

Laparoscopic resection of gastro-intestinal stromal tumour

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Abstract

Gastro-Intestinal Stromal Tumours are rare tumours, constituting less than 1% of gastrointestinal tumours. They are the most common mesenchymal origin tumours of gastro-intestinal tract. Tyrosine kinase c-kit oncogene mutation is found in all cases. These tumours are sensitive to imatinib. They are usually noted incidentally on endoscopy or present with haematemesis after ulceration. We are reporting the laparoscopic resection of GIST in a 67 year old male who had presented with haematemesis. He was found to have a gastric polyp on endoscopy. Endoscopic ultra-sound showed the tumour to be arising from the submucosa. Histo-pathology showed the tumour to be GIST. Patient is currently undergoing chemotherapy.

Keywords: Gastrointestinal Stromal tumour (GIST), Laparoscopic resection, Imatinib.

Introduction

Gastrointestinal Stromal Tumour (GIST) are most commonly found in the stomach. They are of mesenchymal origin. Sex distribution is equal among males and females. Tyrosine kinase c-kit oncogene mutation is found in all cases. These tumours are sensitive to imatinib.¹

Incidence is unclear and is reported to be less than 1% of gastro-intestinal tumours.

They are usually recognized either incidentally during endoscopy or after the tumour causes bleeding as a result of ulceration of the overlying mucosa.

No laboratory investigation can confirm or rule out GIST. Ultra-sound guided biopsy is useful. X-ray contrast studies provide limited information. Computed tomography scan of abdomen and pelvis are extremely useful in diagnosis and staging of GIST.

This report describes the laparoscopic resection of gastro-intestinal stromal tumour (GIST) which had presented as a gastric polyp.

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Case Report

A 67 year old male presented with 3 episodes of haematemesis over a 6 month period. As part of his work-up he underwent endoscopy. On endoscopy he was found to have a large poly-poidal mass with central ulcerations. Endoscopic ultra-sound showed the mass to be arising from the sub-mucosal layer with homogenous appearance. Biopsy from the mucosal surface proved inconclusive. However the endoscopic appearance was highly suggestive of gastro-intestinal tumour.

CT scan abdomen and pelvis showed a localized poly-poidal growth in the stomach with no local extension or distant metastasis.

After carrying out routine baseline investigations, patient underwent laparoscopic resection of the polyp. Patient was category - II as per the ASA (American Society of Anesthesiologists) physical classification.²

After the induction of anaesthesia patient was put in reverse Trendelenberg position. Pneumo-peritoneum was created by closed method.

First camera port was inserted in the supra-umbilical position. Two working 15 mm ports were inserted in the mid-clavicular region on each side above the first port.

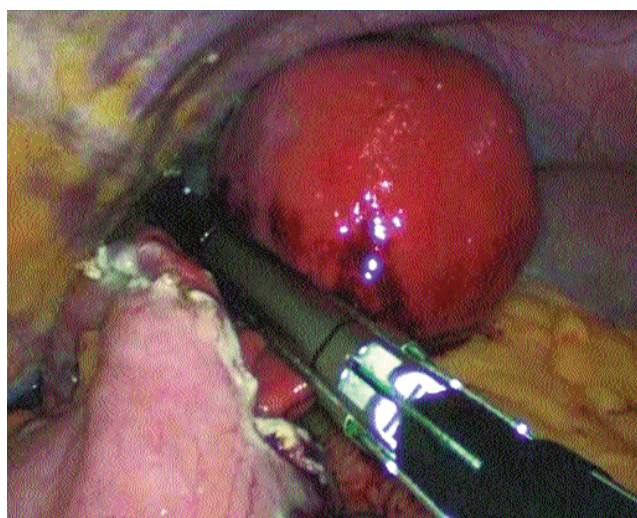


Figure-1: Laparoscopic view of tumour after opening of stomach wall. Endo stapler being used to resect the tumour.



Figure-2: Cut Section of excised tumour.

Another 5mm port was inserted in the anterior axillary line in the left hypo-chondrium region for retraction.

Greater omentum was separated from the greater curvature by means of harmonic shears. Anterior gastrostomy was then done with the harmonic shears to expose the polyp. The stalk of the polyp was attached to the upper part of the posterior wall near the lesser curvature.

The stalk was divided by means of endo-staplers. Haemostasis was ensured. Gastrostomy was closed in double layer with vicryl 2/0. Drain was placed in the gastric bed. Polyp was placed in an endobag introduced via the umbilical port which was removed from the abdomen after enlarging the incision. All incisions greater than 5 mm were closed with vicryl 2/0. Wounds were stitched with prolene 3/0. Dressing was done.

Polyp had size of 8 x 3.5 x 3.5 cm.

Emergence and extubation from anaesthesia was uneventful. Post-operative patient had a smooth recovery. Patient had minimal pain and was mobilized from bed on 1st post-operative day. Patient was kept nil per OS for 4 days. He was allowed orally on morning of 5th day and after tolerating oral feeds was discharged.

Biopsy of the polyp showed it to be a sub-mucosal well circumscribed tumour composed of bands and fascicles of spindle cells. Mitosis were seen in 1/50 HPF (high

powered field). Immuno-histo-chemical studies showed the tumour cells to be positive for CD117 stain. Histologically the tumour had a low grade and the margins were free from tumour. He has been referred for further chemo-therapy. He is currently symptom free and is on regular follow up.

Discussion

GISTs are tumours of connective tissue. They account for less than 1% of gastrointestinal tumours but are the most common mesenchymal tumours of gastrointestinal tract. About 70% occur in the stomach. Small intestine is the second most common site. Small tumors are generally benign, especially when cell division rate is slow.

Mazur and Clark in 1983,³ and Schaldenbrand and Appleman⁴ in 1984 were the first to describe them as a separate entity. Kindblom and associates⁵ reported in 1998, the actual cell of origin of GISTs is a pluripotential mesenchymal stem cell programmed to differentiate into the interstitial cell of Cajal. The discovery of c-kit proto-oncogene mutations in these tumours was reported by Hirota.⁶

Surgery is the definitive therapy for patients with GISTs. Radical and complete surgical excision offers the only chance for cure. Surgery is also indicated in symptomatic patients with locally advanced or metastatic disease. De-bulking large lesions is helpful when adjuvant therapy with imatinib mesylate is contemplated.

Imatinib is a selective small molecule inhibitor of a family of structurally similar tyrosine kinase signaling enzymes. Imatinib was shown to inhibit proliferation of GIST cells with KIT mutations. Imatinib mesylate is indicated in patients with advanced GISTs. It is indicated as adjuvant therapy post complete surgical resection in patients with tumours that are stratified to be high risk and as neo-adjuvant therapy, with the goal of tumour shrinkage prior to surgical resection.⁷

Advanced or metastatic GIST may require increased dosage of Imatinib or conversion of therapy to Sunitinib (Sutent) which is a newer tyrosine kinase inhibitor approved in 2006 by FDA. In February 2013, Stivarga (regorafenib) was approved for locally advanced unresectable GIST no longer responsive to Imatinib or Sunitinib. Multiple studies have demonstrated that laparoscopic surgery is a safe alternative in such patients.^{8,9}

Conclusion

Laparoscopic surgery offers multiple advantages. Laparoscopy allows for smaller incisions, less pain, shorter hospitalization and early return to normal routine.

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