Block Q Surgery

Specialized nutrition support

- Specialized nutrition support comprises the administration of enteral nutrition (bypassing the oropharynx) and/or parenteral nutrition (bypassing the GI tract).
- Specialized nutrition support is primarily indicated in patients with malnutrition and those at high nutritional risk.
- Enteral nutrition is preferred over parenteral nutrition unless contraindications to enteral nutrition are present (e.g., mechanical bowel obstruction).
- Nutrition support is associated with various complications such as injury during feeding tube placement, IV catheter-related infection, and metabolic complications.
- There is a higher risk of metabolic complications with parenteral nutrition than with enteral nutrition.

Enteral nutrition

- Enteral nutrition is the administration of nutrients via a feeding tube placed directly into the stomach, duodenum, or jejunum.
- Absolute contraindications for enteral nutrition include mechanical bowel obstruction and severe bowel ischemia.
- Routes
    - Nasal or oral access
    - Percutaneous access
- Nasal or oral access
    - Gastric feeding: preferred initial route e.g Nasogastric tube, Orogastric tube
    - Postpyloric feeding, e.g., nasojejunal tube, nasoduodenal tube
- Percutaneous access
    - Percutaneous access is indicated if nutritional support is anticipated for approx. > 4 weeks and inserted surgically, fluoroscopically, or endoscopically.
    - Inserted through an incision in the abdominal wall
    - Gastrostomy tube (G tube)
    - Jejunostomy tube (J tube)
    - Gastrojejunostomy tube (GJ tube)
- Tube feeding regimens
    - Continuous feeding: The typical initial infusion rate is 50 mL/hour. Increase the rate of infusion by 25 mL/hour every 4–8 hours until the target rate is reached.
    - Bolus feeding (gastric feeding only): 200–400 mL of formula multiple times per day. Hold if there is residual tube feed formula in the gastric body 4 hours after the previous bolus.
- Osmolality of enteral feeds: ~ 300 mOsmol/L
- Gastrointestinal complications
    - Osmotic diarrhea (most common complication)
    - Nausea, vomiting, bloating
    - Gastroesophageal reflux
- Respiratory complications

    - Aspiration pneumonia
    - Aspiration pneumonitis
    - Respiratory failure due to enteral feeding: Aspiration and the increased carbon dioxide production associated with enteral nutrition can lead to hypercapnia and respiratory failure.
- NG tube-specific complications
    - Incorrect placement, e.g., in the trachea
    - Injury to or perforation of the stomach wall
    - Erosion of the nares
- G tube-specific complications
    - Peristomal infection and/or leakage
    - Buried bumper syndrome
    - Bowel perforation
    - Bleeding
- Do not attempt to unclog a G tube with forceful irrigation or carbonated beverages, as this can worsen occlusion and/or lead to tube rupture
- For tube dislodgement > 4 weeks after placement, immediately stent the tract with a new G tube or a foley catheter to prevent tract closure.

Parenteral nutrition

- the intravenous delivery of nutrition, bypassing the GI tract
- Total parenteral nutrition (TPN): the intravenous provision of all nutritional requirements
- Supplemental parenteral nutrition: the intravenous provision of nutrients to augment oral intake and meet nutritional goals
- Routes
    - Central venous access
    - Peripheral venous access
- Central venous access
    - Preferred for most patients
    - Options include:
      Peripherally inserted central catheter
      Tunneled central venous catheter
      Implanted port
- Peripheral venous access
    - may be considered if parenteral nutrition is expected to be required for ≤ 2 weeks and the patient can tolerate large volumes of low osmolarity formula
- Infusion regimens
    - Continuous parenteral nutrition
    - Cyclic parenteral nutrition
- Continuous parenteral nutrition
    - Set rate over 24 hours
    - Commonly used in acute care settings
    - Higher risk of hepatic steatosis than cyclic
- Cyclic parenteral nutrition

    - Infused over 10–14 hours (as tolerated)
    - Allows for bolus administration at night (e.g., at the patient's home)
    - Higher risk of fluid overload, hyperglycemia, and electrolyte imbalances than continuous
- Parenteral nutrition-specific complications
    - Metabolic complications of specialized nutrition support
    - Intestinal failure-associated liver disease
    - Fluid overload
    - Venous thrombus, venous embolism
    - Catheter-related bloodstream infection
    - Catheter displacement
    - Iatrogenic injury, e.g., pneumothorax
    - Hyperglycemia during enteral or parenteral nutrition
    - Refeeding syndrome with associated electrolyte imbalances
- Parenteral nutrition-associated cholestasis (PNAC): intrahepatic cholestasis due to prolonged parenteral nutrition (> 2 weeks)

Neural tube defects (NTDs)

- Neural tube defects (NTDs) are congenital malformations of the central nervous system (CNS), spine, and cranium.
- Open NTDs: Meninges and/or neural tissue are uncovered and, therefore, freely exposed to the surrounding (e.g., amniotic fluid).
- Closed NTDs: Defect is covered by skin and/or connective tissue.

Spina bifida occulta

- Most common closed NTD
- Vertebral bone defect without herniation
- The spinal cord, meninges, and overlying skin remain intact.
- Most commonly affects the lower lumbar or sacral region
- Often asymptomatic (may be an incidental finding in imaging)
- Possible symptoms at the level of the vertebral defect: Lumbar skin dimple, Collection of fat, Patch of hair
- Normal AFP

Meningocele

- Meninges (without neural tissue) herniate through vertebral bone defect.
- ↑ AFP
- Most commonly affects the lower lumbar and/or sacral region
- Neurological symptoms vary depending on the location and extent of neuronal damage.

Myelomeningocele

- Meninges and parts of the spinal cord herniate through the vertebral bone defect.
- ↑ AFP
- Characteristic feature of Chiari II malformation

- Associated with maternal diabetes and folate deficiency
- Most commonly affects the lower lumbar and/or sacral region
- Neurological symptoms vary depending on the location and extent of neuronal damage.