



Endoscopic Tutoring of a Retracted Ileostomy in a Hostile Abdomen Using a Partially Covered Self-Expandable Metallic Stent (SEMS): A Novel Multimodal Approach

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Abstract

Background: Stomal retraction is a formidable complication of intestinal ostomies, occurring in up to 17% of cases, and often necessitating complex surgical revision. However, in patients presenting with a "hostile" or "frozen" abdomen, early reintervention is associated with a prohibitive risk of iatrogenic visceral injury and bowel perforation.

Case report: We report the novel use of a partially covered self-expandable metallic stent (SEMS) for the tutoring of a severely retracted ileostomy in a patient with a hostile abdomen and concomitant peristomal infection. This approach was chosen due to the extreme surgical risk and the patient's explicit refusal of further invasive procedures.

Management and Outcome: A partially covered SEMS was deployed to maintain the patency of the

retracted stomal tract and guide fecal output directly into the collection pouch. This was part of a multimodal strategy including lateral drainage and targeted antibiotic therapy. The infection resolved, stomal function was restored, and the patient was successfully stabilized for outpatient management.

Conclusion: The use of SEMS in the context of retracted ostomies represents a significant therapeutic innovation. It offers a viable, minimally invasive alternative for patients with complex abdominal conditions where conventional surgery is contraindicated, effectively bridging the gap until definitive reconstruction can be safely performed.

Keywords: Retracted ileostomy; Hostile abdomen; Frozen abdomen; Self-expandable metallic stent (SEMS); Stomal tutoring; Minimally invasive surgical procedure; Ostomy complications

Introduction

The surgical creation of an intestinal stoma (whether a jejunostomy, ileostomy, or colostomy) is a common procedure for managing colorectal cancer, inflammatory bowel disease, and abdominal trauma [1,2]. Despite its clinical necessity, stomal construction is associated with a broad range of complications, with reported incidence rates between 20% and 70% [3,4]. Among these, stomal retraction (defined as a stoma receding 0.5 cm or more below the skin level) is particularly challenging, occurring in 3% to 17% of cases [5,6]. Retraction often leads to chronic appliance leakage, severe peristomal dermatitis, infection, and significant psychological distress [7]. While minor cases may be managed conservatively with convex devices and belts, severe retraction traditionally mandates surgical revision [8]. However, in the setting of a "hostile abdomen," characterized by dense fibrinotic adhesions, loss of anatomical planes, and edematous bowel loops, early surgical entry is often impossible, necessitating innovative alternative strategies [9].

Case Presentation

The patient presented with a severely retracted ileostomy within six weeks of a complex primary abdominal procedure. Physical examination revealed that the stoma had receded well below the skin level,

leading to persistent fecal soilage of subcutaneous tissues and a localized peristomal infection. A second laparotomy in an attempt to reconstruct the ostomy identified a "hostile" or "frozen" abdomen, a condition resulting from an intense inflammatory response that produces dense adhesions and edematous bowel loops. It was deemed exceptionally high-risk due to the severe likelihood of iatrogenic visceral injury [10]. Consequently, and given that the patient explicitly refused a new re-laparotomy, a multimodal, minimally invasive plan was devised using a partially covered Self-Expandable Metallic Stent (SEMS) to tutor the retracted stomal tract, complemented by lateral drainage of the peristomal abscess and intravenous antibiotics. Following placement of the partially covered SEMS, full expansion of the stent was achieved, effectively re-establishing a patent conduit from the bowel lumen to the exterior skin level. Fecal drainage was successfully directed into the ostomy pouching system without further subcutaneous contamination. Local infection resolved, skin healing progressed, and stomal function was fully restored, allowing clinical stabilization and safe outpatient follow-up (Figure 1 and 2).



Figure 1: Deployment of partially covered self-expandable metallic stent (SEMS) tutoring the retracted ileostomal tract.



Figure 2: Post-procedural clinical view demonstrating restored stomal patency and successful placement of ostomy appliance.

Discussion

Etiology and Risk Factors of Stomal Retraction

Stomal retraction is multifactorial. Key risk factors identified in the literature include a high Body Mass Index (BMI > 25 kg/m²), which is associated with a thickened, fatty mesentery that increases tension on the exteriorized bowel segment. Other contributing factors include malnutrition, the use of corticosteroids, and technical issues such as inadequate mobilization of the proximal bowel or an excessively small abdominal wall aperture [11]. In the early postoperative period, stomal necrosis can also lead to secondary retraction as compromised tissue recedes.

The Challenge of the Hostile and Frozen Abdomen

The "hostile abdomen" describes a spectrum of surgical complexity where the abdominal cavity is essentially "frozen" by massive adhesions, infection, or compromised wall integrity [12]. Current consensus suggests that definitive reconstruction in such cases should be deferred for 6 to 12 months. This waiting period allows for the maturation of adhesions and the restoration of the patient's physiological and nutritional status, significantly reducing the risks associated with dissection.

Innovation: SEMS for Stomal Tutoring

Self-expandable metallic stents (SEMS) have traditionally served as a "bridge to surgery" in malignant colonic obstructions, with technical success rates exceeding 90% [13,14]. Their application in tutoring a retracted stoma is a novel extension of this technology. The choice of a partially covered stent is critical. Unlike fully covered stents, which have migration rates as high as 40%, partially covered SEMS feature "bare ends" that allow for tissue anchoring, significantly increasing stability

[15,16]. The stent provides a rigid scaffold that prevents the collapse of the stomal tract and facilitates the coupling of ostomy appliances, successfully guiding fecal output and resolving the underlying cause of the peristomal infection. In malignant cases, stenting also allows for a quicker initiation of adjuvant chemotherapy compared to emergency surgery.

Psychosocial and Quality of Life Considerations

The creation of a stoma is a life-altering event that profoundly impacts bodily identity and self-esteem [17]. Between 30% and 50% of patients experience significant difficulties with body image acceptance, a struggle exacerbated by complications like retraction and leakage [18]. Patients often suffer from anxiety, depression, and social isolation due to the fear of "accidents" in public [19]. Minimally invasive tutoring with SEMS not only addresses the physical complication but also aids in the patient's psychological adaptation by restoring stomal function without the morbidity of repeated surgeries [20].

Conclusion

Tutoring a retracted ileostomy with a partially covered SEMS in a hostile abdomen is an innovative and effective multimodal strategy. This approach avoids high-risk surgical re-laparotomy during the peak of the inflammatory phase while resolving local infection and restoring stomal patency. For patients who are poor surgical candidates or who refuse further invasive procedures, this technique offers a vital alternative that improves quality of life and facilitates clinical stabilization until definitive reconstruction can be safely achieved.

Declarations and Statements

Ethics Approval and Consent to Participate:

Written informed consent was obtained from the

patient for publication of this case report and any accompanying images.

Consent for Publication: The authors confirm that the patient provided written informed consent for the publication of clinical details and images.

Availability of Data and Materials: The datasets and clinical documentation supporting the conclusions of this article are included within the manuscript.

Competing Interests: The authors declare that they have no competing interests.

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