

# A Large Pedunculated Lipoma Endoscopically Resected With the Assistance of a Detachable Nylon Endoloop

Samer El-Dika, MD, MSc<sup>1</sup>  
 Ali Vahabzadeh, MD<sup>1</sup>  
 Lampros Karageorge, MD<sup>2</sup>  
 Adrienne Kinsey, DO<sup>1</sup>

<sup>1</sup> Department of Medicine, <sup>2</sup> Department of Pathology, Veterans Affairs Medical Center, Salem, Va, and University of Virginia, Charlottesville, Va.

In the gastrointestinal tract, lipomas are found predominantly in the colon.<sup>1</sup> These benign, nonepithelial tumors are mostly asymptomatic and incidentally found during colonoscopy.<sup>2</sup> Excision is generally reserved for symptomatic lipomas or when there is a suspicion of malignancy. Excising lipomas endoscopically versus surgically remains a subject of controversy. Typically, lipomas greater than 2 cm in size are removed surgically, as they are associated with a greater risk of perforation<sup>3,4</sup>; however, over the past few years, new endoscopic techniques have been found to be safe in the removal of large colonic lipomas.<sup>5-8</sup> This case study is the third to support the safety of endoscopic removal of large pedunculated colonic lipomas with the assistance of a detachable nylon endoloop.

## Case Report

A 69-year-old man with a history of colonic polyps was referred for surveillance colonoscopy. He had no gastrointestinal symptoms. A large polyp with a thick stalk was found in the sigmoid colon, 30 cm from the anal verge, occupying approximately 80% of the colonic lumen (Figure 1). The surface of the polyp was smooth but did not have the typical “cushion sign” of a lipoma. Endoscopic ultrasound was not available to further evaluate the lesion. A detachable endoloop (HX-400U-30, Olympus) was tied over the base of the stalk and secured. Using a standard snare (reusable SD-9U-1, Olympus) and monopolar current, the polyp was excised in one piece. The endoloop continued to secure the base of the stalk after electro-surgical resection (Figure 2). Histologic examination reported

a 3 cm × 2.5 cm benign submucosal lipoma (Figure 3). The patient had no immediate or late complications.

## Discussion

The excision of colonic lipomas is normally limited to symptomatic cases. In this instance, the nature of the large subepithelial polyp was not clear from its endoscopic appearance (ie, it did not have the typical “cushion sign” that characterizes gastrointestinal lipomas), and the decision was made to excise it.

Endoscopic removal of lipomas 2 cm or greater in size using standard electro-surgical methods has been associated with increased risk of perforation.<sup>3</sup> However, Kim and colleagues reported that large colonic lipomas could be resected safely by electro-surgical snare after injection of the base with epinephrine or saline solution.<sup>5</sup> Raju and Gomez used a detachable nylon endoloop to mechanically transect a 4-cm pedunculated colonic lipoma without the use of electro-surgical snare.<sup>6</sup> Four months later, the size of the lipoma was reduced by 75%; however, the endoloop was found to be loose around the thinned stalk, and another endoloop had to be secured at its base. After 4 more months, complete resorption of the lipoma was observed. Recently, Murray and associates and Koo and Kaffes reported the safe removal of large pedunculated colonic lipomas using electro-surgical coagulation current after securing the base with a detachable nylon endoloop.<sup>7,8</sup>

Approximately 90% of lipomas are submucosal; however, they can occasionally extend from the submucosa to the subserosa.<sup>9,10</sup> Extension of the lipoma to the muscularis propria has been shown to be a risk factor for perforation post-endoscopic removal. In the three perforations reported by Pfeil and colleagues after endoscopic removal

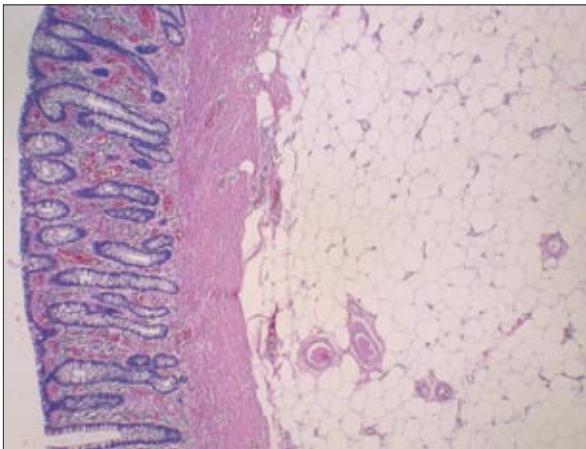
Address correspondence to:  
 Dr. Samer El-Dika, VA Medical Center (111G), 1970 Roanoke Boulevard, Salem, VA, 24153; Fax: 540-983-1092; E-mail: samer.eldika@med.va.gov



**Figure 1.** The large colonic lipoma before resection.



**Figure 2.** The endoloop secured at the base after electro-surgical resection of the colonic lipoma.



**Figure 3.** Photomicrograph showing normal mucosa overlying submucosal lipoma (hematoxylin and eosin stain, 10×).

of large colonic lipomas, the specimens contained large portions of smooth muscle from the muscularis propria.<sup>3</sup> To avoid this complication, Kim and coworkers utilized endoscopic ultrasound to ensure that the lipoma was confined to the submucosa before endoscopic resection.<sup>5</sup>

This case, along with the cases reported by Murray and associates and Koo and Kaffes, shows that endoscopic ultrasound is unnecessary when it is technically feasible to use a detachable nylon loop prior to electro-

surgical removal of a large pedunculated colonic lipoma.<sup>7,8</sup> Extremely thin-stalked and semipedunculated polyps are considered unsuitable for endoloop placement.<sup>11</sup> In these cases, endoscopic ultrasound should be performed, and extension of the lipoma to the muscularis propria should preclude the endoscopic removal. For lipomas that preclude the use of endoloops but do not extend to the muscularis propria, the technique of injecting saline or epinephrine at the base prior to electro-surgical resection appears to be safe.<sup>5</sup>

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# Review

## New Endoscopic Approaches to Removing Colonic Lipomas

Rajasekhara Mummadi, MD

Gottumukkala S. Raju, MD

*Center for Endoscopic Research, Training, and Innovation (CERTAIN), University of Texas Medical Branch, Galveston, Tex.*

Colonic lipoma is one of several submucosal tumors (including other types of lipoma, leiomyoma, lymphangioma, neurofibroma, carcinoid tumor, sarcoma, and lymphoma) that are rarely encountered in clinical practice.<sup>1</sup> Unlike other submucosal tumors, colonic lipomas can be easily diagnosed because of their characteristic appearance. Fat is yellow, smooth, soft, and pliable; thus, a smooth, yellow-colored submucosal lesion with a “pillow sign” (a surface indentation observed upon pushing the mass with closed biopsy forceps during colonoscopy) is quite characteristic of a colonic lipoma. Performing a single biopsy of the lesion is useless, as the biopsy reaches only the surface mucosa. Repeated biopsies at the same spot may reveal underlying fat, which is known as the “naked fat sign.”<sup>2</sup> Colonic lipoma can be seen as an uniformly hyperechoic mass arising from the colonic wall on endoscopic ultrasonography<sup>3,4</sup> or as a pliable, spherical lesion with broad pedicles on barium enema.<sup>5</sup> Confirmation of the diagnosis can be made by computed tomography scan or magnetic resonance imaging.<sup>6,7</sup>

The majority of colonic lipomas are asymptomatic and found incidentally during colonoscopy. Lipomas larger than 2 cm may cause symptoms such as abdominal pain, bowel changes, and rectal bleeding; mimic cancer; or present as a life-threatening emergency with massive hemorrhage, obstruction, perforation, intussusception, or prolapse.<sup>8-17</sup>

Management of colonic lipomas depends upon their size and clinical presentation. Although there is no need to remove small (<2 cm) asymptomatic lipomas, formal guidelines do not currently exist to aid clinicians regarding the need or frequency of follow-up. Surgical removal

is indicated in patients with colonic lipomas who present with complications such as obstruction, intussusception, perforation, or massive hemorrhage.<sup>18,19</sup> Due to the fear of complications (such as bleeding or perforation after endoscopic snare resection), patients with asymptomatic colonic lipomas larger than 2 cm are referred for elective surgery.<sup>20</sup> Recent advances in endoscopic techniques allow endoscopic removal to be considered as an alternative to surgical removal of large colonic lipomas.<sup>3,21-28</sup>

However, before endoscopic removal of large colonic lipomas, the following two questions should be considered:

1. Is the lesion sessile or pedunculated? Large sessile lesions may be difficult to ensnare, as the snare tends to slip easily during closure. In addition, the low water content of fat makes it a poor conductor of electrosurgical current. The prolonged cautery required for cutting may lead to the transmission of thermal damage to underlying tissue and result in a perforation.<sup>20</sup> Surgery should be considered in these cases. However, endoscopic snare resection could be considered if the superficial nature of the lipoma and adequate separation of the lesion from the muscularis propria after saline injection can be confirmed by endosonography.<sup>3,28</sup>
2. Is the pedicle free from muscle or serosa? Submucosal lipomas, as they enlarge, drag a pedicle that is free from muscle or serosa, and are safe to resect. Lipomas arising from the muscular or serosal layers lead to invagination of these layers into the pedicle as they enlarge into the lumen and are at risk for perforation during snare resection.<sup>20,29</sup> Although endoscopic ultrasound may assist in defining the layer structure of the stalk, experience with endoscopic ultrasound is limited in this area, and it is not easy to pass and interrogate the stalk with endosonography. Instead, the clinician could consider the use of probe sonography, as the ultrasound probe catheter can be easily inserted through the colonoscope.<sup>3,28</sup> Surgery should be considered in these cases as well, if the clinician cannot clearly define the nature of the pedicle (ie, whether there is muscle or serosa in the stalk).

Accordingly, one may wonder precisely what the role of the endoscopist is in the removal of colonic lipomas. Given the preceding discussion, it is crucial to be prepared to select the right lesion for removal and to prevent or treat colonic perforation by endoscopy. With expertise in the use of novel devices to approximate tissue—such as a nylon loop, clip device, or suturing device—the clinician could consider endoscopic removal of large pedunculated lipomas. When using these devices to remove colonic

Address correspondence to:

Dr. G. S. Raju, Center for Endoscopic Research, Training, and Innovation (CERTAIN), 4.106 McCullough Building, 301 University Boulevard, University of Texas Medical Branch, Galveston, TX 77555-0764; Tel: 409-772-9019; Fax: 409-772-4789; E-mail: gsraju@utmb.edu

lipomas, it is recommended that endoscopists keep the following in mind:

1. In the case of a long pedicle, the endoloop should be far away from the snare. A little distance should be left on the pedicle in between the nylon (endo) loop and the electrical snare, so that enough stalk remains after snare resection for the endoloop to continue its grasp; ensnaring just above and close to the endoloop results in slippage of the endoloop from the retracting stalk, with the lost benefit of loop ligation to prevent bleeding or delayed perforation.<sup>23,26</sup>
2. If there is not enough stalk on a short stalk to place the snare above the nylon loop, instead of electrosurgical snare resection, the polyp can be allowed to undergo slow ischemic necrosis after endoloop ligation. This process may require repeat application of an additional endoloop after a few weeks for complete resection of the lipoma.<sup>25</sup>

Unlike snare use, loop ligation may be challenging for inexperienced endoscopists; hence, it is crucial to undergo training in the implementation of a loop to safely and effectively use it in clinical practice. The American Society of Gastrointestinal Endoscopy offers training courses in the use of novel devices to help the practicing gastroenterologist learn new tools and tricks of the trade.

As experience with the endoscopic management of large colonic lipomas is limited to only a few cases and it is difficult to recruit large numbers of patients to report adequate experience with this technique, case reports such as this one from El-Dika and colleagues help clinicians gather adequate data to pursue endoscopic resection of colonic lipomas with confidence.<sup>23</sup> Such reports, whether positive or negative, should be encouraged when addressing any challenge not routinely seen in clinical practice.

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