EGYPTIAN FELLOWSHIP

CURRICULUM

OF

GENERAL SURGERY
Preface

The High Committee of Medical Specialties and the General Surgery scientific board worked collaboratively to make this curriculum available for trainees’ guidance and support.

Accreditation of Postgraduate medical education is now a worldwide accepted and recommended practice. Accreditation bodies provide reassurance and confidence to the national authorities and to the public that approved training programs are well designed, implemented and supervised and that graduate physicians are competent and able to provide high quality care to all citizens.

For that reason the Ministry of Health and the High Committee of Medical Specialties consider national and international accreditation of the Egyptian Fellowship programs as a national mission.

For accreditation to be accomplished all training programs must have clearly defined sets of academic standards that describe the qualities and abilities of graduates. In addition, there must be standards for the training processes, trainers’ and trainees selection and well defined assessment systems that cover all curriculum domains and learning outcomes. The presence of clearly described and published standards ensure transparency and clarify expectations.

The High Committee of Medical Specialties has published a document describing our expectations from all graduates across all specialties at levels of knowledge, skills, attitudes and behaviors. ([http://www.mohp.gov.eg/egyfellow/contactUs/Mission.pdf](http://www.mohp.gov.eg/egyfellow/contactUs/Mission.pdf)).

These expectations are clearly reflected in the General Surgery. The curriculum describes what trainees will know and be able to do upon completion of training. In additions, methods of teaching and learning needed to deliver the curriculum are listed.

The curriculum also describes in details, expectations from trainees during their rotations in “The training rules and regulations section”. Methods of assessment and examination regulations are also available in the last section of the curriculum.

We hope that all our trainees, trainers and educational supervisors will follow the guides provided in the curriculum and cooperate with General Surgery Scientific board in order to implement this curriculum in the best ways.

Prof. Dr. Mohammed Hany Hafez
General Secretary
The High Committee of Medical Specialties
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APPLIED SURGICAL ANATOMY

- **Knowledge of arteries and veins** entails description of the course, relations, branches, collateral circulation and surface anatomy of the individual vessel.

- **Knowledge of nerves** entails description of the course, relations and branches of the individual nerves. The motor and sensory supply of each nerve is studied.

- **Knowledge of muscles** entails description of the origin, insertion, nerve supply and actions of the individual muscle.

1.1 Upper Limb:

- **Arteries**: Subclavian, axillary, branchial, radial, ulnar arteries and collateral circulation.

- **Veins**: Cephalic, basilic, brachial, axillary and subclavian veins.

- **Nerves**: The brachial plexus, musculocutaneous, radial, ulnar, median and circumflex nerves.

- Axillary lymph nodes.

- Muscles of the upper limb.

- Bones of the pectoral girdle, arm, forearm and hands.

- Anatomy of cubital fossa.

- Plain x-ray, arteriography and venography of the upper limb bones and vessels.

- Dermatomes of the upper limb.

1.2 Lower Limb:

- **Arteries**: Femoral, popliteal, anterior tibial, posterior tibial, peroneal and dorsalis pedis arteries.
- **Veins**: Long and short saphenous, popliteal and femoral veins.

- **Nerves**: Femoral, obturator, sciatic, common peroneal, superficial peroneal, deep peroneal and tibial nerves.

- Inguinal lymph nodes.

- Muscles of the lower limb.

- The anatomy of the femoral triangle and adductor canal.

- The popliteal fossa.

- The bones of the thigh, leg and foot.

- The dermatomes and tendon reflexes of the lower limb.

- Plain x-ray, arteriography and venography of lower limb bones and vessels.

1.3 **Head, Neck and Spine**:

- **Arteries**: Common, external and internal carotid and middle meningeal arteries.

- **Veins**: Anterior, external and internal jugular veins.

- **Nerves**: Cranial nerves and cervical plexus.

- The anatomy and levels of cervical lymph nodes.

- Muscles of the head and neck.

- The anatomy of the triangles of the neck.

- The anatomical position, relations and blood and nerve supply of salivary glands.

- The anatomical position, relations and blood and nerve supply of thyroid and parathyroid glands.

- The relations and blood and nerve supply of the larynx, trachea, pharynx and esophagus.

- Contents and relations of the carotid sheath.
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- The anatomy of the skull, mandible, temporo-mandibular joint, vertebral column and vertebral canal.
- The anatomy of the eye, orbit, ear, nose and paranasal sinuses.
- The anatomy of the mouth and tongue.
- The anatomy of the cranial cavity, dural sinuses and pituitary gland.
- The development of branchial arches, face, palate, thyroid, parathyroid glands and the spine.
- The anatomical structure of the cerebral hemispheres, ventricles, cerebellum, brain stem, spinal cord and meninges.
- The findings of plain x-ray, arteriography, CT, MRI and arteriography of head and neck.

1.4 Thorax:

- The structure of the thoracic wall.
  - **Arteries:** Ascending aorta, arch of the aorta and descending thoracic aorta.
  - **Veins:** Superior and inferior vena cava.
- The anatomy of the thoracic cavity including superior, inferior mediastinum, heart, pericardium, lungs, pleurae, trachea and esophagus.
- The development, relations, blood and nerve supply of the diaphragm.
- The development of heart, great vessels and esophagus.
- Foetal circulation.
- The dermatomes of the thorax.
- The surface anatomy of hear, heart valves, auscultation sites, lungs and pleurae.
- The findings of chest x-ray, CT and MRI of the chest.
1.5 Abdomen, Pelvis and Perineum:

- **Arteries:** Abdominal aorta and common, external and internal iliac arteries.
- **Veins:** Iliac veins and inferior vena cava.
- The intra-abdominal lymph nodes.
- **Nerves:** The lumbar and sacral plexuses.
- **Muscles:** Anterior abdominal wall muscles, psoas major and quadratus lumborum.
- The structure and contents of the inguinal canal.
- The anatomical location, relations, blood supply, lymphatic drainage and nerve supply of the abdominal viscera.
- The anatomy of the peritoneal cavity and intra-abdominal spaces.
- The development of the abdominal viscera.
- Quadrants of the abdomen and the different planes.
- The dermatomes of the abdomen.
- The abdominal incisions of surgical interest.
- The imaging appearance of gastrointestinal, biliary and urinary tracts.
- Imaging appearance of CT, MRI, ultrasound and arteriography of the abdomen.
Chapter 2

SURGICAL PHYSIOLOGY

2.1 General Physiological Principles:

- Homeostasis and physiological response to stress.
- Thermoregulation.
- Water and electrolyte balance.
- Acid base balance.
- Metabolic pathways.
- Primary and secondary haemostasis.
- Enteral and parenteral nutrition.
- The metabolism in normal situation, starvation and hypercatabolic status.
- Nutrition and its disorders.
- Transfusion of blood and its products.

2.2 Physiology of Respiratory System:

- The central nervous control of ventilation.
- The normal ventilatory cycle and the intermittent positive pressure ventilation.
- Causes of postoperative respiratory failure.
- Adult respiratory distress syndrome (ARDS).

2.3 Physiology of Gastrointestinal Tract:

- Motility of the pharynx and esophagus.
- Gastric acid secretion.
- Gastroduodenal motility.
- Pancreatic secretion.
- Bile secretion and entero-hepatic circulation.
- Gallbladder motility.
- The functions of the small bowel including digestion and absorption.
- Motility of the small bowel.
- Motility of the large bowel.
- The mechanism of anal continence.

2.4 Physiology of the Cardiovascular System:
- Cardiac pressure cycle and control of cardiac output.
- Blood pressure and its control mechanisms.

2.5 Physiology of the Endocrine System:
- The functions of pituitary, adrenal, thyroid and parathyroid glands.
- Calcium metabolism.
- The origin and role of erythropoietin.
- The exocrine and endocrine functions of the pancreas.
- Glucose homeostasis.

2.6 Physiology of Renal System:
- The function of the nephron, renal autoregulation and renin-angiotensin system.
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- Causes of poor urine output and types of renal failure.

2.7 Physiology of the Central Nervous System:
- Causes of postoperative confusion.
- The physiology of space occupying lesion.
- Cerebral autoregulation.

Chapter 3

SURGICAL PATHOLOGY

3.1 Inflammation:

3.2 Wound Healing:
- Stages of wound healing.
- Types of wound healing: Primary, secondary and tertiary.
- Classification of surgical wounds.
- Factors affecting wound healing: General and local.
- Healing in specialized tissues: Central nervous system, gastrointestinal tract and fractures.
- Management of wounds.
- Complications of wounds.
- Suture materials and meshes used in surgical practice.

3.3 Shock:
- Definition of shock.
- Pathophysiology of different types of shock: Hypovolaemic, neurogenic, cardiogenic, anaphylactic and septic.
- Clinical picture and management of different types of shock.

### 3.4 Surgical Oncology:

- Definition of hyperplasia, metaplasia, dysplasia and carcinoma in situ.
- Differences between benign and malignant neoplasms.
- The molecular basis of cancer:
  - Normal cell growth
  - Disorders of cell growth.
  - Carcinogenesis.
  - Abnormalities in neoplastic cell behavior.
  - Neoplastic progression, invasion and metastasis.
  - The immune system and neoplasia.
- Aetiology of malignant neoplasms: Genetics, viral, physical and chemical agents.
- The epidemiology of common cancers.
- Investigations for the diagnosis of neoplasms: Tumor markers, Radiology, Biopsy.
- Paraneoplastic syndromes.
- Management of oncological emergencies.
- Palliative care for advanced cancer.

### 3.5 Vascular Disorders and Surgical Haematology:

- Aetiology and pathology of thrombosis.
- Aetiology and complications of embolism.
Pathology of atherosclerosis.

Disorders of haemostasis and hypercoagulable states.

Risk factors, clinical picture, investigations, complications and treatment of deep vein thrombosis.

Risk factors, Pathophysiology, clinical picture, investigations and treatment of pulmonary embolism.

Transfusion of blood and components of stored blood – complications of blood transfusion.

3.6 Surgical Infections and Antibiotics:

Bacteriology and Pathophysiology of surgical infections.

Endotoxins and exotoxins.

Nosocomial infections.

Acute non-specific surgical infections: Cellulitis, boil, carbuncle, necrotizing fasciitis, bacteraemia, septicemia.

Acute specific surgical infections (tetanus gas gangrene).

Common chronic surgical infections (tuberculosis amoebiasis, filariasis, Bilharziasis).

Principles of disinfection and sterilization.

Antibiotics: Classification, mode of action, proper choice, complications, antibiotic prophylaxis, microbial resistance.

3.7 Disorders of growth, differentiation and morphogenesis:

Failure of growth: Agenesis, aplasia, hypoplasia, atrophy, apoptosis and necrosis.

Overgrowth with normal cellular differentiation, hyperplasia hypertrophy, metaplasia and hamartoma.

Amyloid disease: Causes, diagnosis and effects.
- Haemosiderosis and haemochromatosis.
- Calcification: Metastatic and dystrophic.
- Calculi: Aetiology and complications.

### 3.8 Surgical Immunology and Organ Transplantation:

- Types of hypersensitivity reactions.
- Immunoglobulins and cytokines.
- Common surgical problems mediated by immunological mechanisms; Graves' disease, haemolytic anemia, essential thrombocytopenic purpura, myasthonia graves and rheumatoid arthritis.
- Immunodeficiency syndromes.
- Transplantation immunology, major histocompatibility testing and the mechanism of rejection.
- Principles of immunosuppression: steroids, Anathioprine, cyclosporine, monoclonal antibodies.
- Indications, technique and complications of renal, hepatic, pancreatic, cardiac, lung and bone marrow transplantation.

### 3.9 Surgical Biochemistry:

- Plasma proteins: Synthesis and functions.
- Metabolism of bile pigments and interpretation of their levels in jaundiced patients.
Chapter 4

PRINCIPLES OF SURGERY


- Getting an informed consent before surgery.
- Prescription of premedications.
- Principles of all types of anesthesia.
- Monitoring of anesthetized patient.

4.2 Postoperative management:

- Postoperative monitoring and ventilatory support.
- Intravenous fluids.
- Nutrition.
- Postoperative complications.

4.3 Surgical Techniques:

- Principles of the use of diathermy and laser.
- Types of suture materials.
- Principles of endoscopic and laparoscopic surgery.
- Tourniquet.

4.4 Medical ethics and Medicolegal Aspects.
4.5 Clinical Microbiology:

- Sources of surgical infection.
- Principles of antisepsis.
- Surgery in hepatitis and HIV carries.

Chapter 5

SURGICAL TRAUMA

- The Aetiology of traumatic injury; blunt, penetrating and blast injuries.
- Prehospital care.
- Triage.
- **Primary survey** of traumatized patients ABCDE:
  - Airway and cervical spine support.
  - Breathing.
  - Circulation stoppage of hemorrhage and resuscitation.
  - Disability.
  - Exposure.
- **Monitoring** and important investigation.
- **Secondary survey** (patient overview):
  - Head and facial injuries.
  - Chest injuries.
  - Abdominal and pelvic injuries.
  - Limb injuries: skin injury, vascular injury, nerve injury and fractures.
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- Spinal injuries.
- Management of individual injuries.

- Trauma scoring system.
- Special situations of trauma: Pediatric trauma and trauma in pregnancy.
- Post-traumatic stress disorders.
- Trimodel distribution of mortality.

Chapter 6

THE NECK

- Congenital anomalies of the neck: Branchial and thyroglossal cyst and fistula.
- Sternomastoid tumor.
- Blunt and penetrating injuries of the neck.
- Cervical block neck dissection: indications, types and complications.
Chapter 7

SALIVARY GLANDS

- Anatomy of the parotid, submandibular and sublingual salivary glands.
- Physiology of salivation.
- Salivary glands neoplasms: Benign and malignant.
- Inflammatory problems: acute and chronic.
- Calcular disease.

Chapter 8

THE BREAST

- Embryology and anatomy of the breast.
- Physiology of the breast.
- Abnormalities of the nipple and nipple discharge.
- Inflammatory problems of the breast: Acute mastitis, acute breast abscess – chronic breast abscess.
- Duct ectasia: Pathology, clinical picture and treatment.
- Benign breast neoplasms: Pathology, clinical picture, investigations and treatment.
- Breast cancer: Epidemiology, Aetiology, pathology, clinical picture, investigations, treatment and screening programs.
Chapter 9

THE VASCULAR SYSTEM

- The anatomy of the arterial and venous systems.
- Aetiology, clinical picture, and management of common vascular injuries.
- Acute limb ischaemia: Aetiology, clinical picture and management.
- Chronic limb ischaemia: Aetiology, clinical picture and management.
- Carotid artery disease:
  - Physiology of cerebral circulation.
  - Carotid artery stenosis: Aetiology, clinical picture, investigations and treatment.
- Diabetic foot infection: Aetiology, clinical picture and management.
- Vasospastic arterial disease: Raynaud's disease and phenomenon.
- Deep vein thrombosis: Aetiology, pathology, clinical picture, investigations, treatment and complications.
- Varicose veins of the lower limb: Clinical picture, investigations and treatment.
- Endovascular surgery: Indications, technique, and complications.
Chapter 10

THE LYMPHATIC SYSTEM

- The anatomy of the cervical, axillary, inguinal mediastinal and abdominal lymph nodes.
- Chronic lymphadenitis: Non-specific, specific (T.R), Aetiology, pathology, clinical picture and treatment.
- Metastatic lymph nodes: Pathology, clinical picture, and treatment.

Chapter 11

PLASTIC SURGERY

11.1 Principles of skin coverage: Skin grafts, various types of skin flaps (myocutaneous – fasciocutaneous – microvascular free flaps).

11.2 Surgery of Nerves:

- Clinical picture of individual nerve injuries.
- Sympathectomy: Indications, Technique.
11.3 Surgery of muscles, tendons and fascia:

- Carpal tunnel syndrome: Aetiology, clinical picture, investigations and treatment.
- Duputrynn’s contracture: Aetiology, clinical picture and treatment.
- Volkman’s ischemic contracture: Aetiology, clinical picture and treatment.
- Soft tissue sarcoma: Aetiology, pathology, clinical picture, investigations and treatment.

11.4 Surgery of face, lips and palate:

- Cleft lip and cleft palate: Embryologic background, clinical picture and treatment.
- Maxillofacial injuries: Bones and soft tissues:
- Carcinoma of the lip: Aetiology, pathology, treatment.

11.5 Surgery of the mouth, cheek and tongue:

- Cysts of floor of the mouth: Rannula, sublingual dermoid cyst.
- Injuries of the tongue.
- Inflammation of the tongue.
- Ulcers of the tongue.
- Carcinoma of the tongue, cheek and floor of the mouth: Aetiology, pathology, clinical picture and treatment.
Chapter 12

SKIN AND SUBCUTANEOUS TISSUES

- Cysts of the skin and subcutaneous tissues: Dermoid cysts and sebaceous cysts.
- Benign lesions of the skin and subcutaneous tissues: Haemangioma, lymphangioma, lipoma, neurofibromata and benign melanoma.
- Malignant lesions of the skin: Basal cell carcinoma, squamous cells carcinoma, malignant melanoma.
- Aetiology, pathology, clinical picture and treatment.

Chapter 13

BURNS

- Aetiology of burns: Scalds-Flame burns-Electric burns-chemical burns.
- Pathophysiology of burns.
- Classification of burns:
  - Surface area.
  - Depth of burn.
- Complications of burns:
  - General.
  - Local.
- Management of burns:
  - First and treatment.
  - Resuscitative fluid therapy.
  - Nutritional support.
  - Local treatment.
  - Surgical correction of skin defects.

Chapter 14
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14.1 Surgery of the Thyroid Gland:

- Anatomy of the thyroid gland.
- Physiology of the thyroid gland.
- Simple enlargement of the thyroid gland: Physiological, colloid and nodular goitre.
- Retrosternal goitre.
- Thyrotoxicosis: Graves' disease, Plummer's disease: Autonomous nodule-Miscellaneous.
- Thyroiditis: subacute (De Quervain's disease and Hashimoto's thyroiditis)
- Solitary nodule of the thyroid gland: Aetiology, investigations and management.
- Investigations of the thyroid gland: Laboratory-radiology-biopsy.
- Indications, technique and complications of thyroidectomy operation.

14.2 Surgery of the Parathyroid Glands:

- Anatomy of the parathyroid glands.
- Physiology of the parathyroid glands. Calcium metabolism.
- Hyperparathyroidism:
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  - Secondary
  - Tertiary
- Hypoparathyroidism.
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- Physiology of the adrenal glands: Cortex and medulla.

14.4 Endocrine disorders of the pancreas: The clinical picture, investigations and treatment of insulinoma and gastrinoma.


14.6 Multiple endocrine neoplasia.
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- Cardiac injuries: Aetiology, clinical picture, treatment.
- Empyema: Acute, chronic and tuberculous.

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Pulmonary embolism: Aetiology, clinical picture and treatment.


Principles of surgery for congenital and acquired cardiac diseases.

Principles of cardiopulmonary bypass.

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  - Base: anterior, middle and posterior cranial fossa.

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  - Pathology: primary and secondary pathological sequelae.
  - Clinical picture of brain concussion, extradural haematoma and subdural haematoma.
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- Complications of head injuries.

- **Hydrocephalus:**
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  - Hydrocephalus in children.
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- **Brain abscess:** Aetiology, pathology, investigations and treatment.

- **Intracranial tumors:** Pathology, clinical picture, investigations and treatment.

- **The Aetiology and clinical picture of congenital aneurysms.**

- **The diagnosis and testing for brain stem death and the principles of organ donation.**

Chapter 17

**PHARYNX AND ESOPHAGUS**

- Anatomy of the pharynx and esophagus: Course, structure, blood supply, lymphatic drainage and nerve supply.

- Injuries of the pharynx and esophagus: Penetrating injuries, corrosive injuries.

- Neuromuscular problems of the pharynx and esophagus:
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  - Diffuse esophageal spasm.

- Neoplasms of the pharynx and esophagus:
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Carcinoma of the oesophagus: Aetiology, pathology, clinical picture, investigations and treatment.

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Chapter 18

**THE STOMACH AND DUODENUM**

- Anatomy of the stomach and duodenum: Relations, blood supply, lymphatic drainage, nerve supply.
- Physiology of the stomach and duodenum:
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  - Mechanism of gastric emptying.
- Congenital hypertrophic pyloric stenosis: Clinical picture and management.
- Acute peptic ulcer: Acute gastric ulcer, stress gastric ulceration.
- Peptic ulcer disease: Aetiology, clinical picture, medical and surgical treatment.
- Complications of peptic ulcer disease: Hemorrhage, perforation, obstruction.
- Principles of bariatric surgery.

Chapter 19
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- Anatomy of the liver and biliary system:
  - Surgical anatomy.
  - Blood supply.
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- Physiology of secretion bile salts and bile pigments. Physiology of gall bladder functions.

- Congenital malformations of the biliary apparatus.

- Liver injuries: Type of trauma, types of injuries, clinical picture, investigations and treatment.

- Inflammatory problems of the liver and biliary apparatus:
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    - Pyogenic liver abscess.
    - Amoebic hepatitis.
    - Hydatid cyst of the liver.
    - Acute cholecystitis.
    - Acute cholangitis.


- Liver cirrhosis and portal hypertension:
  - Pathology of liver cirrhosis.
  - Sequelae of liver cirrhosis.
  - Management of portal hypertension during an attack of bleeding and in between the attacks.

- Jaundice: Definition, Aetiology, clinical picture, investigations and treatment.

- Neoplasms of the liver and biliary system: Pathology, clinical picture and management of benign and malignant neoplasms of the liver and biliary system.

- Stricture of the bile duct: Aetiology, clinical picture, investigations and treatment.
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- Anatomy of the pancreas: Relations, blood supply, lymphatic drainage.
- Physiology of the pancreas: Exocrine and endocrine functions.
- Acute pancreatitis: Aetiology, pathology, clinical picture, investigations, treatment and complications.
- Chronic pancreatitis: Aetiology, clinical picture, investigations and treatment.
- Neoplasms of the pancreas:
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  - Clinical picture.
  - Investigations.
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- Intraperitoneal abscess: Pelvic, iliac and subphrenic abscess: Aetiology, clinical picture and management.
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- Trauma to the spleen: Aetiology, clinical picture, investigations and treatment.
- Infections of the spleen: Viral, bacterial, protozoal and parasitic.
- Splenomegaly: Aetiology, clinical picture, investigations and treatment.
- Splenectomy operation: Indications, technique and complications.

Chapter 23
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- Anatomy of the small and large intestine: Histological picture, blood supply, lymphatic drainage.
- Physiology of the small and large intestine: Secretion, absorption, motility.
- Injuries of the small and large intestine: Aetiology, clinical picture and management.
- Intestinal obstruction: Aetiology, clinical picture, investigations, treatment and special types.
- Intestinal fistulae: Aetiology, clinical picture, management.
- Intestinal ischaemia: Aetiology, clinical picture and treatment of acute and chronic intestinal ischaemia.
- Inflammatory bowel disease: Pathology, clinical picture and treatment.
- Diverticular disease of the colon: Aetiology, clinical picture and management.
- Neoplasms of the small and large bowel: Pathology, clinical picture, investigations, treatment and screening for cancer.
- Radiation enteritis.
- Gastrointestinal stomas: The indications and management of gastrointestinal stomas (gastrostomy, ileostomy, colostomy).
THE APPENDIX

- Anatomy of the appendix.
- Complications of acute appendicitis, appendicular mass, appendicular abscess and generalized peritonitis.
- Differential diagnosis of abdominal pain.
- Appendicular tumors.

Chapter 25

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- Haemorrhoids: Aetiology, clinical picture, complications and management.
- Anal fissure: Aetiology, clinical picture and management of acute and chronic anal fissure.
- Perianal abscesses and fistulae: Aetiology, clinical picture and management.
- Carcinoma of the anal canal: Pathology, clinical picture and treatment.
- Sexually transmitted anorectal diseases.

Chapter 26
ABDOMINAL WALL AND HERNIAS

- Anatomy of: Muscles of the anterior abdominal wall, inguinal canal and femoral canal.
- Abdominal incisions: Vertical, Transverse, Oblique.
- Complications of abdominal wall incisions: Dehiscence, infection, incisional hernia.
- The Aetiology, clinical picture and treatment of inguinal, umbilical, epigastric para-umbilical, femoral and incisional hernias.
- Complications of a hernia: Irreducibility, Strangulation, Obstruction and Inflammation.

Chapter 27

PEDIATRIC SURGERY

- The physiological considerations in infants and children regarding.
  - Maintenance of body temperature.
  - Assessment of respiratory and cardiovascular function.
  - Fluid and electrolytes.
  - Metabolic response.
- The aetiology, clinical picture and treatment of correctable congenital abnormalities including: esophageal atresia, diaphragmatic hernia, intestinal atresia, anorectal malformations and Hirschsprung's disease.
- The Aetiology, clinical picture and treatment of congenital hypertrophic pyloric stenosis and infantile intussusception.
- The Aetiology, clinical picture and treatment of inguinal hernia, hydrocele, undescended testes and torsion of the testis.
- Disorders of the hip, knee and foot joints.
The pathology, clinical picture and treatment of neoplasms which occur in infants and children.

Chapter 28

ABDOMINAL TRAUMA AND ACUTE ABDOMEN

- The Aetiology, clinical picture and management of blunt and penetrating abdominal injuries.
- The various causes of acute abdomen.
- The various laboratory and radiological investigations utilized for the diagnosis of acute abdomen.

Chapter 29

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- Anatomy of the kidney, ureter, urinary bladder and urethra.
- Embryological development of the urinary system.
- Symptoms and signs of urinary tract problems.
- Investigations for the urinary tract: Laboratory, radiology, endoscopic.
- Congenital anomalies of the urinary tract:
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  - Ectopia vesica.
  - Hypospadias and epispadias.
- Injuries of the urinary tract: Aetiology, clinical picture, investigations and treatment of injuries to the kidney, ureter, urinary bladder and urethra.
- Inflammations of the urinary tract:
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- Acute pyelonephritis, acute cystitis and acute prostatitis.
- Bilharziasis of the urinary bladder.

- **Obstructive uropathy:** Aetiology, clinical presentation, investigations and treatment of:
  - Urinary tract stones.
  - Stricture of the ureter and urethra.
  - Benign prostatic hyperplasia.
  - Idiopathic retroperitoneal fibrosis.

- Neoplasms of the urinary tract: Pathology, clinical picture, investigations and treatment of neoplasms of the kidney urinary bladder and prostate.

- Differential diagnosis and investigations for haematuria.


Chapter 30

**THE TESTIS AND SCROTUM**

- Development of the testis.


- Inflammatory problems of the testicle, epidydmosis and spermatic cord:
  - Acute: Acute epidydmoorchitis.
  - Chronic: Tuberculosis, Bilharziasis, Filariasis.


- Inflammatory problems of the penis: balanitis and positis.
Carcinoma of the scrotum and penis.

Chapter 31

ORTHOPAEDIC SURGERY

- **Fractures and dislocations:** Aetiology, mechanism of healing, clinical picture, principles of management, complications of fractures (general and location).
- Fractures and dislocations of the upper limb.
- Fractures and dislocations of the lower limb.
- **Infections of bones and joints:**
  - Acute haematogenous osteomyelitis.
  - Chronic non-specific osteomyelitis.
  - T.B. of bones.
  - Septic arthritis.
  - T.B. of joints.
- **Generalized disorders of bones and joints:**
  - Osteoporosis.
  - Rickets and osteomalacia.
  - Hyperparathyroidism.
  - Osteoarthritis.
  - Rheumatoid arthritis.
  - Gout.
  - Paget's disease of bones.
  - Charcot’s osteoarthropathy.
- **Bone tumours:** Aetiology, pathology, clinical picture and treatment of benign and malignant bone tumours.
- **Amputations:** Indications, technique and complications of amputations of the upper and lower limbs.
- Assessment and surgical approaches to the shoulder elbow, wrist, hip, knee and ankle joints.
Chapter 32

THE SPINE AND SPINAL CORD

- Congenital anomalies.
- Fractures and dislocations of the spine.
- Traumatic paraplegia: Aetiology, and management.
- T.B. of the spine.
- Intervertebral disc prolapse.
- Tumors of the spine.
- Neck pain and low back pain.