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ADVANCES IN SURGERY

Intestinal Stomas

Indications, Management, and Complications

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• Complications

Key Points
- An ostomy may be temporary or permanent.
- Prudent utilization of an ostomy at time of surgery may prevent adverse sequelae in the acute or elective setting.
- Appropriate marking of an ostomy site by enterostomal therapy is crucial for construction of a well-functioning ostomy.
- Appropriate use of ostomy appliances and management of complications by skilled enterostomal therapists maximize patient satisfaction and QoL.

INTRODUCTION

The word ostomy, derived from the Latin word *ostium*, means mouth or opening. Surgical creation and subsequent management of the patient with an ostomy encompass an important aspect of the colorectal surgeon's workload. The first recorded surgical ileostomy was created in 1879 by a German surgeon, Baum, to divert an obstructing carcinoma of the right colon. Originally, the ileostomy was created flush with the skin, with severe excoriation of the peristomal skin inevitable. This strategy, allied to the lack of good available pouching systems, resulted in the failure of the ileostomy to gain popularity. As a result of high morbidity (and mortality), an ileostomy was created as a last resort for severe colitis or mechanical obstruction. In 1912, John Y. Brown, a St Louis surgeon, reported a major advance in ileostomy management with the creation of a spouted ostomy; the spouted ileostomy was created from several centimeters of terminal ileum delivered through the lower aspect of a midline laparotomy incision, which was held in place by a surgical clamp. The stoma emptied through a catheter, which was sutured

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in place and subsequently removed. The distal portion of the ostomy sloughed off when ischemic and the remaining ileostomy self-matured. The ensuing mucosal eversion produced severe associated peristomal skin inflammation and recurrent partial small bowel obstruction but did produce a more pouchable ileostomy [1,2]. In 1942, George Crile of the Cleveland Clinic described the mucosal grafted ileostomy to circumvent ileostomy dysfunction. The entity of ileostomy dysfunction was described by Crile and Rupert Turnbull as an ileal serositis, which resulted from the caustic nature of the small bowel effluent coming into contact with the serosal surface of the ileostomy. As a result, serosal edema led to ileostomy obstruction. The mucosal grafted ileostomy involved stripping the serosa and muscle from the terminal 3 to 4 cm of the ileostomy, inverting and suturing the redundant mucosa to the skin edges. Unaware of these advances in ileostomy creation, Dr Bryan Brooke of the University of Birmingham, England, described a spouted ileostomy by full-thickness eversion of the protruding distal ileum. This description, accompanied by a single illustration, revolutionized ileostomy surgery and remains the gold-standard, budded ileostomy that remains in vogue in colorectal surgery [3].

INDICATIONS FOR ILEOSTOMY CREATION

Typically, an ileostomy is created to protect a distal anastomosis, relieve a distal obstruction, or to divert stool from pelvic or perianal/perineal sepsis (Table 1). An ileostomy may be temporary or permanent. A temporary ileostomy is created to divert the fecal stream from a distal anastomosis at high risk of anastomotic leak (extraperitoneal colorectal or coloanal anastomosis postneoadjuvant chemoradiotherapy), severe perianal sepsis in complex Crohn disease or after traumatic rectal injury. A permanent ileostomy is used if a restorative procedure is not possible (eg, total proctocolectomy for Crohn disease or a patient with familial adenomatous polyposis [FAP] and low rectal cancer not suitable for a sphincter-preserving procedure). It is helpful when patients

Table 1
Indications for ileostomy

Defunctioning loop ileostomy	End or loop-end ileostomy
Low rectal/coloanal anastomosis	Total abdominal colectomy for medically refractory mucosal ulcerative colitis
Treatment of anastomotic leak	Familial adenomatous polyposis/hereditary nonpolyposis colon cancer with low rectal cancer total proctocolectomy for Crohn proctocolitis
Relieve distal obstruction–diverticular/malignant/radiation stricture	
Severe Crohn perianal sepsis	
Rectal trauma/sphincter injury	
Fournier gangrene	
Perineal necrotizing fasciitis	
Complex rectovaginal/rectourethral or ileal pouch-vaginal fistulae	
Fecal incontinence	
Fulminant toxic colitis	