Original Article

Laparoscopic Resection Of Giant Gastric Gastrointestinal Stromal Tumor - Extending The Size Criterion – A Case Report

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Abstract

The stomach is the most common site of gastrointestinal stromal tumours representing 50% to 70%. Gastric GISTs are usually asymptomatic, discovered incidentally during endoscopic or radiological investigation. Feasibility and long-term safety of laparoscopic removal of gastric GISTs of the stomach is well established for lesions smaller than 3cm. We report a case of giant gastric GIST of size more than 10cm resected laparoscopically without any tumour rupture.

INTRODUCTION

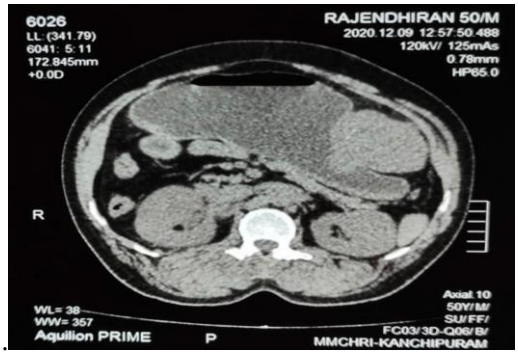
Gastrointestinal stromal tumours' (GIST) are the most common malignant subepithelial lesions of the gastrointestinal tract. GISTs are rare, accounting for 1% to 2% gastrointestinal neoplasia. GISTS commonly originate from the interstitial cells of cajal, which are pacemaker cells of gastrointestinal motility. GISTs are caused by oncogenic mutations in tyrosine kinase receptors KIT or platelet-derived growth factors-alpha.

CASE REPORT:

We report a case of giant gastric GISTs in a 50year male who presented with pain in abdomen and vomiting for 2 days. He had a history of early satiety and loss of appetite for 15 days.

On abdominal examination a vague intra-abdominal mass was palpable in the left upper quadrant and epigastric region. Inferior and medial border palpable, superior border not palpable, surface was smooth and borders well defined. Mass less prominent on contraction of abdomen and more prominent on knee elbow position. Mass moves with respiration. Tenderness presents over right flank and right upper quadrant.

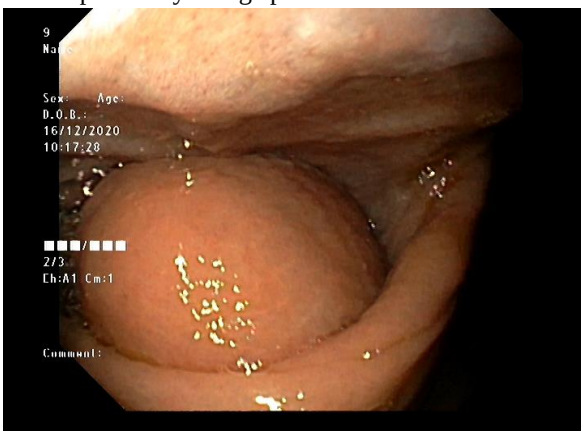
CT abdomen showed a large (12x8x6cm) well defined heterogeneously isodense mass lesion with multiple central necrotic areas originating from the greater curvature of the stomach, just adjacent to the body.



Subsequent upper gastrointestinal endoscopy showed a submucosal bulge in relation to anterior wall and greater curvature of the stomach. The overlying mucosa was normal.

He was advised laparoscopic wedge resection.

Intraoperatively a large pedunculated mass seen in relation to the anterior wall of stomach near greater curvature with



multiple collaterals, it was mobilised from adjacent organs and excised with Endo GIA staplers. Tumour delivered through Pfannenstiel incision. No tumour rupture noted.

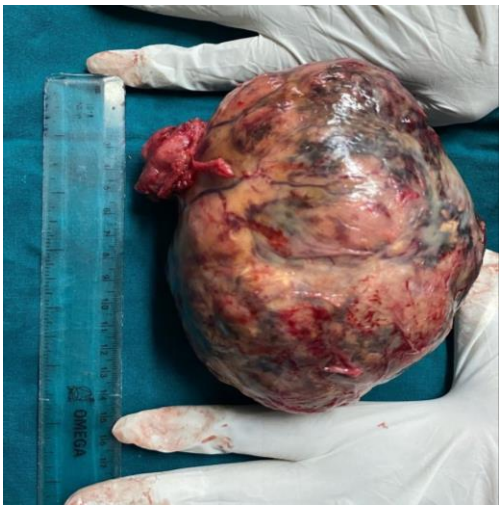
Histopathology revealed a benign gastric gastrointestinal stromal tumour.

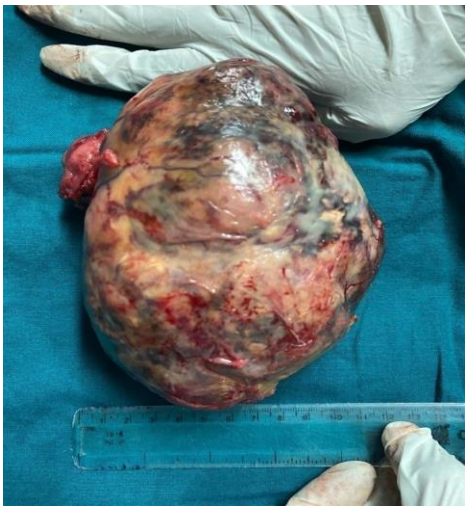
The postoperative period was uneventful, and the patient was discharged on 6 days later. He was started on adjuvant imatinib in view of tumour size and high mitotic count. He is asymptomatic on long term follow up.

PROCEDURE: Under general anaesthesia, patient placed in low lithotomy position, parts painted and draped,10mm supraumbilical camera port placed, laparoscopic assessment was done. Intraoperatively a pedunculated mass lesion of 10x10cm was noted arising from the anterior wall of the fundus of stomach. Mass lesion was seen receiving multiple collaterals.

After obtaining pneumoperitoneum placement of right and left working port. A 5mm epigastric port placed for liver retraction. Omentum loosely adherent to tumour dissected off with bipolar shears. Dissection continued along greater curvature with division of gastroepiploic vessels. Next, fundus of stomach dissected off splenic surface. Short gastric vessels divided using bipolar shears' Junction was mobilised using 45mm & 60mm Endo GIA Stapler, wedge resection of anterior wall of stomach was done leaving 2cm margins while ensuring to stay clear of EG Junction. Tumour was delivered through 10cm Pfannenstiel incision. peritoneal lavage given, jacuzzi test performed to check for staple line

leak, no leak detected ,28Fr ICD kept in place, all ports and Pfannenstiel closed in layers, skin closed using staplers. patient extubated & shifted to SICU.





Biopsy of the specimen showed: –
Tumour site - stomach
Tumour size - 15.5x11.5x8 cm
Focality-unifocal
Histological type - gastrointestinal stromal tumour with mixed type
Mitotic rate - >5/50 HPF
Necrosis – present
Histological grade - high grade Risk assessment- high risk
Pathological staging- pT4 .

DISCUSSION: Gastrointestinal tumours are rare constituting <1% of all gastrointestinal neoplasm, they are the commonest tumour of mesenchymal origin of gastrointestinal tract. It most common found in stomach 50%-60% and small intestine 20%-35%. Less common location colon and rectum 5%, oesophagus 1%. GIST rarely occurs as primary tumours in the omentum, mesentery, or retroperitoneum, but most of the tumour in these sites are metastases from gastric or intestinal primary. Gastric GIST accounts for approximately 3% of all gastric tumours with only 10%-30% of gastric GIST behaving in an overtly malignant manner.

GIST is usually asymptomatic incidentally discovered during endoscopies and radiological investigations. A few cases 25% present with Malena, hematemesis, and anaemia due to recurrent bleeding. Other presenting symptoms and sign include early satiety, abdominal pain, and a palpable mass.

RISK STRATIFICATION OF GIST BY MITOTIC INDEX,TUMOR SIZE AND TUMOR LOCATION.

Tumour size (cm)	Mitosis per 50 hpf	Fletcher's [29] criteria, all sites	Miettinen's [8] criteria (AFIP), gastric	Joensuu [30] (revised NIH), gastric	Joensuu [30] (revised non-gastric
≤ 2	≤ 5	Very low	Benign	Very low	Very low
> 2–≤ 5	≤ 5	Low	Very low	Low	Low
> 5–≤ 10	≤ 5	Intermediate	Low	Intermediate	High
> 10	≤ 5	High	Intermediate	High	High
≤ 2	> 5	Intermediate/high	Low	Intermediate/high	Intermediate/high
> 2–≤ 5	> 5	Intermediate/high	Intermediate	Intermediate/high	High
> 5–≤ 10	> 5	High	High	High	High
> 10	> 5	High	High	High	High

The histological features of GIST include spindle cells with eosinophilic cytoplasm and elongated nuclei. The nuclei showed pleomorphism and hyperchromatic. The positive immunoreactivity to c-KIT usually confirms the diagnosis. A small percentage (5%) of the GIST tumour do not show positive c-KIT immunoreactivity, most probably because these tumour harbour mutation in platelet-derived growth factor receptors. KIT-negative GIST can be identified by some other differently
Markers like calcium-dependent and receptor activated chloride channel protein (known as DOG1), protein kinase C and carbonic anhydrase. About 10%-15% of GIST, in which no c-KIT or PDGFRA mutation is present, are considered wild type (WT-GIST).

It is important to differentiate GIST tumours from other tumours of mesenchymal origin because of their known resistance to chemo and radiotherapy.

In the past GIST were treated with radical resection due to malignant potential. At present, due to better understanding of the tumour biology and introduction of tyrosine kinase inhibitors, wide local resection with margins became the principal treatment.

Traditionally, surgical resection has been achieved through open surgery, necessitating prolonged hospital stays. Laparoscopic surgery is relatively new for GIST resection; however multiple studies reported advantages of laparoscopic approach over the open approach. These advantages include a significantly low risk of minor complication associated with laparoscopic surgery, as well as a decreased postoperative hospital stay, and early return of bowel functions.

The role of laparoscopy in the management of giant gastric GISTs remains debatable due to the concerns about intraoperative tumour rupture and dissemination of tumour cells. At present, there is no consensus regarding the ideal approach for managing giant GIST tumours.

Recent evidence suggests that prognosis is mainly based on tumour size and histological features rather than the width of resection margins, which makes laparoscopic resection more popular for GIST treatment

CONCLUSION: -

In the past GISTs were treated with open surgical radical resection because of their malignant potential. At present, due to better understanding of tumour biology and introduction of tyrosine kinase inhibitors, wide local resection with margins became the principal treatment. The role of laparoscopy in management of giant gastric GISTs remained debatable because of concerns about intraoperative tumour rupture and the dissemination of tumour cells, however; there is increasing evidence of the feasibility and safety of laparoscopic resection. Laparoscopic surgery in the

treatment of larger GISTs without rupturing tumour is feasible and allow satisfactory results both in terms of postoperative course and oncological quality of procedure.

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