1. catheter-related sepsis - femoral route for administration of TPN is associated with a significantly greater incidence of bacteraemia than arm, neck or subclavian sites

2. catheter occlusion: - central venous catheters may be partially or totally occluded by clot, calcium, or lipid deposits

3. disorders of glucose control: - hyperglycaemia is the most common metabolic abnormality during TPN & supplemental insulin is often required - excessive glucose administration has also been shown to induce positive sodium & water balance, increase catecholamines & induce hypophosphataemia which causes paraesthesia, muscular weakness, confusion, convulsions & coma - rebound hypoglycaemia may occur if glucose is suddenly stopped

4. hypercholesterolaemia: - the most common alteration of serum lipids; may develop rapidly & cause cloudy serum - may be prevented by the use of fat emulsions with low phospholipid to triglyceride ratio - may be treated by stopping fat administration, infusing heparin to increase plasma lipolytic activity & infusing glucose with insulin to increase lipase activity in adipose tissue

5. refeeding syndrome: - used to describe various metabolic abnormalities that can arise as a result of refeeding malnourished patients - due to massive cellular uptake of phosphate, potassium & magnesium caused by insulin secretion in response to a glucose load - may cause a range of life threatening clinical manifestations such as arrhythmias, heart failure, respiratory failure, confusion, lethargy, cranial nerve palsy, seizures, haemolysis, fatty liver etc

5. abnormalities of liver function: - aetiologically obscure and probably multifactorial - patients on long-term TPN may show persistent elevations of liver enzymes, steatosis & cholecytitis with or without calculi - use of cyclic infusions and provision of 30-40% of non-protein calories as fat may minimise the development of this complication

6. other problems: - low bone mass (aetiology unknown) - decreased GFR (aetiology unknown)

General:
(i) feeding into GI tract is contraindicated
(ii) enteral feeding fails to meet nutritional requirements
(iii) enteral access is unobtainable

Pre-operative PN:
- in mild or moderate malnutrition parenteral nutrition is not normally indicated. It is indicated if the operation is to be delayed for more than 3-5 days and enteral access is not possible
- in severe malnutrition, preoperative PN is indicated within 1-3 days of admission if immediate surgery is not possible and a substantial period of preoperative starvation is likely

Post-operative PN:
- indicated in mild to moderate malnutrition where oral or enteral feeding is not possible within 7 days. It should be considered in severe malnutrition after 5 days.