



Colonoscopic resection of appendiceal endometriosis

Jose Nieto, DO,¹ Ameya Deshmukh, BA,² Bashar Sharma, MD,³ Enad Dawod, MD⁴

Endometriosis (EM) is the presence of endometrial tissue outside the uterine cavity.¹ It commonly affects women of reproductive age and results in abdominal/pelvic pain and possible infertility.¹ Appendiceal EM is exceedingly rare; it constitutes approximately 3% of all GI EM and accounts for less than 1% of all EM cases.² The appendiceal tip and body are the most frequent locations of involvement. An estimated 66% of cases affect the muscular and seromuscular layers of the appendix.² Additionally, 33% of cases involve the appendiceal serosa.² It is most often found incidentally during appendectomies or colonoscopies, being contingent on the inversion of the appendiceal orifice. Appendiceal intussusception typically manifests as the result of abnormal appendicular peristalsis arising from local irritation.³ The incidence is approximately 0.01% in patients who have

undergone appendectomy, making it an extremely rare phenomenon.³

A 66-year-old woman was seen with a polypoid lesion found on screening colonoscopy in the appendiceal orifice (Fig. 1). A biopsy specimen could not be taken owing to the submucosal location of the lesion. On repeated colonoscopy, a partially inverted appendix was visualized. Possible carcinoid lesion was included in the differential diagnosis, as was a potential submucosal lesion.

Using the double-channel therapeutic endoscope (Olympus GIF-2TH180; North Brooklyn Park, Minn, USA), we identified the appendiceal orifice and the partially in-

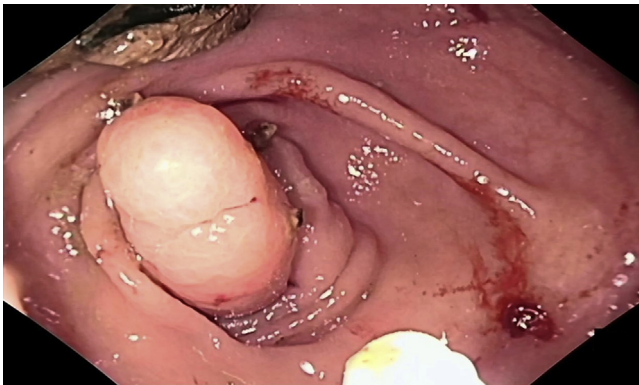


Figure 1. Polypoid lesion before resection.

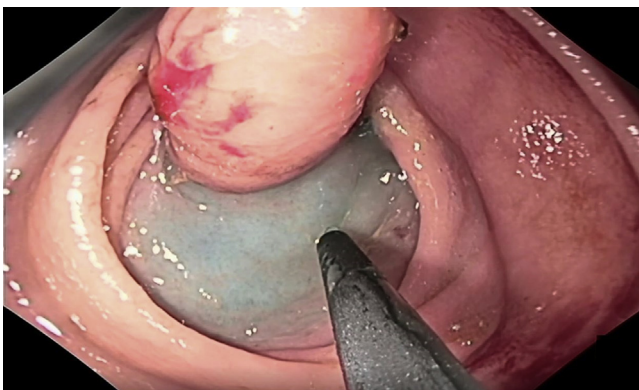


Figure 2. Submucosal injection of Orise lifting gel.

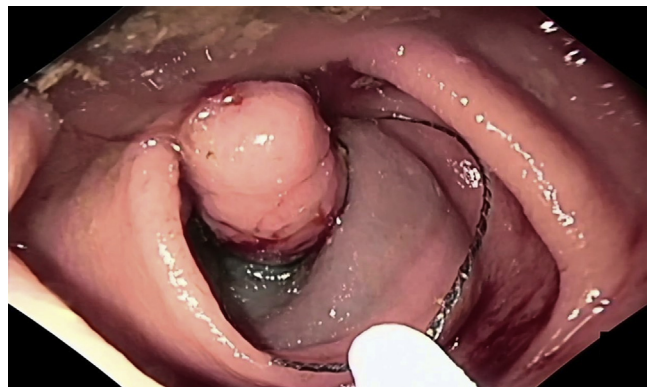


Figure 3. Deployment of the first snare over the proximal base of the appendix.



Figure 4. Deployment of the second snare over the distal portion of the appendix.

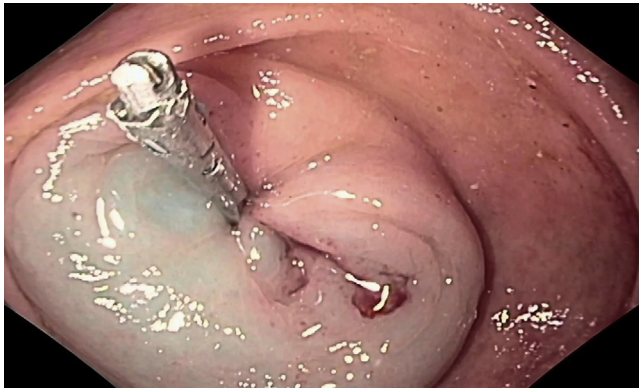


Figure 5. Clip used to close the defect.



Figure 6. Resected gross specimen.

verted appendix. Ten mL Orise lifting gel (Boston Scientific, Maple Grove, Minn, USA) was injected submucosally (Fig. 2). A 2-snare technique was used in the capture and resection of the lesion. Initially, 1 snare was passed over the appendix (Fig. 3). Then, the second snare was passed over the distal portion of the partially inverted appendix (Fig. 4). Using traction, we then completely inverted the appendix into the lumen of the cecum. Once the appendix was correctly in position, the snare overlying the proximal base of the appendix was closed, and a standard polypectomy technique was used to resect the appendix. The appendix was then captured with the snare that was used for traction with the other open channel. Clips were deployed to close the defect (Fig. 5). Appendectomy was completed successfully (Video 1, available online at www.VideoGIE.org).

The gross pathologic appearance was that of an infiltrated appendix with endometrial tissue, consistent with appendiceal EM (Fig. 6). Pathologic analysis confirmed negative margins (Fig. 7). Follow-up CT did not reveal any evidence of perforation. The patient was discharged within 24 hours from the hospital.

Appendectomies are overwhelmingly performed laparoscopically, and very few case reports have described endoscopic resection of an appendix. Some transcecal appendectomies have been performed successfully for appendicular pathologic conditions, including polyps,⁴ although this technique requires a circumferential endoscopic full-thickness incision around the appendiceal orifice because of inadequate inversion of the appendix (Video 1, available online at www.VideoGIE.org).^{4,5}

DISCLOSURE

Dr Nieto is a consultant for Boston Scientific. All other authors disclosed no financial relationships relevant to this publication.

Abbreviation: EM, endometriosis.

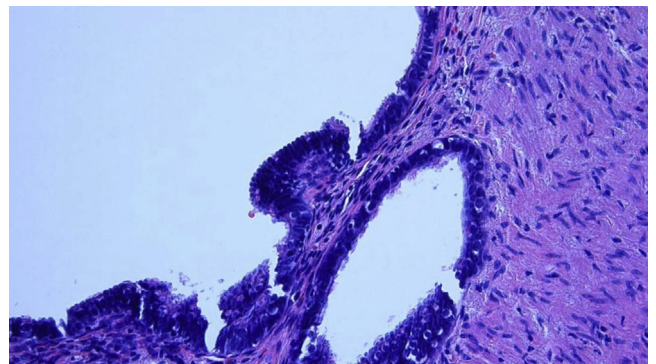


Figure 7. Histologic image of resected lesion consistent with appendiceal endometriosis (H&E, orig. mag. $\times 40$).

REFERENCES

1. Gustofson RL, Kim N, Liu S, et al. Endometriosis and the appendix: a case series and comprehensive review of the literature. *Fertil Steril* 2006;86:298-303.
2. Gupta R, Singh AK, Farhat W, et al. Appendicular endometriosis: a case report and review of literature. *Int J Surg Case Rep* 2019;64:94-6.
3. Tran C, Sakioka J, Nguyen E, et al. An inverted appendix found on routine colonoscopy: a case report with discussion of imaging findings. *Radiol Case Rep* 2019;14:952-5.
4. Liu B-R, Ullah S, Ye L, et al. Endoscopic transcecal appendectomy: a novel option for the treatment of appendiceal polyps. *VideoGIE* 2019;4:271-3.
5. Yuan X-L, Cheung O, Du J, et al. Endoscopic transcecal appendectomy. *Endoscopy* 2019;51:994-5.

Advanced Therapeutic Endoscopy Center, Borland Groover Clinic, Jacksonville, Florida, USA (1); Midwestern University–Chicago College of Osteopathic Medicine, Downers Grove, Illinois (2); SUNY Upstate Medical University, Syracuse, New York (3); NYP/Weill Cornell Medical Center, New York, New York (4).

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.2019.12.008>