Management of a Subcutaneous Colostomy Perforation

The Role of a New Synthetic Skin

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Colostomy perforation is an infrequent but often disastrous and lethal complication. In the majority of patients, the traumatic perforation occurs during irrigation through the colostomy stoma. This case report reviews the clinical course of a patient with a subcutaneous colostomy perforation and the subsequent development of an extensive abscess. Aspects of the management included mobilization of the colostomy and thorough surgical debridement and drainage. In addition, the report introduces the use of the new semisynthetic biologic dressing, BioBrane®. This synthetic, semipermeable skin substitute served as a temporary dressing, provided good stability, and supported the application of a stoma appliance. [Key words: Colostomy perforation; BioBrane®]

COLOSTOMY PERFORATION is an infrequent, yet potentially fatal accident occurring most commonly during catheter irrigation. Patients harboring a peristomal hernia are at greater risk for perforation. To avoid disastrous complications, the perforation requires prompt recognition and aggressive surgical management.

This report outlines the course of such an accident and its therapy. The use of a new synthetic skin for the coverage of a large, abdominal, denuded area will be described.

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Report of a Case

A 51-year-old, moderately obese, white woman presented to the Brooke Army Medical Center Emergency Room with a two-week history of progressive swelling, tenderness, and redness of the anterior abdominal wall. Symptoms began shortly after self-irrigation of the loop sigmoid colostomy that was established in 1960 for severe proctitis, secondary to pelvic radiation for Stage IV cervical cancer. The patient also suffered from chronic radiation cystitis and urinary incontinence and had undergone nephrectomy in 1978.

On admission, the oral temperature was 100.7°F with pulse rate of 120 per minute. Marked tenderness, redness, and swelling over the entire anterior abdominal wall, with extensive fluctuation and crepitus were found on examination. The colostomy was indurated and edematous. A white blood cell count showed marked leukocytosis. Abdominal roentgenograms showed no intraperitoneal free air, but multiple air pockets were present subcutaneously.

Following the administration of intravenous fluids and antibiotics, incision, drainage, and debridement of a large, multiloculated, subcutaneous abscess cavity, extending almost entirely across the anterior abdominal wall (Fig. 1), were performed. The site of colonic perforation was identified and found superficial to the external oblique fascia. It was about 2 cm in diameter, with ragged, edematous edges. A peristomal fascial defect was found adjacent to the stoma; adhesions protected the peritoneal cavity from the superficial parietal infection. The loop colostomy was debrided and divided; the distal segment was stapled shut and allowed to retract below the fascial level. The proximal limb then extended about one inch above the external oblique fascia.

Immediately following surgery, the patient required continuous respiratory and hemodynamic support. Intravenous parenteral nutrition was begun and oral intake was restricted. Daily dressings and debridement in the operating room, to excise small residual areas of
necrosis, soon resulted in total loss of skin and subcutaneous tissue over a large area (Fig. 2). By the fourth day of hospitalization, all necrotic material had been removed. During that time, the small amount of fecal matter that was extruded from the stoma was collected in heavy gauze dressings that were changed frequently. On the fifth postoperative day, sheets of BioBrane® (Woodroof Manufacturing Company, Santa Ana, California) were used to cover the denuded areas, including the pericolostomy area (Fig. 3). The synthetic skin adhered well; its external surface supported a conventional colostomy appliance without tearing, and the bond between the appliance and the synthetic skin was comparable to its bond with normal skin (Fig. 4).

The synthetic skin remained in place for 13 days when, in the operating room, the BioBrane was gently and easily detached, revealing a good bed of granulation tissue (Fig. 5). The abdominal wall was then autografted in segments, the area surrounding the colostomy being the last to be covered (Fig. 6). The patient was fully recovered and left the hospital on the 32nd day.

**Discussion**

Accidental perforation of a colostomy during irrigation is a rare, but potentially life-threatening, complication.1-3 The perforation may be parietal, intraperitoneal, or intramesenteric. The use of a catheter instead of an irrigating cone, the rigidity of the irrigating tip, application of excessive pressure, or a sinuous colostomy tract, are some of the factors contributing to the possibility of colonic perforation. The characteristic symptoms following perforation of a colostomy are: abrupt onset of pain following irrigation, with minimal or no liquid or fecal return. When the perforation is intraperitoneal, signs and symptoms of peritonitis soon follow. In abdominal parietal perforations, the general symptoms may be less severe and localize early to the peristomal area. The extent of abdominal wall involvement and rate of cellulitis and abscess formation will vary widely depending on the exact site and size of the perforation. Following perforation, prompt surgical intervention, with mobilization and exteriorization of the traumatized section of colon, is mandatory. In intraperitoneal and intramesenteric injuries, the segment of bowel containing the perforation may require resection along with an adjoining piece of mesentery and the creation of a new stoma.