Nutrition in surgery

**LECTURE No. 2**

# Artificial Nutritional Support

### What are the indications of nutritional support?

1. Any patient who has sustained 5 days of inadequate nutritional intake.
2. Any patients who is anticipated to have no or inadequate nutritional intake.

The period may be less in patients with pre-existing malnutrition.

### Fact:

The indications for nutritional support are the “inadequate intake” rather than specific disease condition e.g. Crohn’s disease, pancreatitis...etc.

### Techniques used for nutritional support:

1. **Enteral feeding**

Delivery of nutrition into the GIT.

#### Fact:

Alimentary tract should be used whenever possible.

* Normal Food.
* Oral Supplements (Sip Feeding)
* Tube feeding Techniques.
* Polymeric feeds require digestion
* Elemental feeds (monomeric) amino acids or peptides, less palatable.
* Newer Feeds fortified with:

1. Glutamine &fibers to optimize intestinal nutrition.
2. Arginine & fish oil as immunonutrients.

### Sips feeding

* Used in patients who can drink but whose impaired appetite.
* Used in patients in whom adequate intake cannot be maintained with *ad libitum* (freely or as much as the patient wish) intake.

### Tube feeding techniques

1. Nasogastric tube (Ryle’s) feeding.
2. Gastrostomy Feeding.
3. Postpyloric Feeding

* Nasojejunal tube feeding.
* Jejunostomy

#### Nasogastric tube (Ryle’s) feeding

* Tube blockage is common.
* It’s appropriate in a majority of patients but surely with some contraindications.
* Fine-bore feeding tube (internal diameter is < 3mm) causes less gastric and esophageal erosions.

#### Nasojejunal tube feeding

* Less like to cause aspiration pneumonia.
* More useful in pancreatitis where the edematous pancreas causes a degree of gastric outlet obstruction.
* It often necessitates the use of fluoroscopy or endoscopy to achieve placement.

#### Gastrostomy

* The placement of a tube through the abdominal wall directly into the stomach.
* If enteral feeding is needed for prolonged periods (4-6 weeks), then gastrostomy tube feeding is preferable to an indwelling nasogastric tube.
* There are two options for gastrostomy:

1. Percutaneous endoscopic Gastrostomy (PEG) - two techniques.
2. Surgical Gastrostomy - 2 techniques.

#### Jejunostomy

* Surgical placement of a tube into the jejunum.
* May cause leak and subsequent peritonitis.

### Complication of enteral feeding



1. **Parenteral feeding:**

Total Parenteral Nutrition (TPN) is defined as the intravenous provision of all nutritional requirements, without the use of the gastrointestinal tract.

#### Indications of parenteral nutrition

* Massive resection of the small bowel.
* Intestinal fistula.
* Prolonged intestinal failure for other reasons.

#### Route of delivery

### Peripheral:

* This route is usually used when a short period of total parenteral nutrition needed (less than 2 weeks).
* Two types of peripheral Parenteral routes:

1. Catheter can be inserted into a peripheral vein and maneuvered into the central venous system; this is called "Peripherally Inserted Central venous Catheter-PICC".

* The mean duration of it is about 7 days.
* When thrombophlebitis occurs, the vein is destroyed.

1. Conventional short cannula in the wrist veins.

* Used to infuse the nutritional requirements on a cyclical basis over 12 hours.
* After that the cannula is removed and resited in the contralateral arm.
* It has the advantage that it avoids the complications of central venous administration, but suffers the disadvantage that it is limited by the development of thrombophlebitis.

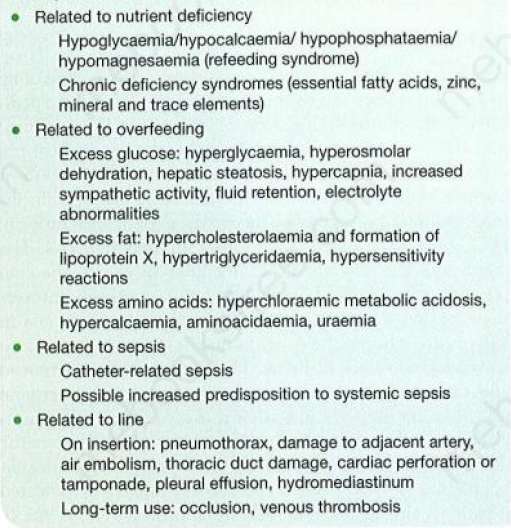
### Central venous line:

Central veins are:

1. Subclavian vein (the best for TPN)
2. Internal jugular vein.
3. External jugular vein.

* Central venous catheter should be tunneled subcutaneously to minimize the risk of infection.
* Hickman line is used for longer-term TPN.
* X ray confirmation for the catheter tip in the distal superior vena cava and exclusion of pneumothorax is essential before starting TPN.

#### Complications of parenteral nutrition:



# Refeeding Syndrome

* Severe fluid and electrolyte shift in malnourished patients undergoing refeeding.
* Can occur with either enteral or parenteral nutrition, but more common in the latter.
* It results in:
* Hypophosphataemia
* Hypocalcaemia
* Hypomagnesaemia
* These electrolyte disorders can result in:
* Altered cardiac function and arrhythmias
* Deterioration of respiratory function
* Deterioration of liver function
* Seizures, confusion and coma
* Tetany and death

## Patients at risk

1. Alcohol dependency
2. Severe malnutrition
3. Anorexics
4. Those who have undergone prolonged fasting

## Treatment

* Avoid overfeeding.
* Calorie delivery should be increased slowly
* Vitamins administrated regularly.
* Treatment of hypophosphataemia and hypomagnesaemia.