From unresectable to curative resection: Conversion surgery for metastatic oesophagogastric junction gastrointestinal stromal tumour after systemic tyrosine kinase inhibitor therapy

Choon Hui Gan[1,2,3], Kelvin Voon[1], Ikhwan Sani Mohamad[2,3], Premnath Nagalingam[4]

[1]Department of General Surgery, Penang General Hospital, Penang, Malaysia, [2]Hospital Universiti Sains Malaysia, Kelantan Malaysia, [3]Department of General Surgery, School of Medical Sciences, Universiti Sains Malaysia, Kelantan Malaysia, [4]Royal College of Surgeons in Ireland and University College Dublin Malaysia Campus, Penang, Malaysia

SUMMARY

Introduction: Gastrointestinal stromal tumours (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract, with the stomach being the predominant site of origin. The liver is the most common site of metastatic spread. The optimal management of oesophagogastric junction (OGJ) GISTs with synchronous liver metastases remains controversial, particularly regarding the role of surgery following systemic therapy. We report a case of metastatic OGJ GIST successfully managed using a multidisciplinary treatment strategy that combined systemic tyrosine kinase inhibitor (TKI) therapy and conversion surgery. Case Presentation: A 39-year-old woman presented with progressive dysphagia, weight loss, and anemia. Imaging revealed a large 20×20 cm OGJ tumor with diaphragmatic involvement and two metastatic liver lesions in segments VI and VII. Histopathological examination confirmed the diagnosis of metastatic GIST. Following multidisciplinary team discussion, systemic TKI therapy was initiated. After six months of treatment, serial CT and PET-CT demonstrated marked radiological and metabolic responses, with significant regression of the primary tumor and complete resolution of FDG avidity in the liver metastases. Considering the favorable treatment response, the patient underwent curative-intent surgery, which included proximal gastrectomy with double tract reconstruction (DTR) and liver metastasectomy. Complete (R0) resection was achieved, and the patient had an uneventful postoperative recovery period. Conclusion: Selected patients with metastatic OGJ GIST who demonstrate a favorable response to systemic TKI therapy may benefit from conversion surgery with curative intent. Proximal gastrectomy with DTR offers the additional advantage of preserving gastrointestinal function while maintaining satisfactory nutritional outcomes.

INTRODUCTION

Gastrointestinal stromal tumours (GISTs) are the most common mesenchymal neoplasms of the gastrointestinal tract, with the stomach being the predominant site of origin. Although GISTs account for only 1–3% of all gastrointestinal malignancies, they represent the majority of gastrointestinal mesenchymal tumors. The liver and peritoneum are the most frequent sites of metastatic spread.[1-2]

GISTs are characterized by activating mutations involving the receptor tyrosine kinases, KIT or platelet-derived growth factor receptor alpha (PDGFRA), resulting in constitutive activation of tyrosine kinase signalling pathways that drive tumor growth and progression.[3-5] Surgical resection remains the cornerstone of treatment for localized disease. However, the introduction of tyrosine kinase inhibitors (TKIs) has dramatically altered the management and prognosis of patients with locally advanced and metastatic GIST.[5-6]

The optimal management of metastatic GIST, particularly in patients with synchronous liver metastases, remains controversial, and there is currently no clear consensus regarding the role of surgery following systemic therapy. We report a case of a large oesophagogastric junction (OGJ) GIST with synchronous liver metastases that was successfully managed using a multidisciplinary approach comprising systemic TKI therapy, followed by conversion surgery with proximal gastrectomy, double-tract reconstruction, and liver metastasectomy.

CASE PRESENTATION

A 39-year-old woman presented with progressive dysphagia, significant weight loss, and iron deficiency anemia. Physical examination revealed a large, firm epigastric mass extending into the left upper abdomen of the patient. Upper gastrointestinal endoscopy revealed a large submucosal tumor arising from the oesophagogastric junction (OGJ), with central ulceration causing significant luminal narrowing.

Contrast-enhanced computed tomography (CT) revealed a large heterogeneous mass measuring approximately 15 × 20 × 20 cm, arising from the gastric cardia and OGJ, with extension to the left hemidiaphragm. Two metastatic lesions were identified in hepatic segments VI and VII (Figure 1A-B). Image-guided core needle biopsies obtained from both the primary tumor and liver lesions confirmed the diagnosis of metastatic gastrointestinal stromal tumour (GIST).

This article was accepted: 24 June 2026
Corresponding Author: Ikhwan Sani Mohamad
Email: ikhwansani@yahoo.com.my

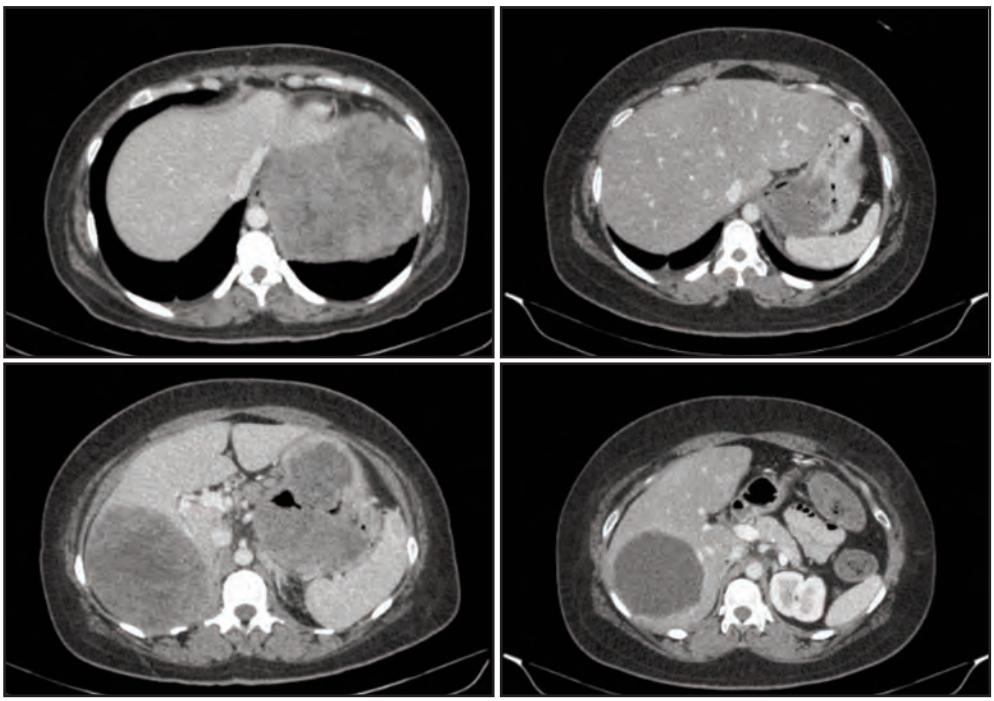

Fig. 1: (A) Large heterogenous COJ GIST (yellow arrow) with infiltration to the left hemidiaphragm; (B) Large segment 6 & 7 liver metastases (red arrow) Stomach GIST; (C) Significant reduction in tumour size 6 months after imatinib therapy; (D) Reduction in liver lesion size with hypodensity after imatinib therapy

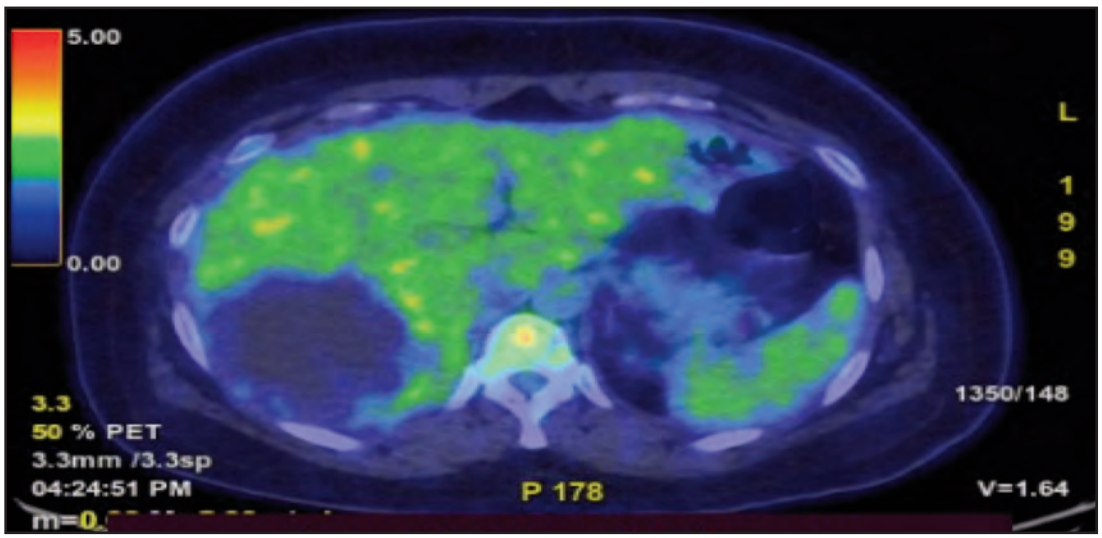

Fig. 2: PET scan showed residual COJ tumour with increased FDG uptake (yellow arrow) & non-FDG avid liver lesions 6 months after imatinib therapy (red arrow), consistent with of partial tumour response

Histopathological examination revealed a spindle cell subtype GIST. Immunohistochemical analysis demonstrated strong diffuse positivity for CD117 (c-KIT) and DOG1, whereas staining for SMA and S100 was negative. Molecular mutational analysis was not performed in this case.

The case was reviewed by a multidisciplinary tumor board comprising upper gastrointestinal surgeons, hepatobiliary surgeons, medical oncologists, radiologists, pathologists, and nuclear medicine specialists. In view of the locally advanced primary tumor and synchronous liver metastases, systemic tyrosine kinase inhibitor (TKI) therapy was initiated as the first-line treatment.

The patient commenced oral TKI therapy(oral imatinib 400 mg OD) at a standard daily dose and tolerated the treatment well, experiencing only mild transient periorbital edema that did not require dose modification. Serial radiological assessment with contrast-enhanced CT demonstrated a substantial reduction in the tumor size and vascularity of both the primary lesion and hepatic metastases (Figure 1C-D). Subsequent PET-CT performed after six months of treatment demonstrated a marked metabolic response, with complete resolution of FDG uptake within the liver metastases and no FDG-avid disease outside the primary OGJ tumor (Figure 2).

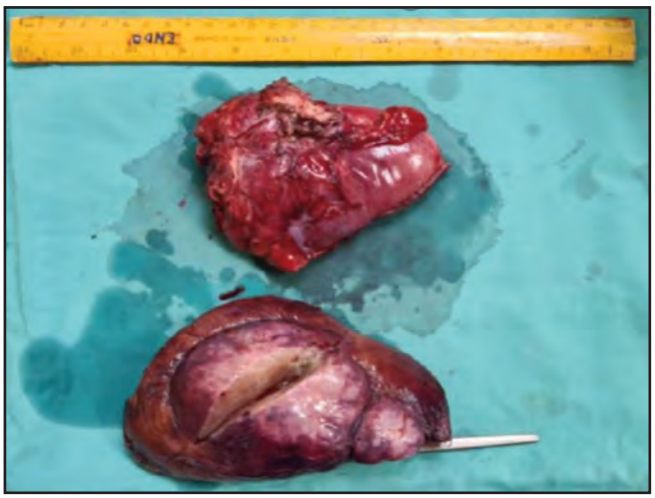

Fig. 3: Proximal gastrectomy (yellow arrow) & non-anatomical resection of right liver metastatic lesions (red arrow)

Following a repeat multidisciplinary review, the patient was considered suitable for conversion surgery with curative intent because of the favorable radiological and metabolic response to systemic therapy and the feasibility of achieving complete tumor clearance.

At laparotomy, no evidence of peritoneal dissemination or extrahepatic metastatic disease was observed. The primary tumor originated from the OGJ, with limited involvement of the left hemidiaphragm. En bloc resection of the involved diaphragmatic segment was performed while preserving the tumor capsule integrity.

Proximal gastrectomy was performed with preservation of the distal stomach and pylorus. Simultaneously, nonanatomical wedge resections of the segment VI and VII liver metastases were performed to achieve complete clearance of the metastatic disease. Reconstruction was performed using the double-tract reconstruction (DTR) technique, consisting of an oesophagojejunostomy (OJ), gastrojejunostomy (GJ), and jejunojejunostomy (JJ), thereby preserving the continuity of the remnant stomach and duodenal passage. OJ was performed using the side-to-side overlap technique, followed by side-to-side GJ approximately 15 cm from the EJ. The JJ was constructed using the side-to-side approach approximately 20 cm from the GJ. All anastomoses were performed using a linear stapler.

Histopathological examination confirmed complete (R0) resection of both the primary tumor and hepatic metastases, with a marked response to preoperative TKI therapy. The postoperative course was uneventful, and the patient was discharged on the ninth postoperative day. Oral TKI therapy was resumed 1 month postoperatively.

At the year follow-up, the patient remained well, with no evidence of disease recurrence. She resumed normal oral intake, maintained a satisfactory nutritional status, and demonstrated no clinical evidence of anemia or micronutrient deficiency.

DISCUSSION

The introduction of tyrosine kinase inhibitors (TKIs) has revolutionized the management of gastrointestinal stromal tumours (GISTs), particularly in patients with locally advanced or metastatic disease. TKI therapy is currently the standard treatment for metastatic GIST and is widely utilized in the neoadjuvant and adjuvant settings for selected high-risk patients. In addition to achieving tumor control, preoperative TKI therapy may facilitate surgical resection through tumor downsizing, reduction in tumor vascularity, improved tumor capsule integrity, and a lower risk of tumor rupture or intraoperative bleeding, thereby increasing the likelihood of achieving an R0 resection. Furthermore, PET-CT plays an important role in assessing the metabolic response to systemic therapy and aids in selecting appropriate candidates for surgical intervention.

The management of metastatic GIST remains challenging, and there are currently no universally accepted guidelines regarding the role and timing of surgery following response to systemic therapy. Historically, metastatic GIST was considered a palliative condition that was primarily managed with systemic treatment. However, growing evidence suggests that selected patients with oligometastatic disease who demonstrate a favorable and sustained response to TKI therapy may benefit from surgical resection.[7-8] The rationale for this approach is to achieve complete clearance of residual disease before the emergence of secondary TKI resistance, potentially improving progression-free and overall survival.[7-8]

This case highlights the importance of a multidisciplinary team (MDT) approach in the management of advanced GIST. At presentation, the patient had a large oesophagogastric junction (OGJ) GIST with synchronous liver metastases. Following discussion within a multidisciplinary team comprising upper gastrointestinal surgeons, hepatobiliary surgeons, medical oncologists, radiologists, pathologists, and nuclear medicine specialists, systemic TKI therapy was initiated as the first-line treatment. Serial CT and PET-CT assessments demonstrated marked radiological and

metabolic responses, with significant regression of both the primary tumor and liver metastases. According to the Choi criteria, the patient achieved a partial response characterized by significant reduction in tumor size and attenuation.9 Following reassessment, complete resection of all detectable diseases was considered feasible, and conversion surgery with curative intent was performed.

The successful achievement of R0 resection of both the primary tumor and liver metastases supports the role of conversion surgery in carefully selected patients with metastatic GIST responding to systemic therapy. Histopathological examination demonstrated excellent treatment response with minimal residual viable tumor, further supporting the effectiveness of a multimodal treatment strategy combining systemic therapy and surgery.[7-8] Although involving a different sarcoma subtype, Aimanan et al. reported successful multidisciplinary management of metastatic chondroblastic osteosarcoma requiring thoracic endovascular aortic repair, highlighting the importance of individualized surgical decision-making in advanced metastatic sarcoma.[10]

An important aspect of this case was the use of proximal gastrectomy with double tract reconstruction (DTR) as a function-preserving surgical approach. Tumors involving the OGJ often require extensive gastroesophageal resection to achieve adequate oncological margins. Traditionally, Either Ivor Lewis esophagectomy or total gastrectomy has been performed in such cases. However, these procedures are associated with more complex surgical steps and significant long-term nutritional and functional consequences, including reflux symptoms, excessive weight loss, iron deficiency anemia, vitamin B12 deficiency, and impaired quality of life.

Proximal gastrectomy with DTR offers several physiological advantages while maintaining oncological safety. Preservation of the distal stomach maintains gastric reservoir function and contributes to more physiological digestion. double tract reconstruction allows a proportion of the food bolus to pass through the remnant stomach and duodenum, preserving normal digestive physiology and facilitating the absorption of iron and micronutrients. Maintaining duodenal transit may reduce the risk of postoperative anemia and nutritional deficiencies commonly observed following total gastrectomy. In addition, DTR has been shown to reduce reflux symptoms compared to conventional oesophagogastrostomy by minimizing the exposure of the esophagus to gastric contents. In the present case, the patient remained nutritionally well, with no evidence of reflux symptoms or nutritional deficiencies during the early follow-up.

This study has several limitations. First, this study was a single case report, which limits the generalizability of the findings. Second, the follow-up duration remains relatively short, and long-term surveillance is required to determine the durability of oncological control, functional outcomes, and nutritional status. Given the risk of late recurrence and potential development of secondary TKI resistance, prolonged follow-up is essential. Additionally, molecular mutational analysis was unavailable at our institution and therefore could not be performed. As KIT and PDGFRA mutation statuses may influence prognosis and responsiveness to tyrosine kinase inhibitors, the absence of molecular characterization represents a limitation of this report. Finally, larger prospective studies are needed to better define the role of conversion surgery and function-preserving reconstruction in patients with metastatic GIST who respond favorably to systemic therapy.

In conclusion, the management of metastatic OGJ GIST requires a multidisciplinary approach. In selected patients who demonstrate a favorable response to systemic TKI therapy, conversion surgery may enable complete (R0) resection of both the primary tumor and metastatic disease. Proximal gastrectomy with double-tract reconstruction offers the additional benefit of preserving gastric and duodenal function while minimizing reflux and nutritional deficiency. This case highlights the potential role of combining systemic therapy with function-preserving surgery to achieve favorable oncological and functional outcomes.

REFERENCES

1. DeMatteo RP, Lewis JJ, Leung D, Mudan SS, Woodruff JM, Brennan MF. Two hundred gastrointestinal stromal tumors: recurrence patterns and prognostic factors for survival. Ann Surg 2000; 231(1): 51-8.
2. Hirota S, Isozaki K, Moriyama Y, Hashimoto K, Nishida T, Ishiguro S, et al. Gain-of-function mutations of c-kit in human gastrointestinal stromal tumors. Science. 1998; 279(5350): 577-580.
3. Heinrich MC, Corless CL, Duensing A, McGreevey L, Chen CJ, Joseph N, et al. PDGFRA activating mutations in gastrointestinal stromal tumors. Science 2003; 299(5607): 708-10.
4. Corless CL, Fletcher JA, Heinrich MC. Biology of gastrointestinal stromal tumors. J Clin Oncol. 2004;22(18): 3813-25.
5. Demetri GD, von Mehren M, Blanke CD, Van den Abbeele AD, Eisenberg B, Roberts PJ, et al. Efficacy and safety of imatinib mesylate in advanced gastrointestinal stromal tumors. N Engl J Med 2002; 347(7): 472-80.
6. Casali PG, Blay JY, Abecassis N, Bajpai J, Bauer S, Biagini R, et al. Gastrointestinal stromal tumours: ESMO–EURACAN–GENTURIS Clinical Practice Guidelines for diagnosis, treatment and follow-up. Ann Oncol 2022; 33(1): 20-33.
7. Gronchi A, Fiore M, Miselli F, Lagonigro MS, Coco P, Messina A, et al. Surgery of residual disease following molecular-targeted therapy with imatinib mesylate in advanced/metastatic GIST. Ann Surg 2007; 245(3): 341-6.
8. Raut CP, Posner M, Desai J, Morgan JA, George S, Zahrieh D, et al. Surgical management of advanced gastrointestinal stromal tumors after treatment with targeted systemic therapy using kinase inhibitors. J Clin Oncol 2006; 24(15): 2325-31.
9. Choi H, Charnsangavej C, Faria SC, Macapinlac HA, Burgess MA, Patel SR, et al. Correlation of computed tomography and positron emission tomography in patients with metastatic gastrointestinal stromal tumor treated at a single institution with imatinib mesylate: proposal of new computed tomography response criteria. J Clin Oncol 2007; 25(13): 1753-9.
10. Aimanan K, Thiagarajan M, Rookkapan S, Kritpracha B, Hussein H. Metastatic chondroblastic osteosarcoma involving the thoracic aorta managed with thoracic endovascular aortic repair: a case report and tribute. Vasc Specialist Int 2025; 41: 31.