Third Year MBBS
Curriculum–Paediatric Surgery

1. Overview

Pediatric Surgery is a specialized branch of surgery that deals with the diagnosis, management, and surgical treatment of congenital and acquired conditions in neonates, infants, children, and adolescents. This study guide provides undergraduate medical students with essential knowledge and clinical skills required to recognize, assess, and manage pediatric surgical conditions. The emphasis is on early diagnosis, preoperative stabilization, surgical principles, and postoperative care.

2. Learning Objectives

By the end of the pediatric surgery rotation, students should be able to:

- Understand the physiological and anatomical differences between pediatric and adult surgical patients.
- Recognize and diagnose common neonatal and pediatric surgical conditions.
- Perform systematic clinical assessments and examinations of pediatric surgical patients.
- Interpret basic pediatric radiological investigations relevant to surgical conditions.
- Understand the principles of perioperative management, including fluid therapy, pain management, and anesthesia considerations in children.
- Develop a multidisciplinary approach to pediatric surgical care.

3. Core Topics Covered

The study guide is structured into key areas of pediatric surgery:

A. Neonatal Surgical Conditions

Learning Objectives: Recognize and manage common neonatal surgical conditions.

Key Concepts: Embryological basis, pathophysiology, clinical presentation, and surgical management.

Skills: Neonatal resuscitation, fluid management, stoma care.

B. Pediatric Gastrointestinal Surgery

Learning Objectives: Diagnose and manage pediatric GI surgical conditions.

Key Concepts: Intestinal obstruction, ischemia, inflammation, congenital anomalies.

Skills: Abdominal examination, nasogastric tube insertion, post-op care.

C. Pediatric Urology

Learning Objectives: Recognize and treat common pediatric urological conditions.

Key Concepts: Developmental anomalies, obstructive uropathy, congenital malformations.

Skills: External genitalia examination, ultrasound interpretation, catheterization.

D. Pediatric Trauma and Emergency Surgery

Learning Objectives: Understand principles of trauma care in pediatric patients.

Key Concepts: Pediatric physiology in trauma, ATLS guidelines, wound healing.

Skills: Pediatric airway management, IV access, burn wound dressing.

E. Pediatric Surgical Oncology and Miscellaneous Conditions

Learning Objectives: Recognize and describe common pediatric tumors.

Key Concepts: Tumor biology, staging, multimodal therapy.

Skills: Examination for lymphadenopathy, biopsy techniques, oncologic imaging interpretation.

4. Curriculum

Theme 1: Principles of Pediatric Surgery

Topics & Subtopics:

1. Fundamentals of Pediatric Surgery
    - Differences between pediatric and adult surgery
    - Ethical considerations in pediatric surgery
    - Role of pediatric surgeons in multidisciplinary teams
2. Perioperative Care in Children
    - Fluid and electrolyte management
    - Nutritional considerations in pediatric patients
    - Pain management and anesthesia considerations

Learning Objectives:

- Understand key physiological differences between children and adults.
- Explain ethical and legal aspects of pediatric surgery.
- Identify key principles of perioperative care in pediatric patients.

Rationale:

Pediatric surgery requires a specialized understanding of physiology, perioperative care, and ethical considerations to ensure safe surgical

management.

Mode of Teaching:

- Interactive Lecture
- Case-Based Discussion

Theme 2: Neonatal Surgical Conditions

Topics & Subtopics:

1. Congenital Anomalies Requiring Early Intervention
   - Tracheoesophageal Fistula (TEF)
   - Congenital Diaphragmatic Hernia (CDH)
   - Gastroschisis & Omphalocele
2. Intestinal Obstructions in Neonates
   - Hirschsprung's disease
   - Meconium ileus and atresia
   - Malrotation and volvulus

Learning Objectives:

- Recognize life-threatening neonatal surgical conditions.
- Understand the pathophysiology and presentation of common congenital anomalies.
- Describe the principles of neonatal resuscitation and surgical management.

Rationale:

Early identification and timely intervention in neonates with surgical conditions significantly improve outcomes.

Mode of Teaching:

- Lecture
- Clinical Case Discussions
- Bedside Teaching

Theme 3: Pediatric Surgical Emergencies

Topics & Subtopics:

1. Acute Abdomen in Children
   - Intussusception
   - Appendicitis in children
   - Bowel obstruction and volvulus
2. Pediatric Trauma
   - Abdominal trauma and solid organ injuries
   - Head injury in children

- Fractures and their unique patterns in children

Learning Objectives:

- Differentiate between common causes of acute abdomen in children.
- Describe the management of pediatric surgical emergencies.
- Outline the principles of pediatric trauma assessment and stabilization.

Rationale:

Pediatric surgical emergencies require rapid assessment and intervention to prevent morbidity and mortality.

Mode of Teaching:

- Problem-Based Learning (PBL)
- Skills Workshop on Pediatric Trauma Management

Theme 4: Pediatric Urology & Genitourinary Disorders

Topics & Subtopics:

1. Congenital Urological Anomalies
   - Hypospadias and epispadias
   - Posterior urethral valves
   - Vesicoureteral reflux
2. Acute Urological Emergencies
   - Testicular torsion
   - Paraphimosis
   - Urinary retention in children

Learning Objectives:

Recognize common congenital and acquired urological disorders in children.

Understand the urgency and management of testicular torsion.

Describe the principles of postnatal management of urological anomalies.

Rationale:

Early recognition of pediatric urological conditions can prevent long-term complications such as renal failure or infertility.

Mode of Teaching:

- Interactive Lecture
- Clinical Case Discussion

Theme 5: Common Pediatric Surgical Conditions

Topics & Subtopics:

1. Abdominal & Gastrointestinal Disorders

- Hernia and hydrocele in children
- Pyloric stenosis

- Constipation and Hirschsprung's disease

2. Soft Tissue & Skin Conditions

- Umbilical anomalies (patent urachus, omphalitis)
- Abscesses and soft tissue infections

Learning Objectives:

Identify common surgical conditions seen in pediatric patients.

Understand diagnostic approaches and management of these conditions.

Develop an approach to children presenting with gastrointestinal complaints.

Rationale:

Pediatric surgical disorders, though common, require timely diagnosis to prevent complications and unnecessary interventions.

Mode of Teaching:

- Lecture
- Bedside Teaching

Theme 6: Pediatric Surgical Oncology

Topics & Subtopics:

1. Common Pediatric Tumors

- Wilms' tumor
- Neuroblastoma
- Germ cell tumors

2. Principles of Pediatric Surgical Oncology

- Multidisciplinary management of pediatric malignancies
- Surgical vs. non-surgical treatment modalities

Learning Objectives:

Identify common pediatric malignancies and their presentations.

Describe the role of surgery in pediatric oncology.

Understand the importance of a multidisciplinary approach in pediatric cancer treatment.

Rationale:

Pediatric tumors often present late, and understanding their management is crucial for improving survival rates.

Mode of Teaching:

Interactive Lecture

Case-Based Discussion

Theme 7: Minimally Invasive Surgery in Pediatrics & Special Topics

Topics & Subtopics:

1. Laparoscopic & Thoracoscopic Surgery in Children
- Advantages and limitations of minimally invasive surgery
- Common procedures: laparoscopic appendectomy, fundoplication

2. Advances in Pediatric Surgery & Global Perspectives
- Fetal surgery
- Pediatric transplant surgery
- Ethical considerations in neonatal and pediatric end-of-life care

Learning Objectives:

Explain the principles and benefits of minimally invasive surgery in children.

Recognize the emerging fields in pediatric surgery and their future potential.

Discuss ethical issues related to surgical decision-making in pediatrics.

Rationale:

Minimally invasive surgery is becoming the standard of care, and understanding its role is essential for modern surgical practice.

Mode of Teaching:

- Lecture
- Video Demonstration of Laparoscopic Procedures