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Case Report: Intermediate-Risk Gastrointestinal Stromal Tumor (GIST) of the Jejunum with Postoperative Gastroparesis

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Abstract

We report a case of a 43-year-old female with a history of breast cancer who was diagnosed with an intermediate-risk gastrointestinal stromal tumor (GIST) of the jejunum. The patient underwent successful en bloc tumor resection with duodenojejunal anastomosis. She later developed postoperative gastroparesis, requiring gastrojejunostomy. This report highlights diagnostic challenges, surgical management, and postoperative complications in jejunal GIST.

Keywords

Gastrointestinal Stromal Tumor, GIST, Jejunum, Gastroparesis, Gastrojejunostomy, Case Report

1. Introduction

Gastrointestinal stromal tumors (GISTs) are rare mesenchymal tumors arising from the gastrointestinal tract, with the jejunum being an uncommon site [1] [2]. Surgical resection remains the cornerstone of treatment [2], but postoperative complications can present diagnostic and therapeutic challenges. This report describes a rare post-operative complication gastroparesis following resection of a jejunal GIST.

2. Case Study

Patient History

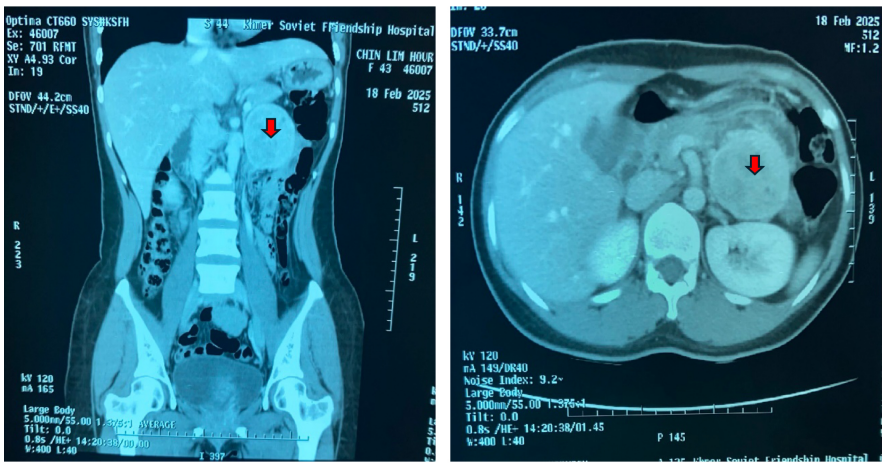
A 43-year-old female presented to Khmer-Soviet Friendship Hospital on Feb-

ruary 17, 2025, for follow-up after completion of treatment for right-sided breast cancer. Her prior therapy included a right mastectomy, six cycles of chemotherapy, and 15 sessions of radiotherapy, completed in 2023.

As part of routine oncologic surveillance, a contrast-enhanced abdominal CT scan was performed on February 15, 2025, which revealed a suspicious mass in the abdominal cavity. She was referred to the Thoracoabdominal Surgery Department for further evaluation. On presentation, she reported abdominal discomfort, asthenia, and fatigue. Physical examination revealed a palpable mass in the epigastric region without signs of hepatomegaly or lymphadenopathy.

Imaging and Diagnosis

- **Ultrasonography** revealed a 52 × 42 mm hypoechoic mass in the pancreatic body and tail region, with bilateral nephrocalcinosis.
- **Contrast-enhanced CT scan** identified a well-defined hypodense lesion (53 × 46 × 57 mm) with heterogeneous enhancement, originating from the jejunal wall and abutting the pancreatic tail. Vascular supply was noted from the superior mesenteric and gastroduodenal arteries. No evidence of pancreatic origin was found. Additional findings included bilateral ovarian vein dilation and a simple left renal cortical cyst (Figure 1).



(a) (b)

Figure 1. (a) and (b): Jejunal Tumor (arrow): A well-defined, hypodense lesion arising from the jejunal wall, closely abutting the tail of the pancreas.

Surgical Management First Surgery (February 25, 2025):

Laparotomy revealed a 5 × 5 cm tumor at the duodenojejunal (DJ) junction, extending into the Meso-jejunum and retroperitoneum. Following mobilization of the ligament of Treitz, an en bloc resection was performed. Primary duodenojejunal anastomosis was completed to re-establish continuity (Figure 2).

Postoperative Course and Second Operation Postoperative Day 2 (POD 2): The patient developed nausea, vomiting, and mild abdominal distension. Laboratory investigations showed: Elevated CRP: 192.4 mg/L, Leukocytosis: 22.8 K/μL, Electrolytes: Within normal limits.

Table 1. Laboratory findings.

Test	Unit	Ref. Range	17/02/25	27/02/25	06/03/25	9/3/25	12/3/25	13/03/25	14/03/25	15/03/25
Potassium	mmol/L	3.60 - 5.50	**3.45**	3.78	**2.82**	3.82	**2.07**	**2.29**	**2.6**	3.86
Sodium	mmol/L	135 - 150	144	143	144	141	**132**	138	137	142
Chloride	mmol/L	94 - 106	**108**	105	**90**	106	**72**	**86**	94	103
Calcium	mg/dL	8.10 - 10.40	**11.2**	-	-	**12.3**	-	**7.4**	-	**7.2**
CRP	mg/L	<6	-	**192.4**	**9.7**	**-**	**163.5**	**-**	**140**	**-**
Blood Glucose	mg/dL	75 - 110	-	-	-	-	-	-	**115**	**64**
Albumin	g/L	35 - 52	45	**34**	-	-	-	-	-	-
Hemoglobin	g/dL	11.50 - 16.50	12.8	-	-	15.3	**11.3**	**10.2**	**9.4**	**10**
WBC	K/µL	4 - 10	6.72	-	-	**22.8**	**15.73**	**10.43**	7.49	7.17
Platelets	K/µL	150 - 400	321	-	-	379	155	170	194	227
Hematocrit	%	34.0 - 46.0	-	-	-	45	34.8	31.8	**77.7**	**29.3**
ALAT	IU/L	5.0 - 35.0	17	-	-	-	-	-	23	-
ASAT	IU/L	5.0 - 35.0	22	-	-	-	-	-	36	-
Urea	mg/dL	75.0 - 110	**30**	-	-	-	**49**	**47**	**44**	-
Creatinine	mg/L	6.0 - 11.3	10.4	-	-	-	10.9	8	-	-
PT	%	70 - 100	100	-	-	-	-	-	100	-
INR	-	1 - 1.4	1	-	-	-	-	-	1	-
Blood Group	-	-	A Rh (+)	-	-	-	-	-	-	-
HBsAg	-	Negative	**Positive**	-	-	-	-	-	-	-
Anti-HCV	-	Negative	Negative	-	-	-	-	-	-	-
Anti-HIV	-	Negative	Negative	-	-	-	-	-	-	-

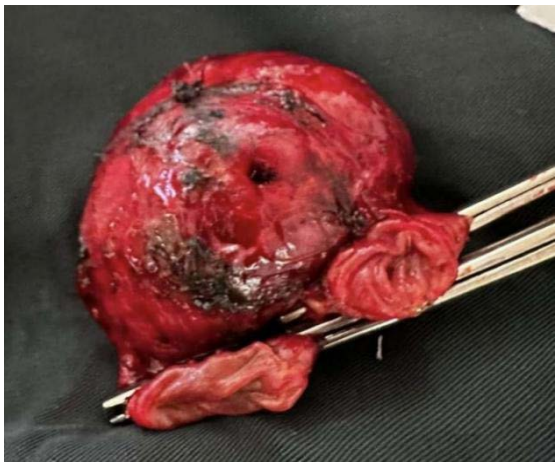


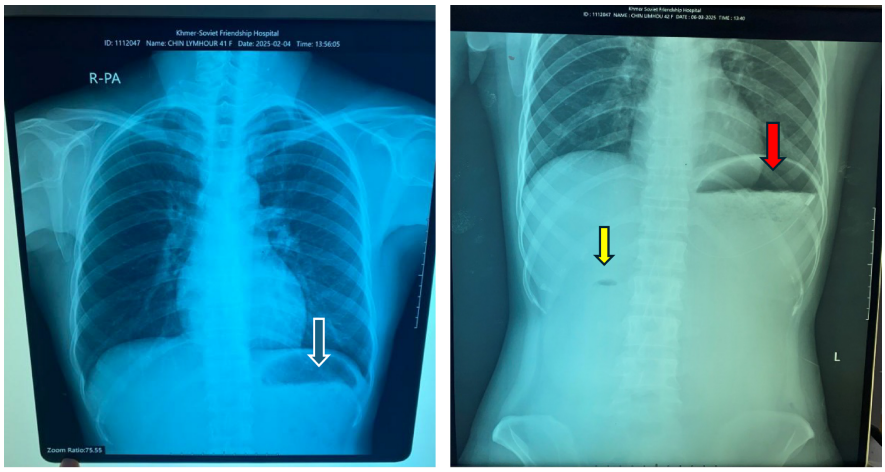
Figure 2. The specimen removed from the surgical field.

Laboratory Findings (Table 1)

- **Electrolyte disturbances:** Hypokalemia (as low as 2.07 mmol/L), hyponatremia, hypochloremia
- **Inflammation:** Elevated CRP, leukocytosis
- **Anemia:** Hemoglobin dropped from 15.3 g/dL to 9.4 g/dL
- **Renal markers:** Elevated urea and creatinine
- **Nutritional markers:** Hypoalbuminemia, hypoglycemia
- **Serology:** HBsAg positive indicating infection with hepatitis B virus (HBV).

Chest X-ray Preoperative showing a prominent single large air-fluid level suggestive of gastric dilatation, with a markedly distended stomach filled with air, fluid and retained food content.

Abdominal X-ray demonstrating the "double bubble" sign characterized by two distinct air-filled structures one in the stomach and the other in the duodenum with absence of distal bowel gas, suggestive of proximal gastrointestinal obstruction. Based on clinical and radiologic findings, re-exploration was performed on March 10, 2025 (Figure 3).



(a) (b)

Figure 3. (a) Chest X-ray (arrow): Shows a single large air-fluid level, suggestive of gastric dilatation. (b) Abdominal X-ray: Demonstrates the "double bubble" sign. two distinct air-filled bubbles, with the red arrow indicating the stomach and the yellow arrow indicating the duodenum with absence of distal bowel gas.

Intraoperative Findings: No evidence of adhesions, anastomosis leakage or stenosis was noted. Marked gastric dilation was present, and a diagnosis of gastroparesis was made.

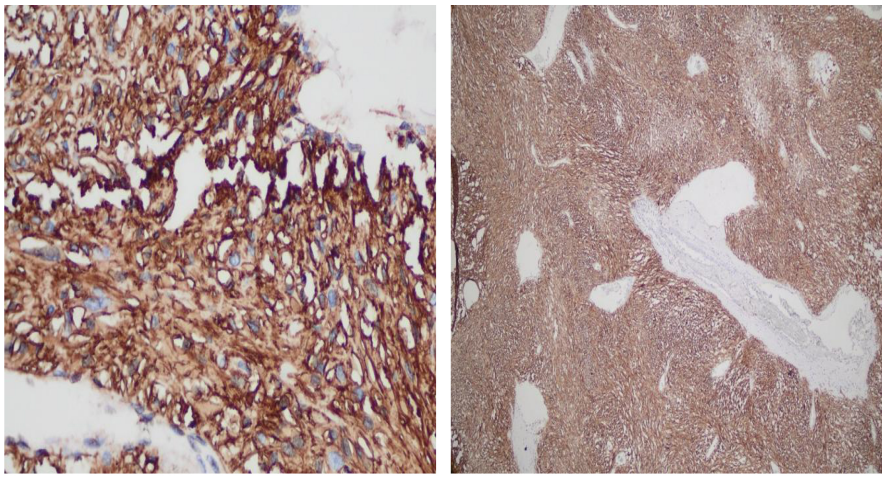
Second Procedure: A gastrojejunostomy was performed by creating a bypass anastomosis 40 cm distal to the duodenojejunal junction to facilitate gastric emptying.

Histopathological Examination

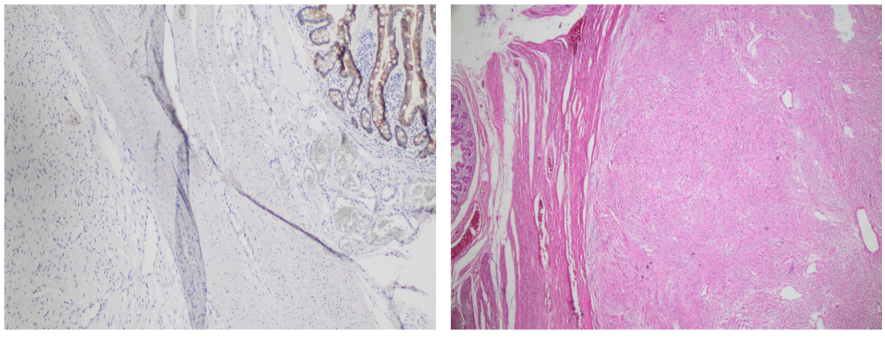
Histopathological examination of the resected jejunal mass revealed a gastrointestinal stromal tumor (GIST), spindle cell type, measuring 6.5 × 4.5 × 4.5 cm,

arising from the submucosal layer. Microscopically, the tumor was composed of spindle-shaped cells with eosinophilic cytoplasm, associated with skeinoid fibers and moderate nuclear atypia, and demonstrated a mitotic index of 4 mitoses per 5 mm^2. The overlying mucosa was unremarkable, and the surgical resection margins were free of tumor (R0 resection).

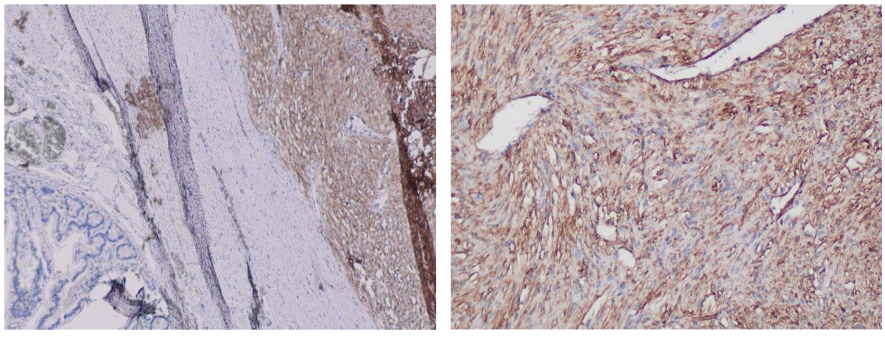
Immunohistochemical staining showed strong diffuse positivity for CD117 (c-KIT) and DOG-1, with patchy positivity for smooth muscle actin (SMA) and negative staining for cytokeratin, confirming the diagnosis of gastrointestinal stromal tumor. Based on the tumor size and mitotic activity, the lesion was classified as an intermediate-risk GIST (**Figures 4(a)-(h)**).



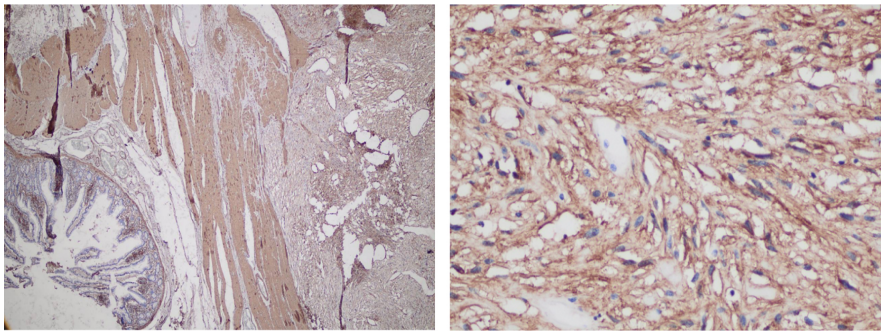
(a) (b)



(c) (d)



(e) (f)



(g) (h)

Figure 4. (a) and (b) DOG-1: Demonstrate diffuse and strong membranous and cytoplasmic positivity in the tumor cells; (c) The tumor cells are negative for mucosal epithelial markers (Cytokeratin), which highlight only the normal colonic epithelium; (d) H and E: Sections show colonic mucosa on the surface with preserved glandular architecture. Beneath the mucosa, the tumor is composed predominantly of interlacing fascicles and whorled bundles of uniform spindle cells set within a collagenous stroma; (e) and (f) CD117 (c-KIT): Demonstrate strong diffuse cytoplasmic and membranous positivity in the tumor cells; (g) and (h) Patchy cytoplasmic positivity for Smooth Muscle Actin (SMA) in the tumor cells.

Diagnosis:

- Based on the tumor size (>5 cm) and mitotic index (<5 per 5 mm^2), the tumor was classified as an Intermediate-Risk Gastrointestinal Stromal Tumor (GIST) according to risk stratification criteria.
- According to AJCC 8th Edition staging, the tumor corresponds to pT3 N0 M0, corresponding to Stage II disease for small intestinal GIST.

Discharge and follow-up

After the second surgery (gastrojejunostomy), the patient's diet was started on postoperative day (POD) 3, and she was discharged on POD 9. Adjuvant therapy with imatinib was prescribed for 3 years, as this is the standard treatment for patients with significant risk of relapse. Follow-up included abdominal ultrasonography at 1 week, followed by contrast-enhanced CT scans at 6, 12, and 18 months to monitor for recurrence. Given the intermediate-risk features (small bowel location, tumor size > 5 cm) and the patient's overall clinical profile, the oncology team recommended imatinib with clinical follow-up every 3 months.

3. Case Discussion

3.1. Epidemiology and Clinical Presentation

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract, although they account for less than 1% of all gastrointestinal malignancies [1]. They most frequently arise in the stomach (≈60%) and small intestine (≈30%), with jejunal involvement being less common Gastrointestinal stromal tumour [1] [3].

Patients typically present between the ages of 60 - 70 years; therefore, our patient, a 43-year-old female, represents a relatively younger presentation, which has been

occasionally reported but is less typical [1] [3]. Clinical manifestations vary and may include abdominal pain, palpable mass, or incidental findings during imaging. In this case, the tumor was detected incidentally during surveillance following breast cancer treatment, highlighting the importance of imaging in early detection.

3.2. Diagnostic Evaluation

Contrast-enhanced CT remains the imaging modality of choice for diagnosing and staging GISTs, providing information on tumor size, location, and relationship to adjacent structures [2]. In this patient, CT imaging demonstrated a well-defined jejunal mass with heterogeneous enhancement, consistent with typical radiologic features of GIST.

Histopathological examination confirmed a spindle cell type GIST, the most common histological subtype, characterized by eosinophilic cytoplasm and moderate atypia. The presence of skeinoid fibers is more frequently associated with small intestinal GISTs and may have prognostic implications [3]. Immunohistochemistry showed strong positivity for CD117 (c-KIT) and DOG1, which are highly sensitive and specific markers for GIST diagnosis [4].

3.3. Risk Stratification and Staging

Risk assessment in GIST is primarily based on tumor size, mitotic index, and anatomical location. According to the risk stratification system proposed by Heikki Joensuu, tumors larger than 5 cm with a mitotic rate of fewer than 5 per 5 mm^2 are classified as **intermediate risk** [5] [6]

In this case, the tumor measured 6.5 cm with a mitotic index of 4/5 mm^2, placing it in the intermediate-risk category. Additionally, according to the AJCC Cancer Staging Manual, the tumor was staged as **pT3 N0 M0 (Stage II)**, which is consistent with localized disease without nodal or distant metastasis [7].

3.4. Surgical Management

Complete surgical resection with negative margins (R0 resection) remains the cornerstone of treatment for localized GISTs [2] [4] [8]. The goal of surgery is complete gross resection with an intact pseudocapsule and negative microscopic margins. Routine lymphadenectomy is not recommended due to the low incidence of lymph node metastasis [8].

In this patient, an en bloc resection of the tumor at the duodenojejunal junction was successfully performed with primary anastomosis. This approach is consistent with current guidelines, emphasizing organ-preserving surgery while achieving clear margins.

3.5. Postoperative Complication: Gastroparesis

A notable aspect of this case is the development of postoperative gastroparesis requiring reoperation. Gastroparesis is characterized by delayed gastric emptying without mechanical obstruction and is more commonly associated with gastric

surgery or vagal nerve injury [9].

Although rare following jejunal GIST resection, postoperative gastroparesis can occur due to disruption of autonomic innervation or altered gastrointestinal motility [9]. In this patient, clinical symptoms (nausea, vomiting, gastric distension) and imaging findings (double bubble sign) suggested proximal obstruction, but re-exploration excluded mechanical causes.

Management required a gastrojejunostomy, which effectively bypassed the functional obstruction and restored gastric emptying. This highlights the importance of distinguishing between mechanical and functional causes of postoperative obstruction.

3.6. Adjuvant Therapy and Prognosis

Treatment options for resectable primary gastrointestinal stromal tumors (GISTs) include surgery and postoperative adjuvant tyrosine kinase inhibitor (TKI) therapy. All GISTs measuring smaller than 2 cm remain controversial. There is no evidence for re-excision in patients with a complete resection of all macroscopic disease but microscopically positive margins. Watchful waiting and adjuvant imatinib therapy may be appropriate for these patients [10].

Adjutant therapy with imatinib, a tyrosine kinase inhibitor targeting KIT and PDGFRA mutations, has significantly improved outcomes in GIST patients [11]. According to current guidelines, adjuvant imatinib is recommended for patients with significant risk of recurrence.

Although intermediate-risk tumors are controversial regarding routine adjuvant therapy, additional clinical factors such as tumor location (small intestine), size (>5 cm), and patient-specific considerations may justify treatment, as in this case [2] [8].

Long-term follow-up with periodic contrast-enhanced CT is recommended because recurrence most commonly occurs during the first 3 - 5 postoperative years [2] [5] [8].

4. Conclusion of Discussion

This case illustrates the importance of a multidisciplinary approach in managing GISTs. Early diagnosis through imaging, accurate histopathological assessment, appropriate surgical management, and individualized adjuvant therapy are critical for optimal outcomes. Additionally, rare postoperative complications such as gastroparesis should be recognized promptly and managed effectively to reduce morbidity.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Joensuu, H., Hohenberger, P. and Corless, C.L. (2013) Gastrointestinal Stromal Tu-

mour. *The Lancet*, **382**, 973-983. https://doi.org/10.1016/s0140-6736(13)60106-3

[2] Casali, P.G., Blay, J.Y., Abecassis, N., Bajpai, J., Bauer, S., *et al.* (2022) Gastrointestinal Stromal Tumours: ESMO-EURACAN Clinical Practice Guidelines. *Annals of Oncology*, **33**, 20-33.

[3] Miettinen, M. and Lasota, J. (2006) Gastrointestinal Stromal Tumors: Pathology and Prognosis at Different Sites. *Seminars in Diagnostic Pathology*, **23**, 70-83. https://doi.org/10.1053/j.semdp.2006.09.001

[4] Wu, C.E., Tzen, C.Y., Wang, S.Y. and Yeh, C.N. (2019) Clinical Diagnosis of Gastrointestinal Stromal Tumor (GIST): From the Molecular Genetic Point of View. *Cancers*, **11**, 679. https://doi.org/10.3390/cancers11050679

[5] DeMatteo, R.P., Lewis, J.J., Leung, D., Mudan, S.S., Woodruff, J.M. and Brennan, M.F. (2000) Two Hundred Gastrointestinal Stromal Tumors: Recurrence Patterns and Prognostic Factors. *Annals of Surgery*, **231**, 51-58. https://doi.org/10.1097/00000658-200001000-00008

[6] Joensuu, H. (2008) Risk Stratification of Patients Diagnosed with Gastrointestinal Stromal Tumor. *Human Pathology*, **39**, 1411-1419. https://doi.org/10.1016/j.humpath.2008.06.025

[7] Amin, M.B., Edge, S.B., Greene, F.L., *et al.* (2017) AJCC Cancer Staging Manual. 8th Edition, Springer.

[8] von Mehren, M., Kane, J.M., Riedel, R.F., *et al.* (2022) NCCN Guidelines Insights: Gastrointestinal Stromal Tumors, Version 2.2022. *Journal of the National Comprehensive Cancer Network*, **20**, 1204-1214.

[9] Shafi, M.A. and Pasricha, P.J. (2007) Post-Surgical and Obstructive Gastroparesis. *Current Gastroenterology Reports*, **9**, 280-285. https://doi.org/10.1007/s11894-007-0031-2

[10] Board, P.A.T.E. (2011) Gastrointestinal Stromal Tumors Treatment (PDQ®). In *PDQ Cancer Information Summaries* [Internet]. National Cancer Institute (US). https://www.ncbi.nlm.nih.gov/books/NBK65712/

[11] Joensuu, H., Eriksson, M., Sundby Hall, K., Hartmann, J.T., Pink, D., Schütte, J., *et al.* (2012) One vs Three Years of Adjuvant Imatinib for Operable Gastrointestinal Stromal Tumor. *JAMA*, **307**, 1265-1272. https://doi.org/10.1001/jama.2012.347