Technical innovations

Double-tube enterostomy for temporary small-bowel decompression

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Abstract. Gangrene and severe peritonitis may render primary anastomosis following small-bowel resection inadvisable. To circumvent problems associated with conventional enterostomas, a double-tube enterostomy was employed in four children. Following resection, a large de Pezzer catheter was introduced in the proximal bowel end, which was closed with purse-string sutures. The catheter (but not the bowel) was brought out through a separate stab incision. The distal end was handled in the same fashion, using a smaller tube. The tubes were employed for an average of 21 days, until an enteroenterostomy was considered safe.

Key words: Small-bowel decompression — Small-bowel enterostomy — Tube enterostomy — Peritonitis

Materials and methods

There were four patients during a 7-year span.

Case 1. A 14-year-old female with myelodysplasia and urinary diversion developed adhesive bowel obstruction, which went undetected for several days. At celiotomy, a loop of ileum had perforated and she had extensive peritonitis. Twenty centimeters of ileum were resected. Since an ileal loop already existed, we wished to avoid the placement of additional stomas. A 30 Fr de Pezzer catheter was placed in the proximal dilated bowel and a 22 Fr catheter distally. The tubes decompressed the bowel for 16 days, at which time she underwent reoperation, removal of the catheters, followed by an end-to-end enteroenterostomy.

Case 2. A 13-year-old male had multiple complications following a perforated appendix. Adhesive bowel obstruction led to loss of 50 cm of proximal jejunum, very close to the ligament of Treitz (Fig. 1). Due to several intra-abdominal abscesses and severe malnutrition, primary anastomosis was not possible. A 30 Fr de Pezzer was placed in the proximal segment, practically at the level of the ligament of Treitz. A 26 Fr catheter was inserted distally (Fig. 2). The tubes remained in place 24 days (Fig. 3). After resolution of the intra-abdominal infection, receliotomy, tube removal and enteroenterostomy were performed.

Case 3. A 15-year-old male lost 30 cm of ileum secondary to adhesive bowel obstruction and peritonitis. He was managed in the same manner as the previous patient (case 2); the tubes were left for 23 days.

Case 4. A 3.5-year-old boy with myelodysplasia and hydrocephalus developed a shunt infection. Following incomplete removal of his ventriculoperitoneal shunt, he developed bowel obstruction. At celiotomy, the intra-abdominal portion of the shunt produced a tight knot around several loops of ileum. Fifty centimeters of bowel were lost. Extensive peritonitis precluded primary anastomosis. A 26 Fr de Pezzer was placed proximally and a 16 Fr distally (Fig. 4). Delayed primary reanastomosis was accomplished 21 days later. The shunt was replaced in the venous system 1 week thereafter.

In an additional patient (11 years old), a catheter was placed in the distal bowel only following ileal resection for perforated Crohn's disease. A conventional stoma was placed proximally because formed stools and a longer interval were anticipated before reanastomosis.

Introduction

Small-bowel resections can usually be followed by primary enterenterostomies. However, bowel anastomosis may be undesirable or impossible in the presence of severe peritonitis, gangrene, massive distention, or questionable gut viability. The conventional approach to this problem is a single or double enterostomy, followed by delayed reestablishment of bowel continuity. Since standard enterostomies, particularly very proximal ones, have several disadvantages [1-4] and since decompression is usually needed for only a few weeks, an alternative method using two large de Pezzer catheters was employed.
Results
Since the level of resection was fairly proximal in the four patients, bowel contents were liquid and tube blockage did not occur. In two of the patients, proximal secretions were collected, mixed with elemental diet, and reinfused distally (Fig. 3). The average duration of tube decompression was 21 days. Although the patients were minimally restricted by the tubes, the absence of stomal bags and the ease of fluid collection facilitated nursing care and was viewed positively by the older children.

At reoperation, the bowel ends were readily identified, easily approximated and without marked discrepancy in diameter. Two loops exhibited mild irritation and some granulating tissue. Only a few centimeters of bowel were discarded