

Endoscopic resection of giant GI lipoma: a case series

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Gastrointestinal lipomas are rare subepithelial benign tumors, which are usually asymptomatic.¹ To differentiate a lipoma from other types of submucosal tumors, EUS may be necessary.² Giant GI lipomas (>4 cm) may cause nonspecific symptoms such as abdominal pain, intestinal obstruction, or bleeding.³ Consequently, in such clinical situations, a resection is recommended.^{1,3}

The classic endoscopic techniques available for resection include EMR with polypectomy snare or submucosal dissection.^{1,4} EMR is considered to be safe for pedunculated lipomas or those measuring less than 3 cm.³⁻⁵ By contrast, some authors consider surgery the best option for larger lipomas because of the risk of adverse events of endoscopic treatment: perforation and bleeding.⁶

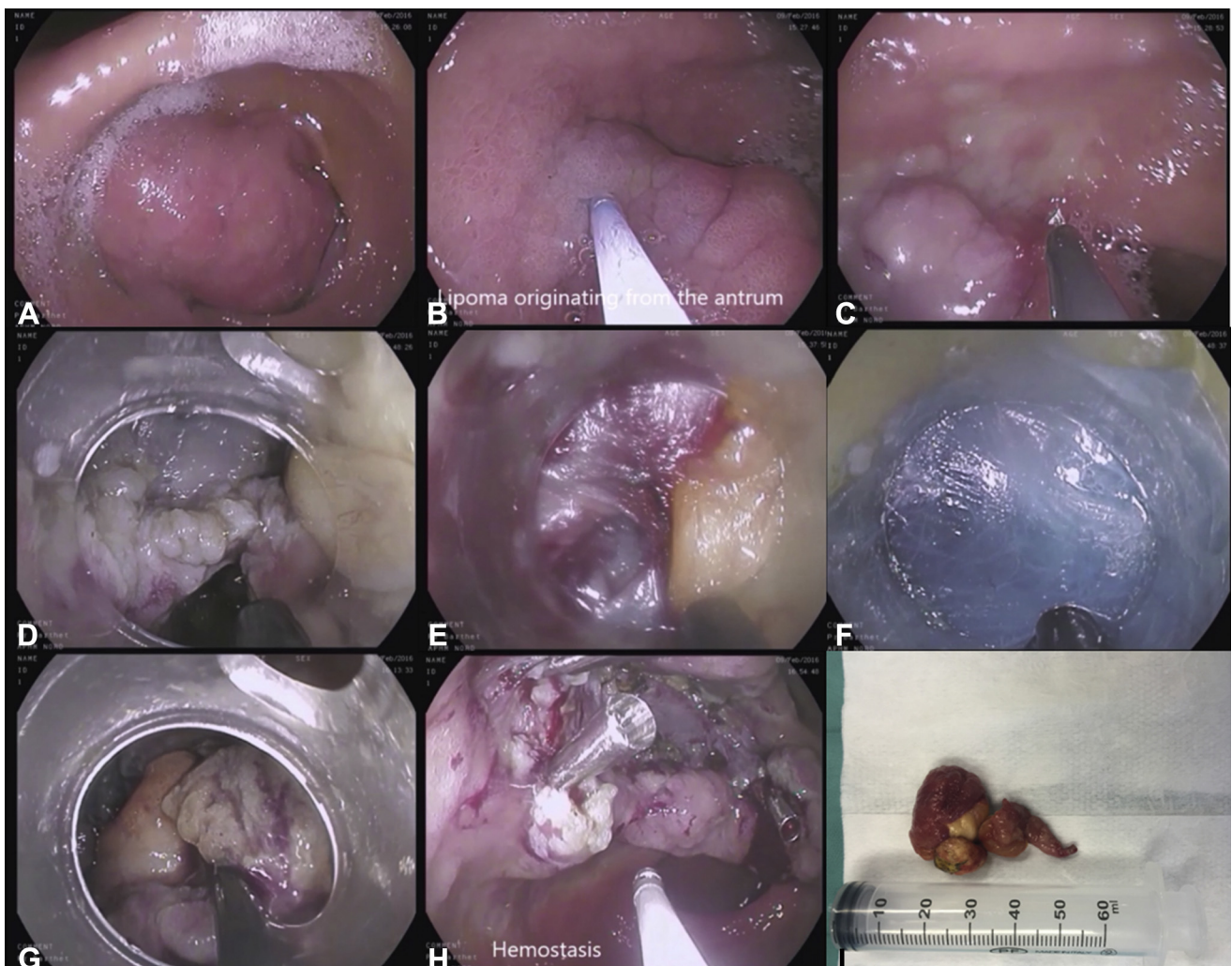


Figure 1. Patient 2: resection of giant lipoma in antrum by endoscopic submucosal dissection. **A**, Base of lipoma in antrum. **B**, Injection of saline solution mixed with epinephrine. **C**, Triangle Tip electrocautery knife. **D, E, F, G**, Step-by-step dissection. **H**, Hemostasis by clipping resection area. **I**, Lipoma specimen.

Written transcript of the video audio is available online at www.VideoGIE.org.

However, surgery may appear to be an invasive procedure for benign tumors and could be risky depending on the location of the tumor. In the meantime, concomitantly with the improvement of resection devices such as knives, and the development of new endoscopic techniques, we have been able to remove increasingly larger tumors. We propose in this case series a comprehensive review of these different approaches by reporting 4 cases of giant GI lipomas removed by endoscopy in a French tertiary care center (Video 1, available online at www.VideoGIE.org). All of the lesions were diagnosed on the basis of endoscopic examination and characterization. EUS was not necessary because of the typical appearance of lipomas in all cases.

PATIENTS AND METHODS

Patients

Patient 1. A 66-year-old man consulted us because of GI bleeding. Upper GI endoscopy showed a 5-cm flat ulcerated lipoma in the duodenum, which was responsible for the bleeding. This lipoma was removed by the unroofing technique, which consisted of cutting off the upper half of the lipoma by use of a polypectomy snare with Endocut Current. Because there were many adipocyte lobules, which were easy to retrieve, the remaining adipose tissue was subsequently extracted from the open surface with a cold snare. Preventive hemostasis was performed by clipping the resection area.

Patient 2. A 69-year-old man consulted us because of upper GI bleeding. Upper GI endoscopy showed a giant pedunculated lipoma originating from the antrum, 10 cm in length, and extending toward the duodenum (Fig. 1). The pedicle was 3 cm in diameter and was inflamed. The lipoma could not be caught (totally or partially) by a snare. The resection began with a submucosal injection of saline solution mixed with epinephrine 1:10,000, followed by a mucosal incision and a step-by-step dissection with a Triangle Tip electrosurgical knife and the application of Endocut Current. Hemostasis was achieved by clipping and coagulating the resection area.

Patient 3. A 77-year-old man was referred to our center because of lower GI bleeding. Colonoscopy showed a giant pedunculated lipoma of the right side of the colon, 6.5 cm in length. The pedicle was veiled, and its head was purple. The lipoma could not be caught (totally or partially) by a snare or an Endoloop. The resection started with preventive hemostasis and stabilization of the lipoma position by clipping its pedicle. Then, the base of the lipoma's foot was dissected step by step with using a Hook knife (Olympus, Tokyo, Japan) and the application of Endocut Current (Fig. 2). Hemostasis was achieved by clipping and deploying an Endoloop (Olympus).

Patient 4. A 39-year-old man consulted us because of abdominal pain and recurrent episodes of subacute



Figure 2. Patient 3: lipoma specimen.

intestinal obstruction. Colonoscopy showed a giant sessile lipoma 6 cm in diameter. It was located in the cecum near the valvula and was probably associated with the patient's symptoms. The resection began with preventive hemostasis by use of an Endoloop deployed around the base of the lipoma, which was very large. Then the lipoma was removed with a jumbo polypectomy snare and the application of Endocut Current. Hemostasis was completed by placing clips on the resection area. Overall, the mean diameter of the lipomas was 6.8 cm (range, 5-10 cm). We did not observe any perioperative adverse event, and the post-operative course was uneventful, with complete resolution of GI bleeding and symptoms of obstruction.

RESULTS

For all patients, histologic analysis confirmed the diagnosis of lipoma and complete resection except for the lipoma removed by the unroofing technique.

DISCUSSION

We have reported 4 cases of giant GI lipomas successfully removed by endoscopy by the use of different techniques, without any adverse event.

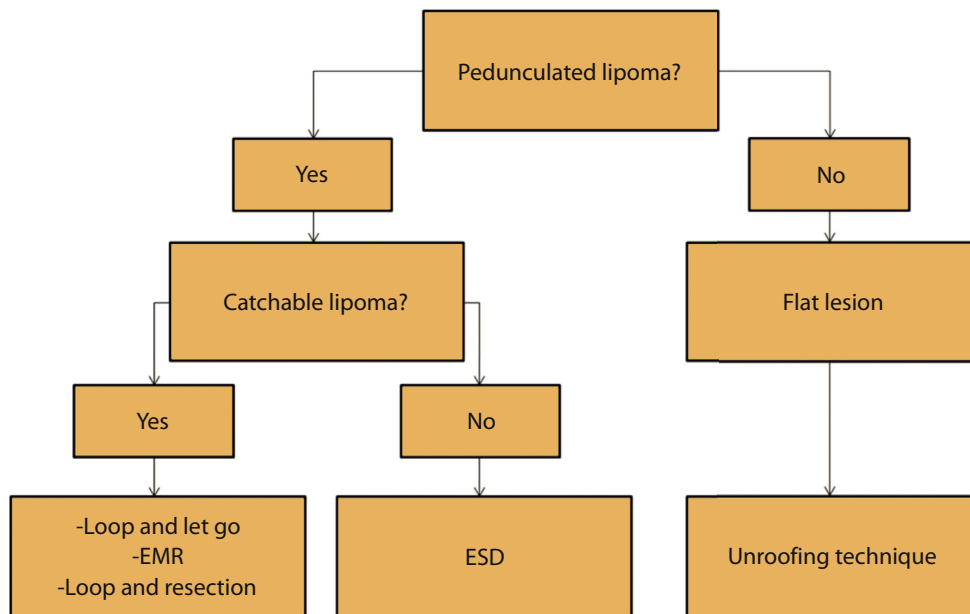


Figure 3. Decision tree. ESD, endoscopic submucosal dissection.

Giant GI lipomas are rare, constituting 0.2% to 4.4% of benign GI tumors.⁷ They are more often located in the colon and are usually single.⁸ Seventy-five percent of patients are symptomatic when lipomas measure more than 4 cm³; therefore, these symptomatic lipomas have to be removed by surgery or endoscopy.

Classically, endoscopic treatment was restricted to lipomas less than 3 cm because of the risk of perforation and bleeding.⁶ Indeed, because lipomas conduct electrical current poorly, the snare transection requires prolonged delivery of current, which could cause muscle injury and delayed coagulation necrosis. A few older studies reported a high perforation rate (42%),⁶ but more recent series have reported a lower rate of adverse events (perforation and bleeding) of approximately 4%.^{3,4,9}

Interestingly, 4 different techniques of endoscopic removal have been used and described. These approaches are illustrated in our cases, and the choice of the technique depends on the characteristics of the lipoma.

First, EMR, which was the first technique to be described in the literature for this indication,⁶ seems safe when the pedicle is long, whatever the location of the lesion.^{4,10,11} For adenomatous polyps, this technique consists of prior injection of saline solution mixed with epinephrine and a resection with a polypectomy snare, as with our patient 4.^{4,10} EMR seems safe and simple when a lipoma is pedunculated and able to be caught, and it should be preferred in such a situation.

Second, the unroofing technique was described by Mimura et al¹² in 1997 to remove a lymphangioma in the colon. It consists of opening the superior half of the lipoma with a polypectomy snare. Then it is possible to either leave the contents, using a cold snare that

secondarily drains into the lumen, or remove the fatty tissue, as with our patient 1. This is a safe and easy technique with a very low rate of adverse events in all locations.^{4,10,13,14} However, it may fail in cases of lipomas with very large or long pedicles.^{3,4,11,12,15} Thus, the unroofing technique should be the best option for flat or sessile lipomas and extended nonpedunculated lipomas.

Third, developed more recently, endoscopic submucosal dissection (ESD) seems to be safe but requires a highly experienced operator.^{3,4,16,17} Because GI lipomas originate from the submucosa in 90% of cases, ESD is effective^{1,7} with the use of different electrosurgical knives (eg, Triangle Tip knife or Hook Tip knife). This technique allows for separating lipomatous tissue from the submucosa with accuracy, even for large lesions, as in our patients 2 and 3.⁴ In consequence, when the lipoma is not able to be caught (totally or partially) with a snare, ESD seems to be a safe and effective technique to remove lipomas.

Fourth, recent publications have reported a very non-invasive treatment, “loop and let go,” which consists of ligating the base of the lipoma with an Endoloop to achieve spontaneous secondary necrosis. This technique was successful in 90% of all cases reported in the colon, seems very safe,^{18,19} and should probably be used more often, even with the risk of failure.

In the literature, a few operators have described several techniques to remove giant lipomas, such as loop and resection, which consist of deploying an Endoloop around the basis of the lipoma and then removing it with a snare. Lee et al⁴ have described EMR after precutting, which consisted of performing a circumferential incision with a dissection knife and then removing the lipoma with a polypectomy snare.

To summarize the therapeutic options available, we have provided a simple decision tree (Fig. 3) to help match the techniques of resection of giant lipomas with the risk of adverse events and technical difficulties.

No study that we are aware of has evaluated the risk factors for adverse events resulting from endoscopic lipoma resection. Nevertheless, as an analogy with resections of GI tract adenomas, the risk for bleeding and perforation is probably increased for lipomas measuring more than 1 cm in the right side of the colon and more than 2 cm in the left side of the colon.²⁰ To prevent postresection hemorrhage, various techniques could be used such as clipping the resection area, using coagulation, or clamping the basis of the lipoma with an Endoloop. These are the same classic techniques of hemostasis used for endoscopic resection of adenomatous tumors.^{5,21-23}

In conclusion, giant GI lipomas can be removed safely by endoscopy when resection is necessary. The choice of the technique of resection (ESD, EMR, unroofing, or loop and let go) and hemostasis (Endoloop, clipping, coagulation, or a combination of these techniques) should depend on the presentation, the aspect, the size, and the location of lipoma. It also must be based on the experience of the operator.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

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