

## D4 Duodenal GIST Presenting with Acute GI Hemorrhage – Case Report

Kolani Henri<sup>1\*</sup> Bici Rexhina<sup>2</sup> Kananaj Ervin<sup>3</sup> Vila Frenki<sup>4</sup> Haxhiu Asfloral<sup>5</sup> Masati Bledi<sup>6</sup>  
Braholli Eriol<sup>7</sup> Çili Manser<sup>8</sup> Osmënaj Renato<sup>9</sup> Prendi Urana<sup>10</sup> Qosja Entela<sup>11</sup> Taçi Stela<sup>12</sup>  
Thomanasto Aleksandër<sup>13</sup> Prendi Kristian<sup>14</sup> Sula Arentin<sup>15</sup>  
\* E-mail of the corresponding author: henri.kolani@yahoo.com

### Abstract

#### Background

A gastro-intestinal stromal tumour is a type of cancer that develops in the wall of the digestive tract. Its origin is a debated topic. The most common location in the gastrointestinal tract is the stomach, small intestine, colon esophagus and in rare occasions in the duodenum (approximately 4% incidence). For the most part GISTs may be asymptomatic, as the volume of the tumor grows, so do complications and signs arise. Current protocols support the treatment by resectional surgery and targeted therapy, most commonly with imatinib. As lymph node involvement is uncommon, lymphatic curage is not recommended and a more conservative surgical approach is possible, depending on the location of the tumor.

#### Case presentation

Our patient is a 60 years old male admitted to the Gastro-enterology department for the diagnosis of acute gastro-intestinal hemorrhage, manifested with haematochezia. He was treated on the course of 3 days conservatively and resuscitated to correct anaemia. The diagnosis of D4 GIST is confirmed via fibro-gastro-duodenoscopy. The patient is prepared for surgery. Due to clear margins of resection an no involvement of pancreas and superior mesenteric vessels, a segmental resection of D4 and part of D3 is performed, followed by a duodeno-jejunal end-to-end anastomosis. The patient was discharged in good health on the 14<sup>th</sup> post-operative day.

#### Discussion

Due to the complex anatomy of the duodenum and special relationships with adjacent organs many authors recommend a pancreatico-duodenectomy as clear margins are difficult to attain. Other authors support the local excision of the tumor due to the high morbidity and risk of a Whipple procedure. In cases where local excision is feasible, the defect is closed by primary rraphy or Roux-en-Y duodeno-jejunostomy. On the technical aspect, studies do not support the excision of wider clear margins around the tumor. Local recurrence is a more prominent feature of adenocarcinomas, whereas GISTs do recur in distant locations. Surgical resection of GISTs is guided by tumor size, infiltration and adjacency to other organs, most importantly the papilla Vater.

#### Conclusion

Current protocols for D4 or jejunal GISTs support the segmental resection and end-to-end duodeno-jejunal anastomosis or side-to-side anastomosis. In our case the pancreas and the superior mesenteric vessels were not involved and the tumor was 30mm in size. As a result of the non-infiltrative nature of this tumor and relatively small size its resection was successfully performend, followed by end-to-end anastomosis of the duodenum and jejunum.

**Keywords:** General Surgery, Duodenal Cancer, GIST, Duodenal Resection, Duodeno-Jejunal Anastomosis.

**DOI:** 10.7176/JEP/14-29-02

**Publication date:** October 31<sup>st</sup> 2023

### 1. Introduction

A gastro-intestinal stromal tumour is a type of cancer that develops in the wall of the digestive tract. Its origin is a debated topic; however, a hypothesis is that interstitial cells of Cajal are a progenitor of GISTs.

The most common location in the gastrointestinal tract is the stomach, small intestine, colon esophagus and in rare occasions in the duodenum (approximately 4% incidence). For the most part GISTs may be asymptomatic, as the volume of the tumor grows, so do complications and signs arise.

Patients may suffer from abdominal pain, fatigue, nausea, vomiting, a palpable mass in abdomen, intestinal spasms and other signs of gastrointestinal hemorrhage such as melena, hematemesis or hematochezia.

Etiological factors are poorly recognized, but there is small number of cases of genetical inheritance.

Among the diagnostic tools for gastro-intestinal stromal tumors the most sensitive are upper or lower endoscopy with biopsy, endoscopic ultrasound (EUS) and fine needle aspiration. Other important examinations include computed tomography for the evaluation of regional advancement and relationships with other organs.

Current protocols support the treatment by resectional surgery and targeted therapy, most commonly with imatinib. As lymph node involvement is uncommon, lymphatic curage is not recommended and a more conservative surgical approach is possible, depending on the location of the tumor.

## 2. Case presentation

### 2.1 History of present illness

Our patient is a 60 years old male admitted to the Gastro-enterology department for the diagnosis of acute gastro-intestinal hemorrhage, manifested with haematochezia. He was treated on the course of 3 days conservatively and administers blood products to correct anaemia.

In the first endoscopic examination, it was not possible to reach the D4 level and no lesions were found on the stomach or duodenum. On a second occasion the fibrogastroscopy reaches the D4 level, where a 3×3cm hemorrhagic lesion was noted, suspecting GIST.

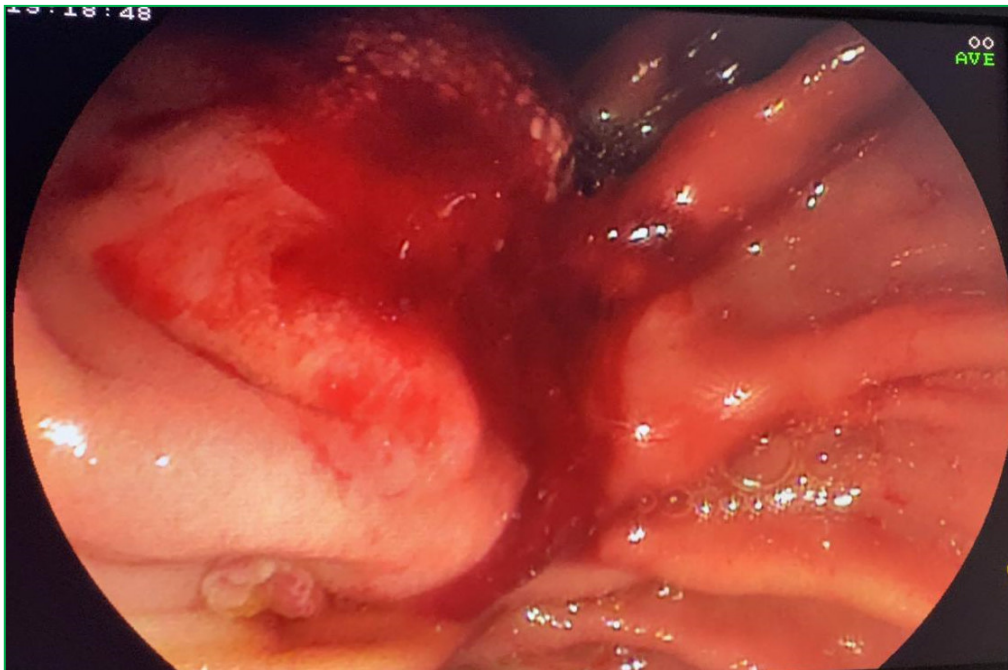


Figure 1. Endoscopy showing a hemorrhagic lesion of D4 segment of duodenum.

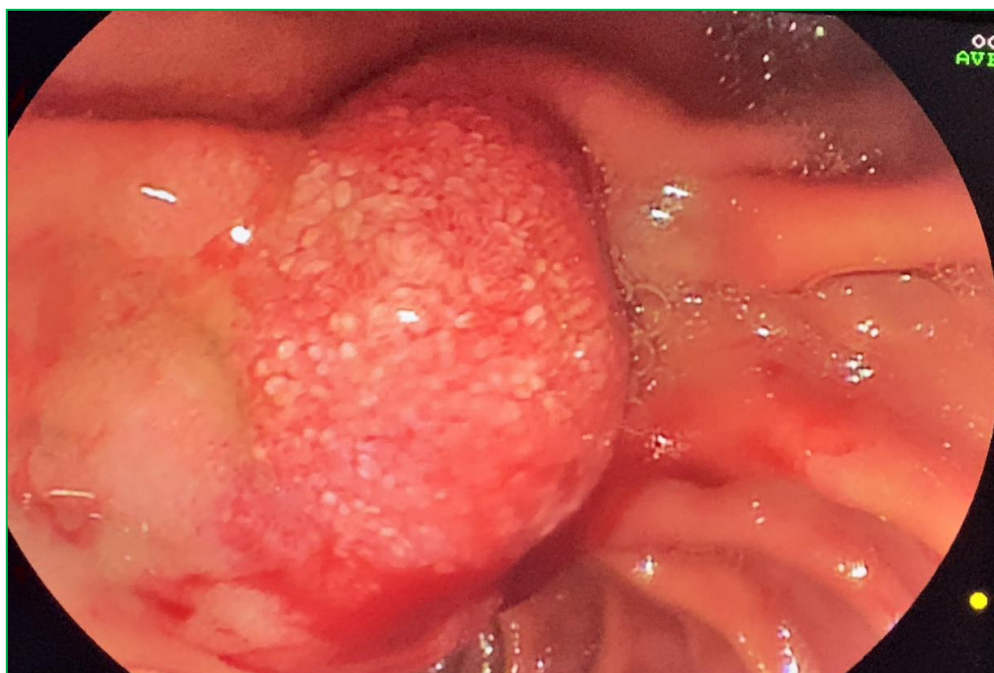


Figure 2. Endoscopic view of the D4 lesion.

Abdominal Computed Tomography with IV contrast evidences the D4 duodenal GIST, whereas the other regions of the abdomen have a normal radiologic aspect.

The patient is thus resuscitated in the intensive care unit, to be prepared for surgical intervention.

### 2.2 Details of the surgical procedure

Under general anaesthesia, a superior and inferior median incision is made and the peritoneum is accessed.

We continue with the dissection at the level of Treitz and we encounter a tumoral formation of the D4 segment of duodenum, which does not involve the pancreas and the superior mesenteric vessels. At this point the case is considered operable.

The D4 portion and a part of D3 of duodenum is resected to achieve clear oncologic margins. At this level a duodeno jejunal anastomosis is performed, along with cholecystectomy which incidentally contains gallstones.

The procedure ends with saline lavage and the placement of a drain. During surgery additional three units of blood were administered.

### 2.3 Post-operative period

The patient was transferred in the intensive care unit where he was monitored for the following 5 days. He was discharged in an improved state on the 14<sup>th</sup> postoperative day.



Figure 3. Tumor of the D4 segment of Duodenum.



Figure 4. Resection in clear margins of the tumor.

### 3. Discussion

The most common presentation of duodenal GISTs is gastrointestinal hemorrhage, similar to small intestine. GISTs of the stomach more often than not an incidental finding.

The most common site of presentation for duodenal GISTs is the D2 portion according to the literature, which in turn makes for a more difficult surgical treatment due to the infiltration of the pancreas.

Current therapeutic standards recommend surgical resection with clear margins. Lymph node dissection is not advocated as lymphatic node involvement is uncommon.

Due to the complex anatomy of the duodenum and special relationships with adjacent organs many authors recommend a pancreatico-duodenectomy as clear margins are difficult to attain. Other authors support the local excision of the tumor due to the high morbidity and risk of a Whipple procedure. In cases where local excision is feasible, the defect is closed by primary rraphy or Roux-en-Y duodeno-jejunosomy.

On the technical aspect, studies do not support the excision of wider clear margins around the tumor. Local recurrence is a more prominent feature of adenocarcinomas, whereas GISTs do recur in distant locations. Surgical resection of GISTs is guided by tumor size, infiltration and adjacency to other organs, most importantly the papilla Vater.

### 4. Conclusion

When technically feasible, the recommended treatment for duodenal GISTs is limited local resection. This is considered reliable and is satisfactory for the 5-year disease free survival.

More radical procedures do not offer significantly improved outcomes in terms of relapse, on the contrary, may increase morbidity and mortality. Radical procedures are advocated in specific cases of regional advancement, proximity to important structures such as the ampulla.

Current protocols for D4 or jejunal GISTs support the segmental resection and end-to-end duodeno-jejunal anastomosis or side-to-side anastomosis.

In our case the pancreas and the superior mesenteric vessels were not involved and the tumor was 30mm in size. As a result of the non-infiltrative nature of this tumor and relatively small size its resection was successfully performed, followed by end-to-end anastomosis of the duodenum and jejunum.

### Conflict of interest

The author(s) declare(s) that there is no conflict of interest. The authors alone are responsible for the content and writing of the paper.

### Financial disclosure

There is no financial support to this study.

### Ethical aspect

Informed consent was obtained from all participants in the study and all procedures were conducted in accordance with the Declaration of Helsinki.

### References

1. Du H, Ning L, Li S, Lou X, Chen H, Hu F, Shan G, Zhang F, Xu G. Diagnosis and Treatment of Duodenal Gastrointestinal Stromal Tumors. *Clin Transl Gastroenterol.* 2020 Mar;11(3):e00156. doi: 10.14309/ctg.000000000000156. PMID: 32352716; PMCID: PMC7145047.
2. Joensuu H, Fletcher C, Dimitrijevic S, Silberman S, Roberts P, Demetri G. Management of malignant gastrointestinal stromal tumours. *Lancet Oncol.* 2002 Nov;3(11):655-64. doi: 10.1016/s1470-2045(02)00899-9. PMID: 12424067.
3. von Mehren M, Randall RL, Benjamin RS, Boles S, Bui MM, Casper ES, Conrad EU 3rd, DeLaney TF, Ganjoo KN, George S, Gonzalez RJ, Heslin MJ, Kane JM 3rd, Mayerson J, McGarry SV, Meyer C, O'Donnell RJ, Pappo AS, Paz IB, Pfeifer JD, Riedel RF, Schuetze S, Schupak KD, Schwartz HS, Van Tine BA, Wayne JD, Bergman MA, Sundar H. Gastrointestinal stromal tumors, version 2.2014. *J Natl Compr Canc Netw.* 2014 Jun;12(6):853-62. doi: 10.6004/jnccn.2014.0080. PMID: 24925196.
4. ESMO/European Sarcoma Network Working Group. Gastrointestinal stromal tumours: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol.* 2014 Sep;25 Suppl 3:iii21-6. doi: 10.1093/annonc/mdu255. Erratum in: *Ann Oncol.* 2015 Sep;26 Suppl 5:v174-7. PMID: 25210085.
5. Nishida T, Hirota S, Yanagisawa A, Sugino Y, Minami M, Yamamura Y, Otani Y, Shimada Y, Takahashi F, Kubota T; GIST Guideline Subcommittee. Clinical practice guidelines for gastrointestinal stromal tumor (GIST) in Japan: English version. *Int J Clin Oncol.* 2008 Oct;13(5):416-30. doi: 10.1007/s10147-008-0798-7. Epub 2008 Oct 23. PMID: 18946752.
6. Lee SY, Goh BK, Sadot E, Rajeev R, Balachandran VP, Gönen M, Kingham TP, Allen PJ, D'Angelica MI,

- Jarnagin WR, Coit D, Wong WK, Ong HS, Chung AY, DeMatteo RP. Surgical Strategy and Outcomes in Duodenal Gastrointestinal Stromal Tumor. *Ann Surg Oncol*. 2017 Jan;24(1):202-210. doi: 10.1245/s10434-016-5565-9. Epub 2016 Sep 13. PMID: 27624583; PMCID: PMC5199143.
7. Joensuu H, DeMatteo RP. The management of gastrointestinal stromal tumors: a model for targeted and multidisciplinary therapy of malignancy. *Annu Rev Med*. 2012;63:247-58. doi: 10.1146/annurev-med-043010-091813. Epub 2011 Oct 13. PMID: 22017446; PMCID: PMC3381421.
  8. 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 Jan;231(1):51-8. doi: 10.1097/00000658-200001000-00008. PMID: 10636102; PMCID: PMC1420965.
  9. El-Gendi A, El-Gendi S, El-Gendi M. Feasibility and oncological outcomes of limited duodenal resection in patients with primary nonmetastatic duodenal GIST. *J Gastrointest Surg*. 2012 Dec;16(12):2197-202. doi: 10.1007/s11605-012-2034-z. Epub 2012 Sep 25. PMID: 23007283.
  10. Lanuke K, Bathe OF, Mack LA. Local excision of duodenal gastrointestinal stromal tumor. *J Surg Oncol*. 2007 Mar 1;95(3):267-9. doi: 10.1002/jso.20618. PMID: 17323342.
  11. Yamaguchi T, Nishizaki D, Kagawa R, Takeda R, Onoyama H, Yosida K. Duodenum-preserving local excision of a gastrointestinal stromal tumor presenting with duodenal bleeding. *Am Surg*. 2010 Apr;76(4):444-6. PMID: 20420259.