

Nutritional support & rehabilitation

Malnutrition

In surgical practice malnutrition is common, being present before, or occurring after, operations in about 50 per cent of patients, possibly more in some parts of the world.

- **Preoperative malnutrition** may be due to starvation or to a failure of digestion.

A. Starvation is caused by:

1. difficulty in obtaining food (poverty);
2. difficulty in swallowing food (dysphagia);
3. difficulty in retaining swallowed food (vomiting);
4. self-neglect, e.g. in the elderly and in alcoholics.

B. Failure of proper digestion may, for example, be due to pancreatic or biliary disease (carcinoma or jaundice due to stones), and duodenal and jejunal conditions (fistula or blind-loop syndrome).

- **Postoperative (post-traumatic) malnutrition** is, in most cases, of a transient nature consequent upon a short period of starvation and the stress reaction to trauma. Recovery from any nitrogen deficit due to protein catabolism will follow on return to normal feeding. Any delay in return to a normal diet, such as may be imposed by the dictates of the operation (oesophagectomy), or a complication (paralytic ileus from peritonitis), means that severe malnourishment is likely to occur.

Nutritional support

According to the WHO, malnutrition is "the cellular imbalance between supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions.

What are the causes of malnutrition?

- Neglect (e.g., severe alcoholics, extreme of ages)

- Digestive problems
- Inadequate food intake
- Chronic illness
- Dysphagia
- Stress and trauma.

Types of nutritional support:

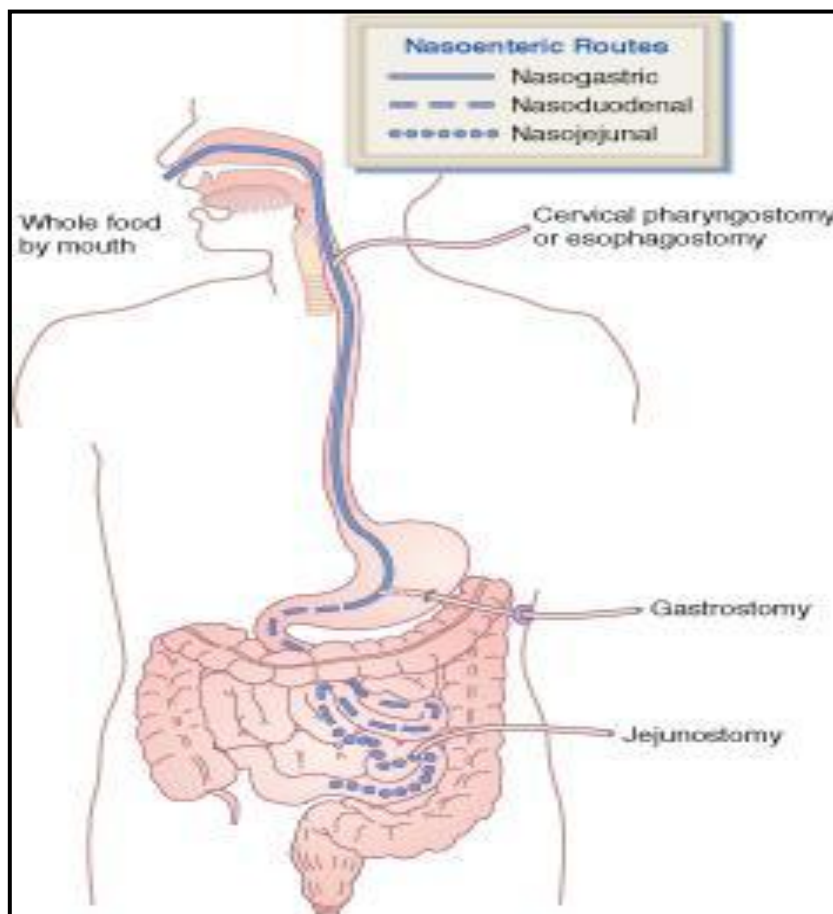
A. **Enteral support** : via placement through the nose, esophagus, stomach, or intestines (duodenum or jejunum)

—Tube feedings

—Must have functioning GI tract

—IF THE GUT WORKS, USE IT!

—Exhaust all oral diet methods first.



Advantages of enteral feeding

- Intake easily/accurately monitored
- Provides nutrition when oral is not possible or adequate
- Costs less than parenteral nutrition
- Supplies readily available
- Reduces risks associated with disease state
- Preserves gut integrity
- Decreases likelihood of bacterial translocation
- Preserves immunologic function of gut

Disadvantages

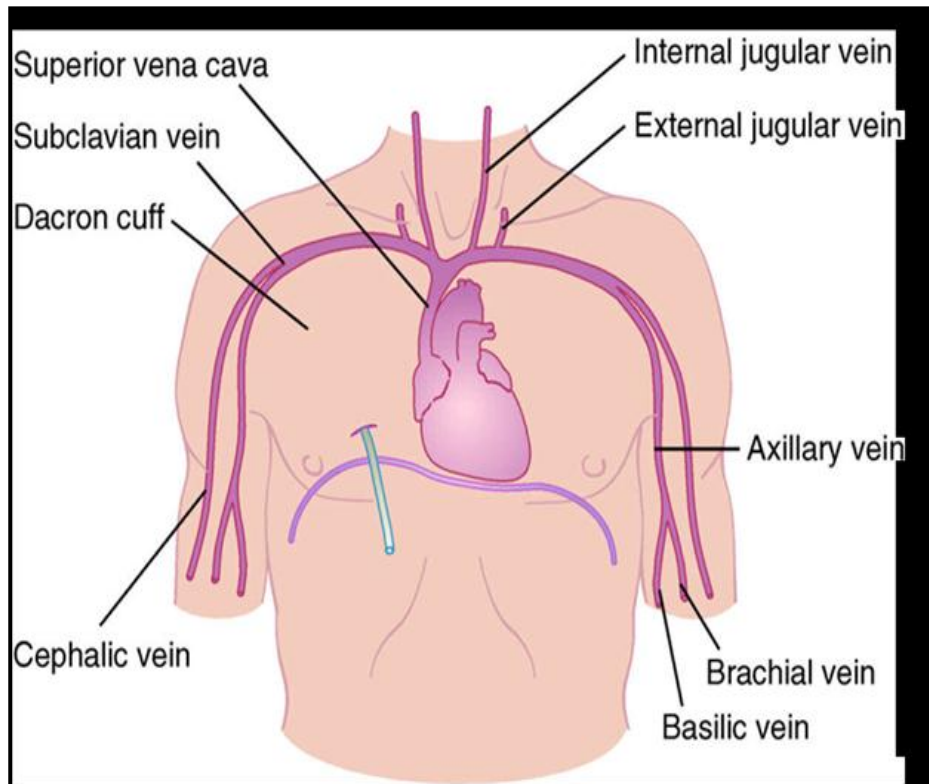
- GI, metabolic, and mechanical complications—tube migration; increased risk of bacterial contamination; pneumothorax
- Access problems (tube obstruction)
- Administration problems (aspiration)
- Gastrointestinal complications (diarrhea)
- Metabolic complications (overhydration)

Contraindications

Enteral nutrition is possible only if the gut is functioning. In patients with intestinal ischemia, ileus, or bowel obstruction, enteral nutrition is contraindicated, as well as in patients in shock and those with severe pancreatitis.

B. **Parenteral nutrition** : is a way to feed the patient intravenously. It can be delivered centrally through a central venous catheter via central vein including total parenteral nutrition (TPN), most commonly in the superior vena cava or peripherally (PPN) via a peripheral vein.

TPN is indicated when patients need long-term nutritional support but are not able to receive enteral feedings (nonworking GI tract, shock, bone marrow transplant, etc.). PPN is indicated in patients requiring short-term nutritional support (10 days) to restrict protein breakdown.



Contraindications

- 1- Heart failure
- 2- Severe liver disease
- 3- Uncontrolled diabetes
- 4- Disease of fat metabolism
- 5- Bleeding tendency.

Complications

Catheter related complications:

- 1- Air embolism.
- 2- Pneumothorax.

- 3- Sepsis.
- 4- Injury to structures like brachial plexus.
- 5- Venous thrombophlebitis.

Metabolic complication:

- 1- hyperglycemia.
- 2-lactic acidosis.
- 3- Hypokalemia and hypophosphatemia.
- 4- Fatty liver.

Notes

- short- term enteral feeding → Nasogastric tube (N/G)
- Long- term enteral feeding → enterostomies are the preferred access route like gastrostomy or jejunostomy.
- Patient not able to receive enteral feeding → parenteral nutrition.
- short-term nutritional support (<10 days)) → PPN
- long-term nutritional support → Total parenteral nutrition (TPN).

Suggestive Reading

Norman S William, Roman O Connell, Andrew W McCaskie. Bailey & Love short practice of surgery, 27th edition. Taylor and Francis, 2018