

Contents

VOLUME 2

PART VII. ABDOMEN

SECTION ONE: THE ABDOMINAL WALL

74 / Disorders of the Umbilicus by <i>Anthony Shaw</i>	731
Clinical Embryology	731
Umbilical Disease	731
The Umbilicus as a Therapeutic Portal	737
75 / Omphalocele and Gastrochisis by <i>Samuel R. Schuster</i>	740
Embryology of the Abdominal Wall and Small Intestine	740
Definitions of Terms and Clinical Observations Related to Developmental Anatomy	740
Associated Malformations	744
Prenatal Management	747
Treatment	747
Clinical Experience	760
Growth, Development, and Late Morbidity	762
76 / Cloacal Exstrophy by <i>Moritz M. Ziegler, John W. Duckett, Charles G. Howell</i>	764
Anatomy	764
Embryogenesis	764
Spectrum of Anomalies	765
Treatment	766
Results	770
77 / Conjoined Twins by <i>Theodore P. Votteler</i>	771
Incidence	771
Classification	772
Prenatal Diagnosis	772
Antepartum Findings of Conjoined Twins	773
Ethics	773
Planned Surgical Separation	773
Anesthetic Management	774
Thoracopagus	774
Omphalopagus	775
Pygopagus	775
Ischiopagus	777
Craniopagus	777
78 / Inguinal Hernia by <i>Marc I. Rowe, David A. Lloyd</i>	779
Embryogenesis and Pathogenesis	779
Incidence	780
Clinical Features	780
Management	781
Complications	784
Contralateral Exploration	784
Irreducible Hernia (Incarceration and Strangulation)	788
Special Considerations	790
Congenital Hydrocele	791
79 / Undescended Testes by <i>Eric W. Fankalsrud</i>	793
Embryology	793
Hormonal Influences	794
Types of Undescended Testes	794
Complications of Cryptorchidism	796
Associated Anomalies	799
Diagnosis	799
Treatment	799
Orchiopexy	800

SECTION TWO: STOMACH AND DUODENUM

80 / Gastrostomy: Indications and Technique by Bradley M. Rodgers	80
Technique	80
Complications	80
81 / Infantile Hypertrophic Pyloric Stenosis by Clifford D. Benson	81
Etiology and Pathology	81
Symptoms and Signs	81
Operative Treatment	81
Nonoperative Treatment	81
82 / Peptic Ulcer—Acute and Chronic by Jessie L. Ternberg	82
Secondary Peptic Ulcer Disease	82
Primary Peptic Ulcer Disease	82
83 / Other Conditions of the Stomach by John R. Campbell	83
Congenital Gastric Outlet Obstruction	83
Incomplete Pyloric-Prepyloric Diaphragm in Infants and Children	83
Volvulus of the Stomach	83
Gastrointestinal Perforations in the Newborn	83
Lact bezoar	83
Congenital Microgastria	83
84 / Duodenal Atresia, Stenosis and Annular Pancreas by Louise Schauszfer	84
Embryology and Pathogenesis	84
Pathology	84
Location and Incidence	84
Associated Anomalies	84
Clinical Picture	84
Diagnosis	84
Management	84
Results	84

SECTION THREE: THE SMALL INTESTINE

85 / Jejunioileal Atresia and Stenosis by Jay L. Granfeld	85
Incidence	85
Etiology	85
Diagnosis	85
Treatment	85
Morbidity and Mortality	85
86 / Meconium Ileus by David A. Lloyd	86
Pathogenesis	86
Incidence	86
Pathology	86
Clinical Features	86
Radiologic Features	86
Diagnosis of Cystic Fibrosis	86
Differential Diagnosis	86
Management	86
Postoperative Complications	86
Operative Results	86
Prognosis	86
Meconium Ileus Equivalent	86
87 / Meckel's Diverticulum by Raymond A. Amoury	87
Incidence	87
Embryology	87
Anatomy and Histology	87
Natural History of Meckel's Diverticulum	87
Hemorrhage—Clinical Presentation and Diagnosis	87
Intestinal Obstruction	87
Meckel's Diverticulitis	87
Umbilical Abnormalities	87
Meckel's Diverticulum and Neoplasms	87
Management of Meckel's Diverticulum Found Incidentally	87
88 / Intussusception by Mark M. Ravitch	88
Incidence	88
Nutrition and Previous Health	88
Previous Attacks; Spontaneous Reduction	88
Examination of the Patient	88
Pathogenesis of the Disease and of Its Symptomatology	88
Treatment	88

89 / Malrotation of the Intestine by <i>E. Ide Smith</i>	882
Embryology	882
Classification of the Abnormalities of Intestinal Rotation	885
Clinical Manifestations	886
Radiological Diagnosis of Abnormalities of Rotation	889
Treatment	889
Postoperative Management and Complications	894
Results	894
90 / Other Causes of Intestinal Obstruction by <i>Howard C. Filston</i>	895
Postoperative Obstruction Due to Adhesions	895
Less Common Causes of Intestinal Obstruction	898
 SECTION FOUR: GENERAL	
91 / Gastrointestinal Endoscopy by <i>Stephen L. Gans</i>	901
Gastroduodenoscopy	901
Endoscopic Retrograde Cholangiopancreatography	902
Colonoscopy	902
Intraoperative Endoscopy	903
92 / Gastrointestinal Bleeding by <i>Robert M. Arensman</i>	904
Neonates	904
Infants 1 Month to 1 Year of Age	905
Infants 1 Year to 2 Years of Age	905
Children Older Than 2 Years	905
93 / Foreign Bodies and Bezoars by <i>Diller B. Groff III</i>	907
Diagnosis	907
Treatment	907
Alkaline Disk Batteries	908
Bezoars	908
Summary	911
94 / Duplications of the Gastrointestinal Tract by <i>Mark M. Ravitch</i>	911
Embryology	911
Symptoms and Diagnosis	913
Duplications of the Stomach	914
Duplications of the Duodenum	915
Duplications of the Small Intestine	915
Duplications of the Colon	918
Complete Duplication of the Colon, With Duplication of the External Genitalia and Lower Urinary Tract	919
95 / Mesenteric and Omental Cysts by <i>Arnold H. Colodny</i>	921
Etiology	921
Clinical Features	921
Radiologic Findings	921
Location of Cysts	923
Treatment	923
Morbidity and Mortality	924
Pathologic Features	924
96 / Ascites by <i>Peter K. Kottmeier</i>	925
Diagnosis	925
Fetal Ascites	925
Chylous Ascites	925
Pancreatic Ascites	927
Biliary Ascites	927
Urinary Ascites	927
Ovarian Ascites	928
97 / Meconium Peritonitis by <i>Eugene S. Wiener</i>	929
Etiology	929
Pathology	929
Clinical Presentation	929
Indications for Operation	930
Operation	931
Results	931
98 / Polypoid Diseases of the Gastrointestinal Tract by <i>Thomas V. Santulli, John N. Schullinger</i>	932
Juvenile Polyps	932
Intestinal Polyposis Associated With Mucocutaneous Pigmentation (Peutz-Jeghers Syndrome)	935
Adenomatous Polyps	938
Familial Adenomatous Polyposis	939
Unusual Polyp Syndromes of the Gastrointestinal Tract	940

Miscellaneous Polypoid Diseases	9
Colonoscopy	9
99 / Necrotizing Enterocolitis by Marc I. Rowe	9
Incidence	9
Pathogenesis	9
Age and Maturity	9
Feedings	9
Reduced Mucosal Blood Flow	9
Hyperosmolar Formulas and Medications	9
Infectious Agents	9
Pathology	9
Diagnosis	9
Imaging	9
Classification	9
Nonoperative Treatment	9
Survival	9
Intestinal Strictures	9
Prevention	9
Late Outcome	9
100 / Crohn's Disease by Robert L. Telander	9
Etiology	9
Pathology	9
Clinical Aspects	9
Surgical Therapy	9
Prognosis	9
101 / Ulcerative Colitis by Lester W. Martin	9
Etiology	9
Pathology	9
Clinical Manifestations	9
Indications for Operation	9
Surgical Treatment	9
Summary	9
102 / Primary Peritonitis by Sigmund H. Ein	9
Etiology	9
Clinical Picture	9
Operation	9
Bacteriology	9
Results	9
103 / Ileostomy and Colostomy by Harry C. Bishop	9
Indications for Enterostomies	9
Types and Techniques of Small- and Large-Bowel Enterostomies	9
Abdominal Sites for Enterostomies	9
Care of Abdominal Enterostomies	9
Closure of Enterostomies	9
Complications of Abdominal Stomas	9

SECTION FIVE: THE COLON

104 / Atresia, Stenosis, and Other Obstructions of the Colon by Arvin I. Philippart	9
Colonic Atresia	9
Dysmotility States	9
Neurofibromatosis	9
Miscellaneous Lesions	9
105 / Appendicitis by Peter K. Kattmeier	9
Incidence	9
Etiology	9
Diagnosis	9
Physical Examination	9
Appendicitis in Preschool Children	9
Neonatal Appendicitis	9
Laboratory Examination	9
X-ray Findings	9
Laparoscopy and Sonography	9
Differential Diagnosis	9
Therapy of Nonperforated Appendicitis	9
Therapy of Perforated Appendicitis	9
Operative Therapy of Perforated Appendicitis	9
Appendiceal Abscess	9
Postoperative Complications	9

106 / Hirschsprung's Disease by William K. Sieber	995
Definitions	996
Pathology	996
Embryology	998
Physiology	999
Etiology	999
Pathophysiology	999
Incidence	1000
Clinical Course	1000
Differential Diagnosis	1000
Diagnostic Procedures	1001
Comparison of Methods of Definitive Diagnosis	1004
Enterocolitis	1004
Medical (Nonoperative) Treatment	1005
Surgical Treatment	1005
Postoperative Complications	1011
Operative Results	1012
Experience—Children's Hospital of Pittsburgh	1013
Personal Approach to Hirschsprung's Disease	1013
Hirschsprung's Disease—Swenson's Procedure by Jordan J. Weitzman	1016
Hirschsprung's Disease—Duhamel's Procedure—Martin's Method by Lester W. Martin	1017
Definitive Operation	1017
Hirschsprung's Disease—Soave's Operation—Boley's Technique by Scott J. Boley	1018
Hirschsprung's Disease—Total Colonic Aganglionosis—Martin's Operation by Lester W. Martin	1019
Operative Technique	1019
Results	1019
107 / Colorectal Tumors by James A. O'Neill, Jr.	1020
Signs and Symptoms	1020
Pathology	1021
Entities Associated With Colorectal Carcinoma in Childhood	1021
Treatment and Results	1021
108 / Anorectal Malformations by John M. Templeton, Jr., James A. O'Neill, Jr.	1022
Embryology	1022
Anatomy and Physiology of Fecal Continence	1023
Incidence and Frequency	1024
Classification	1024
Clinical Investigation	1025
Surgical Management	1027
Surgical Techniques	1030
Complications	1031
Follow-up Results and Patient Care	1032
Anorectal Malformations—Posterior Sagittal Anorectoplasty for Intermediate and High Imperforate Anus Anomalies by Pieter A. de Vries, Alberto Pena	1035
109 / Other Disorders of the Rectum and Anus by Lucian L. Leape	1038
Fecal Continence	1038
Constipation	1038
Fecal Incontinence	1041
Rectal Prolapse	1042
Anorectal Trauma	1043
Miscellaneous Anal Disorders	1044
SECTION SIX: LIVER, BILIARY TRACT, PANCREAS, SPLEEN	
110 / Biliary Atresia: The Jaundiced Infant by John R. Lilly	1047
Pathology	1047
Etiology	1047
Diagnostic Evaluation	1048
Operative Cholangiography	1048
Correctable Biliary Atresia	1049
Noncorrectable Biliary Atresia	1049
Complications	1050
Prognosis	1053
Liver Transplantation	1053
Other Surgical Lesions Responsible for Jaundice in Infants	1054
111 / Choledochal Cyst by James A. O'Neill, Jr.	1056
Etiology	1056
Clinical Findings	1056

Diagnosis	1057
Treatment	1057
Results and Complications	1059
112 / Gallbladder Disease by George W. Holcomb, Jr.	1060
Hydrops of the Gallbladder	1060
Acalculous Cholecystitis	1060
Cholelithiasis and Hemolytic Disease	1061
Cholelithiasis in the Absence of Hemolytic Disease	1062
113 / Nonmalignant Liver Tumors and Hepatic Infections by Robert J. Touloukian	1067
Cysts	1067
Solid Tumors	1068
Vascular Tumors	1069
Hepatic Infections and Abscess	1071
114 / Portal Hypertension by R. Peter Altman	1075
Causes of Portal Hypertension	1075
Gastrointestinal Hemorrhage From Esophageal Varices	1076
Shunt Therapy	1077
Nonshunt Alternatives	1082
115 / The Pancreas by Kenneth J. Welch	1086
Embryology	1086
Pancreatitis	1086
Pancreatic Cysts and Pseudocysts	1091
Pancreatic Neoplasms	1096
Multiple Endocrine Adenomatosis	1099
Hypoglycemia	1100
116 / The Spleen by E. Thomas Boles, Jr.	1107
Abnormal Splenic Function	1107
Postsplenectomy Sepsis	1108
Hematologic Diseases and Splenectomy	1108
Hodgkin's Disease	1109
Trauma	1110
Operative Techniques	1111
117 / The Adrenal Glands by Eric W. Fonkalsrud	1113
Anatomy	1113
Embryology	1113
Physiology	1114
Pheochromocytoma	1116
Cortical Lesions of the Adrenal Glands	1121
Feminizing Tumors	1123
Hyperaldosteronism	1123
Cysts and Stromal Tumors	1123
Adrenal Insufficiency	1123

PART VIII. GENITOURINARY SYSTEM

SECTION ONE: KIDNEY AND URETER

118 / Cystic Disease of the Kidney, Dysplasia, and Agenesis by Howard McC. Snyder III	1127
Classification of Cystic Disease	1127
Renal Dysplasia (Dysgenesis)	1130
Renal Agenesis	1132
119 / Renal Fusions and Ectopia by W. Hardy Hendren, Patricia K. Donahoe	1134
Embryology	1134
Horseshoe Kidney	1134
Crossed Renal Ectopia	1136
Pelvic Kidney	1140
Discoid Kidney	1140
Summary	1145
120 / Renal Vein Thrombosis by David A. Lloyd	1146
Pathogenesis	1146
Etiology	1146
Incidence	1147
Clinical Features	1147
Diagnosis	1148
Management	1148
Outcome	1150

121 / Pyeloureteral Obstruction by Robert H. Whitaker	1151
Hydronephrosis	1151
Etiology of Pelviureteric Junction Obstruction	1153
Diagnostic Methods	1154
The Opposite Kidney and Associated Anomalies	1154
Complications	1154
Treatment	1154
Follow-up	1156
Results	1156
122 / Bifid and Double Ureters, Ureteroceles, and Fused Kidneys by F. Douglas Stephens	1157
Embryology	1157
Ureteral Bud Deformities	1158
Symptoms and Treatment of Bifid and Double Ureters	1160
Ureteroceles in Double Ureters	1161
Blind Ureters	1163
Single Ectopic Ureters	1163
Horseshoe Kidneys	1164
Crossed Renal Ectopia	1164
Retrocaval Ureter	1165
123 / Megaureter by W. Hardy Hendren	1166
Causes	1166
Obstructive vs. Refluxing Megaureter	1166
Correction of Megaureter	1166
Case Material	1171
Conclusion	118
124 / Vesicoureteral Reflux by Casimir F. Firlit	118
Etiology	118
Classifications of VUR	118
Natural History	118
Diagnosis	118
Operative Management of Vesicoureteral Reflux	118
Ureteral Advancements	118
Duplex Ureters	119
Results	119
125 / Prune Belly Syndrome by John W. Duckett	119
Spectrum	119
Etiology	119
Heredity	119
Clinical Manifestations	119
Management	119
Clinical Experience	120
Conclusions	120

SECTION TWO: THE BLADDER

126 / Congenital Neuropathic Bladder by Evan J. Kass	121
Normal Micturition	121
Identification of the Group at Risk	121
Urologic Evaluation	121
Management Options	121
Management of Vesicoureteral Reflux	121
127 / Enuresis by Brian E. Hardy, Kenneth J. Welch	122
Etiology and Natural History	122
Appropriate Investigation	122
Treatment	122
128 / Exstrophy of the Urinary Bladder by Robert D. Jeffs	122
Embryology	122
Incidence and Inheritance	122
Anatomy, Pathology, and Clinical Features	122
Operative Management	122
Staged Functional Reconstruction for Classic Exstrophy of the Bladder	122
Management of Failed Bladder Closures	122
Malignancy	122
Fertility	122
Pregnancy	122
Social Adjustment	122
129 / Urinary Diversion by Alan B. Retik	122
Temporary Urinary Diversion	122
Permanent Urinary Diversion	122

130 / Urinary Tract Undiversion by W. Hardy Hendren	1264
Preoperative Assessment of Bladder Function	1264
Illustrative Undiversion Cases	1265
Other Horizons for Undiversion	1283
Conclusion	1283

SECTION THREE: THE MALE GENITAL TRACT

131 / Hypospadias by A. Barry Belman	1286
Embryology	1286
Etiology	1286
Sexual Ambiguity	1286
Associated Abnormalities	1286
Hypospadias in Females	1287
Chordee	1287
Chordee Without Hypospadias	1288
Hypospadias Repair	1288
Technical Factors	1298
Complications	1299
132 / Epispadias by Robert D. Jeffs, John S. T. Masterson	1302
Embryology	1304
Clinical Assessment	1304
Surgical Treatment	1305
Discussion	1308
Conclusions	1313
133 / Abnormalities of the Urethra, Penis, and Scrotum by Francis F. Bartone, Lowell R. King	1314
Phimosis	1315
Technique of Circumcision	1315
Meatal Stenosis	1315
Distal Urethral Stenosis in Girls	1316
Labial Fusion	1316
Urethral Masses in Girls	1316
Diverticula of the Female Urethra	1316
Urethral Strictures	1316
Anterior Urethral Valves	1316
Anterior Urethral Diverticula	1316
Megalourethra	1317
Cowper's Gland Anomalies	1317
Posterior Urethral Valves	1318
Cysts of the Utricle	1320
Polyps of the Urethra	1320
Bladder Neck Obstruction	1320
Sphincter Dyssynergia	1321
Penile Agenesis	1321
Male Urethral Duplications	1322
Penile Duplication	1322
Female Urethral Duplication	1322
Torsion of the Penis	1322
Penoscrotal Webs	1324
Penoscrotal Transposition and Ectopic Scrotum	1324
134 / Testicular Tumors by Robert M. Filler	1326
Types of Tumors	1326
Clinical Features and Initial Diagnostic Steps	1326
Staging of the Neoplasm	1327
Management of Endodermal Sinus Tumor	1327
Management of Other Testicular Tumors	1329
135 / Torsion of the Testis by Lucian L. Leape	1330
Pathogenesis and Definitions	1330
Clinical Findings	1331
Diagnosis	1332
Treatment	1332
Outcome	1334
136 / Varicocele and Other Abnormalities of the Testis by William J. Cromie	1335
Other Abnormalities of the Testis	1339

SECTION FOUR: FEMALE GENITAL TRACT

137 / Ovarian Cysts and Tumors by Denis R. King	1341
Symptoms and Signs	1341
Diagnostic Studies	1341
Embryology	1342

Classification	1342
Nonneoplastic Ovarian Tumors	1342
Neoplastic Ovarian Tumors	1344
Summary	1351
138 / Abnormalities of the Female Genital Tract by Patricia K. Donahoe, Alberto Pena	1352
Müllerian Embryology	1352
Embryology of Cloacal and Urogenital Defects	1354
Vaginal Atresia	1357
Urogenital Sinus Defects	1357
Vaginal Atresia Associated With Cloacal Deformity	1363
139 / Ambiguous Genitalia in the Newborn by Patricia K. Donahoe, John D. Crawford	1363
Initial Evaluation and Gender Assignment	1363
Normal Development in the Embryo	1366
Preoperative Diagnostic Evaluation: An Orderly Approach	1367
Tests to Determine Genetic Sex and to Assess Steroid Production	1368
Research Tools	1369
Major Classification of Intersex Abnormalities	1376
Operative Repair	1376

PART IX. SPECIAL AREAS OF PEDIATRIC SURGERY

SECTION ONE: CARDIAC SURGERY

140 / Cardiac Disease by Thomas M. Holder, Keith W. Ashcraft	1385
Extracardiac Lesions: Patent Ductus Arteriosus and Coarctation of the Aorta	1387
Cyanotic Congenital Heart Disease	1393
Congestive Lesions	1395
Obstructive Lesions	1396
Miscellaneous Cardiac Lesions	1399
141 / Thoracic Great Vessels by John A. Waldhausen, Walter E. Pae, Jr.	1399
Patent Ductus Arteriosus	1401
Coarctation of the Aorta	1408
Interrupted Aortic Arch	1410
Vascular Rings	1411
Management	1417
Results	1417

SECTION TWO: NEUROSURGERY

142 / Neurosurgery—General Considerations by Donlin M. Long	142
The Diagnosis of Neurosurgical Conditions	142
General Considerations in Perioperative Management	142
Spina Bifida and Hydrocephalus by Melton H. Epstein, George B. Ulaszchewski	142
Hydrocephalus	143
Spina Bifida	144
Infections of the Nervous System by Donlin M. Long	144
Osteomyelitis of the Skull and Epidural Abscess	144
Extradural Abscess	144
Subdural Abscess	144
Brain Abscess	144
Surgical Management	144
Aneurysms and Arteriovenous Malformations by Donlin M. Long	144
Intracranial Arterial Aneurysms	144
Arteriovenous Malformations	144
Miscellaneous Neurosurgical Conditions by Donlin M. Long	144
Conditions of Increased Intracranial Pressure That Require Neurosurgical Intervention	144

SECTION THREE: ORTHOPEDICS

143 / Congenital Deformities by Paul P. Griffin	144
Congenital Dislocation of the Hip	144
Proximal Focal Femoral Deficiency	144
Foot Deformities	144
Metatarsus Adductus	144
Congenital Recurvatum, Subluxation, and Dislocation of the Knee	144
Congenital Pseudarthrosis of the Clavicle	144
Sprengel's Deformity	144

144 / Bone and Joint Infections by Paul P. Griffin	1463
Acute Hematogenous Osteomyelitis	1463
Septic Arthritis	1466
145 / Amputations by Curtis D. Edholm	1469
General Considerations	1469
Treatment	1469

PART X. SKIN, SOFT TISSUES, AND BLOOD VESSELS

146 / Congenital Defects of the Skin, Muscles, Connective Tissues, Tendons, and Hands by William K. Lindsay	1479
Incidence	1479
Classification and Nomenclature	1479
Congenital Defects of Skin	1480
Congenital Defects of Muscle	1484
Congenital Defects of Tendons and Sheaths	1484
Congenital Defects of the Hand	1485
Congenital Defects of Fingers	1486
Congenital Tumors	1490
Ectopic Tissue	1490
Teratoid Lesions	1492
Hamartomatous Lesions	1492
Epithelial Tissue Lesions	1492
Nerve Tissue Lesions	1492
Pigmented Tissue Lesions	1494
Treatment	1495
Mesenchymal Tissue Lesions	1495
Tumors of Muscle Tissue Origin	1498
Synovial Tissue Lesions	1498
147 / Neurofibromatosis—Von Recklinghausen's Disease by John C. Adkins, Mark M. Ravitch	1500
Introduction	1500
Clinical Forms	1500
Neurofibrosarcoma	1504
Summary	1505
148 / Disorders of the Lymphatic System by Eric W. Fontalrue	1506
Lymphangiomas	1506
Treatment	1506
Lymphangioma of the Tongue	1506
Mesenteric Cysts and Lymphangiomas	1507
Chylous Ascites	1507
Intestinal Lymphangiectasia	1508
Lymphangiomas and Lymphangiectasia of Solid Organs	1508
Lymphedema	1508
149 / Hemangiomas: Congenital Hamartomas by Milton T. Edgerton, Raymond F. Morgan	1511
Classification	1511
Treatment	1513
Steroid Therapy	1513
Selective Embolization	1514
Laser Therapy	1517
Summary	1517
150 / Venous Disease by Bruce M. Smith	1518
Congenital Anomalies of the Central Veins	1518
Acquired Abnormalities of the Central Veins	1519
Congenital Anomalies of Peripheral Veins	1520
Acquired Disorders of Peripheral Veins	1522
151 / Arterial Disorders by James A. O'Neill, Jr.	1523
Connective Tissue Disorders	1523
Congenital Malformations	1523
Acquired Disorders	1525
Occlusive Syndromes	1528
152 / Renovascular Hypertension by Richard H. Dean	1528
Etiology and Pathologic Anatomy	1528
Incidence	1530
Clinical Presentation	1531
Diagnostic Evaluation	1531
Operative Treatment	1532
Results of Operative Treatment	1535

153 / Peripheral Vascular Ischemia by William H. Wentraub	1536
Incidence	1536
Etiologic Factors	1537
Causes of Peripheral Ischemia	1541
Treatment	1545
Results	1545
Summary	

Index	xxciii
-------	--------