Contents

1. Applied Anatomy of the Colon and the Rectum and Disease of the Colon 1

- A Brief Description of Surgical Anatomy and Physiology of the Colon and the Rectum 1
- The Rectum and Anus 1
- Function of the Colon 3
- Applied Anatomy and Physiology in the Mechanism for defecation 4
- Diseases of the Colon 6
- Pathological Lesions of the Colon 6
- Clinical Importance of Benign Colonic Lesions 6
- Characteristic Features of a Polyp 6
- Epidemiological and Pathological Features 7
- Broad Outline of Treatment 7
- Polypectomy through the Colonoscope 7
- Complications of the Procedure 8
- Clinical Features and Treatment of Villous Papilloma 8
- Criteria for Considering Malignancy in the Benign Adenoma or Villous Papilloma 9
- Difference between the Adenoma and Villous Papilloma 10
- Familial Polyposis 10
- Clinical Presentation 10
- Choices of Treatment Modalities 10
- Difference Between Adenoma, Peutz-Jeghers Syndrome and Familial Polyposis 10
- Other Benign Polyp in the Colon, Rectum and Anus 11
- Papilloma of the Anus 11

2. Malignant Tumors of the Colon and Spread of the Colonic Tumor 13

- Malignant Tumors of the Colon, Rectum and Anus 13
- Description of the Macroscopical Features of the Malignant Tumors 13
- Macroscopical Appearance of the Tumors 13
- Macroscopical Changes in the Colon, Presented with Malignant Tumor 14
- Pathological Changes in the Gut Wall 14
- Sites for the Colonic Carcinoma 15
- Spread of the Colonic and Rectal Carcinoma 15
- Prognostic Factors of the Colorectal Carcinoma 19
- Dukes Stage of the Colorectal Tumor 19
- Histological Staging 19

3. Presentation of Symptoms 21

- Striking Symptoms of Colonic Carcinoma 21
- Loss of Appetite, Loss of Body Weight and not Feeling Well 22
- Symptoms of Abdominal Pain 22
- Burping and Funny Noise in the Abdomen 23
- Discharge of slime, Mucus and Blood per Rectum 23
- Symptoms Associated with the Growth in the Right Side of the Colon 23
- Symptoms Associated with the Growth in the Left Side of the Colon 23
- Symptoms Associated with the Growth in the Distal Part of the Sigmoid Colon, the Rectum or Anal Canal 24
- Malignant Growth in the Anal Canal 24

4. Clinical Examination 25

- Clinical Examination and Investigations 25
- Examination of the Abdomen 26
- Techniques for Palpation 26
- Superficial Palpation 26
- Deep Palpation 27
- Technique for Percussion 28
- Technique for the test of Fluid Thrill 29
- Rectal Digital Examination, Proctoscopy and Rigid Sigmoidoscopy 29
- Important Features of the Rectal Carcinoma, recorded on Rectal Digital Palpation 31
- Features of Advanced and Poor Prognosis 31
- Method of Instrumentations through the Anal Canal and the Rectum 31
- Method of Proctoscopy 33
- Technique for Sigmoidoscopy 34
- Position of the Patient 34
- Sigmoidoscopy 34
- Indication for Sigmoidoscopy 35

5. Investigations 37

- Radiological Investigations 38
- Important Radiological Features of Abdomen 40
- Specific Line of Radiological Investigations 41
- Clinical Significance of Barium Enema Study 41
- Principle of Bowel Preparations 42
- Advice to the Patient on Diets and Oral Fluid 42
- Complications with Bowel Preparation 42
- Contraindication of Oral Purgatives 42
- A Brief Review of Barium Enema Study 42
- Important Radiological Features of the Carcinoma of the Colon and the Rectum 43
- Radiological Features of Nonmalignant Disease 43
- Method of Small Bowel Enema 46
- Intravenous Pyelogram 47
- For Intravenous Pyelogram (IVP) 47
- Clinical Value of Colonography 48
- Normal Mucosal Features of the Sigmoid Colon 49
- PET Scan 51
- Colonoscopy 53

6. Preoperative Preparation 67

- For Elective Surgery 67
- Policy for Parenteral Fluid Infusion 67
- Crystalloids used in Hypovolemic Shock 68
- Sites of Parenteral Infusion 68
- Total Body Fluid and Management of Fluid Therapy 68
- How much Fluid is necessary for a Normal Healthy Person? 68
- Daily Fluid Requirement 69
- How to Evaluate the Daily Requirement for Electrolyte? 69
- Treatment of Hypokalemia 70
- Treatment of Hyperkalemia 71
- How to Deal with Daily Fluid Balance? 71
- How to Work Out the Rate of Infusion to be given per hour? 71
- How to Set up the Central Venous Pressure (CVP)? 72
- How to Decide how much Fluid is to be given per day? 72
- Interpretation of Unusual and Conflicting Results of Serum Electrolytes 72
- Serum Creatinine (Normal Value 75–150 mmol/l) 72
- Evidences of Dehydration 72
- Evidences of Rehydration 73
- Evidences of Overhydration 73
- A Broad Guideline for Blood Transfusion 73
- Indication and Preparation for Blood Transfusion 73
- Adverse Effects of Blood Stored in the Bag 74
- Instruction to the Nurses 74

7. A Broad Outline for the Surgical Treatment 75

- Principle of Operative Preparations 75
- Technique for holding the Knife 76
- Basic Principle and Technique for the Wound Closure 76
- Precaution in Suturing the Skin Wound 78
- Closure of Burst Abdomen 79
- Operative Technique for the Closure of the Burst Abdomen 79
- Postoperative Care 80
- Broad outline for Suture Materials 80
- Principle of Anastomosis 81
- Stapling Gun 82
- Anastomotic Clamps 82

8. Principle and Policy for Postoperative Care 83

- Metabolic Response to Stress and Shock 83
- Postoperative Stress to Injury 83
- Policy for Postoperative Parenteral Infusion 84
- Surgical physiology of the Gut 84
- Physiological changes of the postoperative Gut 84
- Clinical Application of Nasogastric Tube (Ryle's Tube) 85
- Physiological Value for Gastric Aspiration 86
- Policy for Oral Feeding to Postoperative Patients 86
- Policy for Antibiotic Therapy 87
- Certain Pharmacological Restrictions 87
- Indications for Antibiotic Therapy 88
- A New Therapeutic Approach to Primary Wound Healing 89
- Indications for stopping the Antibiotic Therapy 90
- Clinical Value of Maintaining the Temperature Chart 90
- Postoperative Pain Relief 92
- Complications of Postoperative Pain Relief 93
- Treatment for Postoperative Complications 93

- Postoperative Chest Complications 94
- Management of Wound Drain 95
- Daily Wound Discharge 95
- Closed Drainage System 96
- Merits and Morbidity 96
- Management of Constipation 96
- Etiology for Constipation 96
- Clinical Responsibility of the Doctors 96
- Management of Deep Vein Thrombosis 97
- Treatment for Deep Vein Thrombosis 98

9. The Colon 99

- Techniques for Anastomosis 99
- Types of Anastomosis 100
- Technique for End-to-end Anastomosis (Single Layer) 100
- Technique for End-to-end Anastomosis in Two Layers 101
- Indication for Side-to-side Anastomosis 101
- Technique for Side-to-side Anastomosis 101
- Alternative to Side-to-side Anastomosis 102
- Right Hemicolectomy 102
- Preoperative Preparation 103
- Operative Procedure 104
- Proceeding with the Same Operative Technique for the Right Hemicolectomy 105
- Technique for the Resection of the Growth 105
- Dealing with the Problems 107
- Resection of the Transverse Colon 107
- Operative Procedure 108
- Resection of the Tumor in the Splenic Flexure 109
- Left Hemicolectomy 109
- Preoperative Preparation 110
- Operative Procedure for Left Hemicolectomy 110
- How to Resolve the Problems 111
- Resection of the Sigmoid Colon 112
- Etiology of Anastomotic Leakage 114

10. The Rectum 115

- Preview of the Operative Techniques 115
- Criteria for the Anterior Resection 116
- Preoperative Assessment and Consultation 117
- Technique for the Anterior Resection 117
- Anastomosis by Autosuture 119
- Dealing with the Problems 120
- Technique for the Hartmann's Procedure 120
- Preoperative Consultation for the Terminal Colostomy 121
- Operative Procedure for the Construction of Colostomy 121
- Postoperative Care and Complications 122
- Construction of the Transverse Loop Colostomy 122
- Construction of the Pelvic Loop Colostomy 124
- Telescopic Pelvic Loop or Terminal Colostomy 125
- Construction of Telescopic Colostomy 125
- Complication of the Pelvic Loop Colostomy 125
- Complication of the Telescopic Colostomy 125
- Sphincter-saving Low Anterior Resection of the Rectum 126
- Preoperative Adjuvant Treatment 126
- Preoperative Preparation 127
- Preoperative Consultation 128
- Technique for the Sphincter-Saving Low Anterior Resection 128
- Anastomosis by Stapling Gun 128
- Alternative Approach to Deal with the Resection 129
- Construction of Loop Ileostomy 131
- Construction of Terminal Ileostomy 132
- Postoperative Care for the Low Anterior Resection and the Ileostomy 133
- Postoperative Complication 134
- Postoperative Care and Morbidity with Ileostomy 134
- Clinical presentation of Anastomotic Leakage and Management 135
- Etiology of Anastomotic Leakage 135
- Anal Sphincteric Dysfunction 137
- Review of Local Recurrence 138
- A Summary of the Potential Risk Factors for the Local Recurrence of the Tumor 138
- What is the Safe Level of Resection? 140

11. Abdominoperineal Resection of the Rectum 142

- Preoperative Consultation 143
- Preoperative Preparation for the APR 144
- Technique for Abdominoperineal Resection (APR) of the Rectum 144
- A Preliminary Rectal Digital Examination 145
- Skin Preparation 145
- Procedure for the Synchronous Combined APR 145

- Methods of Perineal Dissection of the Rectum 147
- The landmark for the Perineal Incisions 147
- SAHA Retrograde Dissection of the Rectum 148
- Postoperative Care 152
- Care of Urethral Catheter 152
- Care of Colostomy 152
- Care of Perineal Wound 153
- Merits of Different Techniques used for the Perineal Dissection of the Rectum 153
- Postoperative Bladder Dysfunction and Management 154
- A study of Postoperative Sexual Function among the men 156
- Merits of the Perineal Wound Closure 156
- Review of the Primary Perineal Wound Healing 156
- Continuous Perineal Wound Irrigation 157
- Merits of the Pelvic floor Reconstruction 157
- Merits between the Sphincter-saving Low Anterior resection and Abdominoperineal Resection of the Rectum for the Rectal Carcinoma 157
- Criteria for Curative and Palliative Resection 158
- Merits of Abdominoperineal Resection 159
- Evaluation of Survival Rate after Abdominoperineal Resection of the Rectum 159
- Merits of Abdominoperineal Resection 161
- Factors Affecting the Survival Rate after the Resection of the Rectal Carcinoma 162

12. Prolapse of the Rectum 164

- Partial Prolapse 164
- Epidemiology of the Prolapse Rectum 164
- Etiology 164
- Symptoms 164
- Examination 164
- Treatment 165
- Surgical Treatment for the Complete Prolapse 165
- Operative Technique for Thiersch Operation 166
- Preoperative Preparation 166
- Operative Technique 166
- Postoperative Care 167
- Complications 167
- Delorme Operation 167
- Postoperative Care 168
- Operative Technique for Devadhar Operation 168
- Operative Technique for Abdominal Rectopexy 168
- Operative Technique for Well's Operation 169

13. Emergency Admissions 170

- Clinical Presentations in Emergency Admissions 170
- A Broad Outline of Management for Acute Surgical Patients 170
- Care of Septic Abdomen 171
- A Prospective Study of Septic Abdomen 173
- Emergency Operative Procedure 173
- Outcome of the Operative Treatment 173
- Postoperative Morbidity and Mortality 174
- Surgical Physiology in Emergency Surgery 175
- Epidemiological Study of the Colonic Obstruction 178
- Presentation of Acute Colonic Obstruction 179
- Palpation of the Abdomen 180
- Plain X-ray of Chest and Abdomen 180
- Interpretation of the Radiological Investigations 180
- Plain X-ray of the Abdomen 181
- Interpretation of the Colonic Gas in the Plain X-ray 181
- Preoperative Assessment and Treatment for Dehydration and Correction of Electrolyte Imbalance 182
- Procedure for Emergency Laparotomy 183

14. Ulcerative Colitis 185

- Pathogenesis of Ulcerative Colitis 185
- Epidemiological Study 187
- Pathological Features of the Colon 187
- Power of Healing 188
- Clinical Presentation 188
- Chronic Ulcerative Colitis 189
- Proctoscopy 189
- Sigmoidoscopy 189
- Hematological Investigations 190
- Plain X-ray 190
- Colonoscopy 190
- Management of Ulcerative Colitis 190
- Complications with Drug Therapy 191
- Complications with Long-standing Ulcerative Colitis 191
- Surgical Intervention 192
- Preoperative Preparation for the Elective Surgery 192
- Types of the Operative Procedure 192
- Management of Acute Dilation of the Colon 192

- Appropriate Time for Emergency Laparotomy 193
- Choice of Operative Procedure for Emergency Operation for the Toxic Dilatation of the Colon 194

15. Management of Ulcerative Colitis 198

- Operative Treatment for Ulcerative Colitis 198
- Preoperative Treatment 199
- Preoperative Consultation and Preparation 199
- Operative Procedure for Total Panproctocolectomy 199
- Postoperative Care 200
- Operative Procedures for Subtotal Colectomy and Ileostomy 200
- Operative Procedure 200
- Postoperative Care 201
- Fluid Balance and Correction of Fluid and Electrolytes Deficit 201
- Description of Specific Complications 202
- Delayed Complication of Ileostomy 202
- Problems of Prolapse of the Ileostomy 202
- Various Methods of Correction 203
- Amputation of the Ileostomy Spout 203
- Refashioning of the Terminal Ileostomy 203
- Dysfunction of Ileostomy 204
- Management of the Obstruction 204
- Technique for Surgical Correction of Stenosis of the Stoma 204
- Operative Treatment for Parastomal Hernia 204
- Long-term Follow-Up 206
- Indications for Surgery 206
- Ischemic Colitis 206
- Amebic Colitis 207
- Proctitis 207

16. Diverticula of the Colon 209

- Surgical Anatomy and Physiology 209
- Pathogenesis of the Diverticulosis 210
- Pathology 210
- Description of the Clinical Presentation 211
- Problems with the Diverticulosis 212
- Management of Diverticulosis 213
- Elective Operative Treatment 214
- Preoperative Assessment of the Patient 214
- Resection of the Stricture 215
- Surgical Treatment for Internal Fistula 216
- Colovesical Fistula 216
- Ileocolic Fistula 216
- Management for Emergency Admission 217
- Colonic Hemorrhage 218
- Management for the Perforated Diverticulitis 218
- Care of Septic Abdomen and Perforated Diverticulitis 218
- Angiodysplasia 220
- Pathology 221
- Pharmacological Action of the Drug 221
- A New Therapeutic Approach 221
- Results 222
- Background of the Disease 222

17. The Vermiform Appendix 225

- Surgical Anatomy and Clinical Pathology 225
- Diseases of the Appendix 225
- Epidemiology of the Appendicitis 226
- Etiology 226
- Obstructive Appendicitis 226
- Pathological Changes 226
- Composition of Fecolith 226
- Appendicitis due to Parasites 226
- Nonobstructive Appendicitis 227
- Symptoms of Acute Appendicitis 227
- General Inspection and Examination 228
- Abdominal Examination 229
- Surgical Physiology of Pain and Vomiting in Acute Appendicitis 230
- Clinical Features Associated with Unusual Type of Appendicitis 231
- Differential Diagnosis with Other Abdominal Condition 232
- Important Differential Diagnostic Features 232
- Right Renal and Ureteric Stone 233
- Clinical Features of Pyelonephritis 233
- Crohn's Ileitis 233
- Bilateral Acute Salpingitis 233
- Twisted Ovarian Mass 233
- Rupture of the Right Corpus Luteal Cyst 234
- Ruptured Ectopic Pregnancy 234
- Nonspecific Acute Mesenteric Adenitis 234
- Tuberculosis of the Mesenteric Lymph Nodes 234

- Pathology of the Appendicular Mass or Abscess 235
- Composition of the Appendicular Mass 235
- Surgical Procedure for Acute Appendicitis 235
- The Criteria for Deferring the Operation 236
- Evidences of Responding to Conservative Treatment 236
- Initial Therapeutic Measure 236
- Preoperative Preparation 236
- Technique for Appendicectomy 236
- Dealing with the Problems 238
- Postoperative Care 239
- Postoperative Complications 239
- Tumors of the Appendix 239
- Pathology 239
- Biochemical Effect of the Tumor 239

18. Reversal of Transverse Loop Colostomy 241

- Preoperative Assessment 241
- Technique for Intraperitoneal Closure 241
- Technique for Extraperitoneal Closure 243
- Postoperative Care 243
- Postoperative Complications 243
- Reversal of the Hartmann's Procedure 243
- Postoperative Care and Complications 244

19. The Anus 245

- Hemorrhoids 245
- Etiology 245
- Pathology 245
- Indication for Hemorrhoidectomy 247
- Treatment of Piles with Injection of Phenol in Oil 247
- Treatment of Piles with Rubber Band Ligation 247
- Operative Treatment for Larger Piles 247
- Technique for Hemorrhoidectomy 247
- Postoperative Care 248
- Postoperative Complications 248
- Treatment for Thrombosed Piles 250
- Expected Outcome of the Acute Thrombosed Piles 250
- Strangulated Prolapsed Piles 250

20. Anorectal Abscess 251

- Perianal Abscess 254
- Operative Procedure for Drainage of Abscess 255
- Perianal Fistula 257
- High Anal Fistula 258

21 Fissure-in-Ano 262

- Pathology 262
- The Anatomy of the Anal Canal 264
- Background of the Etiology of Anal Fissure 267
- Pathogenesis of Anal Fissure 268
- Preoperative Preparation 271
- Pruritus Ani 271
- Malignant Tumors of the Anus 272
- Treatment of the Carcinoma of the Anus 273

22. Volvulus of the Colon and Intussusception of the Intestine 278

- Volvulus of the Colon 278
- Volvulus of the Sigmoid Colon 279
- Operative Procedure 280
- Intussusception of the Intestine 281

23. A Bird's Eye View of the Surgical Practice 284

- Potential risk of Problems at Induction 284
- Problems developed in the Operating Room 284
- Problems in the Recovery Room 285
- Problems in the Recovery Ward 286
- Postoperative Chest Problems 286
- Distention of the Abdomen 287
- Attention to the acute abdomen 288
- Wound Hematoma and Infection 288
- Deep Vein Thrombosis and Pulmonary Embolism 288
- Pulmonary Embolism 289
- Other Chronic Debility Conditions 289
- Delayed Complications 289

Index 291