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INCISIONLESS ENERGY-ASSISTED INTRALUMINAL SLEEVE RESECTION FOR LONG-SEGMENT STOMAL PROLAPSE: A NOVEL TECHNIQUE AVOIDING EXTRALUMINAL DISSECTION

General Surgery

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ABSTRACT

Stomal prolapse is a challenging complication of long-standing colostomies and is traditionally managed using peristomal revision, stapled sleeve resection, or abdominal surgery, each associated with varying degrees of morbidity. We describe a novel, completely incisionless and purely intraluminal technique for the management of long-segment stomal prolapse using energy-assisted resection and hand-sewn colo-colic reconstruction. Under general anesthesia, the prolapsed bowel is fully exteriorized, and the outer prolapsed segment is circumferentially divided approximately 1–1.5 cm distal to the mucocutaneous junction using a bipolar energy device, providing direct intraluminal access without any skin or fascial incision. The redundant intussuscepted colon and its mesentery are excised using energy sealing, followed by a meticulous full-thickness intraluminal colo-colic anastomosis reinforced with deeper sutures. The procedure is bloodless at the operative field, avoids extraluminal dissection and fascial manipulation, and allows rapid recovery with minimal postoperative pain. This technique offers a safe and elegant alternative for selected patients with long-segment stomal prolapse and expands the spectrum of minimally invasive options for stoma revision.

KEYWORDS

Stomal prolapse; intraluminal surgery; incisionless technique; energy-assisted resection; stoma revision

INTRODUCTION

Stomal prolapse affects 2–26% of patients with long-standing colostomies and remains a challenging complication [1–3]. Traditional management options include local peristomal mucocutaneous revision, Altemeier-type perineal resection, linear stapled sleeve resection, laparoscopic enteropexy, and stoma relocation via laparotomy.

Each technique has limitations related to peristomal tissue trauma, bowel wall characteristics, or the need for abdominal re-entry.

Altemeier-type resection, adapted for stomal prolapse, begins with a **circumferential mucocutaneous incision**, followed by **extraluminal dissection** down to the fascial trephine. The prolapsed colon is mobilized externally, the mesentery ligated manually, and a hand-sewn colo-cutaneous anastomosis is created at the skin [4,5]. While effective, this method is **not minimally invasive**, causes peristomal tissue trauma, and is associated with edema, bleeding, and postoperative pain.

Stapled sleeve resections have been described as quicker alternatives, but their success depends on the compressibility of the prolapsed bowel wall. Long-standing prolapsed colon is often thickened, edematous, hypertrophic, or fibrotic — making safe stapler compression and firing difficult or impossible [6–8].

More invasive strategies, such as laparotomy with stoma relocation or laparoscopic fixation, carry higher morbidity and are not suitable for all patients.[9-11]

This manuscript describes a novel method designed to be the least morbid option possible: **a completely intraluminal, incisionless, energy-assisted sleeve resection**, avoiding all extraluminal dissection and fascial manipulation while providing excellent exposure for a secure colo-colic anastomosis.

How I Do It

The procedure was performed under **general anesthesia**. The prolapsed segment (approximately 12 inches) was gently exteriorized to its maximal extent (figure 1).

Intraluminal Access Without External Incision:

No mucocutaneous incision was made. Using a bipolar energy sealing device, the outer prolapsed bowel was circumferentially divided approximately 1–1.5 cm distal to the mucocutaneous junction (figure 2). This critical step established a purely intraluminal operative plane, avoided any extraluminal dissection, and preserved the integrity of the fascial trephine. Energy-assisted division allowed a bloodless and clean transection of the bowel wall, providing controlled access to the intussuscepted segment without disturbance of peristomal tissues (figure 3).

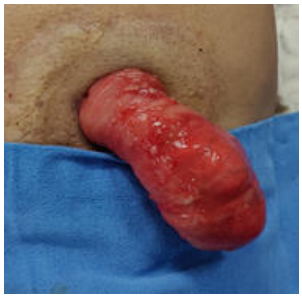

Figure 1 - Preoperative long-segment colostomy prolapse.

Figure 2 - Intraluminal circumferential division of the outer prolapsed colon using bipolar energy.

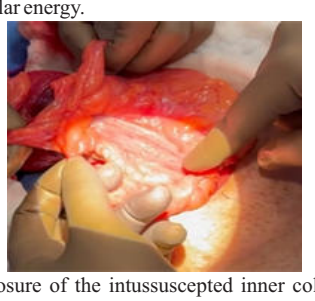

Figure 3 - Exposure of the intussuscepted inner colon through the natural stoma lumen.

Excision And Reconstruction:
The outer bowel sleeve was then gently everted. The redundant colon and its mesentery were divided using the energy device (figure 4). A full-thickness, hand-sewn interrupted colo-colic anastomosis was created between the proximal colon and the preserved 1–2 cm distal cuff (figure 5). Deeper, wider full-thickness bites were added circumferentially to strengthen the anastomosis given the energy-sealed cut edges (figure 6).

Importantly, **at no point was the skin incised, fascia exposed, or extraluminal plane entered**. The entire operation was confined to the inherent lumen of the prolapsed stoma.

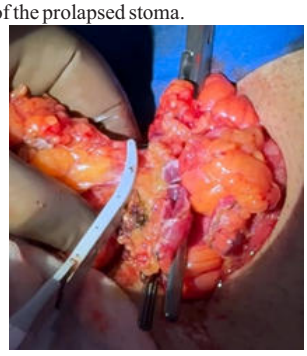

Figure 4 - Energy-assisted excision of redundant colon and mesentery.

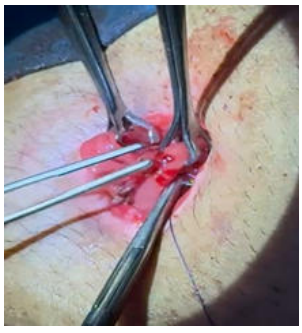

Figure 5 - Full-thickness Hand-sewn Intraluminal Colo-colic Anastomosis.

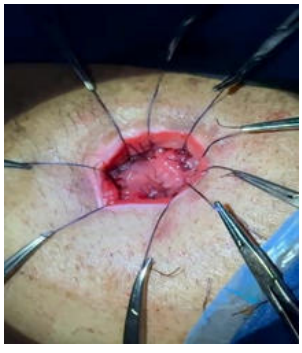

Figure 6 - Circumferential reinforcement of the anastomosis with deep full-thickness sutures.

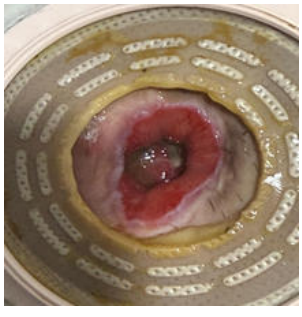

Figure 7 - Postoperative appearance showing a reduced, well-perfused, healed stoma 3 weeks after surgery.

Supplementary Video:
A step-by-step demonstration of the operative technique and intraluminal exposure is available as **Supplementary Video 1**: https://youtu.be/P4l9ZrSCW8E?si=JaQzkAuHGayH-982

Postoperative Course
The patient was managed with bowel rest and temporary parenteral nutrition. Daily inspection revealed a healthy, well-perfused anastomosis (figure 7). Stool output resumed within days. There was no ischemia, leak, or bleeding, and pain was minimal due to the absence of any skin incision.

Written informed consent was obtained from the patient for publication of this case and the associated anonymized clinical images.

DISCUSSION

Difference From Traditional Extraluminal Techniques
Although both Altemeier-type perineal resection and the present method achieve removal of redundant bowel with colo-colic reconstruction, the **surgical planes** are fundamentally different. Extraluminal dissection around the fascial trephine has consistently been associated with bleeding, edema, and peristomal tissue trauma [4,12,14].

In Altemeier-type stomal revision:
Peristomal resections achieve prolapse reduction by circumferential mucocutaneous incision and external mobilization of the prolapsed bowel down to the level of the fascial trephine. While effective, this approach necessarily involves manipulation of highly vascular peristomal tissues and the abdominal wall, which contributes to bleeding, edema, postoperative pain, and wound-related complications, particularly in elderly or comorbid patients

Limitations Of Stapled Sleeve Resection
Linear staplers are popular for local prolapse repair because they expedite excision without large incisions. However, their success depends on **compressibility of the prolapsed bowel wall**.

In chronic prolapse, the bowel wall frequently becomes thickened, edematous, or fibrotic, limiting safe stapler compression and increasing the risk of incomplete firing, multiple overlapping staple lines, or technical failure, thereby reducing reliability in long-segment disease.

Circular staplers are **not feasible trans-stomally** and cannot be used in this setting.

Alternative Surgical Approaches
More invasive techniques — such as laparotomy with stoma relocation, laparoscopic enteropexy, or trephine revision — remain valid options but carry significantly higher morbidity [9,15]. Elderly or comorbid patients often benefit from avoidance of abdominal re-entry.

Strengths Of The Present Technique
The present technique differs fundamentally from traditional methods by altering the plane of surgical access rather than modifying the extent of resection. By remaining entirely within the intraluminal space of the prolapsed stoma, the procedure avoids skin incision, extraluminal dissection, and fascial manipulation, thereby preserving peristomal anatomy and minimizing tissue trauma.

Energy-assisted circumferential division of the outer prolapsed bowel provides controlled access to the intussuscepted segment with minimal bleeding while maintaining a purely intraluminal operative field. This approach allows precise excision of redundant bowel and mesentery under direct visualization, without reliance on stapling devices or external mobilization.

The hand-sewn intraluminal colo-colic anastomosis performed in this technique allows tailored, full-thickness approximation while accommodating variations in bowel thickness commonly encountered in chronic prolapse. Reinforcement with deeper full-thickness sutures compensates for energy-sealed edges and contributes to anastomotic security without increasing procedural complexity.

By avoiding peristomal dissection and fascial disturbance, the present method reduces postoperative pain, minimizes edema, and lowers the risk of wound-related complications. Early return of stoma function and rapid recovery observed in this case reflect the physiological advantage of preserving external tissues and limiting surgical insult.

While this report describes a single illustrative case, the technique demonstrates technical feasibility and highlights a conceptual shift toward intraluminal correction as a means of reducing morbidity in selected patients with long-segment stomal prolapse.

The complete operative video illustrates this clearly (see **Supplementary Video 1**).

CONCLUSION

This incisionless, energy-assisted intraluminal sleeve resection is a novel and effective method for managing long-segment stomal prolapse. By avoiding peristomal incisions, extraluminal dissection, and stapler limitations, this approach preserves the parastomal anatomy while providing a secure colo-colic reconstruction. It expands the spectrum of minimally invasive options for stoma revision.

Disclaimer

This manuscript was prepared with the assistance of **ChatGPT (OpenAI, 2024)** to support the author in structuring, editing, and refining the scientific narrative. All clinical content, surgical details, and final interpretations are original, based on the author's direct experience and expertise. The AI tool was used strictly as an editorial aid and did not contribute to the generation of medical data, analysis, or clinical decision-making.

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