RESIDENT LEARNING OBJECTIVES – PEDIATRIC SURGERY

Neonatal Surgery

1. Describe the cardiac, pulmonary, blood volume, and gastrointestinal changes that occur during the neonatal transitional period.

2. Describe the relevant mechanisms of neonatal thermoregulation.

3. Describe the appropriate fluid and electrolyte management of the full-term and premature infant.

4. Describe the nutritional requirements of the full-term and premature infant, and be able to calculate the appropriate enteral and parenteral nutritional support.

5. Describe the role of prenatal diagnosis of common congenital surgical disorders.

6. Describe the role of fetal surgery in the treatment of prenatally diagnosed:
   a. cystic lung lesions
   b. massive cervical lymphangioma
   c. congenital diaphragmatic hernia
   d. renal obstructive disorders
   e. sacrococcygeal teratoma

7. Describe the embryological development and selected maldevelopment of the following organ systems:
   a. tracheopulmonary
   b. cardiac and great vessels
   c. diaphragm
   d. foregut
   e. midgut
   f. hindgut
   g. anorectum
   h. abdominal wall
   i. genitourinary

8. Describe the pathophysiology of patent ductus arteriosus, persistent fetal circulation, Tetralogy of Fallot.

9. Describe the pathophysiology and evaluation of:
   a. respiratory distress
   b. cyanosis
   c. jaundice
   d. bilious emesis
   e. intestinal obstruction

10. Describe the perioperative care of the surgical neonate, including:
    a. basic airway and ventilator management
    b. fluid, electrolyte, and nutritional management
    c. indications for blood product transfusion

11. Describe the indications and contraindications for the use of Extracorporeal Membrane Oxygenation (ECMO) support of the neonate with respiratory distress. Understand the physiology and complications of ECMO perfusion, and the major differences between venoarterial and venovenous support.

12. Describe the indications for and technical aspects of the following procedures in the neonate:
13. Understand the risks of anesthesia in the newborn and former premature infant, and describe the appropriate perioperative management of these patients.

14. Describe the presentation, diagnosis, embryology, pathophysiology/pathology, preoperative management, technical surgical management, postoperative care, and prognosis/outcome for the following common neonatal surgical disorders:
   a. esophageal atresia/tracheoesophageal fistula
   b. congenital diaphragmatic hernia
   c. cystic lung lesions (congenital lobar emphysema, cystic adenomatoid malformation, lobar sequestration)
   d. duodenal atresia/stenosis
   e. jejunoileal atresia/stenosis; meconium ileus
   f. malrotation and midgut volvulus
   g. Hirschsprung’s disease; meconium plug syndrome
   h. necrotizing enterocolitis
   i. omphalocele; gastroschisis; cloacal extrophy; Prune belly syndrome
   j. imperforate anus
   k. intersex disorders and ambiguous genitalia
   l. inguinal hernia; hydrocele; undescended testes
   m. sacrococcygeal teratoma