Managing Crohn's Disease in Intestinal Failure

Jeremy Nightingale, Simon Lal, Gordon Carlson, Phil Stevens, Alison Culkin and the BIFA Committee

Crohn's disease (CD) is a common cause for intestinal failure (IF). IF may occur in patients with CD due to extensive disease, enteric fistula(s), obstruction or a short, defunctioned or bypassed bowel. CD is a common cause of patients having a short bowel.

Key points

1. Patients with CD who are most likely to develop IF are those with a young age at onset, penetrating behaviour, a family history of CD, or are smokers. Sex and location of the disease are not associated. However, most IF in CD occurs as a consequence of the complications of surgical treatment rather than from CD itself.
2. In addition to 1), patients most likely to develop a post-operative enterocutaneous fistula include those who have pre-existing fistulation and abscess formation, are malnourished, hypoalbuminaemic or are taking more than 10 mg prednisolone/ 24 hours.
3. Elective surgery for CD (e.g, for management of a stricture) should be undertaken in an individual in a good nutrition state (e.g. near normal BMI). This may necessitate preoperative nutritional support. In the absence of infection, immunomodulating and/or biological drugs may be continued.
4. If an operation is needed and abdominal infection is present, then this source should be controlled by radiological or surgical means in a time frame consistent with the patient's clinical condition, and supported with appropriate antibiotics. Nutritional support will frequently be required, but restoration of lean body mass will not be possible unless infection has been dealt with adequately. No immunological or biological drugs should be given.
5. An anastomosis should be avoided in the presence of active abdominal infection, including an inadequately drained abscess and its physiological consequences – notably malnutrition and hypoalbuminaemia. Under these circumstances, resection and a stoma, or a proximal defunctioning stoma and effective drainage are recommended as safer options.
6. In the post-operative period in the absence of active infection, metronidazole, immunomodulating, and/or biological drugs may be given, where appropriate. The last two are avoided if there are ongoing concerns about active infection.
7. Patients with a short bowel generally have either a jejunostomy or a jejunum in continuity with a colon. When a colon is in continuity, this results in improved sodium and water absorption, salvage of carbohydrate energy (by fermentation), manufacture of B vitamins and vitamin K, bacterial synthesis of some amino acids, and it slows bowel transit and stimulates upper gut growth (adaptation).
8. Patients with a short bowel have up to a 45% chance of developing pigment type gallstones. Gall stones are more likely to cause complications in intestinal failure and, if found, consideration should be given to removing them if abdominal surgery is planned for another reason.
9. Patients with jejunum in continuity with colon have a 25% chance of developing calcium oxalate renal stones. They should receive advice about a diet low in oxalate, in addition to one high in carbohydrate, and adequate hydration should be maintained.
10. A period of exclusive enteral nutrition can be beneficial in the treatment of active CD before surgery, where safe and appropriate.
11. Patients with stricturing CD may benefit from a low fibre diet to minimise the risk of obstruction.

Continued over page...

Explanations

1. The phenotype of patients most likely to develop IF from any cause is listed and especially important is smoking and age of onset of the CD. Half of the consequences of surgical treatment that result in IF are a result of emergency surgery.
2. Anastomotic leakage may be more common in the situations listed, especially in those with hypoalbuminemia which can result from saline excess and/or inflammation.
3. Elective surgery is typically performed for a chronic tight stricture and the patient's nutritional status should be taken into account in planning an operative strategy.
4. Severe sepsis is the main cause of death for patients with intestinal failure and may precipitate the need for an emergency operation. During this procedure the minimum necessary is done to achieve adequate source control.
5. Avoid making an intestinal anastomosis if there is an on-going abdominal infection. If an anastomosis is undertaken, it must be kept away from any site of infection or a previous leak. An anastomosis or an intestinal suture line unprotected by a proximal stoma should not be made when the serum albumin is less than 32 g/L.
6. Generally, medication to prevent/treat CD is started (or restarted) before a patient leaves hospital or 2 weeks after the surgery, where safe and appropriate. The patient's previous therapy, location of the disease prior to surgery (e.g. small bowel) and whether an ileo-colic anastomosis has been formed should help inform decisions relating to medication choice post-operatively.
7. A short bowel occurs when there is an insufficient length of small intestine to absorb macronutrients and fluid without additional oral, enteral of intravenous supplementation. This may occur with a small bowel length of less than 2 metres in patients with a jejunostomy and 1 metre in those with a colon in continuity. Those with a jejunostomy have immediate problems with fluid balance (sodium, water and magnesium depletion) and more gradual ones of malnutrition, while those with a colon in continuity typically have gradual problems of diarrhoea and malnutrition. The presence of a colon in continuity may increasingly improve drug absorption as intestinal adaptation occurs. This will require close monitoring if the drug has a narrow therapeutic range (e.g. warfarin or digoxin).
8. Gallstones are common and relate to periods of biliary stasis and the formation of biliary sludge. Parenteral nutrition, ileal resection/ short bowel, any abdominal surgery or periods of no oral intake predispose to these. They are more common in men. They may be asymptomatic; however, they are more often symptomatic in patients receiving parenteral support.
9. Renal stones in patients with a jejunum in continuity with a functioning colon are common. They occur partly because of increased colonic absorption of dietary oxalate. They may be prevented by a low oxalate diet, adequate hydration, calcium supplements, preventing hypomagnesaemia, acidosis (associated with low citrate) and pyridoxine deficiency. Cholestyramine and a reduced fat intake may also be beneficial.
10. Exclusive enteral nutrition (where safe and appropriate) before surgery may improve post operative complications, including infective and non-infective complications and may reduce the requirement for stoma formation in some patients.
11. Fibre adds bulk to the diet and can increase the risk of obstruction in patients with stricturing CD. Therefore, advice on a low fibre diet should be provided by a Dietitian. Due to ongoing obstruction, patients are at risk of malnutrition and will benefit from nutrition support including oral nutritional supplements, enteral and/or parenteral nutrition depending on the severity of the disease.

Suggested reading:

- Nightingale J, Mehta A, Stevens P, Carlson G and the BIFA Committee. Management of type 2 (medium term reversible) intestinal failure. Accessed online: www.bapen.org.uk/pdfs/bifa/bifa-top-tips-series-15.pdf (Oct 2022).
- Gearry RB, *et al.* (2013). Predictors for developing intestinal failure in patients with Crohn's disease. J Gastroenterol Hepatol.; 28: 801-7.
- Soop M, *et al.* (2020). Causes and prognosis of intestinal failure in Crohn's disease: An 18-year experience from a national centre. J Crohns Colitis.; 14(11): 1558-1564.
- Meade S, *et al.* (2022). A retrospective cohort study: pre-operative oral enteral nutritional optimisation for Crohn's disease in a UK tertiary IBD centre. Aliment Pharmacol Ther.; 56(4): 646-663.
- NCEPOD. Delay in Transit A review of the quality of care provided to patients aged over 16 years with a diagnosis of acute bowel obstruction. Accessed online: www.ncepod.org.uk/2020abo/ABO_report%20final.pdf (Oct 2022).