



Total laparoscopic resection of giant multi-lobulated gastrointestinal stromal tumour of stomach: a case and literature review

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Abstract: Laparoscopic resection is being increasingly used in the management of gastric gastrointestinal stromal tumours (GISTs) despite having some oncological safety concerns. Tumour size is an important determinant and laparotomy may be required for larger tumours. The role of laparoscopic resection for large GISTs especially with more than 5 cm size is debatable. This is mainly due to the possibility of intraoperative tumour rupture leading to high recurrence rates. Here we present a case report of 52-year-old obese female presented with left sided upper abdominal discomfort and early satiety for 3 months duration. She also had a recent episode of upper gastrointestinal bleeding. Upper gastrointestinal endoscopy and computed tomography scan of the abdomen revealed a giant gastric (12×11×9 cm³) GIST. She underwent total laparoscopic resection without tumour rupture. Histology revealed complete resection margins without malignant changes. She had adjuvant treatment with Imatinib considering tumour size, higher mitotic count and was well throughout the course of treatment. She is asymptomatic on long term follow up. Laparoscopic excision is feasible for removal of a giant gastric GIST in experienced hands.

Keywords: Laparoscopic resection; gastrointestinal stromal tumours (GISTs); giant; case report

Received: 28 March 2020; Accepted: 23 December 2020; Published: 30 December 2020.

doi: 10.21037/dmr-20-33

View this article at: <http://dx.doi.org/10.21037/dmr-20-33>

Introduction

Gastrointestinal stromal tumours (GISTs) are the commonest mesenchymal tumours in the gastrointestinal tract and 60% to 70% of them are found in the stomach (1,2). Surgical resection remains the treatment of choice for non-metastatic GISTs, since they grow by expansion rather than diffuse infiltration and seldom invade regional lymph nodes. Therefore routine lymphadenectomy can be avoided (3) and this makes the minimally invasive surgery easier. The role of laparoscopic resection for large GISTs especially with more than 5 cm diameter is debatable due to the possibility of intraoperative tumour rupture leading to high relapse rates. The laparoscopic approach is discouraged for large tumours by the European Society for Medical Oncology guidelines 2012 (ESMO) due to

the risk of tumour rupture (4). Guidelines polished by the Chinese Society of Clinical Oncology in 2017 also does not recommend laparoscopic approach for tumours more than 5 cm in diameter (5). The National Comprehensive Cancer Network (NCCN) guidelines recommends laparoscopic surgery only when the GISTs are located in areas such as the greater curvature and anterior gastric wall (6). Recently retrospective studies from Asian countries demonstrated that laparoscopic surgery is feasible, safe and oncologically acceptable for large gastric GISTs (7). Here we present a patient with giant GIST of stomach underwent successful laparoscopic resection with satisfactory outcomes. We present the following case in accordance with the CARE reporting checklist (available at <http://dx.doi.org/10.21037/dmr-20-33>).

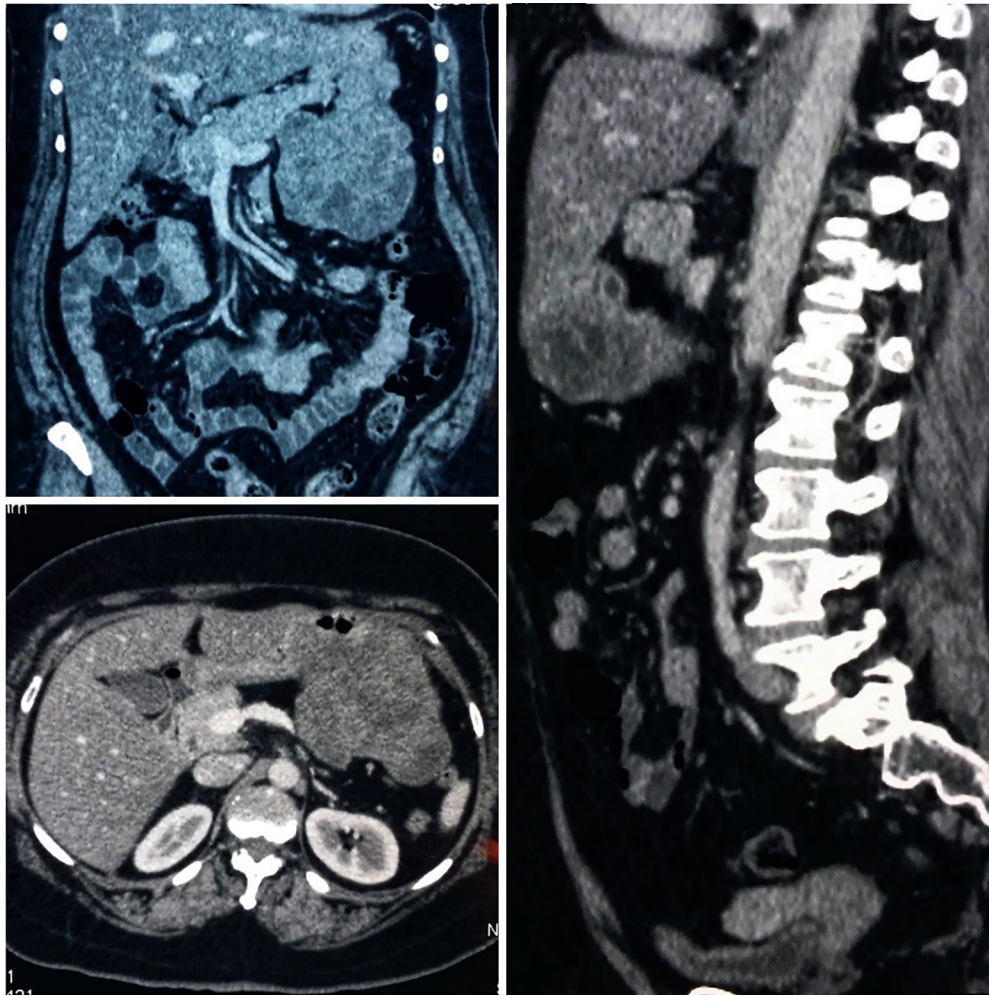


Figure 1 Computed tomography showing large exophytic mass in relation to stomach and pancreatic tail.

Case presentation

A 52-year-old female was referred to our gastrointestinal surgical unit with a history of left upper abdominal pain and early satiety for 3-month duration. She later developed an episode of coffee ground vomiting suggestive of upper gastrointestinal bleeding. There was no history of dysphagia, anorexia or weight loss. She had a history of diabetes mellitus, dyslipidaemia, hypothyroidism, and depressive illness. Her past surgical history was unremarkable. On physical examination her BMI was 35 kg/m^2 and there was no evidence of cervical lymphadenopathy. On abdominal examination a vague intra-abdominal mass was felt and it was difficult to assess due to obesity. Her serum biochemistry was unremarkable. Abdominal ultrasound revealed a large mass in relation to

the tail of the pancreas ($10 \times 8 \times 6 \text{ cm}^3$). Her contrast enhanced computed tomography (CECT) abdomen and pelvis showed a large ($12 \times 9 \times 11 \text{ cm}^3$) heterogenous mass postero-inferior to the stomach with broad-based attachment suggestive of a giant gastric GIST (*Figure 1*). She underwent upper gastrointestinal endoscopy which showed multi-lobulated mass in relation to posterior wall and greater curvature of the stomach (*Figure 2*) without bleeding. Subsequently her endoscopic ultrasound (EUS) guided FNAC confirmed a GIST. She underwent laparoscopic resection (*Figure 3*). At laparoscopy there was a large multi lobulated vascular mass in relation to posterior aspect of stomach near greater curvature without signs of metastases. It was mobilized from vascular adhesions from adjacent organs and excised with Endo GIA staplers. Specimen (*Figure 4*) was delivered via small transverse incision in the left upper quadrant.



Figure 2 Upper gastrointestinal endoscopy showing multi-loculated submucosal masses in relation to posterior gastric wall.

Histopathology revealed a benign gastric gastrointestinal stromal tumour with R0 resection. The post-operative period was uneventful and the patient was discharged 6 days later. She was treated with adjuvant Imatinib by the medical oncologist considering the tumour size and higher mitotic count (Ki 67 index 6–8) for 1 year duration and she was well throughout the course of treatment. She was followed-up for four years with normal upper GI endoscopy and abdominal CT and was asymptomatic. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case and accompanying images.

Discussion

Lukaszczuk and Preletz reported the laparoscopic surgery for patients with GISTs in 1992 (8). Over the last two decades minimal invasive approaches for gastric GIST became more popular and were supported by strong evidence (9). The main advantages of laparoscopic approach are the reduced blood loss, less post-operative pain, reduced peri-operative morbidity, better cosmesis, shorter hospitalization and early return to work compared to open surgery. Limitations are the location and the size of the tumour. Guidelines published by the ESMO (10), the NCCN (11), and Asian GIST guidelines (12), the indication for laparoscopic resection is limited to GISTs located in the greater curvature and anterior wall of the gastric body, fundus and antrum. The laparoscopic approach is restricted in GISTs located in lesser curvature, cardia and prepyloric

region due to consideration of the risks of luminal stenosis, non-oncological resections and the difficulty in surgical exposure.

The NCCN guidelines and several retrospective cohort studies have suggested that laparoscopic resection is feasible and safe for gastric GISTs smaller than 5 cm (13). Prior to 2015 there was no limit imposed on the size of GISTs for laparoscopic resection in NCCN guideline (11). Size is not emphasized in the Asian GIST guidelines either (12). However the latest ESMO guidelines discourage laparoscopic approach in patients with large tumors because of the risk of tumour rupture since it is associated with a very high risk of relapse. In our patient tumour was more than 10 cm in diameter and was located in the posterior wall adjacent to greater curvature. It was safely resected without tumour rupture. In our patient we tried to grasp the stomach and normal tissues around the tumour for the prevention of tumour spread during laparoscopic surgery.

Recent studies show the safety and feasibility of laparoscopic resection in large (>5 cm) and giant (>10 cm) GISTs with oncologic results comparable to those of open surgery (14). Recent retrospective studies showed that laparoscopic surgery did not increase the risks of tumour relapse and metastasis (14–16). The 5-year recurrence free survival (RFS) rate in patients who underwent curative resection for gastric GISTs was excellent (17). According to the 7th UICC/AJCC TNM staging system, 5-year RFS rates were 98.7% in stage I, 93.1% in stage II, 74.1% in stage IIIA and 60% in stage IIIB gastric GISTs (17). Our patient was aware on the importance of further adjuvant therapy, necessity of follow up investigation and her compliance with adherence to treatment protocols was satisfactory. The studies on the prognosis of GISTs suggests that increased attention is warranted for follow-up of patients with GISTs presented with gastrointestinal bleeding (18).

Strengths and limitations

This case provides evidence to the laparoscopic management of giant GISTs and only few cases have been reported in this entity. Neoadjuvant therapy for large GISTs has shown the potential to tumour shrinkage with better complete resection rates and low risk of surgical rupture or extended surgery. As this patient was symptomatic at presentation with evidence of gastrointestinal bleeding we had to consider

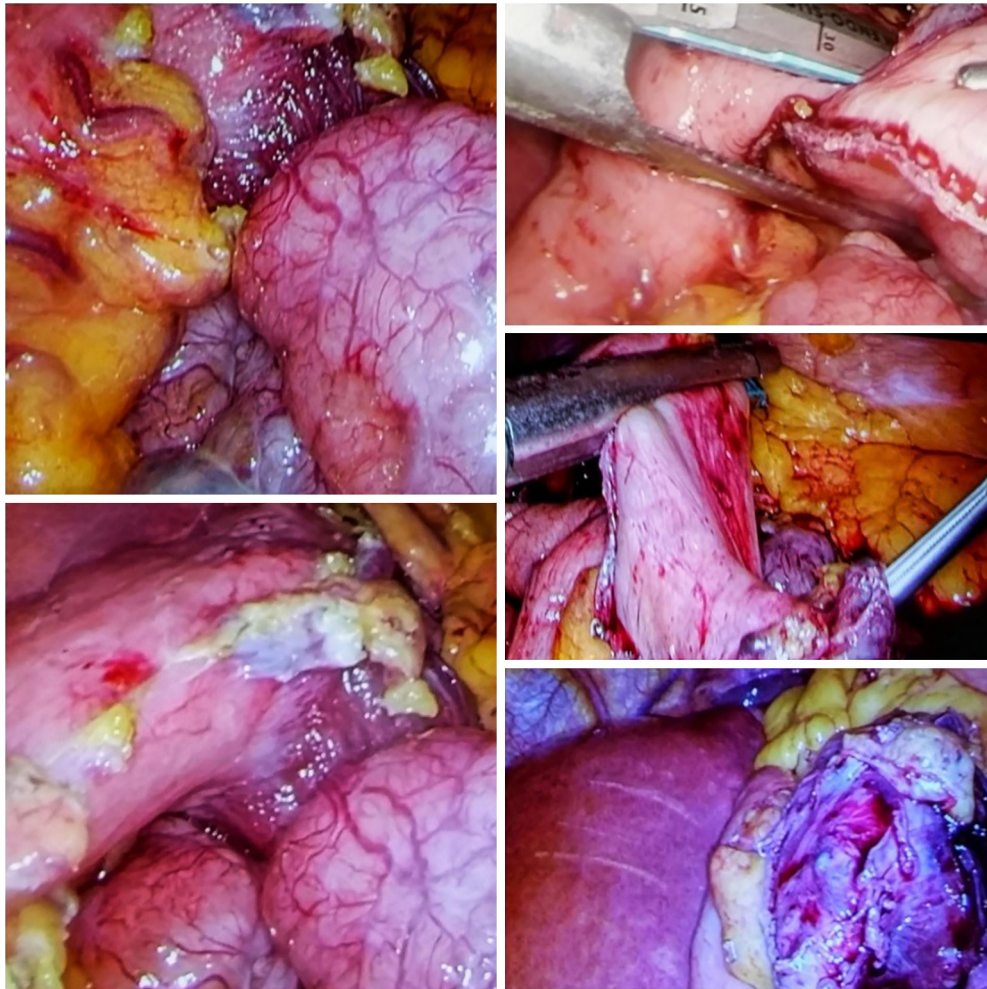


Figure 3 Intraoperative laparoscopic images showing multilobular exophytic mass in relation to greater curvature of stomach and operative steps.

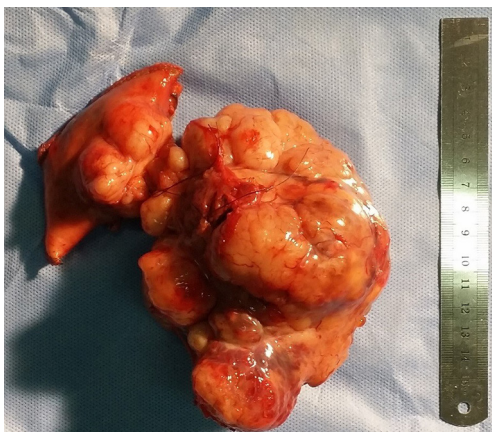


Figure 4 Surgical specimen showing exophytic growth resected with a cuff of greater curvature of stomach.

primary surgery without neoadjuvant treatment despite the large size of the tumour. Increased attention is warranted for follow-up of patients with gastrointestinal bleeding caused by GIST as it's an adverse prognostic factor for recurrence. This patient is still at 4 years after surgery and she needs further follow up to comment on long term recurrence.

Conclusions

Surgical resection with negative margins without lymphadenectomy is the treatment of choice of gastric GISTs. Laparoscopic resection is a good alternative to open surgery in giant gastric GISTs. Therefore, laparoscopic surgery could be considered in all cases irrespective of tumour size in experienced hands.

Acknowledgments

The subject gave informed consent, and patient anonymity was preserved. Authors wish to acknowledge the other medical staff who took care of the patient.

Funding: None.

Footnote

Reporting Checklist: All authors have completed the CARE reporting checklist. Available at <http://dx.doi.org/10.21037/dmr-20-33>

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/dmr-20-33>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Informed written consent was obtained from the patient for publication of this study and any accompanying images.

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doi: 10.21037/dmr-20-33

Cite this article as: Subasinghe D, Priyantha TGA. Total laparoscopic resection of giant multi-lobulated gastrointestinal stromal tumour of stomach: a case and literature review. *Dig Med Res* 2020;3:72.