



Endoscopic decompression of sigmoid volvulus using a corrugated tube

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Background and Aims: Sigmoid volvulus is a major cause of large-bowel obstruction in “volvulus belt” countries, where it accounts for up to 50% of cases. Flexible endoscopic detorsion is the first-line therapy for stable patients; however, recurrence rates may reach 75%. Placement of a rectal decompression tube reduces early recurrence and facilitates elective surgery. In many low-resource settings, commercial tubes are unavailable. This video demonstrates the safe, low-cost use of rectal anesthesia corrugated tubes as a practical alternative.

Methods: We present the case of a 74-year-old woman exhibiting clinical and radiographic signs of sigmoid volvulus. After flexible endoscopic detorsion, a rectal anesthesia corrugated tube was placed. This video illustrates the step-by-step technique, focusing on technical details, potential pitfalls, and troubleshooting tips.

Results: The patient underwent successful decompression. Radiographic control showed the resolution of the volvulus and correct placement of the tube. The tube stayed in place until the elective laparoscopic sigmoidectomy on day 6. The patient had an uneventful recovery, leading to her discharge on postoperative day 10.

Conclusions: Endoscopic decompression combined with the placement of a rectal anesthesia corrugated tube represents a feasible and practical bridge to surgery. This educational video serves as a valuable resource for training endoscopists, particularly in settings with limited resources. (VideoGIE 2026;11:369-74.)

INTRODUCTION

Colon volvulus is a frequent cause of large-bowel obstruction, particularly in low- and middle-income countries, within the “volvulus belt,” a region across Africa, Asia, and South America. For this population, volvulus is up to 50% of intestinal obstructions compared with 3% to 5% in Western regions.^{1,2} Delayed diagnosis and/or management may

result in several adverse events, including ischemia, perforation, and mortality rates as high as 30%.³

International guidelines recommend the flexible endoscopic detorsion in uncomplicated patients, with success rates ranging from 60% to 95%, low morbidity (4%), and mortality (<3%).^{4,5} However, recurrence after endoscopic detorsion occurs in up to 75%^{6,7}; therefore, the World Society of Emergency Surgery guidelines endorsed the use of a rectal decompression tube to reduce early recurrence and allow bowel preparation before elective surgery.^{4,6,8} Unfortunately, in many resource-limited settings, dedicated long rectal tubes are not available or are expensive.

As a practical alternative, this article proposes the use of corrugated anesthesia tubes for transanal decompression in sigmoid volvulus, offering a low-cost and widely accessible option. This Fundamentals video demonstrates step-by-step endoscopic decompression of sigmoid volvulus with tube placement and provides technical and educational insights for endoscopists in training (Video 1, available online at www.videogie.org).

Indication and preprocedural set-up

Endoscopic decompression is the first-line therapy for sigmoid volvulus in the absence of hemodynamic instability, peritoneal signs, or radiologic evidence of ischemia or

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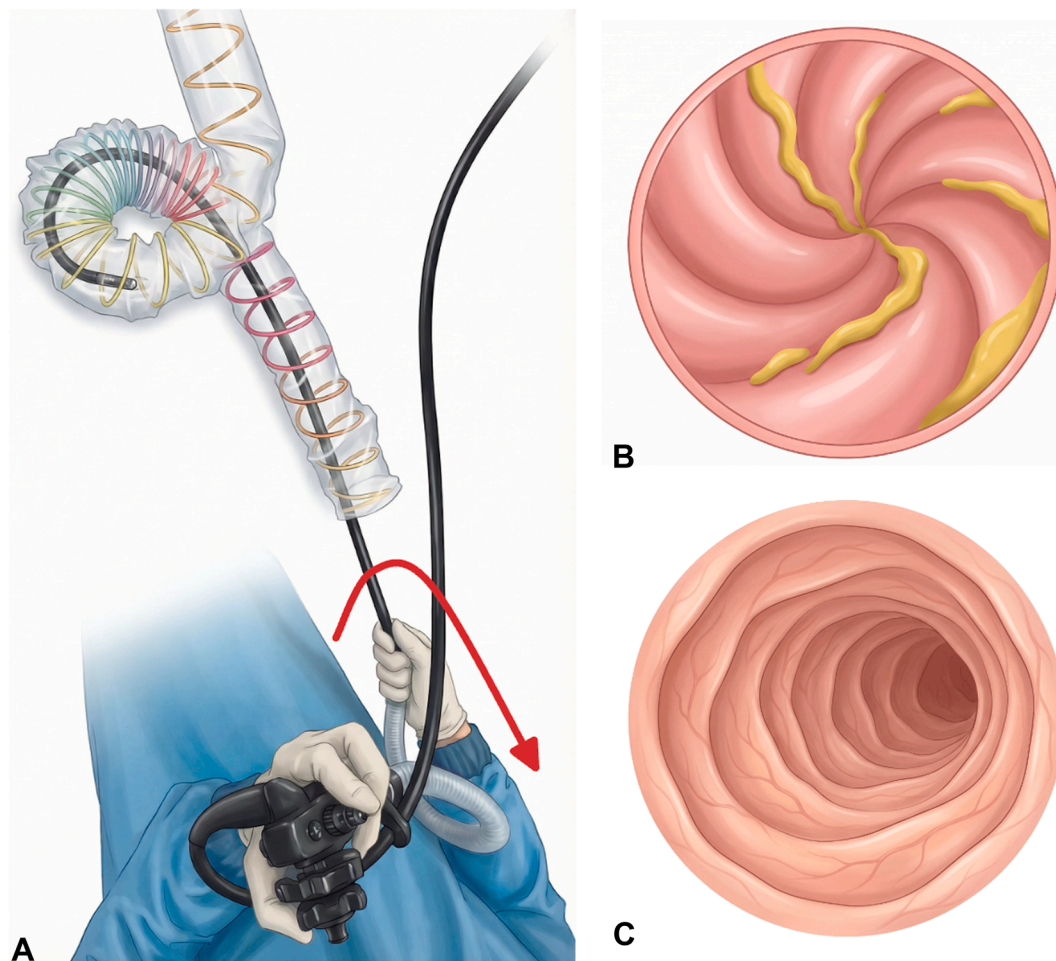


Figure 1. Endoscopic detorsion technique. **A**, Ex vivo model illustrating clockwise torque application with simultaneous colonoscope shortening to achieve reduction of the redundant sigmoid colon. **B**, Endoscopic view of the volvulated colonic mucosa at the torsion point, showing the characteristic spiral convergence (“bird’s beak sign”). **C**, Endoscopic confirmation of successful detorsion, with restored mucosal folds and patent colonic lumen, confirming mucosal viability and absence of ischemic changes.

perforation.^{2,4,6} Before the procedure, informed consent must be obtained. The necessary equipment includes a flexible adult colonoscope, a rectal or colonic decompression tube (specifically, a corrugated anesthesia tube), and a nonabsorbable suture for securing the tube in place. The patient should be positioned in the left lateral decubitus position, with moderate sedation administered. However, patients with large-bowel obstruction face a higher risk of aspiration, and it is important to highlight that anesthesiology support or general anesthesia is often favored over moderate sedation in this context.

STEP-BY-STEP TECHNIQUE

Preparation of the decompression tube

A corrugated anesthesia tube is cut to approximately 50 cm in length using scissors, ensuring that both ends are smooth and blunt to minimize mucosal trauma. The colonoscope is then introduced into the proximal end of

the tube, positioning it to serve as a conduit during insertion.

Colonoscope insertion

With the patient in the left lateral decubitus position, the colonoscope is introduced with direct visualization through the rectum. Air or minimal carbon dioxide insufflation is used to avoid further distension, whereas abundant irrigation facilitates safe progression. The colonoscope is carefully advanced through the sigmoid colon until the characteristic spiral mucosal convergence—the “bird’s beak sign”—is encountered at the rectosigmoid junction, marking the distal torsion point. Beyond this, the lumen opens abruptly into a dilated, air-filled closed loop. Forced advancement maneuvers must be avoided at all times to reduce the risk of perforation.

Decompression and detorsion

Once the torsion point is traversed, the lumen opens abruptly into a dilated, gas-filled loop. Aspiration of

intraluminal gas and fecal content is applied immediately, achieving decompression confirmed clinically by a visible reduction in abdominal distension. Mucosal viability must be carefully assessed at this stage because necrosis or irreversible ischemic changes mandate immediate discontinuation of the procedure and urgent surgical consultation. Clockwise torque rotation, continuous aspiration, and gentle manual compression of the lower abdomen facilitate controlled advancement of the colonoscope to the proximal limit of the torsional obstruction, ideally reaching the sigmoid-descending junction or distal transverse colon.

Endoscopic detorsion of the decompressed volvulus is then performed. Through repeated clockwise rotation and simultaneous shortening of the colonoscope with the right hand, progressive reduction of the redundant sigmoid colon is accomplished (Fig. 1).

Tube advancement, fixation, and confirmation

Although the endoscopist maintains the colonoscope in position, an assistant advances the corrugated tube over the colonoscope toward its tip. Correct depth is confirmed when the colonoscope tip is seen to move away from the mucosa as the tube advances. Once the proximal edge of the corrugated tube is aligned with the distal end of the colonoscope, the assistant holds the tube firmly at the anal verge while the endoscopist slowly withdraws the colonoscope, leaving the corrugated tube in place within the decompressed colon.

The external part of the corrugated tube can be secured to the gluteal skin with 2 nonabsorbable sutures to prevent displacement. This procedure is optional and can be performed using local anesthesia. Although it may reduce the risk of unintentional retraction, it is not always required. A postprocedural abdominal radiograph confirms successful detorsion, correct tube positioning, and absence of pneumoperitoneum, which indicates perforation. In patients with clinical deterioration or suspected ischemia, contrast-enhanced computer tomography is recommended to exclude adverse events.

Postprocedural care

The tube is typically maintained until elective sigmoidectomy, performed during the same admission, allowing continuous decompression and facilitating mechanical bowel preparation before elective sigmoidectomy.^{6,8-10}

RISKS, PITFALLS, AND TROUBLESHOOTING

Endoscopic decompression of sigmoid volvulus is generally considered safe; however, adverse events such as perforation can occur in up to 8% of cases, along with potential bleeding and tube dislodgement.^{1,2,4,6} To minimize these risks, forceful maneuvers should be avoided. If the colonoscope is unable to advance, a guidewire can be used. For a

successful detorsion, 2 transition points must be identified; failure to do so may result in incomplete detorsion.^{6,11} In addition, the endoscopist should be vigilant for signs of ischemia or necrosis in the colonic mucosa. If these conditions are observed, the procedure must be aborted, and the patient should be referred for surgical intervention.^{1,6,9,11}

RESULTS

We present the case of a 74-year-old woman with a 2-day history of progressive abdominal pain, anorexia, nausea, and absence of flatus or bowel movements. On admission, she had marked abdominal distension and reduced bowel sounds, without peritoneal signs. Laboratory values were within normal limits. Abdominal radiography demonstrated the classic “coffee bean” sign of sigmoid volvulus (Fig. 2). Flexible endoscopic decompression was successfully performed, followed by placement of an anesthesia corrugated tube. Postprocedural radiography confirmed complete detorsion and excluded pneumoperitoneum (Figs. 3 and 4). The tube was maintained in situ, and the patient underwent an elective laparoscopic sigmoidectomy on day 6 of hospitalization, with an uneventful recovery and discharge on postoperative day 10.

DISCUSSION

Endoscopic decompression is the first-line treatment for sigmoid volvulus and represents a critical intervention in which appropriate patient selection is paramount. The

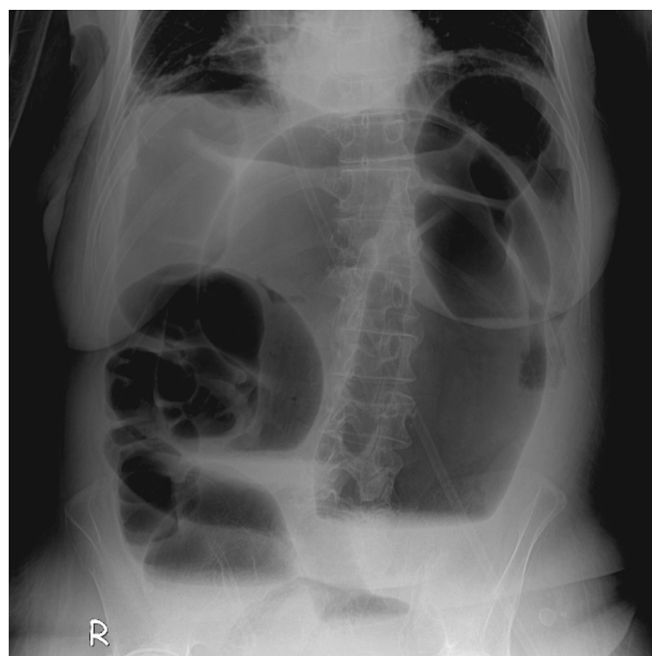


Figure 2. Plain abdominal radiograph. Classic “coffee bean sign” characteristic of sigmoid volvulus.

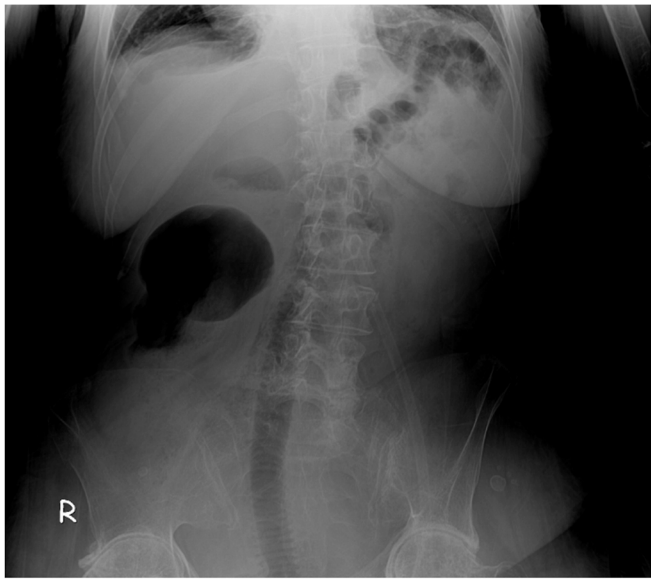


Figure 3. Plain abdominal radiograph after the procedure. Corrugated plastic tube in position with successful resolution of sigmoid volvulus.

primary goals are to relieve a closed-loop obstruction with minimal trauma, identify the transition point of torsion, assess mucosal viability, and maintain colonic decompression with a rectal or colonic tube. Peritonitis, colonic perforation or necrosis, and hemodynamic instability are absolute contraindications to the procedure.^{4,5}

Although no single standardized device is universally recommended, to our knowledge, multiple rectal and colonic decompression tubes have been described in the literature (Table 1). Among the available options, tube length is the most critical determinant of efficacy: long tubes (120 cm) enable decompression proximal to the torsion point, whereas standard short rectal tubes (25–30 cm) fail to reach the affected colonic segment.¹²

Beyond immediate decompression, colonic tubes play an integral role in the overall endoscopic management of sigmoid volvulus. They reduce early recurrence, can be maintained for more than 72 hours, and facilitate bowel preparation for definitive surgery during the same admission—a strategy supported by multiple international guidelines.⁶ Clinical success, however, is not uniform across



Figure 4. A and B, Contrast-enhanced abdominal computer tomography scan. Corrugated plastic tube in the sigmoid colon with no evidence of pneumoperitoneum.

TABLE 1. Rectal and colonic decompression tubes described in the literature for sigmoid volvulus management

Tube type	Commercial name	Manufacturer	Material	Diameter/length	Key features	Approx. cost (USD)
Dedicated colonic decompression tube ⁶	Colon decompression set 14F	Cook Medical (Bloomington, Ind, USA)	Radiopaque polyurethane	14F (~4.7 mm), 175 cm	Guidewire-assisted, multiport, radiopaque	\$250-\$600
Transanal decompression tube ¹²	Transanal ileus tube	Create Medic (Yokohama, Japan)	PVC/polycarbonate/polypropylene	22F (~7.3 mm), 120 cm	Balloon-tipped, multiport, prolonged decompression	\$150-\$400
Flatus tube (generic) ¹³	Generic/hospital-grade	Medline (Northfield, Ill, USA)/Teleflex (Wayne, Pa, USA)/others	Rubber or PVC	30-45F (~10-15 mm), 25-30 cm	Simple, low-cost, easy to use	\$5-\$30
Standard rectal tube ¹⁴	Rectal tube	Medline (Northfield, Ill, USA)/Teleflex (Wayne, Pa, USA)	Flexible PVC	20-40F, 30-45 cm	Distal decompression only	\$10-\$50
Foley catheter (adapted)	Foley catheter	BD (Franklin Lakes, NJ, USA)/Teleflex (Wayne, Pa, USA)	Latex or silicone	14-24F, 40 cm	Balloon-tipped; not designed for colonic use	\$5-\$20
Through-the-scope tube ¹⁵	Marcon decompression set	Cook Medical (Bloomington, Ind, USA)	Polyurethane	8.5-10F	Distal pigtail, multiport	\$200-\$500
Corrugated plastic anesthesia tube	Corrugated anesthesia tube	Bioplast (Bogotá, Colombia)/Global Healthcare (Cali, Colombia)/others	Flexible PVC	45-60F (~15-20 mm), 130-180 cm	Expandable, flexible, low-cost; off-label use	\$6-\$20

PVC, Polyvinyl chloride; USD, U.S. dollar.

devices; tube length and design are the primary determinants of outcomes. Key limitations include cost, restricted availability in rural or low-resource settings, technical challenges during placement, and the off-label use of devices not originally intended for this indication. In this context, corrugated plastic anesthesia tubes offer a compelling alternative: they are globally available across all levels of health care complexity, cost-effective, and easy to place under direct endoscopic visualization, and they allow for prolonged decompression.¹²

The use of larger-diameter tubes in the colon (~15-20 mm, ~45-60F) carries inherent risks, including friction-related mucosal injury, localized ischemia, ulceration, perforation, and patient discomfort. These concerns are particularly relevant for corrugated anesthesia tubes, whose off-label use in devolvulation, irregular surface, and relative rigidity may generate discontinuous pressure, increased friction coefficient, and microtrauma to an already vulnerable mucosa. Nevertheless, these risks can be minimized when placement is performed under direct endoscopic visualization in patients with no evidence of ischemia, necrosis, or perforation. Computer tomography and continuous clinical monitoring remain essential to ensure early detection of potential adverse events.

CONCLUSIONS

This case highlights the feasibility of endoscopic detorsion combined with placement of a corrugated anesthesia tube for the acute management of sigmoid volvulus in uncomplicated presentations. Although findings from a single case cannot be generalized, this article offers a detailed technical description and positions the technique as a viable bridge to elective sigmoidectomy.

Endoscopic decompression, detorsion, and reduction constitute the 3 core pillars of the procedure, with tube length and design being critical determinants of success. The ideal decompression tube should be sufficiently long, flexible, and appropriately sized to allow effective drainage, made of atraumatic material, capable of external fixation, and readily available. Corrugated anesthesia tubes meet these criteria and represent a practical, cost-effective alternative—particularly in resource-limited settings—despite having been originally designed for a different clinical purpose.

This step-by-step educational video highlights key technical details, common pitfalls, and troubleshooting strategies, serving as a practical resource for endoscopists in training across diverse health care settings.

DISCLOSURE

All authors disclosed no financial relationships.

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