

Volume 1

SECTION I General Radiologic Principles 1

- 1 Imaging Contrast Agents and Pharmacoradiology 3
JOVITAS SKUCAS
- 2 Barium Studies: Single and Double Contrast 23
MARC S. LEVINE | DAVID J. OTT | IGOR LAUFER
- 3 Pictorial Glossary of Double-Contrast Radiology 40
STEPHEN E. RUBESIN
- 4 Ultrasound of the Hollow Viscera 56
PETER M. RODGERS
- 5 Multidetector Computed Tomography of the Gastrointestinal Tract: Principles of Interpretation 67
RICHARD M. GORE | MARK E. BAKER
- 6 Magnetic Resonance Imaging of the Hollow Viscera 79
RUSSELL N. LOW
- 7 Positron Emission Tomography and Computed Tomography of the Hollow Viscera 96
SELIM R. BUTROS | SHAUNAGH McDERMOTT | MARTIN J. SHELLY | MICHAEL A. BLAKE
- 8 Angiography and Interventional Radiology of the Hollow Viscera 112
STANLEY TAESON KIM | ALBERT A. NEMCEK, JR | HECTOR FERRAL | ROBERT L. VOGELZANG
- 9 Abdominal Computed Tomography Angiography 135
VAHID YAGHMAI | WARREN M. BRANDWEIN
- 10 Magnetic Resonance Angiography of the Mesenteric Vasculature 149
JOSEPH OWEN | KATHRYN J. FOWLER | VAMSI NARRA

SECTION II Abdominal Radiography 163

- 11 Abdomen: Normal Anatomy and Examination Techniques 165
WILLIAM MOREAU THOMPSON
- 12 Gas and Soft Tissue Abnormalities 178
JAMES M. MESSMER | MARC S. LEVINE

- 13 Abdominal Calcifications 197
STEPHEN R. BAKER

SECTION III Pharynx 205 STEPHEN E. RUBESIN, SECTION EDITOR

- 14 Pharynx: Normal Anatomy and Examination Techniques 207
STEPHEN E. RUBESIN
- 15 Abnormalities of Pharyngeal Function 222
BRONWYN JONES
- 16 Structural Abnormalities of the Pharynx 237
STEPHEN E. RUBESIN

SECTION IV Esophagus 267

- 17 Barium Studies of the Upper Gastrointestinal Tract 269
MARC S. LEVINE | IGOR LAUFER
- 18 Motility Disorders of the Esophagus 279
DAVID J. OTT | MARC S. LEVINE
- 19 Gastroesophageal Reflux Disease 291
MARC S. LEVINE
- 20 Infectious Esophagitis 312
MARC S. LEVINE
- 21 Other Esophagitides 326
MARC S. LEVINE
- 22 Benign Tumors of the Esophagus 350
MARC S. LEVINE
- 23 Carcinoma of the Esophagus 366
MARC S. LEVINE | ROBERT A. HALVORSEN
- 24 Other Malignant Tumors of the Esophagus 394
MARC S. LEVINE
- 25 Miscellaneous Abnormalities of the Esophagus 412
MARC S. LEVINE
- 26 Abnormalities of the Gastroesophageal Junction 438
MARC S. LEVINE

- 27 Postoperative Esophagus 449
STEPHEN E. RUBESIN
- 28 Esophagus: Differential Diagnosis 462
MARC S. LEVINE

SECTION V Stomach and Duodenum 465

- 29 Peptic Ulcers 467
MARC S. LEVINE
- 30 Inflammatory Conditions of the Stomach and Duodenum 496
MARC S. LEVINE
- 31 Benign Tumors of the Stomach and Duodenum 523
MARC S. LEVINE
- 32 Carcinoma of the Stomach and Duodenum 546
MARC S. LEVINE | ALEC J. MEGIBOW | MICHAEL L. KOCHMAN
- 33 Other Malignant Tumors of the Stomach and Duodenum 571
MARC S. LEVINE | ALEC J. MEGIBOW
- 34 Miscellaneous Abnormalities of the Stomach and Duodenum 603
RONALD L. EISENBERG | MARC S. LEVINE
- 35 Postoperative Stomach and Duodenum 630
LAURA R. CARUCCI
- 36 Stomach and Duodenum: Differential Diagnosis 657
MARC S. LEVINE

SECTION VI Small Bowel 663

STEPHEN E. RUBESIN, SECTION EDITOR

- 37 Barium Examinations of the Small Intestine 665
STEPHEN E. RUBESIN
- 38 Computed Tomography Enterography 684
JOEL G. FLETCHER | DAVID H. BRUINING
- 39 Computed Tomography Enteroclysis 694
ANA CATARINA SILVA | DEAN D. T. MAGLINTE
- 40 Magnetic Resonance Enterography 710
GABRIELE MASSELLI | GIANFRANCO GUALDI

- 41 Crohn's Disease of the Small Bowel 725
MARK E. BAKER | RICHARD M. GORE
- 42 Inflammatory Disorders of the Small Bowel Other Than Crohn's Disease 756
STEPHEN E. RUBESIN
- 43 Malabsorption 773
STEPHEN E. RUBESIN
- 44 Benign Tumors of the Small Bowel 789
TEMEL TIRKES | JOHN C. LAPPAS
- 45 Malignant Tumors of the Small Bowel 796
KUMAR SANDRASEGARAN | CHRISTINE O. MENIAS
- 46 Small Bowel Obstruction 806
STEPHEN E. RUBESIN | RICHARD M. GORE
- 47 Vascular Disorders of the Small Intestine 827
SIVA P. RAMAN | KAREN M. HORTON | ELLIOT K. FISHMAN
- 48 Postoperative Small Bowel 851
TEMEL TIRKES | JOHN C. LAPPAS
- 49 Miscellaneous Abnormalities of the Small Bowel 861
STEPHEN E. RUBESIN
- 50 Small Intestine: Differential Diagnosis 870
STEPHEN E. RUBESIN

SECTION VII Colon 877

- 51 Barium Studies of the Colon 879
MARC S. LEVINE | IGOR LAUFER
- 52 Functional Imaging of Anorectal and Pelvic Floor Dysfunction 890
SAT SOMERS | DEAN D. T. MAGLINTE
- 53 Computed Tomography Colonography 905
DAVID H. KIM | PERRY J. PICKHARDT
- 54 Magnetic Resonance Colonography 928
SOFIA GOURTISOYIANNI | NICKOLAS PAPANIKOLAOU | NICHOLAS C. GOURTISOYIANNIS
- 55 Diverticular Disease of the Colon 934
KIRAN H. THAKRAR | RICHARD M. GORE | VAHID YAGHMAI | EMIL J. BALTHAZAR
- 56 Diseases of the Appendix 955
DANIEL R. WENZKE | JILL E. JACOBS | EMIL J. BALTHAZAR | NATASHA WEHRLI
- 57 Ulcerative and Granulomatous Colitis: Idiopathic Inflammatory Bowel Disease 984
RICHARD M. GORE | JONATHAN W. BERLIN | ALEKSANDAR M. IVANOVIC

58 Other Inflammatory Conditions of the Colon 1017RICHARD M. GORE | SETH N. GLICK |
ALEKSANDAR M. IVANOVIC**59 Polyps and Colon Cancer 1027**

RUEDI F. THOENI

60 Other Tumors of the Colon 1074

STEPHEN E. RUBESIN

61 Polyposis Syndromes 1089

ANGELA D. LEVY | CARINA L. BUTLER | JAMES L. BUCK

62 Miscellaneous Abnormalities of the Colon 1102RICHARD M. GORE | RICHARD A. SZUCS |
ELLEN L. WOLF | FRANCIS J. SCHOLZ |
RONALD L. EISENBERG | STEPHEN E. RUBESIN**63 Postoperative Colon 1133**CHRISTOPHER D. SCHEIREY | JALIL AFNAN |
FRANCIS J. SCHOLZ**64 Colon: Differential Diagnosis 1144**

RICHARD M. GORE

Volume 2**SECTION VIII General Radiologic Principles for Imaging and Intervention of the Solid Viscera 1153****65 Computed Tomography of the Solid Abdominal Organs 1155**

CECIL G. WOOD III | SENTA BERGGRUEN

66 Ultrasound Examination of the Solid Abdominal Viscera 1169STUART A. BARNARD | PATRICK M. VOS |
PETER L. COOPERBERG**67 Magnetic Resonance Imaging of the Solid Parenchymal Organs 1183**JENNIFER W. UYEDA | SANDEEP S. HEDGIRE |
MUKESH G. HARISINGHANI | RAJ R. CHINNAPPAN |
PRITESH PATEL**68 Positron Emission Tomography/Computed Tomography of the Solid Parenchymal Organs 1202**SHAUNAGH McDERMOTT | SELIM R. BUTROS |
MICHAEL A. BLAKE**69 Diffusion-Weighted Imaging of the Abdomen 1215**

YEE LIANG THIAN | DOW-MU KOH

70 Perfusion Computed Tomography and Magnetic Resonance Imaging in the Abdomen and Pelvis 1230SURABHI BAJPAI | DUSHYANT V. SAHANI |
AVINASH KAMBADAKONE**71 Techniques of Percutaneous Tissue Acquisition 1239**

STEVEN Y. HUANG | ERIK K. PAULSON

72 Abdominal Abscess 1254

AVINASH KAMBADAKONE | PETER R. MUELLER

SECTION IX Gallbladder and Biliary Tract 1279**73 Gallbladder and Biliary Tract: Normal Anatomy and Examination Techniques 1281**

MARY ANN TURNER | ANN S. FULCHER

74 Endoscopic Retrograde Cholangiopancreatography 1303

ANDREW J. TAYLOR

75 Magnetic Resonance Cholangiopancreatography 1325

ANN S. FULCHER | MARY ANN TURNER

76 Anomalies and Anatomic Variants of the Gallbladder and Biliary Tract 1340RICHARD M. GORE | ANDREW J. TAYLOR |
GARY G. GHAREMANI**77 Cholelithiasis, Cholecystitis, Choledocholithiasis, and Hyperplastic Cholecystoses 1348**

GENEVIEVE L. BENNETT

78 Interventional Radiology of the Gallbladder and Biliary Tract 1392

THOMAS A. FARRELL | MIKIN V. PATEL

79 Neoplasms of the Gallbladder and Biliary Tract 1402

BYUNG IHN CHOI | JEONG MIN LEE

80 Inflammatory Disorders of the Biliary Tract 1427

BENJAMIN M. YEH | WEI-CHOU CHANG

81 Postsurgical and Traumatic Lesions of the Biliary Tract 1442

SIVA P. RAMAN | ELLIOT K. FISHMAN | GABRIELA GAYER

82 Gallbladder and Biliary Tract: Differential Diagnosis 1460

RICHARD M. GORE

SECTION X Liver 1469**83 Liver: Normal Anatomy and Examination Techniques 1471**ALEXANDER DING | NAVEEN KULKARNI |
FLORIAN J. FINTELMANN | SANJAY SAINI

84 Interventional Radiology of the Liver 1498MICHAEL A. WOODS | DOUGLAS R. KITCHIN |
ORHAN S. OZKAN | FRED T. LEE, JR**85** Anomalies and Anatomic Variants of the Liver 1520

ALI SHIRKHODA | RICHARD M. GORE

86 Benign Tumors of the Liver 1528

PABLO R. ROS | SUKRU MEHMET ERTURK

87 Malignant Tumors of the Liver 1561

PABLO R. ROS | SUKRU MEHMET ERTURK

88 Focal Hepatic Infections 1608PABLO R. ROS | SUKRU MEHMET ERTURK |
ABDULLAH MAHMUTOGLU**89** Diffuse Liver Disease 1629

TARA MORGAN | ALIYA QAYYUM | RICHARD M. GORE

90 Vascular Disorders of the Liver and Splanchnic Circulation 1676

RICHARD M. GORE | AHMED BA-SSALAMAH

91 Hepatic Trauma, Surgery, and Liver-Directed Therapy 1706HELENA GABRIEL | NANCY A. HAMMOND |
MARK TALAMONTI | RIAD SALEM | RICHARD M. GORE**92** Liver Transplantation Imaging 1737LAUREN F. ALEXANDER | MARK D. LITTLE |
RUPAN SANYAL**93** Liver: Differential Diagnosis 1756

RICHARD M. GORE

SECTION XI Pancreas 1769**94** Pancreas: Normal Anatomy and Examination Techniques 1771NANCY A. HAMMOND | FREDERICK L. HOFF |
RAVI GUTTİKONDA | HELENA GABRIEL |
RICHARD M. GORE**95** Interventional Radiology of the Pancreas 1785

KOENRAAD J. MORTELE | STUART G. SILVERMAN

96 Anomalies and Anatomic Variants of the Pancreas 1797

ALI SHIRKHODA | PEYMAN BORGHEI | RICHARD M. GORE

97 Pancreatitis 1809

FRANK H. MILLER | ANA L. KEPPEKE | EMIL J. BALTHAZAR

98 Pancreatic Neoplasms 1838

ALEC J. MEGIBOW

99 Pancreatic Trauma and Surgery 1856PAUL NIKOLAIDIS | JOSEPH MERANDA |
FRANK H. MILLER | ALLISON L. SUMMERS |
HELENA GABRIEL | MARK TALAMONTI | RICHARD M. GORE**100** Pancreatic Transplantation Imaging 1872FAUZIA Q. VANDERMEER | MARIA A. MANNING |
ALETTA A. FRAZIER | JADE J. WONG-YOU-CHEONG**101** Pancreas: Differential Diagnosis 1889

RICHARD M. GORE

SECTION XII Spleen 1895**102** Spleen: Normal Anatomy and Examination Techniques 1897

STEPHEN THOMAS | ABRAHAM H. DACHMAN

103 Angiography and Interventional Radiology of the Spleen 1905

J. SATHEESH KRISHNA | NAVEEN KALRA | AJAY K. SINGH

104 Anomalies and Anatomic Variants of the Spleen 1912

STEPHEN THOMAS | ABRAHAM H. DACHMAN

105 Benign and Malignant Lesions of the Spleen 1923PATRICK M. VOS | STUART A. BARNARD |
PETER L. COOPERBERG**106** Splenic Trauma and Surgery 1965

VAHID YAGHMAI | ADEEL R. SEYAL

107 Spleen: Differential Diagnosis 1977

RICHARD M. GORE

SECTION XIII Peritoneal Cavity 1981**108** Anatomy and Imaging of the Peritoneum and Retroperitoneum 1983VINCENT M. MELLNICK | DENNIS M. BALFE |
CHRISTINE M. PETERSON**109** Pathways of Abdominal and Pelvic Disease Spread 2006RICHARD M. GORE | MORTON A. MEYERS |
DAVID N. RABIN**110** Ascites and Peritoneal Fluid Collections 2024RICHARD M. GORE | ROBERT I. SILVERS |
GERALDINE MOGAVERO NEWMARK | MARGARET D. GORE**111** Mesenteric and Omental Lesions 2036APARNA BALACHANDRAN | TARA SAGEBIEL |
PAUL M. SILVERMAN

112 Hernias and Abdominal Wall Pathology 2053

RICHARD M. GORE | GARY G. GHAREMANI |
 CAROLYN K. DONALDSON | GAIL S. SMITH |
 LINDA C. SHERBAHN | CHARLES S. MARN

SECTION XIV Pediatric Disease 2077
113 Applied Embryology of the Gastrointestinal Tract 2079

BRUCE R. JAVORS | ROI M. BITTANE

114 Neonatal Gastrointestinal Radiology 2095

KATE A. FEINSTEIN | SANDRA K. FERNBACH

115 Diseases of the Pediatric Esophagus 2125

JENNIFER E. LIM-DUNHAM | SANDRA K. FERNBACH

116 Diseases of the Pediatric Stomach and Duodenum 2141

JENNIFER E. LIM-DUNHAM | RICHARD M. GORE

117 Diseases of the Pediatric Small Bowel 2158

JENNIFER E. LIM-DUNHAM | SANDRA K. FERNBACH

118 Diseases of the Pediatric Colon 2164

KATE A. FEINSTEIN | SANDRA K. FERNBACH

119 Diseases of the Pediatric Gallbladder and Biliary Tract 2180

JENNIFER L. NICHOLAS

120 Diseases of the Pediatric Liver 2200

JENNIFER L. NICHOLAS | CAROLINE L. HOLLINGSWORTH

121 Diseases of the Pediatric Pancreas 2216

MARIAM M. KAPPIL | DARSHIT J. THAKRAR

122 Diseases of the Pediatric Spleen 2228

JARED R. GREEN | MARTHA COTSEN SAKER

123 Diseases of the Pediatric Abdominal Wall, Peritoneum, and Mesentery 2241

KEVIN P. BOYD | ARTHUR B. MEYERS |
 ANA MARIA GACA | GEORGE S. BISSETT III

SECTION XV Common Clinical Problems 2253
124 The Acute Abdomen 2255

RICHARD M. GORE | KIRAN H. THAKRAR |
 DANIEL R. WENZKE | ROBERT I. SILVERS |
 UDAY K. MEHTA | GERALDINE MOGAVERO NEWMARK |
 JONATHAN W. BERLIN

125 Gastrointestinal Hemorrhage 2271

JAMES E. HUPRICH | JEFFREY A. ALEXANDER |
 BRIAN P. MULLAN | ANTHONY W. STANSON

126 Abdominal Trauma 2282

RAJAN T. GUPTA | KIREMA GARCIA-REYES

127 Monitoring Gastrointestinal Tumor Response to Therapy 2295

KUMAR SANDRASEGARAN