

Complication of the Intracolonic Bypass

Report of a Case

Leon Egozi, M.D., Joseph J. Sorrento, M.D., Robert Golub, M.D.,
Eric H. Schultz, M.D.

From the Department of Surgery, Flushing Hospital Medical Center, Flushing, New York, and Albert Einstein College of Medicine, Bronx, New York

The intracolonic bypass has been used both experimentally and clinically to avoid high-risk primary colonic anastomosis in the face of peritonitis. Experimental and clinical data have established the Coloshield® as safe, with few clinical complications reported. This is a review of the literature and a case report of a complication of an intracolonic bypass that was found to have eroded through the colon in the early postoperative period. [Key words: Intracolonic bypass; Coloshield®]

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Great concern has been expressed over the years about performing a colonic anastomosis in the face of peritoneal contamination. There have been reports of significant morbidity and mortality with primary anastomosis, especially in the face of such conditions as acute diverticulitis with peritonitis.¹⁻³ Therefore, temporary colostomies have been used to avoid anastomotic complications in these high-risk situations.

Unfortunately, this approach requires a second or third procedure to close the colostomy, a procedure with a significant morbidity and mortality.^{4, 5} A method used to avoid both the high-risk anastomosis and the colostomy has been the intracolonic bypass.⁶⁻¹⁰

Experimental and clinical data have established the Coloshield® as safe, with few complications reported. We report a case of a complication of an intracolonic bypass that was found to have eroded through the colon in the early postoperative period.

Address reprint requests to Dr. Golub: Department of Surgery, Flushing Hospital Medical Center, 45th Avenue & Parsons Boulevard, Flushing, New York 11355.

REPORT OF A CASE

A 63-year-old woman with a previous history of myocardial infarction, status postcoronary angioplasty, and a history of diverticular disease presented with complaints of pneumaturia and dysuria.

Cystoscopy revealed inflammation at the left posterior aspect of the bladder but failed to reveal a colovesical fistula. Computed tomography scan failed to show any evidence of air in the bladder or a colovesical fistula but did reveal extensive diverticular disease.

The patient underwent exploratory laparotomy, where an enterocolonic fistula with a moderate amount of inflammation and a partial obstruction of the sigmoid colon was found but no definite colovesical fistula was identified.

Owing to the partial obstruction and the inflamed condition of the bowel, it was noted that the bowel preparation was incomplete; therefore, Hartmann's procedure was considered. Because of the patient's considerable cardiac history, a two-stage procedure was considered undesirable; thus, we opted to place a Coloshield® and perform a primary anastomosis. After everting two inches of proximal colon, the Coloshield® was sutured to the submucosal layer using a continuous suture of 2-0 polyglycolic acid to form a waterproof anastomosis. The proximal colon was then unfolded, and the colonic anastomosis was made using a single layer of interrupted polyglycolic acid sutures.

The patient did well immediately postoperatively; however, on postoperative day eight, she had a sudden onset of severe lower abdominal pain

and a white blood cell count of 22,000, and abdominal x-rays revealed pneumoperitoneum.

Upon re-exploration, the patient was found to have colonic necrosis at the site of the Coloshield® insertion, proximal to the colonic anastomosis. This segment was resected, and Hartmann's procedure was performed. The patient did well postoperatively and was discharged on postoperative day 26.

DISCUSSION

Colostomies have been used since the 18th century to avoid the complications of colonic surgery.¹¹ In 1907, Mayo *et al.*¹² described the transverse loop colostomy for the treatment of colonic obstruction. Smithwick¹³ proposed the three-stage approach for the treatment of perforated diverticulitis in 1942.

Primary anastomosis, when performed electively, is the most desirable choice; however, it is not recommended in the face of peritonitis because of the fear of anastomotic leakage.

Hartmann's procedure, first described in the early 20th century, has therefore become the most popular procedure for the treatment of complicated diverticulitis.¹⁴⁻¹⁶ This procedure requires a second stage to close the colostomy, with morbidity rates that range from 10 to 50 percent.^{4,5}

The concept of intraluminal stents has existed for several hundred years.¹⁷ The intracolonic bypass has been used to avoid the complications of construction and closure of colostomy as well as those of anastomotic leaks.⁶

Ravo and Ger,^{6,10} in their 1984 animal experiments, described the use of the intracolonic bypass and reported no leaks from 13 anastomoses as evaluated by barium studies as well as laparotomy. Ger and Ravo⁷ continued this study, subsequently reporting on 32 mongrel dogs, which received esophageal, gastric, and colonic anastomoses, again reporting no leaks from any of the colonic anastomoses. Clinically they reported the intracolonic bypass in 29 patients with no significant leaks or deaths.^{8,9}

Although few clinical complications have been reported, a complication similar to ours was reported by Ross.¹⁸ In his experimental study of 78 rats, there were five deaths where colonic necrosis was found between the anastomosis and the site of the intraluminal latex tube fixation.¹⁸ It was hypothesized that the rigid latex tube or the contin-

uous sutures may have been the cause of the colonic ischemia.¹⁸

The described method of suturing the Coloshield® is to use submucosal interlocking continuous sutures of 2-0 polyglycolic acid that will secure the tube for 14 days with a waterproof anastomosis.⁶ Although we used continuous submucosal 2-0 polyglycolic acid sutures, we feel that the colonic necrosis was due to the use of a Coloshield® with a rigid tube. At the time of surgery, the Coloshield® used had a rigid oval edge with a snug fit; thus, perhaps postoperative edema compromised the blood supply to the bowel wall, causing the rigid edge to erode through the colon.

The manufacturer has since produced a softer, less rigid tube, which will hopefully prevent any similar-type complications. We have used the Coloshield® on various occasions in other patients with good results. We agree with Ravo and Ger that it is an advancement in colonic surgery; however, one needs to be aware of this potentially catastrophic complication.

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ERRATUM

With regard to the article by Hachigian *et al.* appearing in the December 1992 issue of this Journal (vol. 35, pp. 1123-9), two errors were pointed out by the readership.

In Figure 3, the arrow incorrectly points to the urinary bladder. The abscess is correctly identified on the right (R) side of the bladder within the pelvis, anterior to the rectum; this is where the arrow should have pointed.

Figure 5 was inadvertently placed sideways because of the position of the legend on the back of the original illustration and the fact that the galley proofs were not returned to the publisher. The figure should be rotated 90 degrees clockwise.

The authors apologize to the readership for these errors.