

# CONTENTS

<b>Chapter 1</b>	
<b>INFECTION AND FEVER IN THE SURGICAL PATIENT</b> .....	1 ✓
<i>Hiram C. Polk, Jr., and Donald E. Fry</i>	
Host-Pathogen Relationships .....	1
Postoperative Fever and Infection .....	3
Special Problems in Surgical Infection .....	14
Antimicrobial Chemotherapy.....	16
Future Prospects in Infection .....	17
Bibliography .....	18
<b>Chapter 2</b>	
<b>WOUND COMPLICATIONS</b> .....	20 ✓
<i>Thomas K. Hunt</i>	
The Basic Nature of Wounds .....	20
Wound Dehiscence .....	24
Wound Pain.....	26
Serum Collection .....	26
Hemorrhage .....	26
Drains.....	26
Suture Sinuses.....	27
Infection .....	27
Hypertrophic Scars, Contracted Scars, and Keloids.....	29
Reoperation Through Existing Wounds.....	30
Hernia .....	30
Bibliography .....	31
<b>Chapter 3</b>	
<b>SHOCK</b> .....	33
<i>Lazar J. Greenfield</i>	
Historical Perspective .....	33
Diagnosis of Shock.....	33
Pathophysiology and Compensatory Mechanisms.....	34
Hypovolemic Shock.....	34
Cardiogenic Shock .....	37
Septic Shock .....	38
Cellular Function in Shock.....	41

Treatment of Shock .....	42
Approach to the Patient.....	42
Specific Organ Failure.....	50
Future Directions in Shock.....	52
Bibliography .....	53

#### Chapter 4

<b>HEMORRHAGIC COMPLICATIONS IN SURGERY.....</b>	<b>56</b>
--	-----------

*Francis S. Morrison*

The Hemostatic Mechanism .....	56
Laboratory Screening for Hemostatic Defects.....	58
Disorders of Hemostasis .....	60
Preexisting Hemostatic Defects .....	60
Deficiencies of the Intrinsic Clotting System.....	61
Deficiencies of the Extrinsic Clotting System .....	63
Operative and Postoperative Bleeding.....	65
Miscellaneous Reports .....	66
Bibliography .....	67

#### Chapter 5

<b>COMPLICATIONS OF PARENTERAL FLUID THERAPY AND OTHER STATES OF POSTOPERATIVE FLUID DISEQUILIBRIUM.....</b>	<b>69</b>
--	-----------

*William Schumer*

Complications of Methods of Administration .....	69
Metabolic Complications of Total Parenteral Nutrition .....	78
Postoperative Fluid Disequilibrium .....	82
Bibliography .....	84

#### Chapter 6

<b>ACUTE RENAL INSUFFICIENCY COMPLICATING SURGERY AND TRAUMA .....</b>	<b>86</b>
--	-----------

*Gordon R. Lang and Olga Jonasson*

Prerenal Azotemia .....	87
Postrenal Azotemia .....	88
Acute Renal Parenchymal Failure—AFR .....	88
Practical Considerations in Diagnosis and Management of Acute Azotemia and Oliguria .....	91
Surgery in the Patient with Impaired Renal Function.....	95
Bibliography .....	95

#### Chapter 7

<b>POSTOPERATIVE PULMONARY COMPLICATIONS (Including Complications of Bronchoscopy).....</b>	<b>98</b>
---	-----------

*Watts R. Webb and Peter V. Moulder*

Atelectasis and Pneumonia.....	98
Lung Abscess .....	103

Respiratory Insufficiency.....	105
The Acute Respiratory Distress Syndrome.....	106
Pulmonary Edema.....	108
Pleural Effusions and Empyema.....	109
Mediastinal Emphysema.....	109
Complications of Specific Thoracic Procedures.....	109
Bibliography.....	112

### Chapter 8

## CARDIAC ARREST AND RESUSCITATION..... 114

*James R. Jude*

Definition and Historical Aspects.....	114
Etiology of Cardiac Arrest.....	115
Objectives of Cardiopulmonary Resuscitation.....	115
Recognition of Cardiac Arrest.....	116
Methods of Resuscitation.....	117
Techniques of Cardiac Compression.....	119
Determination of the Exact Nature of the Cardiac Arrest.....	120
Pharmacologic Therapy.....	121
Treatment of Ventricular Fibrillation.....	122
Closure of Thoracotomy.....	123
Postresuscitative Care.....	123
Conclusion.....	124
Bibliography.....	124

### Chapter 9

## COMPLICATIONS OF SURGERY THAT INVOLVE THE VENOUS SYSTEM..... 126

*Robert M. Miles*

Incidence.....	126
Epidemiology.....	127
Pathogenesis and Natural History.....	128
Deep Vein Thrombosis.....	129
Symptoms.....	129
Diagnosis.....	130
Prevention.....	132
Treatment.....	133
Pulmonary Embolism.....	135
Symptoms.....	135
Diagnosis.....	137
Treatment.....	138
Miscellaneous Venous Complications.....	145
Superficial Thrombophlebitis of the Lower Extremities.....	145
Pelvic Thrombophlebitis.....	145
Intravenous Catheter Thrombophlebitis.....	146
Bibliography.....	148

**Chapter 10****COMPLICATIONS OF ANESTHESIA** ..... 151*John E. Forestner*

Preoperative Period .....	152
Cardiovascular System .....	155
Respiratory System .....	157
Medications .....	159
Assessment of Physical Status .....	162
Counseling and Informed Consent .....	162
Premedication .....	163
The Operative Period.....	164
General Anesthesia .....	164
Complications During Emergence from Anesthesia.....	190
Conduction Anesthesia.....	192
Complications of Vertebral Conduction Anesthesia.....	199
Special Problems.....	204
Postoperative Period .....	213
Bibliography .....	218

**Chapter 11****MISCELLANEOUS COMPLICATIONS IN THE  
PREOPERATIVE AND POSTOPERATIVE PERIODS**..... 222*C. Thomas Fitts and John H. Davis*

Complications of Tracheostomy .....	222
Operative Complications.....	223
Postoperative Complications .....	225
Complications of Thoracentesis.....	228
Pneumothorax .....	228
Empyema .....	229
Hemorrhage .....	229
Pleural Shock.....	229
Complications of Paracentesis .....	229
Perforation of a Viscus .....	229
Hemorrhage .....	230
Plastic Adhesive Peritonitis.....	230
Persistent Drainage .....	230
Complications of Gastric Dilatation.....	230
Fluid and Electrolyte Losses .....	231
Perforation of the Stomach .....	231
Aspiration Pneumonitis .....	232
Complications of Fecal Impaction.....	233
Loss of Appetite .....	233
Partial Obstruction.....	233
Perforation .....	234
Complications of Diagnostic Radiology.....	234
Excessive Exposure to Roentgen Rays.....	234
Sensitivity to Contrast Materials .....	235
Complications of Angiography.....	235

Complications of Bronchography .....	236
Barium Contrast Studies .....	237
Complications of Drains .....	238
Tissue Reaction .....	238
Source of Contamination .....	239
Delayed Return of Function .....	239
Retained Foreign Body .....	239
Tissue Necrosis .....	239
Complications of Immobility—"Pressure Sores" .....	240
Complications of Pain .....	241
Preoperative Pain .....	241
Postoperative Pain .....	242
Bibliography .....	244

### Chapter 12

#### NUTRITIONAL COMPLICATIONS IN THE SURGICAL PATIENT .....

245

*Harry M. Shizgal*

Nutritional Equilibrium .....	245
Nutritional Complications in the Surgical Patient .....	248
Recognition of Nutritional Complications in the Surgical Patient .....	259
Management of Nutritional Complications in the Surgical Patient .....	262
Protein and Caloric Requirements .....	274
Overview .....	277
Bibliography .....	277

### Chapter 13

#### COMPLICATIONS OF SURGERY FOR CANCER OF THE HEAD AND NECK .....

280

*Oliver H. Beahrs and John E. Woods*

Hemorrhage .....	281
Airway Obstruction .....	284
Carotid Sinus Reflex .....	286
Late Postoperative Tracheal Aspiration .....	286
Air Embolism .....	287
Emphysema .....	287
Pneumothorax .....	287
Lymph and Chylous Fistulas .....	287
Facial Edema .....	288
Increase in Cerebral Venous Pressure .....	289
Fever .....	290
Infection .....	290
Mediastinitis .....	290
Necrosis of Cervical Skin Flaps .....	290
Radiation and Complications .....	291
Neurologic Complications .....	292
Malnutrition .....	293

Recurrence of Cancer.....	293
Bibliography .....	293
<b>Chapter 14</b>	
<b>COMPLICATIONS OF THYROID AND PARATHYROID SURGERY.....</b>	<b>295</b>
<i>John S. Kukora and James D. Hardy</i>	
Anatomic Complications of Thyroid and Parathyroid Surgery.....	295
Safe Technique .....	295
Postoperative Complications .....	300
Metabolic Complications of Thyroid and Parathyroid Surgery.....	307
Hyperthyroidism and Thyroid Storm .....	307
Recurrent Hyperthyroidism .....	307
Hyperthyroidism and Pregnancy.....	308
Hypothyroidism and Postoperative Thyroid Suppression .....	308
Hypocalcemia and Hypoparathyroidism.....	309
Hypercalcemic Crisis .....	310
Persistent Hyperparathyroidism.....	310
Miscellaneous Complications of Hyperparathyroidism .....	312
Bibliography .....	312
<b>Chapter 15</b>	
<b>COMPLICATIONS OF PULMONARY RESECTION .....</b>	<b>313</b>
<i>Paul C. Adkins and Benjamin L. Aaron</i>	
Preoperative Evaluation.....	313
Intraoperative Complications.....	314
Postoperative Complications .....	319
Bibliography .....	328
<b>Chapter 16</b>	
<b>COMPLICATIONS OF ESOPHAGEAL AND DIAPHRAGMATIC SURGERY .....</b>	<b>330</b>
<i>W. Spencer Payne, Howard K. Leonardi, and F. Henry Ellis, Jr.</i>	
General Considerations.....	331
Special Problems.....	332
Esophagus .....	332
Bibliography .....	362
<b>Chapter 17</b>	
<b>COMPLICATIONS OF SURGERY OF THE HEART AND ADJACENT GREAT VESSELS.....</b>	<b>367</b>
<i>Derward Lepley, Jr., Robert J. Flemma, and Donald C. Mullen</i>	
Surgery of the Heart.....	368
Technical Considerations .....	368
Complications .....	378

The Secondary Operation .....	393
Complications of Coronary Bypass Surgery .....	394
Conclusion .....	401
Overall Care of the Cardiovascular Surgical Patient .....	402
Surgery of the Great Vessels .....	402
Technical Considerations .....	404
Complications .....	410
Bibliography .....	416

### Chapter 18

#### COMPLICATIONS OF SURGERY OF THE ABDOMINAL AORTA AND OF AORTIC BRANCHES..... 422

*Norman M. Rich*

Preoperative Complications .....	422
Complications of Surgery for Abdominal Aortic Aneurysm.....	425
Complications of Replacement of the Upper Abdominal Aorta.....	430
Complications of Celiac and Mesenteric Artery Surgery.....	431
Complications of Surgery for Renovascular Hypertension .....	432
Complications of Surgery for Occlusive Disease of the Terminal Aorta and Iliac Arteries .....	435
Complications of Femoropopliteal Reconstruction.....	437
Complications of Surgery for Peripheral Aneurysms.....	441
Complications of Carotid Artery Surgery .....	443
Complications of Vertebral and Subclavian Artery Surgery .....	445
Complications of Surgery for Thoracic Outlet Syndrome.....	446
Complications of Sympathectomy .....	448
Complications of Arterial Injury .....	450
General Postoperative Complications of Vascular Surgery .....	454
Bibliography .....	457

### Chapter 19

#### COMPLICATIONS OF GASTRIC SURGERY (Distal Subtotal Gastrectomy, Esophagogastrectomy and Total Gastrectomy, Vagotomy, Pyloroplasty, and Gastrostomy)..... 462

*James D. Hardy*

Hemorrhage (Early).....	462
Hiccups (Singultus).....	464
Postoperative Pancreatitis.....	465
Jaundice.....	467
Intraperitoneal Infection .....	467
Proximal Loop Problems.....	468
Leakage from the Stomach or the Gastrojejunal Anastomosis.....	472
Gastric Retention .....	473
Nutritional Problems.....	480

Duodenal Fistula .....	559
Mesenteric Thrombosis.....	560
Intra-Abdominal Abscess .....	561
Peritonitis.....	561
Hepatic Failure .....	562
Renal Insufficiency.....	563
Marginal Ulcer.....	564
Diabetes .....	565
Complications of Splenectomy .....	568
Hemorrhage .....	568
Abscess .....	570
Late Infections .....	572
Thrombosis .....	573
Splenosis .....	573
Gastric Fistula .....	574
Pancreatic Fistula.....	575
Stress Ulceration.....	575
Delayed Rupture of the Spleen .....	575
Atelectasis and Pneumonia.....	576
Mortality .....	576
Bibliography .....	577

**Chapter 23****COMPLICATIONS OF PORTAL-SYSTEMIC SHUNT SURGERY .....** 579*Robert B. Smith, III, and Joseph D. Ansley*

Complications of Portal-Systemic Shunting .....	579
Selection of Shunting Procedure .....	580
Preoperative Work-Up and Patient Preparation.....	582
Usual Postoperative Care .....	585
Intraoperative Complications.....	585
In-Hospital Postoperative Complications .....	591
Late Postoperative Complications .....	600
Bibliography .....	603

**Chapter 24****COMPLICATIONS OF APPENDECTOMY.....** 606*W. A. Altemeier and W. R. Culbertson*

Early Regional Complications .....	606
Peritonitis.....	606
Intra-Abdominal Abscess .....	610
Special Complicating Infections or Tumors .....	613
Wound Infection .....	614
Pylephlebitis with Multiple Liver Abscesses and Septicemia .....	615
Fecal Fistula.....	616
Early Distant or Remote Infections.....	617
Pulmonary Complications .....	617
Pericarditis .....	617



Brain Abscess.....	617
Nosocomial Infections .....	617
Later Complications .....	617
Sinus Tract Formation.....	617
Intestinal Obstruction.....	618
Herniation.....	618
"Postappendectomy" Appendicitis .....	618
Other Complications Incident to Appendectomy .....	618

## Chapter 25

### COMPLICATIONS IN SURGERY OF THE RECTUM..... 620

*Stephen E. Hedberg and Claude E. Welch*

Prophylaxis of Complications.....	621
Measures Used Preoperatively in Prevention of Complications .....	621
Measures Used at Operation in Prevention of Complications .....	625
Management of Operative Complications .....	627
Measures Used Postoperatively in Prophylaxis of Complications .....	628
Management of Postoperative Complications Common to All Colonic Operations .....	630
Sepsis.....	630
Ileus .....	638
Hemorrhage.....	642
Fistula.....	644
Other Complications .....	646
Management of Complications Related to Special Procedures.....	647
Complications of Diagnostic Procedures.....	647
Complications of Colonoscopic Polypectomy .....	648
Complications of Colostomy.....	648
Complications of Cecostomy.....	651
Complications of Operations on the Rectum .....	652
Operations for Rectal Prolapse .....	656
Complications of Segmental Resections of the Colon.....	657
Complications of Total and Subtotal Colectomy.....	658
Complications of Ileostomy .....	659
Bibliography .....	663

## Chapter 26

### COMPLICATIONS OF GASTROINTESTINAL SURGERY IN INFANCY..... 665

*Richard C. Miller*

Specific Complications .....	666
Complications of Specific Procedures.....	669
Complications of Specific Lesions .....	674
Bibliography .....	683

<b>Chapter 27</b>	
<b>COMPLICATIONS OF HERNIAL REPAIR.....</b>	<b>685</b>
<i>Lloyd M. Nyhus</i>	
Preoperative Complications.....	685
Differentiation of Hernial Type.....	685
Incarceration and Strangulation.....	686
Intestinal Obstruction.....	687
Concomitant Disease.....	687
Operative Complications.....	688
Hemorrhage.....	688
Severance of the Vas Deferens.....	688
Severance of Nerves to Lower Abdominal Wall.....	689
Damage to Arterial Blood Supply to Testis.....	690
Damage to Abdominal Viscera.....	691
Miscellaneous Considerations.....	693
Postoperative Complications.....	694
Early Complications.....	694
Late Complications.....	696
Bibliography.....	697

<b>Chapter 28 :</b>	
<b>COMPLICATIONS FOLLOWING THE SURGICAL TREATMENT</b>	
<b>OF WOMEN WITH POTENTIALLY CURABLE CARCINOMA</b>	
<b>OF THE BREAST.....</b>	<b>698</b>
<i>Guy F. Robbins</i>	
Preparation for Surgery.....	698
Selection of Surgical Procedure.....	699
Common Technical Errors.....	700
Incision.....	700
Preparation of the Flaps.....	700
Axillary Dissection.....	700
Perforating Arteries.....	701
Closure of the Wound.....	701
Wound Drainage.....	701
Postoperative Complications.....	702
Hemorrhage and Serous Drainage.....	702
Pneumothorax.....	702
Infection.....	702
Necrosis of Skin Edges.....	703
Limitation of Motion of the Arm.....	703
Axillary Contracture.....	704
Edema of the Arm.....	704
Suggested Hand Care for Postmastectomy Patients.....	706
Complications Following Radiation Therapy.....	707
Complications Following Adjunctive Chemotherapy.....	707
Psychological Support and Adjustment.....	708
Bibliography.....	708

**Chapter 29****COMPLICATIONS OF ADRENAL SURGERY ..... 709***Charles Eckert*

Surgical Anatomy .....	711
Complications Resulting from Technical Difficulties .....	713
Abdominal Approach .....	713
Lumbar Approach .....	715
Transthoracic Incision .....	715
Thoracoabdominal Incision .....	717
Operative Complications .....	717
Acute Adrenal Insufficiency .....	717
Hyperfunction of the Adrenal Cortex .....	719
Roentgenologic Diagnosis of Adrenal Tumors .....	721
Complications of Adrenal Steroid Therapy .....	722
Pheochromocytoma .....	723
Bibliography .....	724

**Chapter 30****COMPLICATIONS OF COMMON FRACTURES AND  
DISLOCATIONS .....****726***Alan E. Freeland*

Immediate Complications .....	726
Delayed Complications .....	736
Complications of Open Fractures .....	756
Septic Open Fractures .....	765
Complications of Open Reduction of Fractures .....	765
Management of Postoperative Wound Suppuration Following Open Reduction and Internal Fixation of Fractures .....	771
Bibliography .....	777

**Chapter 31****COMPLICATIONS OF TRANSPLANTATION ..... 783***Charles W. Putnam and Thomas E. Starzl*

Special Anesthetic Considerations .....	783
Technical Complications .....	785
Rejection .....	793
Immunosuppression and Its Consequences .....	799
Complications Affecting the Esophagus, Stomach, and Duodenum .....	802
Complications Affecting the Intestines .....	804
Pancreatic Complications .....	805
Hepatic Complications .....	808
Hyperparathyroidism and Bone Disease .....	812
Problems of Growth .....	814
Pulmonary Diseases .....	815
Other Infectious Complications .....	818
De Novo Malignant Disease .....	819

Neurologic and Psychiatric Complications.....	820
Summary.....	820
Bibliography.....	820

**Chapter 32****COMPLICATIONS OF BURNS AND BURN TREATMENT ..... 826***Alan R. Dimick*

Pulmonary Complications .....	826
Fluid Overload .....	828
Dehydration.....	829
Acute Renal Failure .....	829
Ocular Complications .....	830
Chondritis of the Ears .....	832
Costal Chondritis.....	833
Genitourinary Complications .....	834
Gastric Dilatation.....	834
Paralytic Ileus .....	835
Parotitis.....	835
Fecal Impaction.....	835
Esophageal Stricture .....	835
Acute Acalculous Cholecystitis .....	835
Serum Hepatitis.....	835
Superior Mesenteric Artery Syndrome.....	836
Acute Gastroduodenal Ulceration.....	836
Disseminated Intravascular Coagulation .....	837
Decubitus Ulcers.....	837
Constricting Eschars.....	838
Foot Drop.....	839
Skin Contractures.....	839
Heterotopic Periarticular Calcification.....	840
Dead Bone .....	840
Marjolin's Ulcer.....	841
Burn Stress Pseudodiabetes.....	841
Adrenocortical Insufficiency .....	842
Disorientation .....	842
Infection .....	842
Bibliography.....	845

**Chapter 33****COMPLICATIONS INVOLVING THE NERVOUS SYSTEM ..... 846***John P. Kapp and Robert R. Smith*

Cardiac Arrest.....	847
Dural Venous Sinus Thrombosis.....	848
Cerebral Air Embolism.....	848
Fat Embolism.....	848
Perioperative Stroke.....	849
Malignant Hyperthermia .....	850
Perioperative Convulsions.....	851

Hyponatremia and Inappropriate Antidiuretic Hormone	
Production.....	852
Postoperative Paraplegia .....	852
Complications of Spinal Anesthesia .....	853
Complications of Intestinal Bypass .....	854
Neurologic Complications of Burns .....	854
Peripheral Nerve Injuries .....	855
Nerve Injuries Related to Position on the	
Operating Table.....	856
Injury to the Ilioinguinal Nerve.....	857
Injury to the Spinal Accessory Nerve.....	857
Injection Injuries.....	857
Vascular Compartment Syndromes.....	858
Bibliography.....	858
<b>Chapter 34</b>	
<b>COMPLICATIONS OF GYNECOLOGIC SURGERY.....</b>	<b>860</b>
<i>Michael Newton and John R. Lurain</i>	
Abdominal Operations .....	861
General.....	861
Specific Operations .....	872
Vaginal Operations .....	879
General.....	879
Specific Operations .....	882
Obstetric Operations .....	889
General.....	889
Specific Obstetric Operations.....	891
Bibliography .....	897
<b>INDEX.....</b>	<b>899</b>