

# Jejunal gastrointestinal stromal tumor presenting as a right adnexal mass with severe iron deficiency anemia in a young female: A diagnostic challenge

Rithani KR<sup>1</sup>, Shiyam Sundaran<sup>1\*</sup>, Ashwin Kumar A<sup>1</sup>, G Murugan<sup>1</sup>, Jeyasoorian S<sup>1</sup>

<sup>1</sup>Department of Radiodiagnosis, Sree Balaji Medical College and Hospital, Chromepet, Chennai - 600044, Tamil Nadu, India.

Corresponding author email: 11shiyam96@gmail.com

Email: rithani21@gmail.com

## ABSTRACT

### Background:

Jejunal gastrointestinal stromal tumors (GISTs) are uncommon mesenchymal neoplasms of the small intestine and may demonstrate aggressive biological behavior compared with gastric counterparts. Large exophytic tumors can extend into the pelvis and radiologically mimic adnexal masses, particularly in young female patients.

### Case Presentation:

A 26-year-old female presented with right lower abdominal pain and severe iron deficiency anemia (hemoglobin 6.8 g/dL; serum ferritin 8 ng/mL). Contrast-enhanced computed tomography revealed a well-defined, lobulated, heterogeneously enhancing pelvic mass measuring 12.3 × 10.1 × 9.4 cm with central low-attenuation areas suggestive of necrosis. The lesion displaced the uterus medially and small bowel loops superiorly without ascites or lymphadenopathy. MRI demonstrated heterogeneous T2 hyperintensity with internal cystic degeneration, diffusion restriction on DWI indicating high cellularity, and blooming on gradient echo (GRE) sequence consistent with intratumoral hemorrhage. Despite detailed imaging, bowel wall attachment was not confidently identified preoperatively, and an adnexal neoplasm was considered. Exploratory laparotomy revealed a 13 cm exophytic tumor arising from the jejunum approximately 45 cm distal to the ligament of Treitz. Segmental jejunal resection with primary anastomosis was performed. Histopathology showed spindle cell morphology with a mitotic count of 6 per 50 high-power fields. Immunohistochemistry demonstrated diffuse CD117 and DOG1 positivity, confirming high-risk jejunal GIST.

### Conclusion:

Large exophytic jejunal GISTs may present as pelvic masses and simulate adnexal pathology on cross-sectional imaging. Severe iron deficiency anemia in the absence of overt gastrointestinal bleeding should raise suspicion for occult small intestinal tumors. Careful radiologic assessment and multidisciplinary management are essential for accurate diagnosis and appropriate oncologic treatment.

**Keywords:** Jejunal GIST; Pelvic mass; Adnexal mimic; Iron deficiency anemia; Diffusion restriction; Intratumoral hemorrhage.

**How to cite this article:** Rithani KR, Sundaran S, Kumar AA, Murugan G, Jeyasoorian S. Jejunal gastrointestinal stromal tumor presenting as a right adnexal mass with severe iron deficiency anemia in a young female: A diagnostic challenge. *Int J Drug Deliv Technol.* 2026;16(6s): 500-505; DOI: 10.25258/ijddt.16.6s.53

## INTRODUCTION

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal neoplasms of the gastrointestinal tract, arising from the interstitial cells of Cajal or related mesenchymal progenitor cells. They are characterized by activating mutations in KIT or platelet-derived growth factor receptor alpha (PDGFRA), with corresponding immunohistochemical positivity for CD117 and DOG1 [1]. Histologically, GISTs exhibit spindle cell, epithelioid, or mixed morphology, and their biological behavior is determined primarily by tumor size, mitotic index, and anatomical location [1]. Advances in molecular

pathology have established GIST as a distinct clinicopathological entity with defined diagnostic and therapeutic implications.

The global incidence of GIST is estimated at 10–15 cases per million population annually [2]. Although most cases occur in individuals over 50 years of age, younger patients may also be affected. The stomach is the most common site, followed by the small intestine, which accounts for approximately one quarter to one third of cases [2]. Small intestinal GISTs, particularly those arising from the jejunum, are associated with comparatively higher malignant potential and recurrence risk than gastric lesions of similar size and

## Jejunal Gastrointestinal Stromal Tumor Presenting as a Right Adnexal Mass with Severe Iron Deficiency Anemia in a Young Female: A Diagnostic Challenge

mitotic activity [2]. Accurate anatomical localization therefore has significant prognostic implications.

Radiologically, GISTs typically appear on contrast-enhanced computed tomography (CECT) as well-circumscribed, heterogeneously enhancing soft tissue masses arising from the gastrointestinal wall. Larger tumors frequently demonstrate central necrosis, cystic degeneration, or hemorrhage. A characteristic feature is exophytic growth, in which the tumor projects outward from the bowel wall into the peritoneal cavity while maintaining a narrow attachment. When the lesion attains substantial size, identification of the primary bowel origin may become challenging.

Jejunal GISTs pose a particular diagnostic difficulty due to their intraperitoneal mobility. Large exophytic tumors may descend into the pelvis and displace adjacent structures, including the uterus and adnexa. In reproductive-age females, this may lead to radiologic misinterpretation as an adnexal mass. Modi and Godara described an ileo-jejunal GIST radiologically simulating an ovarian neoplasm due to pelvic location and lack of obvious bowel continuity [3]. Similarly, Shrestha, Shrestha, Kharel, Rijal, Joshi, Tiwari, Sah, and Ghimire reported a jejunal GIST masquerading as an ovarian mass on preoperative imaging [4].

Comparable findings have been reported in the Indian setting. Baghel, Pant, Singh, and Rawat described a pelvic GIST initially interpreted as ovarian pathology on imaging [5], while Dande, Pajai, Acharya, Joshi, Patel, and Gupta documented a similar presentation mimicking ovarian malignancy [6]. These cases underscore the overlapping radiologic features between exophytic small bowel tumors and adnexal neoplasms.

Jejunal GISTs are also frequently associated with iron deficiency anemia due to chronic occult gastrointestinal bleeding. Miranda, Fernandez Trokhimchouk, Flores, Morillo Cox, and Negrete highlighted anemia as a presenting feature in jejunal GIST, contributing to diagnostic delay [7]. In young females, anemia in the presence of a pelvic mass may reinforce suspicion of gynecologic pathology rather than gastrointestinal origin.

Cross-sectional imaging remains central to evaluation; however, subtle bowel wall attachment or mesenteric vascular pedicle identification may be overlooked in large pelvic lesions. Differentiating pelvic GIST from ovarian neoplasm is clinically significant, as management strategies and oncologic follow-up differ substantially.

Given the rarity of jejunal GIST presenting as a right adnexal mass with severe iron deficiency anemia in a

young female, awareness of this diagnostic pitfall is essential to improve radiologic accuracy and optimize multidisciplinary management.

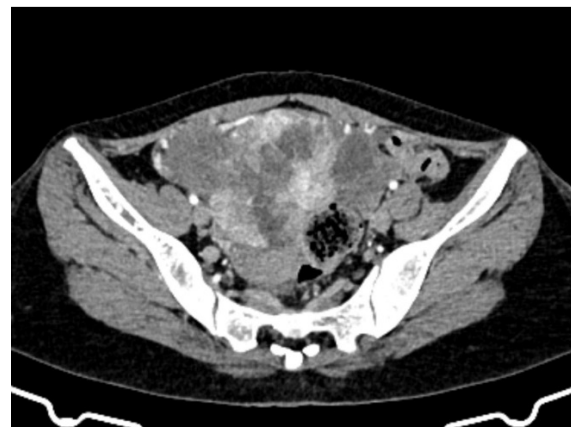
### CASE PRESENTATION

A 26-year-old female presented with progressive right lower abdominal pain and generalized fatigue. Laboratory evaluation revealed severe iron deficiency anemia (hemoglobin 6.8 g/dL; serum ferritin 8 ng/mL). Contrast-enhanced computed tomography (CECT) in the arterial phase demonstrated a well-defined, lobulated heterogeneously enhancing soft tissue mass measuring 12.3 × 10.1 × 9.4 cm occupying the right pelvic cavity (Figure 1). The lesion showed areas of internal low attenuation suggestive of necrosis. The uterus was displaced medially, and small bowel loops were displaced superiorly. No ascites, peritoneal nodules, or lymphadenopathy were identified.

MRI pelvis was subsequently performed for further characterization. On axial T2-weighted imaging, the lesion appeared heterogeneously hyperintense with internal areas of high signal intensity corresponding to cystic degeneration and necrosis (Figure 2). The mass demonstrated diffusion restriction on DWI with corresponding low ADC values, suggestive of high cellularity (Figure 3). Gradient echo (GRE) sequence showed focal blooming within the lesion, indicating intratumoral hemorrhage (Figure 4).

Despite detailed imaging, bowel wall attachment could not be definitively demonstrated preoperatively, and an adnexal neoplasm was considered in the differential diagnosis.

Exploratory laparotomy revealed a 13 cm exophytic mass arising from the jejunum approximately 45 cm distal to the ligament of Treitz. Segmental resection with primary anastomosis was performed. Histopathology demonstrated spindle cell morphology with a mitotic count of 6 per 50 high-power fields. Immunohistochemistry showed diffuse CD117 and DOG1 positivity, confirming gastrointestinal stromal tumor.



## Jejunal Gastrointestinal Stromal Tumor Presenting as a Right Adnexal Mass with Severe Iron Deficiency Anemia in a Young Female: A Diagnostic Challenge

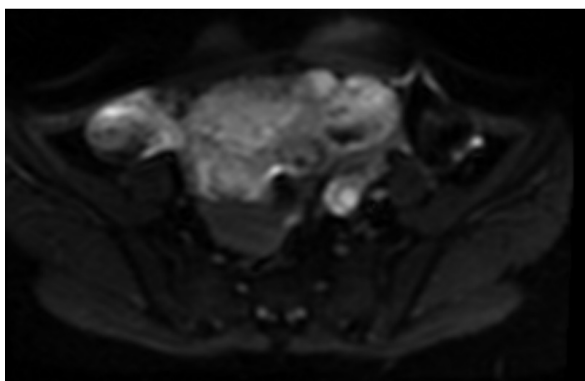
### Figure 1: CECT Arterial Phase (Axial Section)

Heterogeneously enhancing right pelvic mass measuring  $12.3 \times 10.1 \times 9.4$  cm with central necrosis. The lesion displaces the uterus medially and small bowel loops superiorly without ascites or lymphadenopathy.



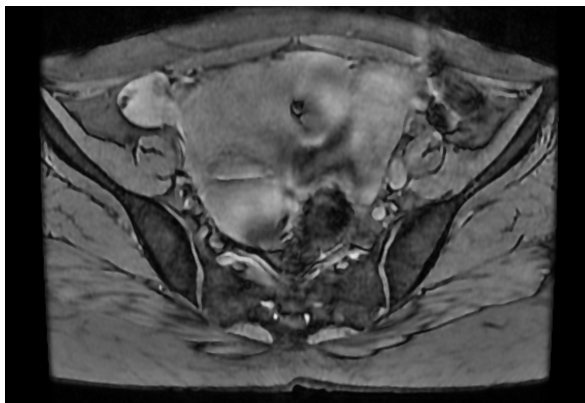
### Figure 2: MRI Axial T2-Weighted Image

Large heterogeneously hyperintense mass with internal cystic/necrotic areas and well-defined margins causing mass effect on adjacent pelvic structures.



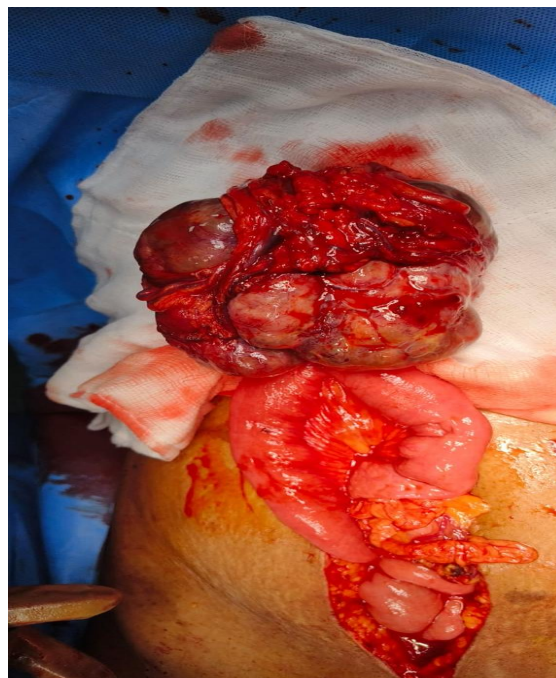
### Figure 3: Diffusion-Weighted Imaging (DWI)

Restricted diffusion within the solid components of the mass, consistent with high cellularity.



### Figure 4: Gradient Echo (GRE) Sequence

Focal blooming within the lesion indicating intratumoral hemorrhage.



### Figure 5: Intraoperative Photograph Showing Large Exophytic Jejunal Gastrointestinal Stromal Tumor (GIST)

#### Figure

Intraoperative image demonstrating a large lobulated exophytic tumor arising from the jejunum. The mass appears multinodular with areas of surface congestion and hemorrhage. Dilated and congested jejunal loops are seen inferior to the tumor, consistent with the intestinal origin of the lesion. The tumor demonstrates a predominantly extraluminal growth pattern projecting into the peritoneal cavity, explaining its radiologic appearance as a pelvic mass. This intraoperative finding confirmed the jejunal origin of the lesion, which was located approximately 45 cm distal to the ligament of Treitz. Segmental jejunal resection with primary anastomosis was subsequently performed. Histopathological examination later confirmed the diagnosis of gastrointestinal stromal tumor (GIST) with spindle cell morphology and immunohistochemical positivity for CD117 and DOG1

#### Description:

### DISCUSSION

Jejunal gastrointestinal stromal tumors (GISTs) constitute a less common but clinically important subgroup of mesenchymal neoplasms. Compared with gastric GISTs, small intestinal tumors are more frequently associated with larger size at diagnosis and a higher risk of recurrence. Tumor behavior is primarily determined by size, mitotic index, and anatomical location.

Gastrointestinal bleeding is a well-recognized presentation of jejunal GIST. Liu et al. reported a case

## Jejunal Gastrointestinal Stromal Tumor Presenting as a Right Adnexal Mass with Severe Iron Deficiency Anemia in a Young Female: A Diagnostic Challenge

characterized by overt gastrointestinal hemorrhage and symptomatic anemia secondary to mucosal ulceration [8]. In contrast, our patient presented with severe iron deficiency anemia (hemoglobin 6.8 g/dL; serum ferritin 8 ng/mL) without clinical evidence of melena or hematochezia. This difference can be attributed to the predominantly exophytic growth pattern observed intraoperatively. When tumor expansion is largely extraluminal, mucosal disruption may be limited, leading to chronic occult blood loss rather than acute hemorrhage. Increasing tumor size has been associated with a greater likelihood of bleeding, particularly in lesions exceeding 5 cm [8]. The 13 cm tumor in our case likely contributed significantly to the severity of anemia.

Radiologic evaluation played a central role in the diagnostic process but also contributed to initial misinterpretation. Large exophytic small bowel GISTs may extend into the pelvis and displace adjacent organs, particularly in female patients, thereby simulating adnexal pathology. Tonni et al., in a systematic review, demonstrated that GISTs larger than 8–10 cm frequently mimic primary ovarian tumors due to pelvic extension and obscured bowel continuity on imaging [9]. In our patient, contrast-enhanced CT revealed a 12.3 × 10.1 × 9.4 cm heterogeneously enhancing mass occupying the right pelvis. The lesion displaced the uterus medially and small bowel loops superiorly, with preserved fat planes and no ascites or nodal enlargement. These features led to a provisional diagnosis of an adnexal neoplasm. Failure to clearly identify bowel wall attachment underscores a recognized limitation in evaluating large exophytic masses. Careful analysis of mesenteric vascular pedicles and multiplanar reconstructions may assist in localization; however, definitive identification of origin may remain challenging preoperatively.

Risk stratification in GIST is based on tumor size, mitotic count, and site of origin. According to the ESMO–EURACAN–GENTURIS guidelines described by Casali et al., tumors greater than 5 cm with more than 5 mitoses per 50 high-power fields (HPF), particularly in the small intestine, are classified as high risk for recurrence [10]. The tumor in our patient measured 13 cm with a mitotic count of 6 per 50 HPF, fulfilling high-risk criteria. Small intestinal location further increases recurrence potential compared with gastric tumors of comparable size [10]. The NCCN Guidelines® Insights outlined by von Mehren et al. emphasize complete surgical resection with negative margins as the standard treatment for localized GIST, without routine lymphadenectomy

[11]. In our case, segmental jejunal resection with primary anastomosis was performed, and no peritoneal deposits, hepatic metastases, or lymphadenopathy were identified, indicating localized disease at presentation. Histopathological examination demonstrated spindle cell morphology arranged in fascicles with mild nuclear atypia and focal necrosis. Diffuse immunoreactivity for CD117 and DOG1 confirmed the diagnosis. The WHO classification described by Nagtegaal et al. recognizes spindle cell morphology as the most common histologic subtype of GIST [12], consistent with our findings.

Long-term outcome data from DeMatteo et al. demonstrated improved recurrence-free survival among high-risk patients treated with adjuvant imatinib following complete resection [13]. Serrano and George further highlighted advances in molecular profiling and targeted therapy, reinforcing the importance of genotype-directed treatment in aggressive disease [14]. The randomized trial conducted by Joensuu et al. showed superior recurrence-free and overall survival with three years of adjuvant imatinib compared with one year in high-risk tumors, particularly those larger than 10 cm with elevated mitotic rates [15]. Given the tumor size of 13 cm and mitotic activity of 6 per 50 HPF in our patient, extended adjuvant therapy is supported by current evidence.

This case illustrates how a large exophytic jejunal GIST can closely mimic adnexal pathology on imaging. Severe iron deficiency anemia may represent the only clinical clue to an underlying gastrointestinal source. Accurate interpretation of cross-sectional imaging, combined with multidisciplinary surgical management and risk-adapted oncologic therapy, is essential for optimal patient outcomes.

### CONCLUSION

Jejunal GIST should be considered in the differential diagnosis of large pelvic masses in young female patients, particularly when unexplained iron deficiency anemia is present. Large exophytic tumors may obscure their intestinal origin and radiologically simulate adnexal neoplasms.

In this case, a 13 cm jejunal GIST with a mitotic count of 6 per 50 high-power fields presented as a right adnexal mass accompanied by severe anemia. Definitive diagnosis was established through surgical exploration and histopathologic confirmation.

Recognition of this diagnostic pitfall is crucial to ensure accurate preoperative assessment, appropriate surgical planning, proper risk stratification, and timely

## Jejunal Gastrointestinal Stromal Tumor Presenting as a Right Adnexal Mass with Severe Iron Deficiency Anemia in a Young Female: A Diagnostic Challenge

initiation of adjuvant targeted therapy in high-risk disease.

### References :

1. Kumar V, Abbas AK, Aster JC, Robbins SL. *Robbins and Cotran Pathologic Basis of Disease*. 10th ed. Philadelphia: Elsevier; 2020.
2. Søreide K, Sandvik OM, Søreide JA, Giljaca V, Jureckova A, Bulusu VR. Global epidemiology of gastrointestinal stromal tumours (GIST): A systematic review of population-based cohort studies. *Cancer Epidemiol*. 2016 Feb;40:39-46. doi: 10.1016/j.canep.2015.10.031. Epub 2015 Nov 24. PMID: 26618334.
3. Modi RD, Godara P. Ileo-jejunal gastrointestinal stromal tumor (GIST) mimicking an ovarian mass. *Int J Gynecol Cancer*. 2023 Feb 6;33(2):314-315. doi: 10.1136/ijgc-2022-003915. PMID: 36746504.
4. Shrestha S, Shrestha BM, Kharel S, Rijal Y, Joshi JP, Tiwari SB, Sah JK, Ghimire B. Jejunal GIST masquerading as an ovarian mass: A case report. *Int J Surg Case Rep*. 2021 May;82:105960. doi: 10.1016/j.ijscr.2021.105960. Epub 2021 May 3. PMID: 33964715; PMCID: PMC8114170.
5. Baghel J, Pant H, Singh AK, Rawat R. An Unusual Presentation of Gastrointestinal Stromal Tumor as an Ovarian Mass: A Diagnostic Dilemma. *J Obstet Gynaecol India*. 2023 Jun;73(3):282-284. doi: 10.1007/s13224-023-01743-1. Epub 2023 Mar 17. PMID: 37324363; PMCID: PMC10267039.
6. Dande A, Pajai S, Acharya N, Joshi KS, Patel DJ, Gupta A. Gastrointestinal Stromal Tumors Mimicking Ovarian Mass: A Case Report. *Cureus*. 2024 Apr 15;16(4):e58320. doi: 10.7759/cureus.58320. PMID: 38752091; PMCID: PMC11094664.
7. Miranda ED, Fernandez Trokhimchouk T, Flores LF, Morillo Cox Á, Negrete JR. Jejunal Gastrointestinal Stromal Tumor: A Diagnostic Challenge. *Cureus*. 2023 Apr 25;15(4):e38098. doi: 10.7759/cureus.38098. PMID: 37252549; PMCID: PMC10210522.
8. Liu H, Santanello A, Jimenez M, Kumthekar N. Jejunal Gastrointestinal Stromal Tumor (GIST) as a Rare Cause of GI Bleed: A Case Report. *Cureus*. 2022 Apr 19;14(4):e24272. doi: 10.7759/cureus.24272. PMID: 35607565; PMCID: PMC9123355.
9. Tonni, Gabriele, Andrea Palicelli, Maria Chiara Bassi, Federica Torricelli, Ilaria Vacca, Lorenzo Aguzzoli, and Vincenzo Dario Mandato. 2024. "Gastrointestinal Stromal Tumors (GISTs) Mimicking Primary Ovarian Tumors or Metastasizing to the Ovaries: A Systematic Literature Review" *Cancers* 16, no. 13: 2305. <https://doi.org/10.3390/cancers16132305>
10. Casali PG, Blay JY, Abecassis N, Bajpai J, Bauer S, Biagini R, Bielack S, Bonvalot S, Boukovinas I, Bovee JVMG, Boye K, Brodowicz T, Buonadonna A, De Álava E, Dei Tos AP, Del Muro XG, Dufresne A, Eriksson M, Fedenko A, Ferraresi V, Ferrari A, Frezza AM, Gasperoni S, Gelderblom H, Gouin F, Grignani G, Haas R, Hassan AB, Hindi N, Hohenberger P, Joensuu H, Jones RL, Jungels C, Jutte P, Kasper B, Kawai A, Kopeckova K, Krákorová DA, Le Cesne A, Le Grange F, Legius E, Leithner A, Lopez-Pousa A, Martin-Broto J, Merimsky O, Messiou C, Miah AB, Mir O, Montemurro M, Morosi C, Palmerini E, Pantaleo MA, Piana R, Piperno-Neumann S, Reichardt P, Rutkowski P, Safwat AA, Sangalli C, Sbaraglia M, Scheipl S, Schöffski P, Sleijfer S, Strauss D, Strauss SJ, Hall KS, Trama A, Unk M, van de Sande MAJ, van der Graaf WTA, van Houdt WJ, Frebourg T, Gronchi A, Stacchiotti S; ESMO Guidelines Committee, EURACAN and GENTURIS. Electronic address: [clinicalguidelines@esmo.org](mailto:clinicalguidelines@esmo.org). Gastrointestinal stromal tumours: ESMO-EURACAN-GENTURIS Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol*. 2022 Jan;33(1):20-33. doi: 10.1016/j.annonc.2021.09.005. Epub 2021 Sep 21. PMID: 34560242.
11. von Mehren M, Kane JM, Riedel RF, Sicklick JK, Pollack SM, Agulnik M, Bui MM, Carr-Ascher J, Choy E, Connelly M, Dry S, Ganjoo KN, Gonzalez RJ, Holder A, Homsy J, Keedy V, Kelly CM, Kim E, Liebner D, McCarter M, McGarry SV, Mesko NW, Meyer C, Pappo AS, Parkes AM, Petersen IA, Poppe M, Schuetz S, Shabason J, Spraker MB, Zimel M, Bergman MA, Sundar H, Hang LE. NCCN Guidelines® Insights: Gastrointestinal

## Jejunal Gastrointestinal Stromal Tumor Presenting as a Right Adnexal Mass with Severe Iron Deficiency Anemia in a Young Female: A Diagnostic Challenge

- Stromal Tumors, Version 2.2022. *J Natl Compr Canc Netw*. 2022 Nov;20(11):1204-1214. doi: 10.6004/jnccn.2022.0058. PMID: 36351335; PMCID: PMC10245542.
12. Nagtegaal ID, Odze RD, Klimstra D, Paradis V, Rugge M, Schirmacher P, Washington KM, Carneiro F, Cree IA; WHO Classification of Tumours Editorial Board. The 2019 WHO classification of tumours of the digestive system. *Histopathology*. 2020 Jan;76(2):182-188. doi: 10.1111/his.13975. Epub 2019 Nov 13. PMID: 31433515; PMCID: PMC7003895.
  13. DeMatteo RP, Ballman KV, Antonescu CR, Corless C, Kolesnikova V, von Mehren M, McCarter MD, Norton J, Maki RG, Pisters PW, Demetri GD, Brennan MF, Owzar K; American College of Surgeons Oncology Group (ACOSOG) Intergroup Adjuvant GIST Study Team for the Alliance for Clinical Trials in Oncology. Long-term results of adjuvant imatinib mesylate in localized, high-risk, primary gastrointestinal stromal tumor: ACOSOG Z9000 (Alliance) intergroup phase 2 trial. *Ann Surg*. 2013 Sep;258(3):422-9. doi: 10.1097/SLA.0b013e3182a15eb7. PMID: 23860199; PMCID: PMC4041735.
  14. Serrano C, George S. Gastrointestinal Stromal Tumor: Challenges and Opportunities for a New Decade. *Clin Cancer Res*. 2020 Oct 1;26(19):5078-5085. doi: 10.1158/1078-0432.CCR-20-1706. Epub 2020 Jun 29. PMID: 32601076.
  15. Joensuu H, Eriksson M, Sundby Hall K, Hartmann JT, Pink D, Schütte J, Ramadori G, Hohenberger P, Duyster J, Al-Batran SE, Schlemmer M, Bauer S, Wardelmann E, Sarlomo-Rikala M, Nilsson B, Sihto H, Monge OR, Bono P, Kallio R, Vehtari A, Leinonen M, Alvegård T, Reichardt P. One vs three years of adjuvant imatinib for operable gastrointestinal stromal tumor: a randomized trial. *JAMA*. 2012 Mar 28;307(12):1265-72. doi: 10.1001/jama.2012.347. PMID: 22453568.