College of Medicine at Chicago;
Surgeon-in-Chief, University of Illinois Hospital,
Chicago

Robert J. Baker, M.D.

Professor of Surgery and Chief, Division of General Surgery,
University of Illinois College of Medicine at Chicago;
Chief, Division of General Surgery, University of Illinois Hospital;
Dean, Cook County Graduate School of Medicine,
Chicago

IN CONJUNCTION WITH

Consultant on Anatomy

Harry Monsen, Ph.D.

Professor of Anatomy,
University of Illinois College of Medicine

Editorial Consultant

Catherine Judge, B.A.

Publications Editor, Department of Surgery,
University of Illinois College of Medicine

Foreword by

Claude E. Welch, M.D., D.Sc. (Hon.)

Senior Surgeon,
Massachusetts General Hospital;
Clinical Professor of Surgery (Emeritus),
Harvard Medical School

Little, Brown and Company
Boston/Toronto

This work is dedicated to our surgical residents over the years. They have been our severest critics, but at the same time by far the greatest inspiration and the most stimulating influence in our professional lives.

Copyright © 1984 by Lloyd M. Nyhus and Robert J. Baker

First Edition

All rights reserved. No part of this book may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without permission in writing from the publisher, except by a reviewer who may quote brief passages in a review.

Library of Congress Catalog Card No. 83-81342

ISBN 0-316-61742-3

Printed in the United States of America

HAL

Mastery of Surgery

Contents

Foreword by Claude E. Welch	xxi
Preface	xxii
Contributing Authors	xxv

Volume I

One. General Principles

1. Preparation of the Patient	John M. Daly, Edward M. Copeland III, and Stanley J. Dudrick	3
2. Metabolic Response to Trauma and Acute Illness	John M. Kinney	19
3. Problems with Anesthesia	Gwendolyn Graybar	26
4. Myocardial Support in the Operative and Postoperative Periods	Sidney Levitsky	36
5. Postoperative Hemorrhage and Volume Depletion	John J. Skillman	41
6. Blood and Blood Component Therapy	Charles L. Rice and Gerald S. Moss	47
7. Postoperative and Posttraumatic Renal Insufficiency	William H. Stahl	52
8. Respiratory Care of the Postoperative Patient	R. M. Peters	59
9. Bacteriology in Surgery	Ronald L. Nichols	71

Two. The Head and Neck

I. Lesions of the Parotid and Other Salivary Glands

- | | | |
|--|--|-----|
| 10. Anatomy of the Submandibular Triangle and the Floor of the Mouth | Harry Monsen | 87 |
| 11. Surgical Management of Inflammatory and Neoplastic Diseases of the Parotid Gland | Edward F. Scanlon and Stephen F. Sener | 89 |
| 12. Repair of Facial Nerve Injury and Rehabilitation of the Paralyzed Face | A. G. D. Maran | 96 |
| 13. Submandibular Gland Resection and Excision of Sublingual Gland Tumors | Myles P. Cunningham | 103 |

II. Lesions of the Floor of the Mouth, the Tongue, and the Lip

- | | | |
|--|--|-----|
| 14. Anatomy of the Tongue and Lip | Harry Monsen | 109 |
| 15. Operations on the Lip | Walley J. Temple and Alfred S. Ketcham | 111 |
| 16. Hemiglossectomy, Excision of the Floor of the Mouth, and Mandibular Resection for Cancer | Martin C. Robson | 119 |

III. Lesions of the Neck

- | | | |
|--|------------------------------|-----|
| 17. Anatomy of the Anterior and Lateral Triangles of the Neck | Harry Monsen | 127 |
| 18. Diagnostic Approach to Neck Masses | John Hibbert and P. M. Stell | 129 |
| 19. Thyroglossal Duct Cysts and Branchial Cleft Anomalies | Robert L. Telander | 131 |
| 20. Hemangioma, Lymphangioma, Lymphangiectasis, and Cystic Hygroma | Alexander H. Bill | 137 |

21. Radical Neck Dissection	Elliot W. Strong	142
22. Carotid Body Tumor	Hushang Javid	151

IV. Thyroid Disease

23. Surgical Anatomy of the Thyroid Gland	Sidney Black	159
24. Total and Subtotal Thyroidectomy	Caldwell B. Esselstyn, Jr.	168
25. Extended Total Thyroidectomy with Modified Radical Lymph Node Dissection for Cancer	Brown M. Dobyns	179

V. Parathyroid Glands

26. Anatomy of the Parathyroid Glands	Edward Paloyan and Ann M. Lawrence	191
27. Parathyroidectomy for Primary Hyperparathyroidism	Edward Paloyan and Ann M. Lawrence	197
28. Exploration of Parathyroid Glands and Subtotal Resection for Hyperplasia	Melvin A. Block	205

VI. The Larynx and Trachea

29. Resection of the Larynx and Pharynx for Cancer	Lawrence W. DeSanto	215
--	---------------------	-----

Three. The Breast, Chest, and Mediastinum

I. The Breast

30. Anatomy of the Female Breast	Harry Monsen	241
31. Diagnostic Approach to Breast Masses	Paul H. O'Brien and E. Q. Seymour	242
32. Modified Radical Mastectomy	George P. Rosemond and Willis P. Maier	248
SPECIAL COMMENT	Thomas L. Dao and Jashbhai Patel	255
33. Modified Radical Mastectomy	Thomas L. Dao and Jashbhai Patel	257
SPECIAL COMMENT	Elvin G. Zook and Lewis R. Kinkead	262
Subcutaneous Mastectomy and Breast Postmastectomy Reconstruction		

II. The Chest

- | | | |
|---|-------------------|-----|
| 34. Anatomy of the Chest Wall and Thoracotomy | Paul A. Thomas | 267 |
| 35. Excision and Repair of the Chest Wall | Hiram T. Langston | 273 |
| 36. Anatomy and Operations of the Thoracic Duct | Walter L. Barker | 278 |

III. The Mediastinum

- | | | |
|---|--------------------|-----|
| 37. Topography of the Mediastinum, Thymectomy, and Excision of Primary Mediastinal Masses | William E. Neville | 289 |
|---|--------------------|-----|

Four. The Diaphragm

- | | | |
|--|---|-----|
| 38. Surgical Anatomy of the Diaphragm | John E. Skandalakis, Stephen W. Gray, and Joseph S. Rowe, Jr. | 301 |
| 39. Congenital Diaphragmatic Hernia | Morton M. Woolley | 319 |
| 40. Paraesophageal Hiatal Hernia | W. S. Payne | 329 |
| 41. Traumatic Diaphragmatic Hernia | James W. Brooks | 338 |
| 42. Congenital and Acquired Eventration of the Diaphragm | Harry C. Bishop and C. Everett Koop | 343 |
| 43. Reflux Peptic Esophagitis in Children | Moritz M. Ziegler and Harry C. Bishop | 346 |

Five. The Gastrointestinal Tract

I. The Esophagus

- | | | |
|--|---------------------------------------|-----|
| 44. Anatomy of the Esophagus and the Posterior Mediastinum | Russell K. Pearl | 357 |
| 45. Achalasia and Diffuse Spasm of the Esophagus | Raymond W. Postlethwait | 363 |
| 46. Nissen Antireflux Operation | Mario E. Rossetti and Konrad Th. Hell | 368 |
| 47. Transthoracic Antireflux Procedures | Tom R. DeMeester | 381 |

48. Hill Median Arcuate Ligament Repair of Gastroesophageal Reflux	Colin O. H. Russell and Lucius D. Hill	393
49. Total Esophagectomy for Carcinoma	K. C. McKeown	403
50. Colon Interposition for Esophageal Replacement	Ivan A. May and Paul C. Samson	410
51. Jejunal Interposition in Esophageal Replacement	J. Rüdiger Siewert	417
52. Esophageal Replacement After Blunt Esophagectomy	Mark B. Orringer and Herbert B. Sloan	426
53. Heimlich Operation for Esophageal Replacement	Henry J. Heimlich	440
54. Transthoracic Interruption of Esophageal Varices	Ashby C. Moncure and Leslie W. Ottinger	446
55. Injection Sclerotherapy for Bleeding Esophageal Varices	John Terblanche	450
56. Perforation of the Esophagus	Harold C. Urschel, Jr., and Maruf A. Razzuk	457
57. Thoracoabdominal Esophagogastrectomy with End-to-Side Anastomosis	Jameson L. Chassin	463
58. Surgical Repair of Esophageal Atresia and Tracheoesophageal Fistula in Infants	Judson G. Randolph	471

II. The Stomach and Duodenum

59. Anatomic Considerations in Gastroduodenal Surgery	Charles A. Griffith	479
60. Gastrostomy	John E. Jesseph and Andrew C. Fiore	488
61. Billroth I Gastrectomy	J. Rüdinger Siewert and H. J. Castrup	494
62. Billroth II Gastrectomy	Stanley O. Hoerr and Ezra Steiger	501
63. Truncal Vagotomy with Jaboulay Gastroduodenostomy for Obstructing Duodenal Ulcer	Philip E. Donahue	515

64. Selective Vagotomy and Pyloroplasty	John L. Sawyers	522
65. Proximal Gastric Vagotomy	Christopher Wastell and Timothy E. Bucknall	528
66. Selective Gastric Vagotomy Plus Suprapyloric Antrectomy	Charles A. Griffith	535
67. Selective Vagotomy, Antrectomy, and Gastroduodenostomy for the Treatment of Duodenal Ulcer	Lloyd M. Nyhus	542
68. Pyloroplasty, Vagotomy, and Suture Ligation for Bleeding Duodenal Ulcer	James H. Foster	551
69. Congenital Pyloric Stenosis and Duodenal Obstruction	Hernan M. Reyes	555
70. Extended Subtotal Gastrectomy for Cancer	Bernard Gardner	563
71. Radical Total Gastrectomy for Carcinoma	Eric W. Taylor and John Alexander-Williams	572
72. Esophagogastrectomy for Carcinoma of the Abdominal Esophagus and Gastric Cardia	John Wong and G. B. Ong	582
73. The Dumping Syndrome and Postvagotomy Diarrhea	J. Lynwood Herrington, Jr.	591
74. Gastric Reduction for Obesity	Edward E. Mason	603
75. Duodenorrhaphy for Perforated Duodenal Ulcer	Robert J. Baker	610
76. Vascular Compression of the Duodenum	Stephen W. Gray, John E. Skandalakis, and Joseph S. Rowe, Jr.	614
 III. Surgery of the Liver and Biliary Tract		
77. Surgical Anatomy of the Liver and Biliary Tract	Gordon F. Madding and Paul A. Kennedy	625
78. Treatment of Echinococcal Cyst	Basil Golematis and Panos Delikaris	633
SPECIAL COMMENT	David D. Heath	640
79. Liver Biopsy Techniques	Donald K. Wood	642

80. Regular and Extended Right and Left Hepatic Lobectomy for Cancer	G. B. Ong	646
81. Drainage of Hepatic, Subphrenic, and Subhepatic Abscesses	Toni Hau	653
82. Approach to an Injured Liver	Charles E. Lucas and Anna M. Ledgerwood	660
83. Cholecystostomy, Cholecystectomy, and Intraoperative Evaluation of the Biliary Tree	Thomas T. White	671
SPECIAL COMMENT	Bernard Sigel	673
84. Nonoperative Treatment of Residual Biliary Tract Stones	Rodolfo M. Mazzariello	678
85. Measured Papillofundibulotomy	Louis Barraya, J. Alemanno, and J.-F. Rey	686
86. The Choice Between Transduodenal Sphincteroplasty and Lateral Choledochoduodenostomy for Distal Common Duct Obstruction	S. Austin Jones	695
SPECIAL COMMENT Experience with Choledochoduodenostomy for Benign Obstructive Biliary Tract Disease	Herbert R. Freund and Yacov Berlatsky	707
87. Acute and Chronic Repair of Common Hepatic Duct Injury	Gabriel A. Kune	710
88. Treatment of Benign and Malignant Proximal Biliary Tract Stenosis	Bjarne Fretheim and Audun Flatmark	715
89. Silastic Transhepatic Biliary Stents in High Benign and Malignant Biliary Tract Obstructions	John L. Cameron	721
90. Choledochojunostomy	Herbert R. Freund and Yacov Berlatzky	728
91. Cholecystojejunostomy	Paul F. Nora and Robert P. Davis	733
92. Surgical Treatment of Jaundice in Newborn Infants	Morio Kasai	736

Volume II

IV. Surgery of the Pancreas

- | | | |
|--|---|-----|
| 93. Surgical Anatomy of the Pancreas | Stephen W. Gray, Lee J. Skandalakis, Joseph S. Rowe, Jr., and John E. Skandalakis | 751 |
| 94. Cystogastrostomy for Pancreatic Pseudocyst | William Schumer | 765 |
| 95. Roux-en-Y Cystojejunostomy for Pancreatic Pseudocyst | Lawrence W. Way | 770 |
| 96. Roux-en-Y Pancreaticojejunostomy for Chronic Pancreatitis | Herbert B. Greenlee | 774 |
| 97. Partial and Subtotal Pancreatectomy for Chronic Pancreatitis | Charles F. Frey | 780 |
| 98. Total Pancreatoduodenectomy for Cancer of the Pancreas | A. R. Moossa | 795 |
| SPECIAL COMMENT
Cystic Neoplasms of the Pancreas | Donald W. Weaver and Alexander J. Walt | 806 |
| 99. Reparative Procedures for Trauma to the Pancreas | Lawrence W. Norton | 809 |
| 100. Pancreatic Exploration and Excision of the Islet Cell Tumor | R. Dale Liechty | 817 |

V. Surgery of the Spleen

- | | | |
|--|--------------------|-----|
| 101. Anatomy of the Spleen, Splenectomy, and Excision of Accessory Spleens | John F. Perry, Jr. | 823 |
| 102. Splenic Repair and Partial Splenectomy | Leon Morgenstern | 830 |

VI. Portal Hypertension and Its Treatment

- | | | |
|---|-------------------|-----|
| 103. Anatomy of the Portal System | Harry Monsen | 839 |
| 104. End-to-Side and Side-to-Side Portacaval Shunts | Robert E. Hermann | 841 |

105. Portacaval Shunt with Arterialization of the Portal Vein	Roland J. Adamsons	850
106. Mesocaval Shunts	Marvin L. Gliedman and Vivian A. Tellis	858
107. Distal Splenorenal Shunt	Robert Zeppa	867
108. The LeVeen Shunt for Intractable Ascites	Harry H. LeVeen and Vincent A. Piccone	873
VII. Surgery of the Small Intestine		
109. Surgical Techniques and Care of Obstruction of the Small Intestine	Richard L. Nelson	883
110. Miscellaneous Surgical Techniques for the Small Intestine	Raymond Pollak	894
111. Intestinal Bypass for Hypercholesterolemia	Henry Buchwald	901
112. Continent Ileostomy	Nils G. Kock	908
VIII. Surgery of the Colon		
113. Anatomy of the Colon	Harry Monsen	917
114. Appendectomy for Acute Appendicitis: Drainage of Appendiceal Abscess	James T. Adams	920
115. Diverting and Venting Colostomy Techniques and Colostomy Closure	Joaquin S. Aldrete	931
116. Magnetic Stoma Cap: A Continent Colostomy	Joel J. Bauer, Irwin M. Gelernt, Barry A. Salky, and I. Kreel	943
117. Ileostomy-Colostomy for Toxic Megacolon	Victor W. Fazio and R. C. J. Verschueren	949
118. Transperitoneal Extramucosal Rectal and Proximal Colonic Biopsy and the Soave Procedure for Hirschsprung's Disease	Hernan M. Reyes	955

119.	Total Colectomy and Mucosal Proctectomy for Ulcerative Colitis	Lester W. Martin	965
120.	Segmental Resection for Acute and Chronic Diverticulitis	John L. Madden	969
121.	Radical or Extended Right Hemicolectomy for Cancer	Hiram C. Polk, Jr., and Kirby I. Bland	979
122.	Total Colectomy with Ileorectal Anastomosis	Victor W. Fazio	987
123.	Total Proctocolectomy for Ulcerative Colitis	George E. Block	998
124.	Radical Left Hemicolectomy for Cancer	Richard L. Nelson	1008
125.	Abdominosacral Resection for Cancer of the Rectum and Anus	Anthony R. Gennaro	1013
126.	Anterior Resection of the Rectum	Robert L. Schmitz and William C. Allen	1019
127.	Abdominosacral Resection for Midrectal Cancer	S. Arthur Localio and Kenneth Eng	1023
128.	York Mason Procedure for Rectourethral Fistula or Benign Tumor	M. Leela Prasad	1033
129.	Ripstein Procedure for Rectal Prolapse	J. Patrick O'Leary	1039
130.	Perineal Sleeve Resection of the Rectum for Prolapse	J. Patrick O'Leary	1042
131.	Ivalon Sponge Wrap and Thiersch Wire Operations for Rectal Prolapse	Philip H. Gordon	1045
132.	Removal of Foreign Bodies from the Rectum	E. Earl Pennington	1051
133.	Surgical Treatment of Anal Disorders	Herand Abcarian	1054

Six. Nongastrointestinal Transabdominal Surgery

I. Surgery of the Adrenal Glands

- | | | |
|--|-----------------------|------|
| 134. Anatomy of the Adrenal Glands and Bilateral Adrenalectomy | H. William Scott, Jr. | 1065 |
|--|-----------------------|------|

II. Urinary Tract Surgery

- | | | |
|---|--|------|
| 135. Anatomy of the Kidney, Ureter, and Bladder | Harry Monsen | 1073 |
| 136. Calculous Disease of the Genitourinary Tract | Lloyd H. Harrison and William H. Boyce | 1077 |
| 137. Operations on the Ureteropelvic Junction | Frank Hinman, Jr. | 1085 |
| 138. Nephrectomy for Renal Parenchymal and Uroepithelial Tumors | Sunmolu Beckley and Gerald P. Murphy | 1091 |
| 139. Surgical Management of Wilms' Tumor | Julio Pow-Sang | 1101 |
| 140. Cystectomy for Bladder Cancer | Donald G. Skinner | 1109 |
| 141. Urinary Diversion | Arthur D. Smith and Stephen A. Ortlip | 1118 |
| SPECIAL COMMENT | David M. Wallace | 1132 |
| 142. Retroperitoneal Lymph Node Dissection for Tumors of the Testis | W. Bedford Waters and Patrick Guinan | 1137 |
| 143. Surgical Treatment of Trauma to the Genitourinary Tract | Alexander S. Cass | 1146 |
| 144. Bench Surgery for Renal Disease | Hans Brynger and Silas Pettersson | 1153 |

III. Female Genitourinary Tract Surgery

- | | | |
|------------------------------------|--|------|
| 145. Dilation and Curettage | Morris Notelovitz | 1165 |
| 146. Simple Abdominal Hysterectomy | Richard E. Symmonds and Raymond A. Lee | 1171 |

147. Radical Hysterectomy	Hervy E. Averette, John H. Ford, Jr., Robert E. Girtanner, and Bernd-Uwe Sevin	1183
148. Radical Vulvectomy	James W. Daly	1194
149. Anterior and Posterior Colporrhaphies	Thomas H. Green, Jr.	1203
150. The Marshall-Marchetti-Krantz Operation for Stress Incontinence	Kermit E. Krantz	1212
151. Tubal Sterilization by Minilaparotomy and Laparoscopy	James H. Dorsey and Clifford R. Wheelless	1215
152. Surgical Treatment of Infertility	Alan H. DeCherney	1221
153. Surgical Construction of an Artificial Vagina	Howard W. Jones, Jr.	1227
154. Cesarean Section	William E. Fuller and Edgar L. Makowski	1233

IV. Surgery of Hernia

155. Cooper's Ligament Repair of Groin Hernia	C. B. McVay	1239
156. The Ponka Approach to Repair of Groin Hernias	Joseph L. Ponka	1250
157. The Shouldice Repair	Frank Glassow	1268
158. Iliopubic Tract Repair of Inguinal Hernia: The Anterior (Inguinal Canal) Approach	Robert E. Condon	1274
159. Iliopubic Tract Repair of Inguinal and Femoral Hernia: The Posterior (Preperitoneal) Approach	Lloyd M. Nyhus	1283

Seven. Vascular Surgery

I. Removal of Arterial Embolus

160. Fogarty Catheter Embolectomy	Perry M. Shoor and Thomas J. Fogarty	1295
-----------------------------------	--------------------------------------	------

II. Carotid-Subclavian Obstruction

161. Carotid Endarterectomy with Shunt	Jesse E. Thompson	1305
162. Axilloaxillary Bypass Graft	David S. Sumner	1312
163. Carotid-Subclavian Bypass Graft	Hendrick B. Barner and Gary J. Peterson	1318

III. Thoracic Vascular Lesions

164. Thoracic Aortic Aneurysmectomy	Arthur C. Beall, Jr., Laurens R. Pickard, and Kenneth L. Mattox	1325
165. Revascularization of Proximal Brachiocephalic, Subclavian, Carotid, and Vertebral Arteries	James A. DeWeese	1334
166. Management of Trauma to the Thoracic Great Vessels	Kenneth L. Mattox, Laurens R. Pickard, and Arthur C. Beall, Jr.	1348

IV. Aneurysms

167. Technique for Repairing Infra renal Abdominal Aortic Aneurysm	James S. T. Yao, William R. Flinn, and John J. Bergan	1361
168. Ruptured Abdominal Aneurysm	Hugh E. Stephenson, Jr.	1366
169. Wall Reinforcement (External Grafting) in the Management of Aneurysm of the Great Vessels	Francis Robicsek	1372
170. Excision of Suprarenal Abdominal Aortic Aneurysm	Marshall W. Webster and Henry T. Bahnson	1379
171. Excision of Renal, Splenic, and Hepatic Artery Aneurysms	James C. Stanley and Walter M. Whitehouse, Jr.	1385
172. Excision of Iliac Aneurysm	Victor M. Bernhard	1395
173. Excision of Femoral Artery Aneurysm	Arthur B. Voorhees, Jr.	1402