PRIMARY GASTRIC LEIOMYOSARCOMA: A CASE REPORT

ABSTRACT

Background: Primary gastric leiomyosarcoma constitutes an exceptionally rare and diagnostically elusive mesenchymal neoplasm of the gastrointestinal tract, typically manifesting with nonspecific constitutional and gastrointestinal symptoms that may obfuscate timely clinical recognition and management.

Case Presentation: We delineate the case of a 45-year-old male with no antecedent comorbid conditions, presenting with chronic melena, intermittent low-grade pyrexia, anorexia, and constitutional fatigue of insidious onset. Clinical assessment revealed a hemodynamically stable yet anaemic individual. Cross-sectional imaging elucidated a heterogeneously enhancing polypoidal mass lesion in the distal stomach without radiological evidence of disseminated disease. Upper gastrointestinal endoscopy demonstrated a large ulcero-proliferative mass with everted margins, and subsequent histopathological evaluation confirmed a high-grade (Grade 3), primary, unifocal gastric leiomyosarcoma emanating from the submucosal layer along the greater curvature, exhibiting mild necrosis (<10%), stromal haemorrhage, and adjacent mucosal edema. Immunohistochemistry revealed diffuse immunoreactivity for SMA and h-caldesmon, with a Ki-67 proliferative index of 40–45%, corroborating the diagnosis of leiomyosarcoma.

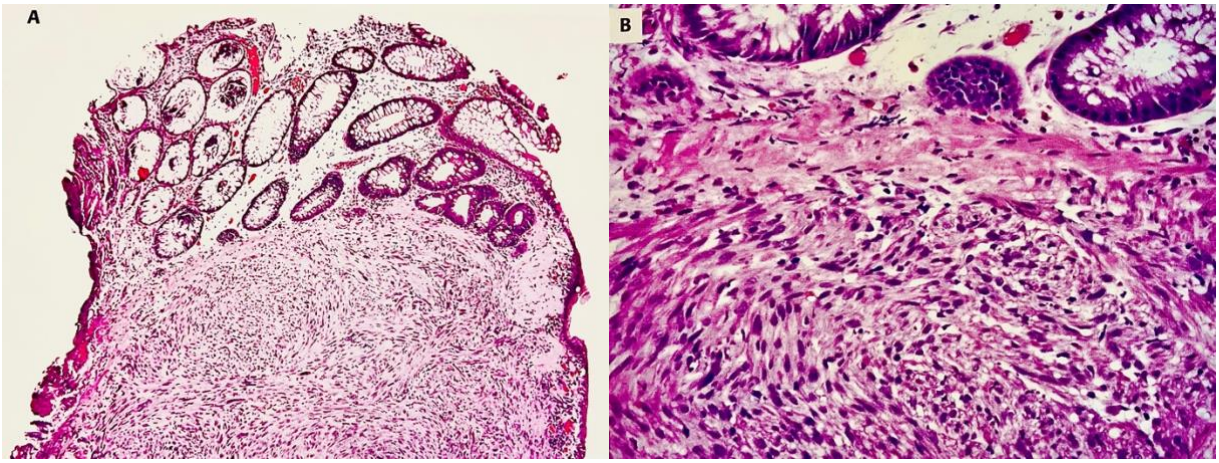
Management and Outcome: The patient underwent a diagnostic laparoscopy followed by open subtotal D2 gastrectomy with Roux-en-Y reconstruction. Histopathologic analysis of resected tissue confirmed negative gastric and duodenal margins, absence of lymphovascular and nodal involvement (pT1pN0, AJCC 8th edition). Postoperative recovery was uneventful; the patient resumed oral intake, ambulated early, and was discharged on postoperative day seven. Adjuvant systemic chemotherapy consisting of five cycles of Ifosfamide and Epirubicin was subsequently initiated.

Conclusion: This case underscores the pivotal role of multimodal diagnostic integration—comprising endoscopic visualization, advanced imaging, and meticulous histopathological examination—in the definitive diagnosis and oncological management of primary gastric leiomyosarcoma. Prompt surgical resection with oncologically sound margins, followed by tailored chemotherapeutic regimens, remains imperative in optimizing clinical outcomes in such rare malignancies.

Keywords: Gastrointestinal stromal tumor, leiomyosarcoma, proto-oncogene KIT, stomach

INTRODUCTION

Primary gastric leiomyosarcoma is an exceptionally rare malignant mesenchymal tumor of the stomach, accounting for less than one percent of all gastric neoplasms. Unlike gastrointestinal stromal tumours (GISTs), which are more common and often mistaken for leiomyosarcomas, these tumours lack c-KIT (CD117) and DOG1 expression, making accurate histopathological and immunohistochemical evaluation essential for diagnosis. Gastric leiomyosarcomas typically originate from the smooth muscle cells of the muscularis propria and are characterized by their aggressive behaviour, with a high potential for local invasion and distant metastasis.



(Figure -1) Histopathological staining showing malignant spindle cell neoplasm – a gastric leiomyosarcoma

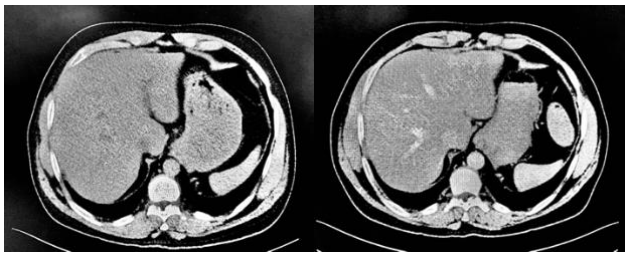
Due to their rarity, non-specific clinical presentation, and overlapping imaging features with other gastric tumours, preoperative diagnosis remains a challenge. Here, we report a rare case of primary gastric leiomyosarcoma in a 45-year-old gentleman, highlighting the diagnostic process, histopathological findings, the surgical management undertaken and the trial of adjuvant chemotherapy imperative in such malignancies.

CASE REPORT

A 45-year-old gentleman, with no antecedent comorbidities presented to the Department of General and Gastrointestinal Surgery with complaints of melena persisting over a two-month duration, accompanied by intermittent low-grade pyrexia, anorexia, and generalized asthenia over the past two weeks. Additionally, he reported a recent onset of non-productive cough over the past one week.

On general physical examination, the patient appeared moderately built and nourished, hemodynamically stable, febrile, tachycardic, and clinically pale. Abdominal examination revealed no remarkable findings, notably with absence of left supraclavicular lymphadenopathy. Examination of other systems were normal.

Laboratory evaluation revealed a normocytic normochromic to microcytic hypochromic anaemia, with total leukocyte and platelet counts remaining within physiological limits. Other routine haematological and biochemical parameters were within normal limits. Contrast-enhanced computed tomography (CECT) of the abdomen unveiled a heterogeneously enhancing intraluminal polypoidal mass located in the distal gastric body along the greater curvature, raising a strong suspicion for primary neoplastic process of mesenchymal origin. No additional focal lesions or evidence of metastatic disease were identified. Chest imaging, including radiography and computed tomography, did not reveal any signs of pulmonary dissemination.



(Figure –2) CT Abdomen showing heterogeneously enhancing intraluminal polypoidal mass lesion in the distal body of stomach

Upper gastrointestinal endoscopy delineated a substantial ulcero-proliferative neoplastic lesion with everted margins, situated predominantly within the mid-to-distal body of the stomach. Biopsy specimens obtained intra-endoscopically were submitted for histopathological analysis, which revealed a high-grade (Grade 3) primary unifocal gastric leiomyosarcoma. The tumor originated from the submucosal layer along the greater curvature and

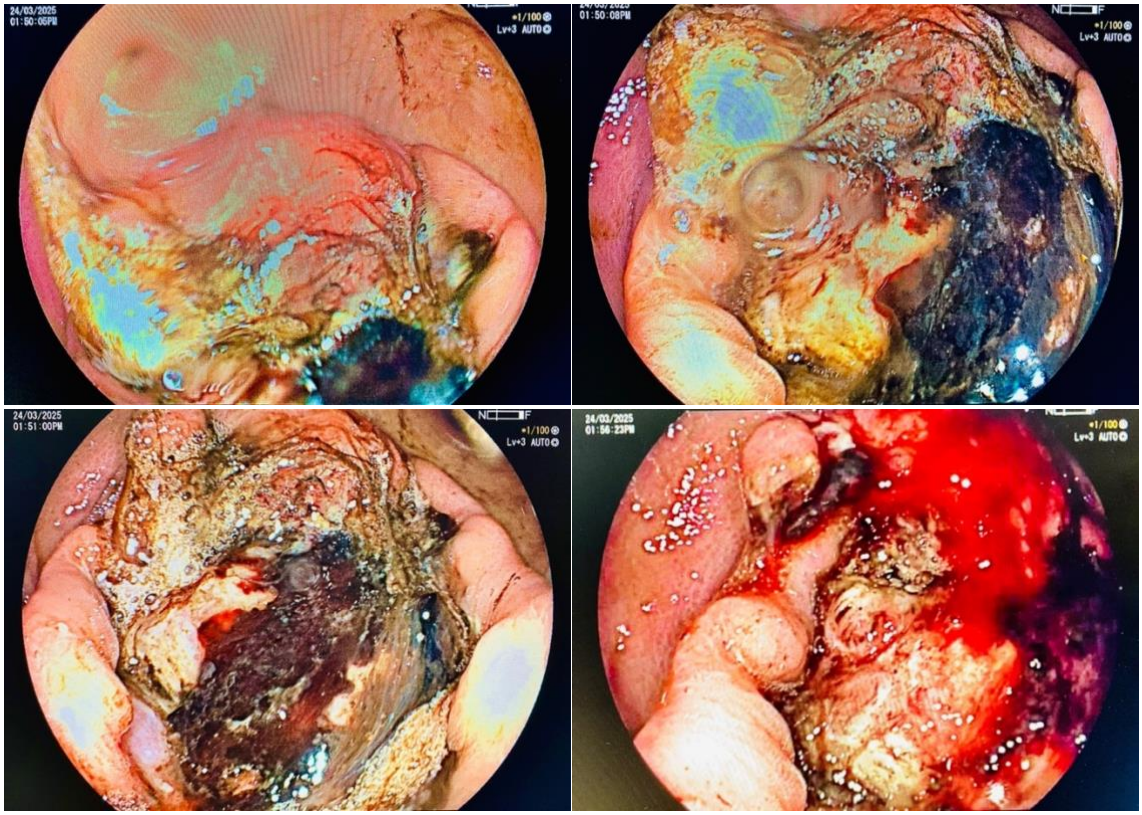
exhibited <10% necrosis, accompanied by stromal haemorrhagic foci and adjacent mucosal edema.

Immunohistochemical profiling demonstrated strong immunopositivity for smooth muscle actin (SMA) and h-caldesmon, while staining was negative for Desmin, cytokeratin (CK), CD117 (c-Kit), DOG1, CD34, and S-100. The Ki-67 proliferation index ranged between 40–45%, further substantiating the diagnosis of leiomyosarcoma.

Preoperatively, the patient underwent medical optimization inclusive of nutritional augmentation and pulmonary prehabilitation via chest physiotherapy. Given the presence of significant anemia (hemoglobin 5.7 g/dL), the patient was transfused with four units of packed red blood cells to correct hematologic deficiency and facilitate safe surgical intervention.

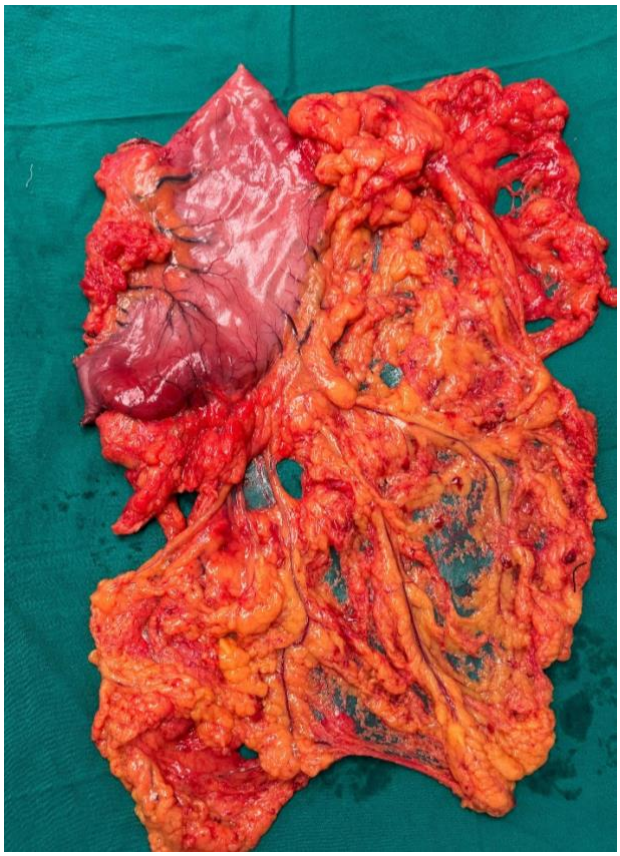
The patient was taken up for diagnostic laparoscopy, which was subsequently converted to an open approach, and a subtotal D2 gastrectomy with Roux-en-Y reconstruction was performed. Intraoperative assessment revealed a pale grey, ulcero-infiltrative neoplasm measuring 6.0 × 3.5 × 2.3 cm, located along the greater curvature of the distal gastric body. The lesion was noted to originate from the submucosal plane, with posterior extension abutting the serosal surface, but without evidence of invasion into adjacent visceral structures.

Gross morphological evaluation of the resected specimen was concordant with intraoperative findings. Histopathological examination revealed a high-grade (Grade 3) spindle cell neoplasm exhibiting marked nuclear pleomorphism, hyperchromasia, elevated mitotic index, focal necrosis (<10%), and extensive stromal haemorrhage—features consistent with the diagnosis of primary gastric leiomyosarcoma. The tumor demonstrated a fascicular growth pattern originating from the muscularis propria, with no morphologic or immunohistochemical features indicative of a gastrointestinal stromal tumor (GIST).



(Figure – 3) UGI endoscopy showing ulcero-proliferative mass lesion along the greater curvature of mid-distal gastric body

All resection margins, including proximal gastric, distal duodenal, and radial circumferential edges, were microscopically negative. No lymphovascular or perineural invasion was identified, and none of the retrieved regional lymph nodes demonstrated metastatic involvement [Pathological staging pT1pN0 (AJCC 8th edition)]. Taken together, these findings established the diagnosis of a rare primary gastric leiomyosarcoma, distinct from more common stromal neoplasms.



(Figure – 4) Gross specimen of distal body primary gastric leiomyosarcoma –abutting the posterior serosal layer.

The patient had an uneventful postoperative recovery. He was gradually initiated on oral feeds, mobilized without complications, and discharged in stable condition on the seventh postoperative day. In view of the high-grade nature of the tumor, adjuvant chemotherapy was commenced during follow-up, comprising five cycles of Ifosfamide and epirubicin—standard agents used in the treatment of high-grade soft tissue sarcomas. The patient was subsequently referred to oncology department for continued multidisciplinary management.

DISCUSSION

Primary gastric leiomyosarcoma (LMS) constitutes a remarkably rare subset of mesenchymal neoplasms of the stomach, especially in the era following the advent of immunohistochemical and molecular markers that have reclassified the majority of erstwhile smooth muscle tumours as gastrointestinal stromal tumours (GISTs). True leiomyosarcomas, by definition, are devoid of c-KIT (CD117) and DOG1 expression and originate from the muscularis propria, exhibiting unequivocal smooth muscle differentiation.

Clinically, gastric LMS tends to present insidiously, often masquerading as more common gastrointestinal pathologies. The present case, involving a 45-year-old male with melena, low-grade fever, anorexia, and constitutional symptoms, exemplifies the non-specific symptomatology characteristic of such tumors. Initial radiological evaluation revealed a heterogeneously enhancing polypoidal lesion in the distal stomach, while upper gastrointestinal endoscopy exposed a large ulcero-proliferative mass with rolled-out margins, raising suspicion for an aggressive neoplasm.

Histopathological analysis remains the gold standard for definitive diagnosis. In this case, the biopsy and subsequent resection specimen demonstrated a high-grade (Grade 3) spindle cell neoplasm exhibiting features consistent with a primary leiomyosarcoma—characterized by marked cytological atypia, brisk mitotic activity, focal necrosis (<10%), stromal haemorrhage, and a lack of immunopositivity for GIST-defining markers. These findings were consistent with a neoplasm of smooth muscle lineage, confined to the gastric wall, with no evidence of nodal or distant dissemination.

Therapeutically, complete surgical excision with negative margins constitutes the cornerstone of curative intent management for localized gastric leiomyosarcoma. The patient underwent a subtotal

D2 gastrectomy with Roux-en-Y reconstruction. Intraoperative findings and subsequent gross pathological examination revealed a 6.0 × 3.5 × 2.3 cm grey-white ulcero-proliferative mass arising from the submucosa along the greater curvature. Histopathology confirmed negative proximal, distal, and radial margins with no lymphovascular invasion or lymph nodal involvement (pT1pN0, AJCC 8th edition), supporting a localized but high-grade neoplasm.

Given the tumor's histological aggressiveness, adjuvant chemotherapy was deemed appropriate. Although no standardized regimen exists due to the paucity of cases, chemotherapeutic agents typically employed in the management of high-grade soft tissue sarcomas—namely Ifosfamide and Epirubicin—were initiated in this case. The patient tolerated the postoperative period well and was discharged on the seventh postoperative day.

CONCLUSION

In conclusion, this case delineates the diagnostic and therapeutic challenges inherent to primary gastric leiomyosarcoma, a rare and often misdiagnosed entity. Accurate histopathological differentiation from GISTs, thorough surgical resection, and individualized oncological follow-up are imperative in optimizing clinical outcomes. The rarity of this neoplasm underscores the necessity for further case-based analyses to elucidate prognostic determinants and refine therapeutic strategies.

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