

SHORT BOWEL SYNDROME

INTESTINAL FAILURE

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Intractable diarrhoea with impaired absorption of nutrients following resection or bypass of the small intestine, ultimately leading to progressive malnutrition, is referred to as short bowel syndrome. When a patient is unable to maintain satisfactory fluid, electrolyte or nutritional homeostasis without intra venous administration of fluid, electrolytes or nutrients they are said to have intestinal failure. The mainstay of treatment for intestinal failure is parenteral nutrition. The most common causes of short bowel syndrome are resection resulting from the management of CD and its complications (which accounts for almost half of cases), mesenteric vascular thrombosis, radiation enteritis and tumours. Although features of short bowel syndrome usually appear when there is less than 200 cm of small bowel, the length and nature of the remaining intestine are also important. In general, diseases that result in short bowel syndrome tend to preferentially affect the distal small intestine, and there is some evidence that the ileum, with its tighter intercellular junctions and consequently better fluid absorptive capacity, can assume the functions of a missing jejunum, but not vice versa. While the ileocaecal valve used to be considered important with regard to preservation of absorptive function, it is more likely that this is a reflection of the associated preservation of the distal ileum and right colon than the valve itself.) - - Patients with an intact colon are relatively protected from the effects of massive small bowel resection because of the ability of the colon to absorb not only fluid and electrolytes but also a modest amount of nutrient energy. Patients with as little as 100-200 cm of jejunum anastomosed to an intact colon may therefore be able to maintain satisfactory macronutrient, fluid and electrolyte status, although they will, of course, be at risk of fat-soluble and B12 vitamin deficiencies and will also generally need oral nutritional supplements of trace elements, vitamins and minerals. Some (but not all) patients with 50-100 cm of small intestine and an intact colon will have intestinal failure, as will almost all patients with 50 cm or less of jejunum anastomosed to an intact colon. In contrast, most patients with less than 200 cm and virtually all with less than 100 cm of small intestine ending in a stoma will have intestinal failure and will require long-term parenteral nutrition. Medical management of patients with short bowel syndrome relies on the use of antidiarrhoeal agents (loperamide and codeine phosphate), drugs to reduce diarrhoea related to bile-salt malabsorption (cholestyramine), drugs to reduce the increased gastric acid secretion resulting from the loss of the small bowel 'brake' on gastric acid production (proton pump inhibitors) and enteral and parenteral vitamin and trace element supplements. Although there has also been interest in the use of drugs to promote intestinal adaptation, such as growth hormone, glutamine and, most recently, glucagon-like peptide 2 agonists, the mainstay of treatment for short bowel syndrome remains home parenteral nutrition (HPN). The development of this treatment in the late 1960s enabled the majority of patients with short bowel syndrome to enjoy a reasonably good quality of life, with long-term survival related

principally to the underlying disease. HPN is, however, expensive and demanding and patients are at risk from catheter-related complications (notably catheter-related sepsis and occlusion), as well as metabolic complications (fibrotic liver disease, gallstones, metabolic bone disease and kidney stones). Surgical procedures designed to improve the surface area or reduce the speed of transit of the remaining small intestine (and thus improve absorptive capacity) have shown some promise in children, but their place in managing adults with

Figure 74.10 Computed tomography (CT) scan in a patient with a complex enterocutaneous fistula and an intra-abdominal abscess being drained with a CT-guided catheter.

In some patients, the loss of venous access resulting from the complications of long-term intravenous feeding or the development of progressive liver dysfunction may represent indications for small bowel transplantation. The results of small bowel transplantation have progressively improved and 5-year patient survival now exceeds 80% in some centres (see Chapter 91). Bland KI, Sarr MG, Büchler MW et al. (eds.) *Surgery of the small bowel. Handbooks in General Surgery* . London: Springer-Verlag, 2011. Keighley MRB, Williams NS. *Keighley & Williams' surgery of the anus rectum and colon*, 4th edn. Boca Raton, FL: CRC Press, 2018. Slade DAJ, Carlson GL. Takedown of enterocutaneous fistula and complex abdominal wall reconstruction. *Surg Clin North Am* 2013; 93 : 1163–83. Soop M, Carlson GL. Intestinal failure: In: Herold A, Leher P-A, Matzel KE, O'Connell PR (eds). *European manual of medicine: coloproctology* , 2nd edn. Berlin: Springer, 2017.

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