Catastrophic enterocutaneous fistulae

The role of home hyperalimentation

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Home hyperalimentation in the treatment of patients with an inadequately functioning gastrointestinal tract has been reported by several authors.[1-8] The indications for its use include massive bowel resections for vascular compromise, bowel obstruction, inflammatory disease, tumor, and volvulus. Home hyperalimentation has been also used for functional short bowel syndrome caused by inflammatory bowel disease or radiation enteritis.

We report three cases in which home hyperalimentation has been employed as a temporary but prolonged measure in the management of catastrophic high output enterocutaneous fistulae.

Case reports

Case 1. A 16-year-old boy had a history of colitis since the age of 4½ years. This had been treated intermittently with salicylazosulfapyridine (Azulfidine) and steroids and became more severe in 1973; the colitis gradually worsened. In December 1975 the patient was admitted to a local hospital with toxic megacolon and a free perforation at the splenic flexure. On December 20, 1975, a proctocolectomy and ileostomy were performed. Postoperatively a high fever developed and at reexploration on January 5, 1976, multiple intraabdominal abscesses were found, including left subphrenic and left subhepatic abscesses. These were drained. Shortly after operation, al-

most total drainage of his fecal stream through the perineal wound occurred, together with persistent purulent drainage from the upper abdominal drain sites. His general condition deteriorated and he was transferred to The Cleveland Clinic Foundation on January 19, 1976.

On admission to the Cleveland Clinic Hospital, he was pale, thin, and cachectic; he weighed 53.5 kg (118 pounds); normal weight, 81.7 kg (180 pounds). He was jaundiced and in septic shock with signs of persistent intraabdominal sepsis and multiple enterocutaneous and enteroperineal fistulae. Treatment was initiated with antibiotics and intravenous fluids and careful collection of fistula fluid. Hyperalimentation was given at the rate of 3000 to 4000 calories/day. After 3 weeks his general condition had improved considerably despite a loss of 1500 to 2000 ml/day from the fistulae. On February 27, 1979, an operation was performed revealing a diffuse, severe, and obliterative intraperitoneal inflammatory process with multiple enterocutaneous fistulae involving the small bowel as far proximal as the upper jejunum. These were resected and a high-loop jejunostomy approximately 15 cm (6 inches) from the ligament of Treitz was constructed in the knowledge that nutritional support would be required for several months. He continued to have a stormy, febrile course, and empyema developed on the left side; the fluid was drained through the chest on March 25, 1976.

Roentgenographic studies distal to the jejunostomy revealed at least one site that failed to heal and fistulae to the abdominal skin and perineum. Because of the obliterative peritonitis, it was considered hazardous to attempt surgical correction of these fistulae for at least 6 months and a program of home hyperalimentation was advised. On July 8, 1976, a Broviac catheter was inserted.[9] After a training program to familiarize him with home hyperalimentation techniques,[10] he was discharged on September 7, 1976. At that point he had had hyperalimentation for 8 months.

He was readmitted for 3 weeks in October 1976 for local drainage of a pelvic abscess and again briefly in December 1976 for local drainage of a left lower quadrant abscess, but was otherwise managed on home hyperalimentation for 5 months until early in March 1977. By this time he had gained 15.8 kg (35 pounds) to 68.9 kg (153 pounds). On February 10, 1977, he underwent laparotomy with resection of several enterocutaneous fistulae and exteriorization of the bowel ends as multiple mucous fistulae. He returned home receiving hyperalimentation in April 1977 when his weight was 75.8 kg (167 pounds). Over the ensuing 8 months he was admitted four times for resection of further enterocutaneous fistulae and then to close stepwise the mucous fistulae, thereby gradually bringing the remaining small bowel back into circuit. By February 1978 all fistulae were closed. He has remained well and is now working and attending college.

Case 2. A 43-year-old woman was admitted to another hospital in 1972, with a 2-year history of diarrhea and weight loss of 18.1 kg (40 pounds). A laparotomy performed at that time revealed Crohn's disease of the jejunum and ileum, but no resection was done. She was treated with steroids and salicylazosulfapyridine until December 1974 when she underwent laparotomy at the Cleveland Clinic Hospital; the terminal ileum and cecum were resected. In July 1975 a pelvic abscess was drained. She was relatively well for several months, but was readmitted in December 1976 with abdominal pain, diarrhea, and a weight loss of 11.3 kg (25 pounds), down to a weight of 43.1 kg (95 pounds). An upper gastrointestinal x-ray series showed recurrent disease in the distal ileum.

On proctosigmoidoscopy there was mild disease in the rectum. She was treated with steroids and improved, but 3 months later she again had a partial bowel obstruction. Hyperalimentation and fasting resulted in dramatic improvement.

She was well for 5 months, but was readmitted in July 1977 with further weight loss, to 36.3 kg (80 pounds), diarrhea, and abdominal pain. She was dehydrated and malnourished. She was treated with increased

doses of steroids and with hyperalimentation via a Broviac catheter, initially in hospital and later at home.

Her weight increased to 44.2 kg (97½ pounds), but in December 1977 an upper gastrointestinal x-ray series and upper gastrointestinal endoscopy revealed Crohn's disease in the stomach and duodenum and in the terminal 60 cm (2 feet) of ileum. The doses of steroids and salicylazosulfapyridine were increased, but in January 1978 signs and symptoms of an enterovesical fistula developed. At laparotomy on January 22, 1978, a pelvic abscess was found and drained, but no enterovesical fistula was demonstrated. Nine days postoperatively an enterocutaneous fistula developed. It was decided to allow the intraabdominal inflammation to settle down before resection of the fistula was attempted. The Broviac catheter was, therefore, retained and she was discharged February 9, 1978, and hyperalimentation was prescribed.

Two months later, the enterocutaneous fistula and diseased terminal ileum and proximal colon were resected with creation of an end-to-end anastomosis of ileum to the ascending colon and a proximal loop ileostomy. Three weeks postoperatively, she was again sent home and received hyperalimentation to allow time for the bowel to heal. She was readmitted briefly in July 1978 for closure of the loop ileostomy.

Home hyperalimentation was continued until December 1978, after a total period of 12 months, 8 months of which were primarily for management of the enterocutaneous fistula.

Case 3. A 63-year-old man underwent sigmoid colectomy for a Dukes' A carcinoma at another hospital in March 1978. This was followed by an anastomotic leak for which a transverse colostomy was constructed. Closure 4 months later resulted in stricturing with a large bowel obstruction and an enterocutaneous fistula. This fistula was resected on August 21, 1978, and a colotomy at the site of the colostomy closure was made to assess the stricture. The stricture was not resected, because it was considered to be of adequate size. He had a stormy, febrile postoperative course. On September 16, 1978, a further large bowel obstruction developed. A laparotomy to resect the strictured transverse colon was attempted, but an obliterated peritoneal cavity was encountered and three or four enterotomies were inadvertently made. A side-to-side colocolic anastomosis was constructed to bypass the stricture. Two days postoperatively, a small bowel fistula developed. This was treated for 2 months with hyperalimentation via a Broviac catheter, but the fistula did not close and the patient was transferred to The Cleveland Clinic Foundation on December 4, 1978.

Gastrografin studies confirmed the presence of enterocutaneous fistulae. On December 7, 1978, laparotomy was performed. There was a dense, obliterative peritonitis. After tedious dissection, during which enterotomies were made, it was possible to resect the enterocutaneous fistulae with enteroenteric anastomoses, resect the colonic stricture with colocolic anastomosis, and create a loop-end jejunostomy above the repaired small bowel. The jejunostomy was placed 90 cm (3 feet) from the ligament of Treitz and the distal loop of jejunum was brought out as mucous fistula. Hyperalimentation was continued postoperatively.

Roentgenographic studies showed integrity of all bowel anastomoses, and after 6 weeks an attempt was made to close the jejunostomy. This was prevented by the dense, obliterative peritonitis, and the procedure was abandoned. The patient then was given a course of instruction in home hyperalimentation and was discharged.

At outpatient follow-up, he is doing well. The jejunostomy was closed in July 1979, after 6 months of hyperalimentation, 4 months of this at home.

Discussion

All patients who undergo operation for enterocutaneous fistulae have adhesions and persistent sepsis in varying degrees. For many patients, the surgeon deems a resection and anastomosis to be the procedure of choice. There is, how-

ever, a group of patients in whom the surgeon may recognize that the conditions at reoperation are even less favorable than at the original operation, and that this augurs poorly for extensive or heroic surgery especially with the construction of new anastomoses. Factors known to be associated with a high failure rate include associated sepsis, severe peritoneal reaction, malnutrition, multiple fistulae, underlying radiation disease, jejunal fistulae, small bowel obstruction and gangrenous bowel segments.[11] In these situations, the surgeon is aware that proximal diversion or even exteriorization of the fistula is desirable, but hesitates to do this when a short bowel syndrome will result. The surgeon realizes that closure of the diverting stoma may not be possible for many weeks or months and is reluctant to put these patients through a prolonged period of hospitalization. Fortunately, most patients with enterocutaneous fistulae are not in this category, but for those few patients with catastrophic fistulae, a home hyperalimentation program may realize the goal of safety with diversion, and also achieve reasonably early discharge from the hospital. The final stage of surgery may then be done electively and is certainly easier and therefore safer to perform. Despite the relatively high cost of a home hyperalimentation program, it is considerably less expensive than prolonged hospitalization. The patient is permitted to resume a more normal life during the waiting period.

Summary

Home hyperalimentation, with staged operation and temporary proximal diversion, was used in the management of catastrophic enterocutaneous fistulae. The type of patient in whom this treatment may be considered and the benefits of this form of management are discussed.

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