

Novel Use for Maloney Dilators in the Management of Gastrostomy Stenosis

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ABSTRACT

Gastrostomy tube dislodgement is a common complication after gastrostomy tube placement. If the tube is not immediately replaced, the gastrostomy stomal tract may close in as little as 8 hours. Small case series have reported the salvage of partially closed or stenosed gastrostomy stomal tracts using different types of dilators, but the use of Maloney dilators for this indication has not been reported. Dilation of a stenosed tract can allow for immediate re-establishment of enteral access without the need for a repeat invasive procedure. We present 3 instances of gastrostomy stenosis successfully dilated with Maloney dilators using minimal topical anesthesia.

INTRODUCTION

Gastrostomy tubes (G-tubes) are used to ensure enteral feeding. Multiple modalities have been developed to place these tubes: open surgical placement, fluoroscopy-guided percutaneous placement, and percutaneous endoscopic gastrostomy.¹ A common complication of having a G-tube is dislodgement.²⁻⁴ Historically, as long as the gastrostomy was at least 30 days old, bedside replacement could be performed.³ Once the tube is dislodged, the gastrostomy stomal tract can begin to close immediately. Emergency providers place a small catheter (usually a Foley urinary catheter) into the gastrostomy to prevent complete closure and refer the patient for follow-up for replacement. With a smaller catheter in place, the gastrostomy site continues to close, which can impact the ability to replace a sufficiently sized feeding tube. If the tract is too narrow to replace the G-tube, patients may require a new G-tube to be placed using an invasive procedure. In patients who develop gastrostomy stenosis, there are limited data available describing techniques used to reestablish the gastrostomy tract. We describe a novel technique using Maloney dilators to dilate gastrostomy stenosis to allow replacement of a G-tube.

CASE REPORT

Patient 1: A 68-year-old man with multiple sclerosis presented for follow-up after G-tube dislodgement and subsequent 14 Fr Foley catheter placement. Bedside exchange of the 14 Fr Foley with a 20 Fr G-tube was unsuccessful. An 18 Fr G-tube was passed with moderate resistance into the stomach. Several days later, the patient presented back to the endoscopy suite for tube malfunction (clogged by crushed medications). It was determined that an 18 Fr was too small to meet the patient's needs. The decision was made to attempt percutaneous gastrostomy dilation and place a larger G-tube.

After obtaining consent, the gastrostomy tube site was cleaned, and 2% lidocaine hydrochloride jelly applied to the gastrostomy stoma and surrounding skin. The 18 Fr G-tube was removed. An 18 Fr Maloney dilator was lubricated and passed into the stomal tract, advanced to its widest diameter with no resistance, and removed (Figure 1). This was repeated with 20 Fr and 22 Fr Maloney dilators with minimal resistance, followed by 24 Fr and 28 Fr dilators with moderate resistance (Figure 2). A 22 Fr replacement balloon G-tube was lubricated and passed through the stomal tract without difficulty (Figure 3). The G-tube was slowly rotated 360 degrees with no resistance. The retention balloon was filled with 9 mL of sterile water and the external bumper was noted to be at 4



Figure 1. Removal of small gastrostomy tube and lubrication of Maloney dilator before insertion.

cm. Gastric contents were aspirated and the tube flushed without issue. The area was cleaned and dressed, and the patient was discharged home. There were no immediate complications from the procedure.

Patient 2: A 50-year-old man with a history of hemorrhagic strokes had a 20 Fr G-tube placed 2 years ago. The patient had his first tube dislodgement with emergent placement of a 16 Fr Foley catheter into the tract. A 20 Fr and 18 Fr G-tube could not be passed; the ostomy was dilated using a Savary dilator to the point where an 18 Fr G-tube could be placed. Within that same year, this tube broke and needed to be replaced; however, the gastrostomy tract had stenosed, and a new 18 Fr replacement could not be placed. Given the recurrent stenosis, 20 and 22 Fr Maloney dilators were used to dilate the stomal tract. An 18 Fr replacement was then placed without complications. Approximately 6 months later, the patient

accidentally removed his feeding tube and a 14 Fr Foley catheter was placed resulting in stenosis of the gastrostomy. Gastrostomy dilation with Maloney dilators (20 Fr, 22 Fr, and 24 Fr) was performed and a new 18 Fr G-tube was placed.

DISCUSSION

There is little literature available on managing gastrostomy stenosis after dislodgement. Different methods have been reported, including over-the-wire Savary dilations as well as balloon dilation.⁵⁻⁷ Emergency room physicians have employed a similar technique by using larger and larger Foley catheters to dilate the stenosed stomal tract and then replacing the G-tube.⁸ Likewise, surgical case reports have used steel cervical dilators (Hegar) or vascular dilators to salvage stenosed gastrostomies.^{9,10} To our knowledge, these are the first reported cases of utilizing Maloney dilators to manage gastrostomy stenosis.

Maloney dilators were designed as weighted reusable devices with soft, tapered ends for per oral “blind” dilations of esophageal stenosis.¹¹ Theoretically, this would minimize risk for trauma, given the soft, flexible tip and the ability to gradually dilate up to the desired size. Maloney dilators have fallen out of favor, with the development of through the scope guidewire techniques, using either a more rigid Savary type dilator or balloon dilators. Many young gastroenterologists have no knowledge of, or experience with, Maloney dilators.

As no additional tools are needed for Maloney dilators, dilation of a stenosed stomal tract and placement of a new gastrostomy tube can be performed by a single provider. Furthermore, the procedure can be performed in any clinical setting because no sedation or sterile operating room is needed. With topical anesthetics, Maloney gastrostomy stomal dilations are well tolerated (although the procedure is painful during the acute dilation), and

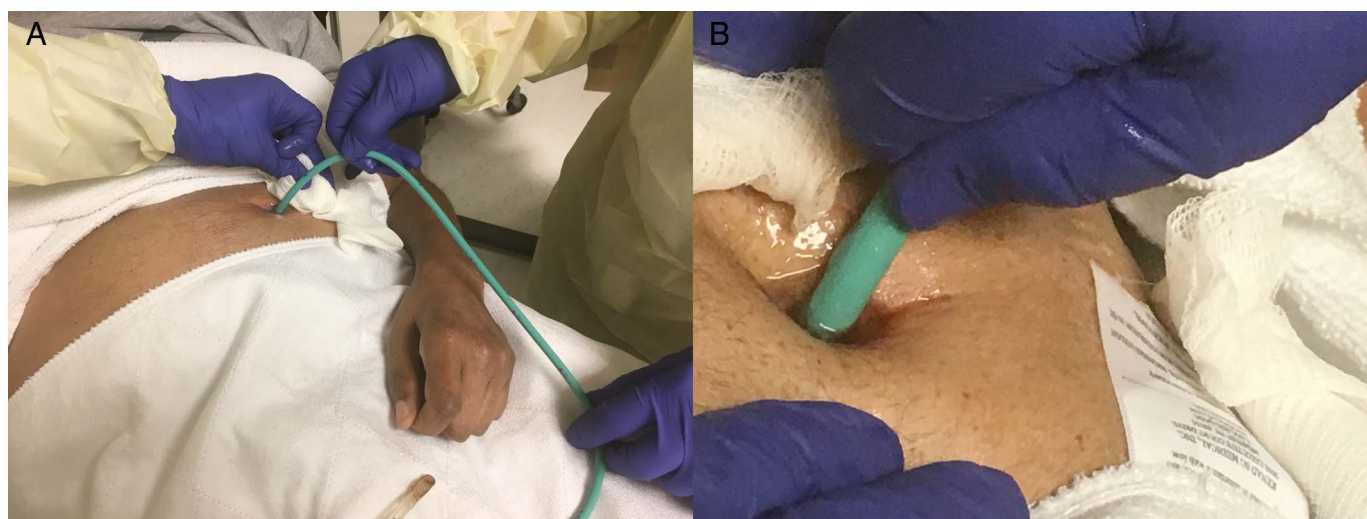


Figure 2. Maloney dilator (A) inserted and (B) held at maximal diameter.



Figure 3. Placement of larger gastrostomy tube.

long-term follow-up has shown sustained effects of the dilation. Experience has taught us to dilate 4 Fr sizes above the desired G-tube size, to ensure minimal resistance when passing the replacement balloon gastrostomy device. Surgical case reports have suggested using a size at least 2 Fr above the desired G-tube size.^{9,10}

Regarding cost, a set of reusable Maloney dilators is slightly more expensive than a set of Savary dilators (\$4,300 vs \$3,700) but without the cost of the guide wires (\$130/wire). Through-the-scope dilators are cheaper still (\$1,600) but can only be used once compared with Maloney dilators, which are designed for repeated use after appropriate processing. Costs are based on institutional quotes from Diversatek Healthcare (Milwaukee, WI) for Savary and Maloney dilators, Cook Medical (Bloomington, IN) for guide wires, and Boston Scientific (Marlborough, MA) for balloon dilators. The avoidance of sedation or operating room setting also helps minimize healthcare costs. There is a theoretical concern over the presence of radial and shear forces applied when performing a Savary or Maloney dilation as opposed to balloon dilation. However, slow advancement of the Maloney dilator into a mature gastrostomy stomal tract with the immediate feedback of an unsedated patient helps to minimize the clinical risk of this difference between dilation techniques.¹²

Providers should continue to advise patients to be seen as soon as possible after G-tube dislodgement, to ensure gastrostomy tract patency. As long as the gastrostomy tract is patent and mature, gastroenterologists may be able to dilate as described in this case series and save the patient from a more invasive procedure. Other benefits of Maloney dilators may include easier coordination of care as only 1 provider is needed, less materials are needed so potential lower costs compared with other dilation techniques,

and lower risk of trauma, given the soft tapered design of the Maloney dilators. It appears that Maloney dilators can be used to safely dilate stenosed gastrostomy stomas to re-establish access for feeding tube placement.

DISCLOSURES

Author contributions: All authors collected data, and wrote and edited the manuscript. JJ Jennings is the article guarantor.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received December 5, 2018; Accepted February 1, 2019

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