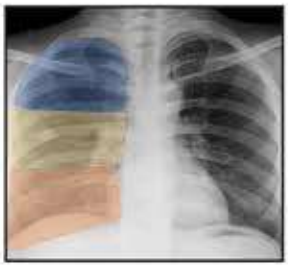
ers.com, for detailed information on surgery books, visit our website www.jaypeebrothers.com, for detailed information on surgery books

Scan to Download the App

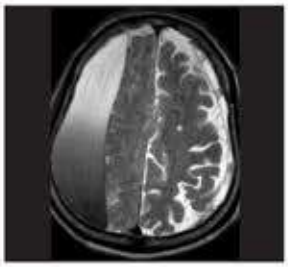
diginerve
A Jaypee Initiative
Your Guide at Every Step
Video Lectures | Notes | Self-Assessment

3rd Edition

Complementary Online Student Resource











Exam Preparatory Manual for Undergraduates

Surgery

As per the Competency Based Medical Education Curriculum (NMC)

HIGHLIGHTS

- Case-based MCQs at the end of each chapter
- Online **OSCE** practice assessment
- Line diagrams, tables, and flowcharts for better understanding
- An ultimate guide for **NEET PG/NExT, MRCS and USMLE examinations.**

Editor
Gunjan S Desai

JAYPEE

Contents

Section 1: General Surgery **1**

1. Perioperative Journey of a Patient **3**

- Preoperative Evaluation: "The Optimized Patient" *4*
- Type and Grading of Surgery *5*
- American Society of Anesthesiologists Status *5*
- Evaluation of Cardiac Status Before Noncardiac Surgery *6*
- Clinical Predictors of Perioperative Death, Myocardial Infarction, or Heart Failure *7*
- Risk Factors of Coronary Artery Disease *7*
- Preoperative Workup of the Patient for Cardiac Status *8*
- Cardiac Risk Stratification for Noncardiac Surgical Procedures *8*
- Evaluation of Thrombotic Risk: Management of Antithrombotics *9*
- Monitoring During Anticoagulation *13*
- Role of Thromboelastography *14*
- Renal Status: Important Points *15*
- Patients with Diabetes *15*
- Pulmonary Comorbidities for Nonpulmonary Surgery *16*
- Management of Patients on Long-term Steroids *16*
- Management of Liver Disease Patients in the Perioperative Period *17*
- Deep Vein Thrombosis and its Prophylaxis *17*
- Nutritional Assessment of Surgical Patient *18*
- Techniques of Minimal Access Surgery *19*
- Basics of Laparoscopy *20*
- Robotic Surgery *22*
- Natural Orifice Transluminal Endosurgery *22*
- Day Case Surgery *23*
- Enhanced Recovery After Surgery (Fast-Track Surgery) *24*
- Basics of Patient Consent *26*
- Preanesthetic Medication *27*
- Intraoperative Care *27*
- WHO Surgical Safety Checklist *28*
- Surgical Diathermy or Electrosurgery *29*
- Special Issues with Laparoscopic Electrosurgery *31*
- Ablative Techniques Used in Surgery *31*
- Prophylactic Antibiotics in Surgery *31*
- Postoperative Care *33*
- Surgical Site Infection *35*

2. Wound Healing **41**

- Phases and Types of Wound Healing *41*
- Nonhealing Wound: Causes and Management *42*

- Wound Dressings and its Types *43*
- Pressure Sore Management *44*
- Keloid and Hypertrophic Scar *45*

3. Fluid and Electrolyte Balance **48**
- Hot Favorite for Examinations *48*
- Fluid Balance in Patients and Surgery *48*
- Hyponatremia *49*
- Hypernatremia *51*
- Potassium Homeostasis *51*
- Hypokalemia *51*
- Hyperkalemia *52*
- Disorder of Calcium Metabolism *53*
- Hypercalcemia *54*
- Hypocalcemia *54*
- Acid-Base Disorders *55*
- Plasma Expanders *58*

4. Endocrine and Metabolic Response to Stress/Surgery/Injury **62**
- Endocrine Response to Stress *62*
- Total Parenteral Nutrition *62*
- Enteral Nutrition *65*

5. Blood Transfusion and Related Topics **69**
- Disseminated Intravascular Coagulation *69*
- Blood "Substitutes" *70*
- Blood Components *71*
- Indications of Blood Transfusion *72*
- Complications of Blood Transfusion *72*

6. Shock in Surgical Patients **76**
- Blalock's Etiological Classification of Shock *76*
- Differential Diagnoses of Shock Types *77*
- Septic Shock Management (Campaign Guidelines–2021) and Multiple Organ Dysfunction Syndrome *77*
- Hemorrhagic Shock and Lethal Triad *81*

7. Surgical Infections **84**
- Tubercular Lymphadenopathy *84*
- Ludwig's Angina *85*
- Tetanus: Prophylaxis and Management *86*
- Gas Gangrene *87*
- Necrotizing Fasciitis *88*
- Carbuncle *89*
- Madura Foot *90*
- Anatomy of Palmar Spaces *91*
- Acute Paronychia and Felon *92*

- Hydatid Cyst and Related Diseases *93*
- Entamoeba Histolytica and Related Diseases *94*
- Actinomycosis *95*

8. Trauma and Surgery **98**
- Advanced Trauma Life Support—Basics *98*
- Flail Chest *99*
- Field Management of Disaster *100*
- Damage Control in Surgery and Damage Control Resuscitation *101*
- Faciomaxillary Trauma, Le Fort and Mandible Fractures *102*
- Crush Injury and Rhabdomyolysis *104*

9. Salivary Glands **108**
- Classification of Salivary Gland Neoplasms *108*
- Pleomorphic Adenoma *108*
- Warthin Tumor/Adenolymphoma *109*
- Superficial Parotidectomy and its Complications *109*

10. Miscellaneous Topics **112**
- Surgical Audit *112*
- Ethics and its Impact on Patient Management *113*
- Universal Precautions or Standard Precautions *114*
- Needle Prick Injury from a HIV Positive Patient *114*
- Postexposure Prophylaxis *115*
- Probiotics, Prebiotics and Synbiotics *116*
- Biopsy and its Types *117*
- Fine Needle Aspiration Cytology *118*
- Sterilization and Disinfection *119*
- Hospital Waste Management *120*
- Tracheostomy *121*
- Suture Materials *121*
- Topical Hemostatic Agents *122*

Section 2: Gastrointestinal Surgery **125**

11. Esophagus **127**
- Esophageal Anatomy—Key Points *127*
- Important Conditions with Names *128*
- Classic Triads in Esophageal and Stomach Disorders *129*
- Portal Hypertension and Esophageal Varices *129*
- Cirrhosis *131*
- Variceal Hemorrhage *134*
- Role of TIPPS and Surgery in Patients with Portal Hypertension *136*
- Dysphagia: Causes and Management *140*
- Esophageal Motility Disorders and Achalasia *141*
- Gastroesophageal Reflux Disease and Barrett's Esophagus *143*
- Barrett's Esophagus *145*

- Esophageal Diverticula *146*
- Esophageal Perforation *147*
- Corrosive Injury/Ingestion in Upper Gastrointestinal Tract *149*

12. Stomach and Duodenum **153**

- Blood Supply and Lymphatic Drainage of Stomach *153*
- Physiology of Gastric Acid Secretion *154*
- Gastric Outlet Obstruction *156*
- *H. pylori* Infection and Management of Peptic Ulcer Disease *157*
- Peptic Ulcer Disease *158*
- Postgastrectomy Problems and Dumping Syndrome *161*
- Upper Gastrointestinal Bleeding Management *162*
- Morbid Obesity Management *164*

13. Small Intestine **170**

- Short Bowel Syndrome and Intestinal Failure *170*
- Enterocutaneous Fistula and its Management *172*
- Meckel's Diverticulum *173*
- Intussusception *174*
- Mesenteric Ischemia *175*
- Superior Mesenteric Artery Syndrome *178*
- Abdominal Tuberculosis and its Management *179*
- Intestinal Obstruction *180*
- Adynamic Intestinal Obstruction *183*

14. Large Intestine and Intestinal Stomas **186**

- Relevant Anatomy *186*
- Ulcerative Colitis and Crohn's Disease *187*
- Lower Gastrointestinal Bleeding and its Management *189*
- Lower Gastrointestinal Bleed *189*
- Volvulus (Cecal and Sigmoid) *191*
- Diverticulitis (Peridiverticulitis) *192*
- Intestinal Stomas *193*

15. Appendix **198**

- Appendicitis *198*
- Appendicular Lump and Ochsner–Sherren Regime *200*
- Appendiceal Mucocele *200*

16. Rectum and Anal Canal **202**

- Anatomy of the Anal Canal *202*
- Blood Supply of the Rectum *204*
- Fissure-in-Ano *205*
- Fistula-in-Ano *206*
- Pilonidal Disease (Jeep Driver's Disease, Barber's Disease) *208*
- Rectal Prolapse (Procidentia) *209*

- Hemorrhoids *210*
- Ischiorectal Space and Ischiorectal Abscess *212*

17. Liver **215**

- Liver Anatomy *215*
- Management of Hydatid Liver *218*
- Differential Diagnoses of Space-Occupying Lesions in Liver *220*
- Management of a Case of Amebic Liver Abscess *220*
- Management of Liver Trauma (WSES 2020 Guidelines) *221*
- Hepatocellular Adenoma *223*
- Cavernous Hemangioma *224*
- Focal Nodular Hyperplasia *224*
- Child-Turcotte-Pugh Scoring *225*
- Model for End-Stage Liver Disease—Sodium Score *225*

18. Gallbladder and Bile Duct **227**

- Anatomy *227*
- Gallstone Disease *227*
- Types of Cholecystitis *228*
- Medical and Surgical Jaundice *231*
- Mirizzi Syndrome *234*
- Complications of Laparoscopic Cholecystectomy *236*
- Choledochal Cyst *238*
- Hemobilia and Bilhemia *239*
- Common Bile Duct Stones and Management *240*
- Biliary Strictures *242*
- Courvoisier's Law *242*

19. Pancreas **245**

- Acute Pancreatitis *245*
- Pseudocyst Pancreas *250*
- Insulinoma *250*
- Cystic Pancreatic Neoplasms *252*
- Pancreatic Duct Disruption *255*
- Chronic Pancreatitis *255*

20. Spleen **262**

- Massive Splenomegaly and Hypersplenism *262*
- Splenic Injury Management (WSES 2017 Update with AAST Guidelines) *263*
- Complications of Splenectomy *264*

21. Hernias **267**

- Meshes Used in Hernia Surgery *267*
- Ventral Hernia *268*
- Anatomy of the Umbilicus *270*
- Adult Umbilical Hernia (Paraumbilical Hernia) *272*
- Open and Laparoscopic Anatomy of Inguinal Region *272*

- Direct and Indirect Inguinal Hernia *276*
- Classifications of Inguinal Hernia *277*
- Treatment for Inguinal Hernia *278*
- Femoral Hernia *279*

22. Gastrointestinal Oncosurgery 283

- Esophageal Carcinoma *283*
- Carcinoma Stomach *286*
- Small Bowel Adenocarcinoma *289*
- Carcinoid Tumor and Carcinoid Syndrome *289*
- Site-specific Points on Carcinoids *291*
- Gastrointestinal Stromal Tumor *292*
- Colorectal Cancer *294*
- Rectal Cancer Management *298*
- Carcinoma Anal Canal *299*
- Hepatocellular Carcinoma *299*
- Carcinoma Gallbladder *301*
- Cholangiocarcinoma *303*
- Pancreatic Cancer *305*
- Pancreatic Neuroendocrine Neoplasm *306*
- Pseudomyxoma Peritonei *307*

23. Miscellaneous Topics Relevant to Gastrointestinal Tract and Abdomen 311

- Burst Abdomen *311*
- Abdominal Compartment Syndrome *312*
- Peritonitis: Types and Management *313*
- Mesenteric Cyst *314*
- General Anatomy of Abdominal Wall and Peritoneal Layers *315*
- Lesser Sac Boundaries *316*

Section 3: Genitourology 319

24. Kidney and Ureter 321

- Renal Calculi *321*
- Calculus Anuria *323*
- Management of Stone in the Lower Third of Ureter *324*
- Retrograde Intrarenal Surgery *325*
- Extracorporeal Shockwave Lithotripsy *325*
- Percutaneous Nephrolithotomy *326*
- Urinary Diversion *328*
- Renal Tuberculosis *329*
- Renal Trauma Management *332*
- Ureteric Trauma/Injury Management *334*
- Hematuria Management *335*
- Pyelonephritis *336*

- Pyonephrosis *338*
- Hydronephrosis *338*
- Wilms Tumor *339*
- Horse-shoe Kidney *341*
- Pelviureteric Junction Obstruction *342*
- Classification of Renal Masses *343*
- Acute Kidney Injury *344*
- Chronic Kidney Disease *346*

25. Urinary Bladder **350**
- Bladder Calculi *350*
- Management of Bladder Injury *351*
- Vesicovaginal Fistula *352*
- Micturition Reflex *354*
- Types of Incontinence and its Management *356*
- Chyluria *357*
- Vesicoureteric Reflux *357*
- Ectopia Vesicae *359*

26. Prostate **362**
- Benign Prostatic Hypertrophy and Lower Urinary Tract Symptoms *362*
- Management of Acute Urinary Retention *365*
- Prostate-specific Antigen *366*

27. Testis and Scrotum **369**
- Embryology *369*
- Cryptorchidism *370*
- Testicular Torsion *372*
- Epididymo-orchitis *373*
- Varicocele *374*
- Hydrocele *375*
- Fournier Gangrene *376*
- Differential Diagnoses of a Scrotal Swelling *377*
- Vasectomy *377*

28. Penis and Urethra **380**
- Phimosis *380*
- Paraphimosis *380*
- Circumcision *380*
- Penile Ulcer and Lymphadenopathy *381*
- Urethral Injury Management *382*
- Management of Urethral Stricture *383*
- Lasers in Urology *384*
- Posterior Urethral Valve *385*
- Proteinuria *387*
- Male Infertility *388*
- Congenital Anomalies of the Genitourinary Tract *390*
- Hypospadias *391*

29. Uro-oncology **394**
- Renal Cell Carcinoma *394*
- Carcinoma Urinary Bladder *399*
- Carcinoma Testis *402*
- Carcinoma Penis *406*
- Carcinoma Prostate *410*

Section 4: Neurosurgery **415**

30. Neurosurgery **417**
- Cerebrospinal Fluid Physiology and Hydrocephalus *417*
- Hydrocephalus *418*
- Head Injury *420*
- Glasgow Coma Scale *421*
- Urgent CT Scan Indications in Brain Trauma *422*
- Intracranial Pressure Monitoring in Head Injury *423*
- Management of a Patient with Head Injury *424*
- Extradural Hematoma *426*
- Subdural Hematoma *427*
- Neural Tube Defects/Dysraphisms *429*
- Neurocutaneous Syndromes (Phakomatoses) *432*
- Functional Neurosurgery *435*
- Stereotaxy and Navigation in Neurosurgery *436*
- Frame-based Stereotaxy *437*
- Frameless Stereotaxy (Neuronavigation) *438*
- Seizure, Epilepsy and Surgery *440*
- Stem Cells in Neurosurgery *442*

Section 5: Cardiothoracic and Vascular Surgery **447**

31. Cardiothoracic Surgery **449**
- Interpretation of Chest X-ray *449*
- Empyema Thoracis *458*
- Chest Trauma Management *459*
- Hemothorax *460*
- Cardiac Tamponade and Management *461*
- Intercostal Drainage Using Chest Tube *463*

32. Peripheral Arterial Disease for Lower Limb **465**
- Arteries of Lower Limb *465*
- Risk Factors for Peripheral Arterial Disease *465*
- Common Causes of Peripheral Arterial Diseases *466*
- Difference Between Atherosclerosis and Burger Disease *466*
- Clinical Features and Investigations for Peripheral Arterial Disease *466*
- Gangrene *469*
- Management of a Case of Peripheral Arterial Disease *470*
- Burger Disease *472*

- Amputation *472*
- Role of Sympathectomy *474*
- Endovascular Management of Peripheral Arterial Disease *475*
- Diabetic Foot *476*

33. Peripheral Venous Diseases **480**
- Superficial System *480*
- Deep System *480*
- Perforator System *480*
- Risk Factors for Varicose Veins *481*

34. Miscellaneous Topics in Cardiothoracic and Vascular Surgery **485**
- Raynaud Phenomenon *485*
- Thoracic Outlet Syndrome *485*
- Lymphedema *487*
- Hodgkin's and Non-Hodgkin's Lymphoma *488*

Section 6: Breast and Endocrine Surgery **493**

35. Breast Diseases **495**
- Key Named Conditions/Classifications/Triads in this Section *495*
- Anatomy of Breast *496*
- Nipple Discharge and its Management *498*
- Aberrations of Normal Development and Involution *499*
- Mammary Duct Ectasia (Zuska Disease) *500*
- Phylloides Tumor *501*
- Paget's Disease of Nipple *501*
- Gynecomastia *502*
- Evolution/Natural History of Breast Cancer *503*
- Lobular Carcinoma in Situ and Ductal Carcinoma in Situ *503*
- Staging of Breast Cancer *504*
- Triple Breast Assessment *506*
- Trucut (Core Needle) Biopsy in Breast Lumps *506*
- Risk Factors for Breast Cancer *507*
- Early Breast Cancer, Breast Conserving Surgery and Axilla Management in Breast Conserving Surgery *507*
- Management of Locally Advanced Breast Cancer *510*
- Breast Reconstruction *511*

36. Diseases of Thyroid **516**
- Embryology *516*
- Blood Supply of Thyroid Gland *517*
- Thyroglossal Cyst and Fistula *517*
- Classification of Thyroid Swellings *518*
- Solitary Thyroid Nodule *520*
- Papillary Thyroid Cancer *521*
- Follicular Thyroid Cancer *522*

- Medullary Thyroid Cancer *524*
- Grave's Disease (Diffuse Toxic Goiter) *525*
- Complications of Thyroidectomy *527*

37. Parathyroid and Adrenal **529**
- Primary Hyperparathyroidism *529*
- Adrenal Incidentaloma *531*
- Men Syndrome (I, II, III or IV) *532*

38. Endocrine Emergencies **536**
- Thyroid Storm *536*
- Myxedema Coma *537*
- Adrenal Insufficiency *539*

Section 7: Radiology **543**

39. Basics of Radiology and Imaging Approaches for Surgeons **545**
- Key Signs in Surgical Radiology *545*
- Basics of Computed Tomography (CT Scan) *548*
- Basics of Ultrasound *550*
- Endoscopic Ultrasound *555*
- Intraoperative Ultrasound *556*
- Basics of Magnetic Resonance Imaging *558*
- Basics of Radionuclide Scanning *560*
- PET Scan *562*
- Intravenous Pyelography *565*
- Micturating Cystourethrogram *567*
- Endoscopic Retrograde Cholangiopancreatography *569*
- Magnetic Resonance Cholangiopancreatography *571*
- Radionuclide Imaging in Various Musculoskeletal Disorders *573*
- Radionuclide Imaging in Various Thyroid Disorders *576*
- DMSA and DPTA Scan *579*
- Mammography Technique and Interpretation—BI-RADS *582*
- Fast for Evaluation of Trauma Patients *585*
- Imaging Approach in Patient with Acute Intestinal Obstruction *588*
- Role of Barium Swallow in Evaluation of Dysphagia *591*

Section 8: Miscellaneous **601**

40. Anesthesia **603**
- Spinal Canal and Nerve Applied Anatomy/Physiology *603*
- Spinal Ligaments *603*
- Important Surface Anatomy Landmarks *604*
- Epidural Space *605*
- Meningeal Layers *605*
- Muscle Relaxants *606*
- Regional Anesthesia *608*

- Spinal Regional Anesthesia *609*
- Epidural Anesthesia and Analgesia *611*
- Brachial Plexus Block *612*
- Caudal Block *613*
- Cervical Blocks *614*
- Nerve Block and Field Block *614*
- General Anesthetics *615*
- Postoperative Mechanical Ventilation *617*
- Central Venous Pressure Monitoring *618*
- Postoperative Pain Management *620*
- Adult Basic Life Support *622*
- Advanced Cardiac Life Support *622*

41. Skin Malignancy **625**

- Premalignant Skin Lesions *625*
- Squamous Cell Cancer *625*
- Basal Cell Carcinoma *627*
- Pigmented Nevus *628*
- Malignant Melanoma *629*

42. Plastic Surgery **632**

- Basics of Plastic Surgery—Reconstructive Ladder and Elevator *632*
- Anatomy of Skin *632*
- Classification of Skin Grafts *633*
- Classification of Flaps *633*
- Management of Burns *636*
- Assessment of Depth of Burns *637*
- Prehospital Care of Burns Patients *637*
- Pathophysiology of Thermal Burns *640*
- Vascular Anomalies *640*
- Basics of Scar *641*
- Cleft Lip and Cleft Palate *642*
- Pilonidal Sinus *644*
- Hidradenitis Suppurativa *645*

43. Head and Neck Surgery **648**

- Anatomy of Neck *648*
- Facial Layers of Neck *649*
- Epulis, Odontomes and Adamantinoma *650*
- Cervical Lymph Node Levels and Neck Dissection *651*
- Leukoplakia *654*
- Cystic Hygroma *654*
- Hemangioma *655*
- Branchial Cyst and Fistula *655*
- Carcinoma Oral Cavity *656*
- Ranula *660*
- Complications of Tracheostomy *660*

44. Oncology and Oncosurgery Basics **663**

- Immunotherapy in Cancer Treatment *663*
- Checkpoint Inhibitors *666*
- Neoadjuvant Chemotherapy *666*
- Cancer Screening and Prevention *667*
- Tumor Markers *668*
- Oncogenes *669*
- Tumor Suppressor Genes *670*
- Sacrococcygeal Teratoma *670*
- Sentinel Lymph Node Biopsy *671*

45. Transplantation **674**

- Liver Transplantation *674*
- Kidney Transplant *675*
- Pancreas Transplant *676*
- Important Terms in Transplant *677*
- Important Antigens Involved in Transplant *677*
- Brain Death *677*
- Rejection and Transplant *680*
- Immunosuppressant Drugs *680*

46. Pediatric Surgery **684**

- Principles of Pediatric Surgical Sciences *684*
- Principles of Pediatric Trauma *686*
- Esophageal Atresia and Tracheoesophageal Fistula *688*
- Diaphragmatic Hernias (Both Congenital and Acquired) *690*
- Congenital Hypertrophic Pyloric Stenosis *694*
- Congenital Anterior Abdominal Wall Defects *695*
- Annular Pancreas *696*
- Neonatal Intestinal Obstruction *698*
- Anorectal Malformation *700*
- Hirschsprung's Disease *701*

Index ***705***

for detailed information on surgery books, visit our website www.jaypeebrothers.com, for detailed information on surgery books, visit our

Exam Preparatory Manual for Undergraduates

Surgery

Salient Features

- Revised thoroughly keeping in mind the changing needs of the current examination patterns.
- Focus on the practical application of newer concepts and technologies in the field of surgery as well as learning.
- Case-based scenarios, image library, MCQs, updated guidelines of 2020–2023, algorithms, figures, tables, and flowcharts all have been included to aid the understanding as well as for easy recall.
- Discusses key topics related indirectly to surgery such as radiology, anesthesia, transplant, and important medical topics in entirely separate chapters.
- Focuses on topics frequently encountered in case-based examinations, OSCEs, and multiple-choice questions.
- Fulfills all the requirements of medical students as well as budding surgeons for various competitive examinations.

Gunjan Desai MS MRCS (Eng) FMAS PGDMLS DNB (GI Surgery) is a DNB teaching faculty for Gastrointestinal Surgery Super-specialty, and practices as a Consultant Gastrointestinal and Hepato-pancreatico-biliary Surgeon at Lilavati Hospital and Research Centre, Mumbai, Maharashtra, India. He has many internationally indexed publications to his name and has mentored many students to achieve the same. He has authored a chapter in the prestigious American HPB Textbook on Bile Duct Cancer Management, authored an e-book on scientific research publishing—A Step-by-step Approach for Research Publications, and "Taming the Tumor" for spreading awareness in the field of cancer. He is the Founder and Director of 'EduSurg Clinics'—a health care educational initiative that is a government-approved start-up in the field of health education. It got international recognition in the field of cancer awareness by UICC on World Cancer Day. The details of these educational endeavors, and publications can be viewed at www.learnwithedusurg.in

If any reader wishes to share feedback, suggestions, updates, and errata, please scan the QR code and fill the google form.

Printed in India

Available at all medical bookstores or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
EMCA House, 23/23-B, Ansari Road, Daryaganj, New Delhi - 110 002, INDIA
www.jaypeebrothers.com

Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
SURGERY

ISBN 978-93-5696-296-5