



# Endoscopic sleeve gastroplasty by use of a novel suturing pattern, which allays concerns for revisional bariatric surgery

Mohamad Kareem Marrache, MD,<sup>1</sup> Abdulhameed Al-Sabban, MD,<sup>1</sup> Mohamad I. Itani, MD,<sup>1</sup> Adrian Sartoretto, MBBS, BMedSc,<sup>2</sup> Vivek Kumbhari, MD<sup>1</sup>

Endoscopic sleeve gastroplasty (ESG) is a safe and effective minimally invasive procedure that has been gaining traction to treat patients with obesity.<sup>1-3</sup> Because obesity is a chronic disease, revisional bariatric surgery may be beneficial if adverse events, inadequate weight loss, or weight regain have occurred.<sup>4</sup>

During laparoscopic revision, the metallic anchor and cinch placed after ESG have been suggested as the cause of potential stapler misfire, which can lead to adverse events.<sup>5,6</sup> For this reason, the anchor and cinch must be removed either endoscopically or surgically before laparoscopic sleeve gastrectomy (LSG). Surgical revision is often a tedious and difficult task after ESG, requiring identification and removal of all tags in the path of the staple line. Alternatively, blindly stapling the stomach is feasible but is not recommended because of the increased risk of the foreign materials being jammed in the stapler.<sup>7</sup> Moreover, the added steps needed to perform a revisional LSG and the increased risk pushes some patients toward the more invasive Roux-en-Y gastric bypass surgery. Hence, a suture pattern that avoids the placement of the anchor and cinch on the anterior and posterior walls of the stomach would potentially negate concerns regarding future revisional bariatric surgery.

The suture pattern demonstrated in [Video 1](#) (available online at [www.VideoGIE.org](http://www.VideoGIE.org)) addresses these difficulties

by leaving the anchor and cinch away from the staple line by starting and ending the suture on the greater curvature of the stomach ([Fig. 1](#)). This is accomplished with the OverStitch (Apollo Endosurgery Inc, Austin, Tex, USA), a cap-based flexible endoscopic suturing system, which is mounted on a double-channel endoscope.<sup>8,9</sup> One suture is used per rectangular pattern, with an average of 7 bites per suture ([Fig. 2](#)). The pattern is repeated as the endoscopist moves proximally toward the fundus with a total average of 7 sutures.

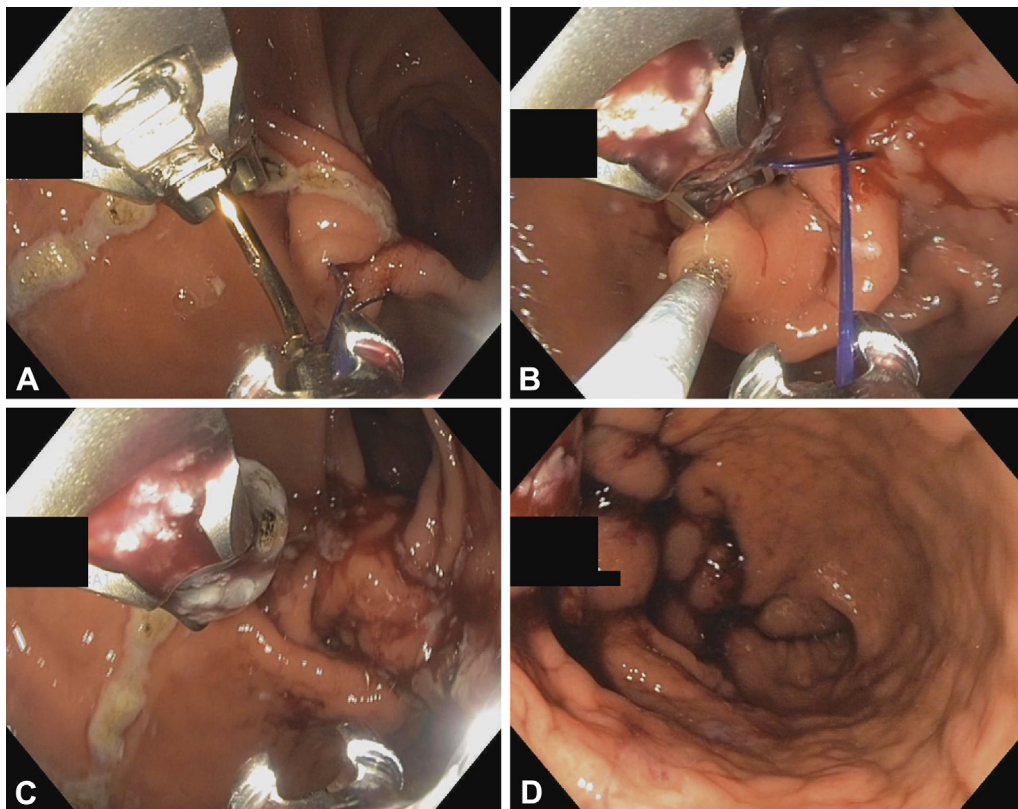
## DISCLOSURE

*Dr Sartoretto is a consultant for Apollo Endosurgery and BAROnova. Dr Kumbhari is a consultant for Apollo Endosurgery, Boston Scientific, Medtronic, Pentax Medical, Obalon, FujiFilm, ReShape Life Sciences, and Erbe and the recipient of research support from Apollo Endosurgery and Erbe. All other authors disclosed no financial relationships relevant to this publication.*

*Abbreviations: ESG, endoscopic sleeve gastroplasty; LSG, laparoscopic sleeve gastrectomy.*



**Figure 1.** **A**, Novel suture pattern with anchor and cinch placed on the greater curvature. **B**, Standard “Z” suture pattern with the cinch placed on the anterior wall and the anchor placed on the posterior wall. **C**, Standard “U” suture pattern with anchor and cinch placed on the anterior wall.



**Figure 2.** **A**, Endoscopic view showing the first and second full-thickness bites. **B**, Endoscopic view showing the seventh and last bite taken from the greater curvature. **C**, Endoscopic view demonstrating a completed single pattern with the cinch in place. **D**, Endoscopic view demonstrating gastric sleeve on completion of the procedure.

## REFERENCES

1. Dayyeh BKA, Acosta A, Camilleri M, et al. Endoscopic sleeve gastroplasty alters gastric physiology and induces loss of body weight in obese individuals. *Clin Gastroenterol Hepatol* 2017;15:37-43.
2. Sharaiha RZ, Kumta NA, Saumoy M, et al. Endoscopic sleeve gastroplasty significantly reduces body mass index and metabolic complications in obese patients. *Clin Gastroenterol Hepatol* 2017;15:504-10.
3. Alqahtani A, Al-Darwish A, Mahmoud AE, et al. Short-term outcomes of endoscopic sleeve gastroplasty in 1000 consecutive patients. *Gastrointest Endosc* 2019;89:1132-8.
4. Shimizu H, Annaberdyev S, Motamarry I, et al. Revisional bariatric surgery for unsuccessful weight loss and complications. *Obes Surg* 2013;23:1766-73.
5. ElGeidie A, Gadel Hak N, Abdulla T. Stapler's malfunction during laparoscopic sleeve gastrectomy: an unusual but correctable complication. *Surg Obes Relat Dis* 2013;9:144-6.
6. MKT-01384-00R01 OverStitch - FT Advanced Procedure.prproj.mp4. Available at: <https://apollo.showpad.com/share/iUG7S4F3QBcc1Hd1Re3eh>. Accessed November 20, 2019.
7. Alqahtani AR, Elahmedi M, Alqahtani YA, et al. Laparoscopic sleeve gastrectomy after endoscopic sleeve gastroplasty: technical aspects and short-term outcomes. *Obes Surg* 2019;29:3547-52.
8. Kumbhari V, Tieu AH, Khashab MA. Common indications for transoral flexible endoscopic suturing. *Gastrointest Endosc* 2015;81:1000.
9. Lopez-Nava G, Asokkumar R. Step-by-step approach to endoscopic gastroplasty by a novel single-channel endoscopic suturing system. *Video-GIE* 2019;4:444-6.

Department of Gastroenterology and Hepatology, Johns Hopkins Medical Institutions, Baltimore, Maryland, USA (1); The BMI Clinic, Double Bay, New South Wales, Australia (2).

If you would like to chat with an author of this article, you may contact Dr Kumbhari at [vkumbhari@gmail.com](mailto:vkumbhari@gmail.com).

Copyright © 2019 American Society for Gastrointestinal Endoscopy. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.vgie.2019.11.013>