

Laparoscopic Management of Gastric Submucosal Lipomas: A Case Series

Bishnu Prasad Kandel¹, Deepak Sharma¹, Suyog Bhandari¹, Paleswan Joshi Lakhey¹

¹ Department of Surgical Gastroenterology, Tribhuvan University Teaching Hospital, Institute of Medicine, Maharajgunj Medical Campus

Gastric lipomas are exceedingly rare benign mesenchymal tumors of the stomach, representing less than 1% of all gastric neoplasms and approximately 5% of all gastrointestinal lipomas. While often discovered incidentally, they can cause significant morbidity when they reach a large size. This report describes the laparoscopic management of two symptomatic cases of large gastric submucosal lipomas and provides a comprehensive review of the diagnostic criteria and surgical management strategies for this condition. We present two male patients, aged 50 and 71 years, who presented with symptoms of gastric outlet obstruction, including upper abdominal pain and recurrent vomiting. Diagnostic imaging revealed large, well-circumscribed submucosal masses in the antrum and pylorus of the stomach. Both patients were successfully treated with laparoscopic excision and improved without complications. Laparoscopic intervention is a safe, effective, and definitive treatment for symptomatic gastric lipomas. Preoperative diagnosis is reliably achieved using computed tomography (CT) and endoscopy, allowing for organ-preserving surgical planning.

Introduction

Gastric lipomas are uncommon, slow-growing, benign tumors composed of mature adipose tissue. They typically originate in the submucosal layer of the stomach, with a smaller percentage originating in the sub-serosal layer.¹ These lesions represent fewer than 1% of all gastric tumors and are most frequently diagnosed in the fifth and sixth decades of life.^{1,2} Approximately 75% of these tumors are located in the gastric antrum. While small lipomas (<2 cm) are generally asymptomatic, larger lesions can cause multiple symptoms, depending on their location. Symptomatology is typically driven by the mass effect, leading to epigastric pain or gastric outlet obstruction, or by mucosal changes such as ulceration and subsequent gastrointestinal hemorrhage.³ Given their rarity, they are often misdiagnosed as other mesenchymal tumors such as gastrointestinal stromal tumors (GISTs) or leiomyomas.⁴ This report illustrates the successful laparoscopic management of two symptomatic gastric lipomas and reviews the literature to define the current standards of care.

Case Presentation

Case 1

A 50-year-old man presented with a two-month history of progressive upper abdominal discomfort, nausea, and intermittent non-bilious vomiting. Physical examination and laboratory evaluations, including CBC and liver function tests, were unremarkable. Upper gastrointestinal endoscopy revealed a large prepyloric polypoid lesion with mucosal ulceration. Contrast-enhanced computed tomography (CECT) of the abdomen revealed a well-circumscribed, 6 × 7 cm lesion in the pylorus with fat attenuation (-70 to -120 HU), highly suggestive of a lipoma. Intraoperatively, the submucosal mass was located on the anterior wall of the pylorus and extended into the first part of the duodenum. Given the proximity to the gastroduodenal junction,

Article History

Received on - 2026 Feb 22
Accepted on - 2026 May 15

Correspondence

Dr. Bishnu Prasad Kandel
Department of Surgical Gastroenterology,
Tribhuvan University Teaching Hospital,
Institute of Medicine, Maharajgunj Medical
Campus
Email: drkandel@hotmail.com
ORCID: 0009-0006-9341-8773

Online Access



DOI:

Citation: Kandel BP, Sharma D, Bhandari S, Joshi Lakhey P. Laparoscopic Management of Gastric Submucosal Lipomas: A Case Series. JNSG 2026;1(1):20-22.

Copyright: © The Author(s) 2026.

This is an open access article under the [CC BY](#) license.



the lipoma was excised with a small cuff of the involved gastric wall. The patient was discharged on the fourth postoperative day. The histopathology report suggested a diagnosis of lipoma. At the three-month follow-up, he remained asymptomatic, with complete resolution of the obstructive symptoms.

Case 2

A 71-year-old man presented with a three-month history of recurrent vomiting and early satiety. Endoscopy and CECT imaging confirmed a 6 × 5 cm lipoma in the gastric antrum. The overlying mucosa was intact and not adherent to the tumor. Laparoscopic extramucosal enucleation was performed. This parenchymal-sparing technique was selected because the lesion was well encapsulated and lacked mucosal ulceration. The gastric wall was then reconstructed in two layers. (Figure 1)

The patient's postoperative course was uneventful, and he fully recovered. The histopathology report was consistent with that of a lipoma.

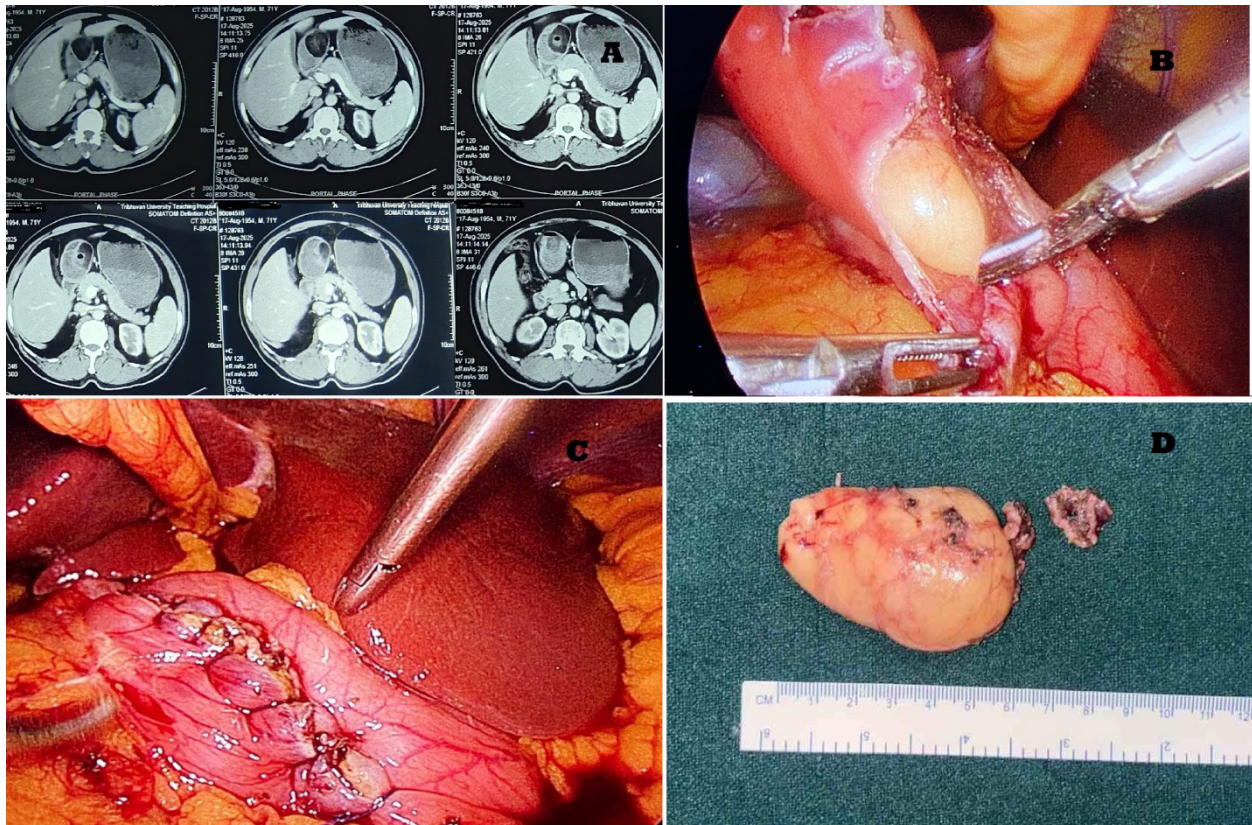


Figure 1: Gastric lipoma A:CT Scan abdomen showing gastric lipoma, B: intraoperative picture showing dissection of lipoma, C:intraoperative picture after closure of gastric wall, D: Specimen of gastric lipoma

Discussion

Differentiating gastric lipomas from other submucosal tumors is crucial for surgical planning. The differential diagnosis includes gastrointestinal stromal tumors (GISTs), leiomyomas, and extremely rare liposarcomas.⁴ While GISTs require wide margins due to their malignant potential, lipomas are benign and can be managed with local excision or enucleation.^{5,6} The diagnosis is facilitated by specific endoscopic markers. The cushion sign refers to visible indentation of the mass when pressed with biopsy forceps, reflecting the soft, adipose nature of the tumor.⁷ The tenting sign describes the ease with which the overlying mucosa can be grasped and pulled away from the underlying mass, indicating a lack of infiltration into the epithelial layers. These signs are characteristic of subepithelial fat displacement. While endoscopic ultrasound (EUS) is considered the gold standard for identifying the layer of origin, CECT remains the definitive modality for tissue characterization.⁸ The presence of a well-defined mass with a fat density range of -70 to -120 Hounsfield units (HU) is considered pathognomonic, and this radiological certainty often precludes the need for a preoperative biopsy, which is frequently non-diagnostic due to the submucosal depth.⁴

The current literature suggests that asymptomatic lipomas smaller than 2 cm can be monitored conservatively. However,

surgical intervention is mandatory for symptomatic lesions or "giant" lipoma (more than 10cm) due to the risk of obstruction or bleeding.⁹ Our surgical approach was tailored to the clinical findings of each case. In Case 2, we performed extramucosal enucleation. This approach is oncologically safe for lipomas because they are well encapsulated benign entities. In contrast, enucleation is generally avoided in GISTs because of the risk of pseudocapsule rupture and peritoneal seeding. In Case 1, the presence of mucosal ulceration and duodenal extension necessitated formal wedge resection to ensure complete and safe removal, followed by a specific two-layer closure to maintain pyloric patency.

Laparoscopic management of submucosal tumors offers significant advantages over traditional open surgery, including reduced postoperative pain, shorter hospital stays, and a faster return to bowel function.¹⁰ The use of minimally invasive techniques allows for precise dissection and preservation of gastric volume and function, which is particularly beneficial in older patients, such as the patient in Case 2.

Histopathologically, these tumors consist of mature adipocytes arranged in lobules, separated by thin fibrous septa, and enclosed in a thin capsule. Although malignant transformation into liposarcoma is statistically negligible, definitive histopathological confirmation remains the standard for ruling out high-grade

mesenchymal malignancies.

Conclusion

CECT is the preoperative gold standard for diagnosing gastric lipomas. Symptomatic gastric lipomas can be managed by surgical resection. Extramucosal enucleation with minimally invasive techniques is a safe, parenchymal-sparing option when the overlying mucosa is healthy and the tumor is well-encapsulated.

References

1. Neto FAF, Ferreira MCF, Bertoncello LCN, Neto AA, de Aveiro WC, Bento CA, et al. Gastric lipoma presenting as a giant bulging mass in an oligosymptomatic patient: a case report. *J Med Case Reports*. 2012 Sep 24;6(1):317. [DOI]
2. López-Zamudio J, Leonher-Ruezga KL, Ramírez-González LR, Razo Jiménez G, González-Ojeda A, Fuentes-Orozco C. Pedicled gastric lipoma. Case report. *Cirugía y Cirujanos*. 2015 May 1;83(3):222–6. [DOI]
3. Jarrett SA, Tito S, Chan M, Jarrett DE, Lo KB, DePalma R. Gastric Lipomas: A Case Series and Review of the Literature. *Case Rep Gastroenterol*. 2024 Jan 9;18(1):14–20. [DOI] [PMID] [PubMed]
4. Thompson, W, Kende, A, Levy, A. "Imaging Characteristics of Gastric Lipomas in 16 Adult and Pediatric Patients". *American Journal of Roentgenology* 2003; 181(4):981–985. [DOI]
5. Akahoshi K, Oya M, Koga T, Shiratsuchi Y. Current clinical management of gastrointestinal stromal tumor. *World J Gastroenterol*. 2018 Jul 14;24(26):2806–17. [DOI] [PMID] [PubMed]
6. Krasniqi AS, Hoxha FT, Bicaj BX, Hashani SI, Hasimja SM, Kelmendi SM, et al. Symptomatic subserosal gastric lipoma successfully treated with enucleation. *World Journal of Gastroenterology*. 2008 Oct 14;14(38):5930–2. [DOI]
7. Priyadarshi RN, Anand U, Pandey MK, Chaudhary B, Kumar R. Giant Gastric Lipoma Presenting as Gastric Outlet Obstruction – A Case Report. *J Clin Diagn Res*. 2015 Oct;9(10):PD03–4. [DOI] [PMID] [PubMed]
8. Gong EJ, Kim DH. Endoscopic Ultrasonography in the Diagnosis of Gastric Subepithelial Lesions. *Clinical Endoscopy*. 2016 Sep 30;49(5):425–33. [DOI]
9. Amundson JR, Straus D, Azab B, Liu S, Garcia Buitrago MT, Yakoub D. Giant symptomatic gastric lipoma: A case report and literature review. *Int J Surg Case Rep*. 2018 Sep 9;51:313–7. [DOI] [PMID] [PubMed]
10. De Nardi P, Castoldi R, Pecorelli N, Staudacher C. Laparoscopic Enucleation of Submucosal, Large, Symptomatic, Gastric Lipoma. *VideoscopyTM*. 2012 Aug 1;22(4). [DOI]