



## **A CASE REPORT ON GASTROINTESTINAL STROMAL TUMOR(GISTs)**

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### **ABSTRACT**

Gastro-intestinal stromal tumors are the most common mesenchymal tumors of the gastrointestinal tract. As all GISTs have the potential for aggressive behavior, awareness is paramount in managing these rare tumors. Advances in the identification of gastrointestinal stromal tumors, its molecular and immunohistochemical basis, and its management have been a watershed in the treatment of gastrointestinal tumors. Now it is understood that it's a rare gastrointestinal tract tumor with predictable behavior and outcome. In this case report we presents a case of gastric gastrointestinal stromal tumor operated recently in a 53-year-old male patient along with the outcome, literature review on its pathological identification, sites of origin, prognosis and its treatment.

**Keywords:** Gastrointestinal stromal tumor, Identification, Risk stratification, Management.

## INTRODUCTION

Gastrointestinal stromal tumors (GISTs) are a type of soft tissue tumor that grows from a specialized cells found in the GI tract called interstitial cells of Cajal (ICCs) or precursors of these cells. It accounts for approximately 0.1% to 3% of GI tumors, but they are the most common mesenchymal neoplasm of the GI tract [1].

GISTs are usually found in the stomach or small intestine but can occur anywhere along the GI tract and rarely have extra-GI involvement. The majority of GISTs present at ages 50-70 years, with similar incidence in both male and female [2]. Although a rare entity in children and young adults, its association has been observed with neurofibromatosis and Carney's triad (gastric stromal tumor, extra adrenal paraganglioma and pulmonary chordoma) [3]. These tumors are usually solitary, well circumscribed tumors with a pseudocapsule, arising from embryological mesoderm of the GI tract. Historically, they are resistant to chemotherapy and radiotherapy, with responses in only less than 5% [1, 2]. About 40-70% occurs in the stomach, 20-40% in the small intestine and less than 10% in the esophagus.

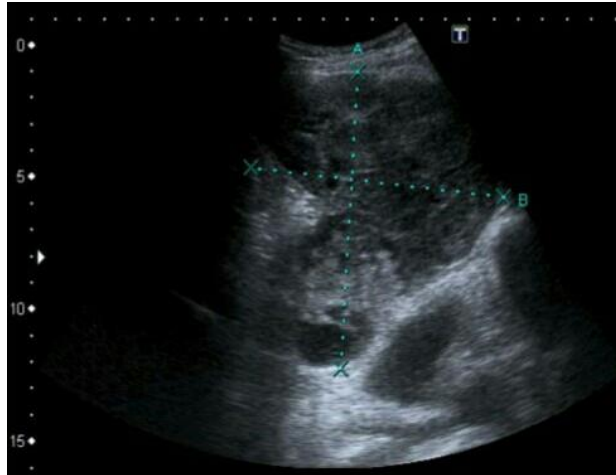
The clinical presentation of GISTs is variable, depending upon its size and its organ involvement. They usually present with vague abdominal pain, dyspepsia and vomiting, with rare presentation of secondary complications like upper GI bleeding and perforation. Asymptomatic GISTs are incidentally found during endoscopy, imaging or surgery for other conditions.

Here, we report a case of GISTs, highlighting the necessity of awareness in early diagnosis and management of this rare but aggressive tumor.

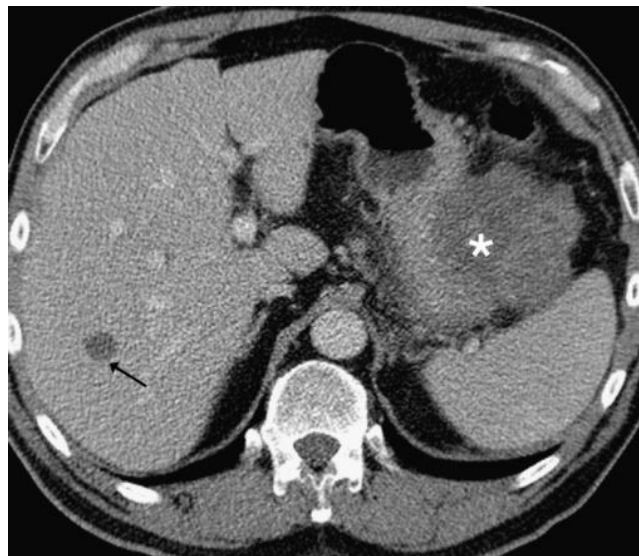
## CASE PRESENTATION

A 53-year-old male presented with vague abdominal pain and feeling of an abdominal lump on and off for more than one year. An ex-alcoholic with no history of chronic liver disease or any associated general or GI tract symptoms. A well defined transversely mobile intra-abdominal lump in the right hypochondrium of about 6x7 cm was revealed on clinical examination.

The patient then underwent USG and CECT of the abdomen (*Fig. 1 and Fig. 2*), which reported a large tumor arising probably from the greater curvature of the stomach.



**Figure 1:** Iliac perivesical GIST, appearing on USG as an hypoechoic mass.



**Figure 2:** Axial CECT showing large low attenuation exophytic GIST.

Elective exploration of the abdomen was planned. At exploration, a tumor of size 8x6cm was identified on the greater curvature of the stomach, arising exophytically with a sessile base. There was no evidence of liver, peritoneal, omental or lymph node lesions. A partial gastrectomy was performed with a 2cm sleeve of the greater curvature of the stomach with clearance from the tumor.

Histopathology of the tumor revealed an 8x5.4x5cm, well circumscribed, non-encapsulated tumor within submucosa and muscularis propria. Mitosis was occasional at 2/50 HPF, with no evidence of dysplasia or malignancy of overlying gastric mucosa. Immunostaining of the tumor cells were strongly positive for CD17

and negative for S100, desmin, smooth muscle and actin. These features strongly suggested the diagnosis of GIST. He did well following surgery and has been on regular follow-up postoperatively. Serial ultrasonogram and CECT of the abdomen has been reported to be normal with no evidence of recurrence. Adjuvant imatinib therapy was not considered as the prognostic factors revealed a low risk although he has been advised for long term follow-up at the Medical Oncology department.

## DISCUSSION

Gastrointestinal stromal tumors are submucosal lesions that can occur anywhere in the GI tract, observed with frequent endophytical growth although rare instance of exophytical growth has been reported. About 40-70% occurs in the stomach, 20-40% in the small intestine and less than 10% in the esophagus. Sizes ranging from 1cm-40cm in diameter have been reported. The radiological and endoscopic features of GIST mimics with the Brunner's gland hamartomas of the duodenum [4].

The majority of GISTs present at ages 50-70 years, with similar incidences in both male and females [2]. Of GISTs is variable, depending upon its size and its organ involvement. They usually present with vague abdominal pain, dyspepsia and vomiting, with rare presentation of secondary complications like intestinal obstruction, upper or lower GI bleeding or melena. Asymptomatic GISTs are incidentally found when a patient is investigated for other symptoms.

Abdominal ultrasound is often considered the initial imaging test in a patient with abdominal pain or mass but the tumor discovered is frequently so large rendering the organ of origin unidentifiable. Therefore CT is considered for the diagnosis and staging in most of the patients. Tumors are usually of varying density, and show patchy enhancement after intravenous contrast. Varying degrees of necrosis may be frequently demonstrated within the mass [5]. The CT study will usually provide rapid and reproducible assessment of the size of the primary tumor, as well as its relationship to other structures. Metastatic disease may well be demonstrated at the outset [6]. CECT abdomen findings of solid pseudopapillary neoplasm of the pancreas could share the radiological features of GIST [7].

Considerable increase in size of the tumor and cystic changes can occur before initial diagnosis is made and may lead to enteric fistulation. Calcification within the tumor is occasionally recognized in association with this tumor necrosis.

Operative excision with clear margin is the curative intent in the treatment. The prognosis initially rested upon the risk factors of the size of the tumor and its mitotic activity. The high risk of malignant potential and recurrence are seen in tumors more than 5-10 cm in size with a mitotic count of more than 10/50 hpf. Recurrences reach up to 80% in these high risk groups. Fletcher et al. provided one of the earliest schemes of predicting risk factors in 2002 [8] (*Table 1*). As seen in Fletcher's Risk Factors, 62.5% of cases of the High Risk

Group showed recurrence or metastases [9]. Nakamura et al. in 2005 also found 38.5% cases of recurrence and metastases in the high risk group. These studies confirmed that the risk scheme by Fletcher was a good predictor of recurrences and metastases [10]. In emergent situations and presentations, the acute life-threatening clinical pictures of intestinal obstruction, upper or lower GI bleeding, or idiopathic spontaneous intra-abdominal hemorrhage are dealt with. The mainstay of treatment is surgical excision having a clear margin. Traditional Chemotherapy and Radiotherapy have not been found to be effective.

Risk	Tumor Size	Mitotic Count
Very low risk	<2 cm	<5 / 50 HPF
Low risk	2-5 cm	< 5 / 50 HPF
Intermediate risk	<5 cm	6-10 / 50 HPF
	5-10 cm	< 5 / 50 HPF
High risk	>5 cm	> 5 / 50 HPF
	>10 cm	any mitotic rate

**Table 1:** Schemes of predicting risk factors

The consensus guidelines for management of GIST by the ESMO and ASCO groups are outlined as follows:

- Small esophagogastric or duodenal nodules <2 cm are deemed as low risk and these patients need only follow-up, reserving excision for patients whose tumor increase in size or become symptomatic.
- Standard approach for nodules >2 cm is excision biopsy. If larger and surgery is expected to involve multivisceral resection, multiple core needle biopsies are performed guided by ultrasonography or CT.

Neoadjuvant imatinib is considered for 6-12 months to achieve cytoreduction if R0 excision is not considered possible or the surgery entails gross functional sequelae. Tumor response is assessed by serial ultrasonogram or CT. The risk of relapse is estimated on the basis of mitotic rate, tumor size, tumor site, surgical margins and whether tumor ruptured during excision. Spontaneous tumor ruptures or during excision denotes a high risk independent of any other prognostic factor [11]. Staging procedures relate to the fact that most metastases or

recurrences affect the peritoneum and liver. Ultrasonogram, CT abdomen and PET scans are recommended, the latter, useful to detect tumor response to neoadjuvant or adjuvant targeted molecular therapy [12]. With the advent of imatinib mesylate, a multitargeted c-KIT, PDGF-R, and c-ABL inhibitor has made successful inroads in the management of patients with operated GIST having no clear margins, tumors which are unresectable, or those with recurrences. Guidelines indicate that radical surgical resection is the gold standard for localized primary GIST. Increasing cure rates, overall survival and progression-free survival should be the aim of all adjuvant therapy which should be reserved only for patients having significant prognostic indicators for disease recurrence [13].

Tumor spillage during surgery have show high risk of recurrence.The present consensus is that patients who have histological profile of intermediate, moderate, or high risk and those with R1 and R2 (microscopic and macroscopic tumor residue) or tumor rupture should receive long-term adjuvant therapy with imatinib.

## CONCLUSION

As all GISTS have the potential for aggressive behaviour, the risk being estimated from tumour size and mitotic count awareness is paramount in managing these rare tumors. A multidisciplinary approach, postoperative targeted molecular therapy in intermediate and high risk patients, and continued surveillance is required for a successful outcome.

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