Case study

Laparoscopic resection of a rare large spindle cell tumor of stomach – Schwannoma

Abstract

Aim: To present a rare case report of large schwannoma stomach which was adherent to transverse colon and pancreas and was safely and effectively resected by laparoscopic approach

Presentation of Case: A 52 years old lady presented with a large gastric mass which was initially suspected as GIST and was resected laparoscopically but final Histopathology and Immunohistochemistry results were suggestive of Schwannoma

Discussion: Gastrointestinal tract is rarely involved by schwannoma, with stomach being the most common site. It arises from the nerve sheath of Auerbach's or Meissner's plexus and is observed as a submucosal tumor by endoscopy. It's accurate diagnosis is difficult to establish by preoperative CECT or endoscopy. Final diagnosis can be made only from Histopathology and Immunohistochemistry of resected specimen.

Conclusion: Laparoscopic resection of large gastric schwannomas is feasible and safe.

Key words: Schwannoma stomach, GIST stomach, S-100, Laparoscopic Resection

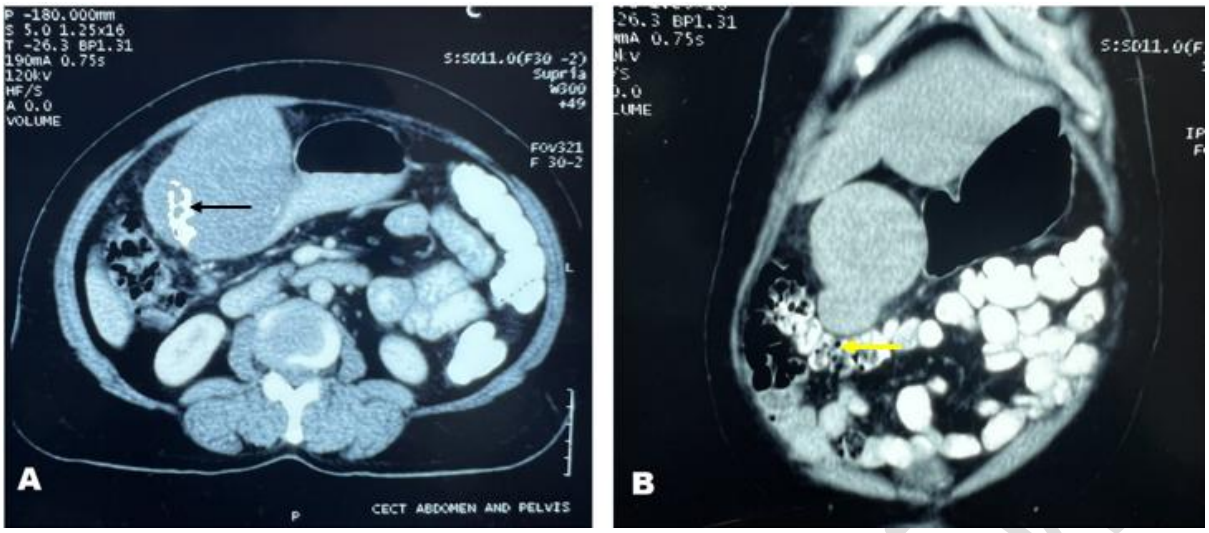
Introduction

Schwannoma of the stomach (SS) accounts to 0.2% of gastric neoplasms [1]. They are mostly benign, slow growing and very often asymptomatic. Diagnosis can only be established by histopathology (HP) and immunohistochemistry (IHC) of the resected specimen. The best treatment option remains complete resection with negative margins.

Presentation of case

A 52-year-old lady, known diabetic presented with pain abdomen, mass per abdomen and occasional non bilious vomiting. On examination, there was a mass in the epigastrium extending to right hypochondrium. Contrast Enhanced Computerized Tomography (CECT) of abdomen showed 12cm x 10cm x 10cm heterogeneously enhancing exophytic lesion arising from antro-pyloric region of the stomach. The lesion had calcification and was compressing the first part of duodenum, mid transverse colon and the head of pancreas (Fig 1 A, B).

FIGURE 1



A: Large tumor arising from antro-pyloric region of the stomach (Black arrow showing calcification)

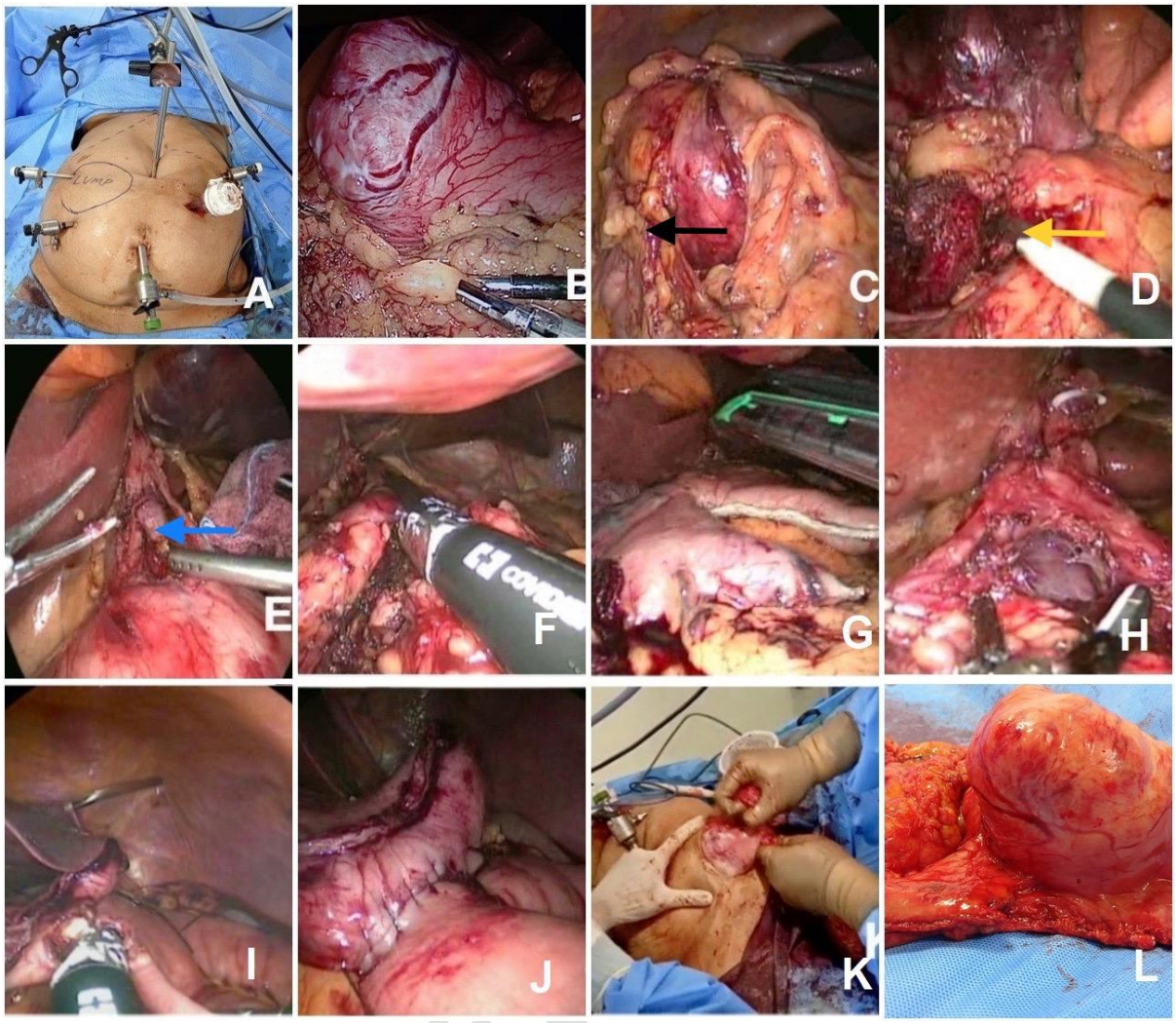
B: Tumor adherent to transverse colon (yellow arrow)

Endoscopy showed a globular lesion with central umbilication. Serum CEA was normal. With the above findings a provisional diagnosis of Gastro Intestinal Stomal Tumor (GIST) was made.

The patient was planned for Laparoscopic resection. Six ports were used. (Fig2 A) Per-operatively there was a large tumor arising from the antro-pyloric region of stomach (Fig 2B) with adhesions to mid-transverse colon (Fig 2C) and head of pancreas (Fig 2D). There were enlarged lymph nodes over the coeliac artery and common hepatic artery (Fig 2E). After carefully separating the tumor from the surrounding structures using harmonic shears, the first part of the duodenum was staple transected using Endo GIA white cartridge (Fig 2F) and the body of the stomach with proximal margin of 10 cm from the growth is transected using two Endo GIA green cartridge (Fig 2G).

In view of enlarged lymph nodes, a formal D2 lymphadenectomy was performed (Fig 2H). Loop Gastro-jejunostomy was performed using Endo-GIA blue load (Fig 2I) and intracorporeal sutures (Fig 2J). The specimen was extracted through the incision over previous Pfannenstiel scar of hysterectomy (Fig 2K). Abdominal drain was placed.

FIGURE 2

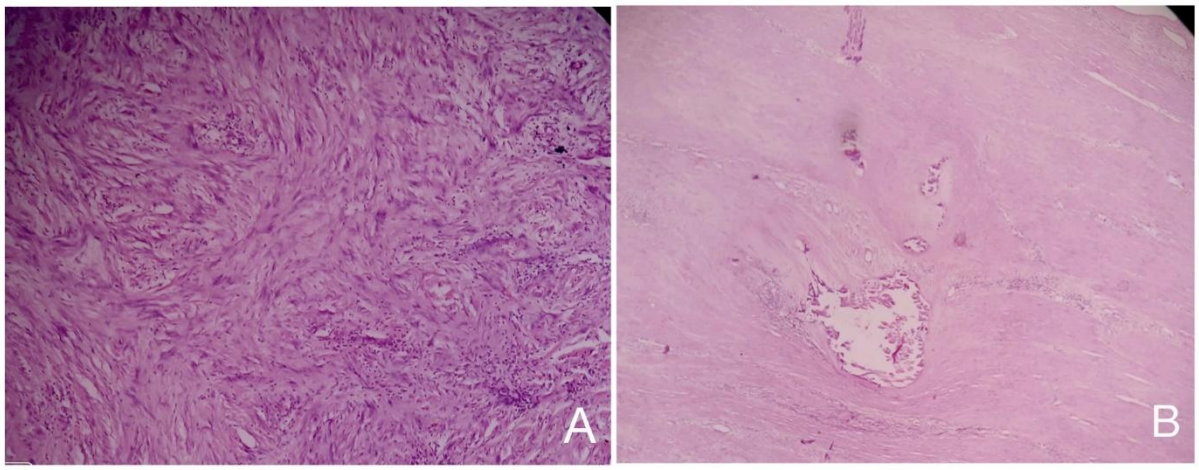


A. Port placements. **B.** Tumour arising from Antro-pyloric region **C**. Tumour adherent to transverse colon (black arrow). **D.** Adherent to Pancreas head (yellow arrow). **E.** Lymph nodes over coeliac axis (blue arrow). **F.** Stapled transection of D1. **G.** Stapled transection of Body of stomach **H.** Completed lymph node clearance. **I.** GJ with stapler **J.** GJ reinforced with intracorporeal sutures. **K.** Specimen extraction through Previous scar. **L.** Final specimen.

The patient was started liquids orally on the 2nd post operative day (POD) and semisolid diet on the 4th POD. The abdominal drain was removed on the 5th POD and the patient was discharged.

HP of the resected specimen showed features of benign spindle cell tumor of the stomach (Fig 3). The resection margins were free of tumor and 20 lymph nodes which were isolated were also reactive.

FIGURE 3



A: Histopathology showing spindle cells in palisading pattern

B: Calcification within the tumour

IHC was positive for S-100 protein and was negative for CD117, DOG 1, H. Caldesmon, SMA and hence final diagnosis of Schwannoma was made.

At 10 months follow up there were no recurrence.

Discussion

Gastrointestinal tract is rarely involved by schwannoma with stomach being the most common site. It was first reported by Daimaru et all [2]. SS arises from the nerve sheath of Auerbach's or Meissner's plexus and is observed as a submucosal tumor by endoscopy [3]. Its accurate diagnosis is difficult to establish by preoperative CECT or endoscopy. Routine use of EUS –FNA is not recommended due to risk of rupture, bleeding and spread. Diagnosis can only be established by HP and IHC of the resected specimen which shows S-100 positivity and allows the distinction between SS and other submucosal tumors. IHC shows strongly positive S-100 Protein and negative CD117 [4], thus differentiating it from GIST.

In view of large size, adhesions to transverse colon and pancreas, enlarged lymph nodes over the coeliac axis a malignant tumour was suspected. The elements suggesting malignancy in spindle cell tumour of stomach are: the large size of the tumour, the break-in of the capsule, the adherence to neighbouring organs, the calcifications and the necrotic haemorrhagic changes, the hypercellularity, the high mitotic activity of the appearance epithelioid and sometimes the diagnosis of malignancy is established only on the existence of metastases. [4]
Lymph node metastasis in GIST and Schwannoma are rare. In our case there were enlarged lymph nodes over the coeliac axis and hence a formal D2 lymphadenectomy was also performed.
Complete surgical resection of tumor with negative margins remains curative treatment for SS. [5] This case is reported due to rarity of involvement of stomach by schwannomma and its effective resection by laparoscopic approach with negative margins despite the large size, adhesions to surrounding structures and enlarged lymph nodes over coeliac axis.

Conclusion

Schwannomas of stomach are a rare entity and final diagnosis is usually established by immunohistochemistry of resected specimen. Laparoscopic resection of such large gastric tumor is safe, effective and feasible in experienced hands with sound anatomical knowledge.

References

1. Yanagawa, S. et al. (2020) “A rare case of Gastric Schwannoma: A case report and literature review,” Case Reports in Oncology, 13(1), pp. 330–335. Available at: https://doi.org/10.1159/000506450.
2. Daimaru, Y. *et al.* (1988) “Benign Schwannoma of the gastrointestinal tract: A Clinicopathologic and immunohistochemical study,” *Human Pathology*, 19(3), pp. 257–264. Available at: https://doi.org/10.1016/s0046-8177(88)80518-5.
3. Mekras, A. et al. (2018) “Gastrointestinal schwannomas: A rare but important differential diagnosis of mesenchymal tumors of gastrointestinal tract,” BMC Surgery, 18(1). Available at: https://doi.org/10.1186/s12893-018-0379-2.
4. Raihana, B. (2020) “Malignant Gastric Schwannoma: A case report & review of literature,” *American Journal of Biomedical Science & Research*, 7(1), pp. 36–40. Available at: https://doi.org/10.34297/ajbsr.2020.07.001110.
5. Mulita, F. et al. (2022) “Gastric Leiomyoma or Gastric Schwannoma: A diagnostic dilemma and the role of Laparoscopic Surgery,” BMJ Case Reports, 15(3). Available at: https://doi.org/10.1136/bcr-2021-247199.