

## Gastrointestinal Stromal Tumor (GIST) Localization at the D3 and D4 Levels: Apropos of A Case

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### Abstract

### Case Report

GISTs are rare mesenchymal tumors and their preoperative diagnosis can be difficult. Certain less accessible anatomical locations, such as the duodenum and in particular at the level of D3 and D4, as well as the obtaining of biopsies which contribute little are in question. The surgical approach usually makes it possible to acquire a formal diagnosis and remains the cornerstone of treatment. Faced with any possibility of a GIST, even without histological diagnosis obtained, surgery should be encouraged.

**Keywords:** Duodenal GIST, gastrointestinal stromal tumor, diagnosis, surgery, segmental resection.

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## INTRODUCTION

GISTs (gastrointestinal stromal tumors) are rare mesenchymal tumors representing 1% of primary gastrointestinal cancers with an incidence of 10-20 per million inhabitants [1, 2]. They are more common in the stomach (60%), jejunum/ileum (20-30%), and rectum. Duodenal involvement is much rarer (3-5%) [3, 4]. The case we report underlines the importance of including GIST in the differential diagnosis of duodenal tumours, but above all the difficulty of obtaining a preoperative diagnosis and the determining role that surgery represents in the management.

## CLINICAL OBSERVATION

61-year-old patient with no pathological medical history. Surgical: hysterectomized vaginally in 2021 undocumented. Admitted for abdominal pain, chronic constipation plus dyspepsia.

The beginning of the symptomatology goes back to Eight months, by the appearance of diarrhea, abdominal pain, chronic constipation which has not been improved by symptomatic treatment, evolving in a context of deterioration of the general state, transferred to our structure for additional support.

According to the anamnestic elements, the initial examination found a conscious patient, hemodynamically and respiratory stable, eupneic with a blood pressure of 12/9 mm Hg, a heart rate of 98 beats per minute, a respiratory rate of 18 cycles per minute and a temperature at 36.7°C.

Physical examination found a soft abdomen and non-distended tenderness in the epigastric region. A standard biological assessment: which is not useful for the diagnosis, but useful for the overall assessment of the patient as well as for the preoperative assessment.

Complete blood count, platelets: Hemoglobin at 13g/dl. Absence of inflammatory syndrome with white blood cells at 8000G/L; C reactive protein: negative. Normal kidney function: serum creatinine at 10 micromoles/L; urea at 8 micromoles/L. Complete blood tonogram is without abnormality. Normal liver function.

Oesogastroduodenal fibroscopy plus biopsy: Presence at the level of D3, D4 of a mass measuring around 5cm with a smooth surface that looks under the mucous membrane. Pathology results: absence of identifiable tumor proliferation.

Total colonoscopy: presence of 02 millimetric polyps, one in the caecum and the other in the transverse

colon, biopsy and excision performed. Presence of 02 other polyps at the level of the sigmoid colon measuring around 15 to 18 mm, polypectomy done.

Histological results: Comparable appearance of all the polyps: Villous tubular adenoma with low-grade dysplasia.

Thoraco-abdomino-pelvic computed tomography: Presence at the level of D3, D4 of a hypervascularized mass around 5cm with intraexophytic development.

The file was staffed in digestive multidisciplinary consultation meetings, the aim of which was to review the imaging and therapeutic decisions. Discussion of the digestive multidisciplinary consultation meeting (RCP): lesional process at the level of the duodenal Genus inferior measuring 6mm, two lesional processes at the level of the duodenojejunal junction measuring 5cm evoking a GIST (Figure 1).

CPR decision is to do surgery. Surgical treatment: First midline laparotomy straddling the umbilical enlarged above and below the umbilical.

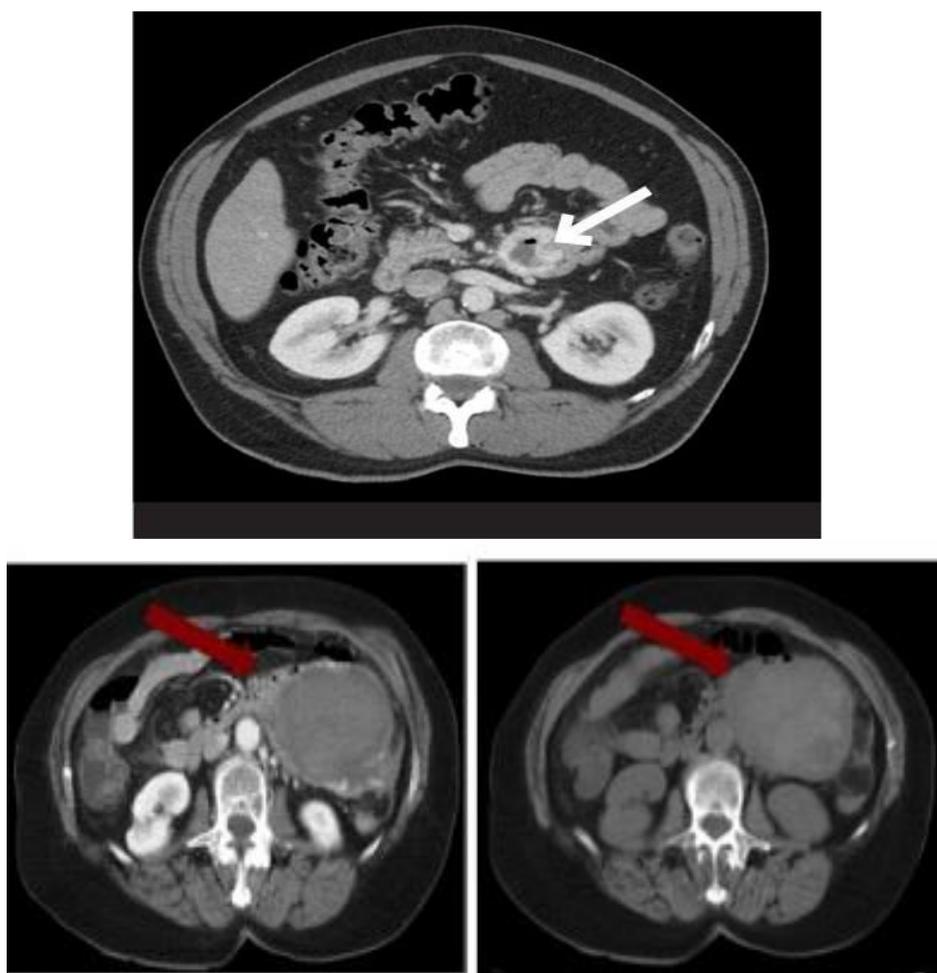
On exploration: Absence of effusion and visual and manual peritoneal carcinomatosis centipedally to the diaphragmatic cupolas in the liver and in the peritoneum up to the cul de sac of Douglas.

Presence of several grelogrelic and grelo-epiploic adhesions. Adhesiolysis of all adhesions until complete release of all hail.

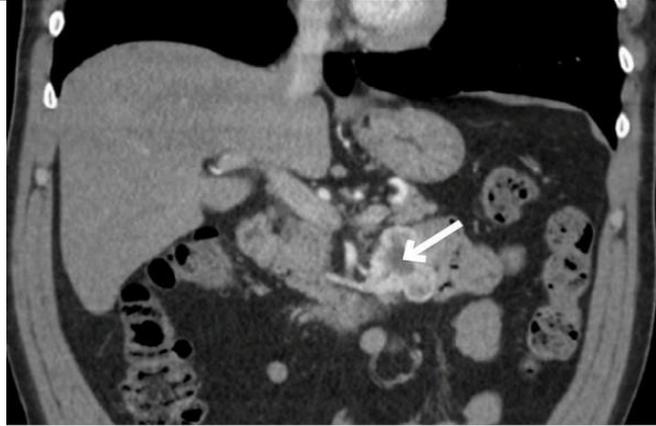
Release of the first jejunal loop made it possible to objectivize a bulky mass at the expense of D3 and D4 which is exophytic, bleeding easily on contact visualization of the jejunal artery which has been ligated and resected. Release of a good part of the duodenum up to a few centimeters upstream of the mass.

Performing a duodenectomy carrying the D 3-D4 with a manual end-to-end duodenojejunal anastomosis (Figure 3, 4, 5 & 6).

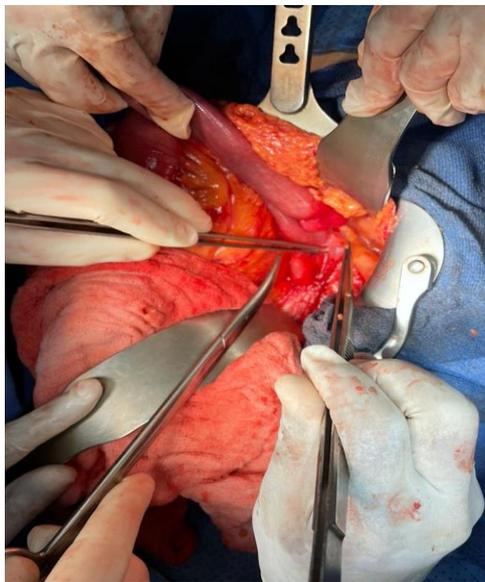
The postoperative follow-up was simple, food allowed on the third day. Exit authorized on the 6th day. Review at check-up without complaining of pain. Anatomopathological results of the surgical specimen: Absence of tumor proliferation, in favor of a GIST.



**Figure 1:** CT image in axial section showing a hypervascularized mass in the duodenal



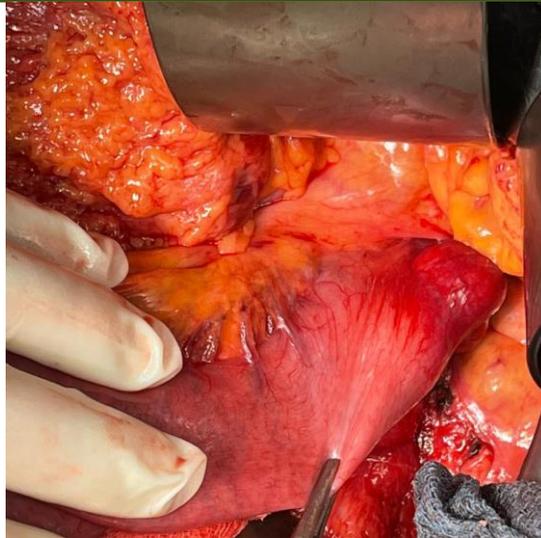
**Figure 2:** Computed tomography image in coronal section showing a mass with raising walls measuring 5cm hypervascularized with intraexophytic development



**Figure 3:** Intraoperative image showing a duodenal GIST at the expense of D3 and D4



**Figure 4:** Intraoperative image showing a nodular lesion at the expense of D3 D4 measuring 5cm along the axis



**Figure 5: Intraoperative image showing a nodular lesion at the expense of D3 D4 measuring 5cm along the axis**



**Figure 6: Piece of duodenal resection showing a nodular lesion of 5cm long axis very well delimited**

## DISCUSSION

Gastrointestinal stromal tumors (GIST) are rare tumors, and their diagnosis is rarely easy. In the case presented, the multiple investigations carried out as well as the trial of an antibiotic therapy only led to the hypothesis of a tumoral lesion but without being able to make a formal and precise diagnosis.

Ulcerative duodenal diverticulitis has been suggested and difficult to exclude. Duodenal diverticula are part of the differential diagnosis of GISTs but are more frequent, with an estimated incidence of 5 to 10% and whose most common locations are the 2nd and 3rd duodenal segments [5].

Other cases similar to ours are reported, such as that of Jeremy *et al.*, who put forward the preoperative hypothesis of duodenal diverticulum and pancreatic cystic neoplasia, but whose formal diagnosis of GIST was only made after surgery [6]. Conversely, the case presented by Zaynab Ouali *et al.* strongly suspected a

duodenal GIST preoperatively, whereas postoperative analyzes concluded that a duodenal diverticulum was present [7]. Because of their sometimes similar locations and presentations, it is sometimes difficult to decide between these two types of duodenal lesions but also to distinguish them from other pathologies of pancreatic origin.

The management of GIST obviously requires an initial diagnostic assessment before any therapeutic time.

Imaging is certainly essential in the assessment of a GIST. The examination of choice is computed tomography with injection of contrast product, which makes it possible to characterize the tumour, its size and its locoregional extension [8, 9]. We report that our patient benefited from a thoraco-abdomino-pelvic computed tomography which objectified at the level of D3-D4 a hypervascularized mass measuring around 5cm with intra-exophytic development. Other examinations can be carried out like Pet scanner, we will give more precise information.

The diagnosis of a GIST is a histological diagnosis. An endoscopic approach with biopsy is an option. However, duodenal GISTs and in particular of D3-D4 concern a deep anatomical zone, with more delicate access.

In addition, biopsies are frequently of little contribution. In our case, no contributory result was obtained after two consecutive biopsies. Other iterative biopsies could have been considered without ensuring a diagnosis. Endoscopic biopsies are often too superficial to allow histological diagnosis [8,9], with tumors developing in the submucosal part of the digestive tract [9-10]. Ultrasound-guided fine-needle aspirations (FNA) would give more contributive results (80-90%) but are in practice more complex to perform in the case of duodenal GIST [11, 12].

The second option to acquire a histological diagnosis is the surgical approach. In our case, it was the surgical indication that made it possible to obtain a histological diagnosis and a tumor stage. In our case, the patient's file was staffed in a multidisciplinary consultation meeting from which the decision was to perform the surgery. A midline laparotomy straddling the umbilical enlarged above the umbilical. Followed by a duodenal resection removing the mass between D3-D4, plus a manual end-to-end duodenojejunal anastomosis was performed. Discharge allowed on the 6th postoperative day without any complications.

In terms of immunohistochemical analysis, GISTs are characterized by an overexpression of the KIT gene (95%) [13]. They are positive for CD117 (95%). They can also express CD34 (60-70%), actin (30-40%), protein S100 (5%) and desmin (1-2%) [14]. Another interesting immunohistochemical marker is DOG-1, which is expressed by almost all GISTs [9]. The KIT gene can be mutated at exons 11, 13 and 9 [1, 4].

Thus, if there is a possibility of GIST, a surgical approach is requested, whether a biopsy contributes little or is incidental.

The complementarity of these two therapeutic components (surgery and systemic therapy) in the management of more advanced GIST means that in the event of surgery necessary for the diagnosis without neoadjuvant therapy administered, the treatment can nevertheless be supplemented by an adjuvant systemic therapy in postoperative. Therefore, without obtaining a formal diagnosis, surgery also represents an acceptable and possible diagnostic means even in a possibly metastatic situation.

## CONCLUSION

Duodenal GISTs can represent a diagnostic challenge for the practitioner. Their presentation mimics

in some cases other lesions such as duodenal diverticula and biopsies are frequently non-contributory. Although in practice more complex to perform in this location, echoendoscopy with ultrasound-guided fine needle aspirations nevertheless plays a role in the assessment.

In case of insufficient preoperative assessment, the possibility of a GIST imposes a formal diagnosis which can be obtained by means of both diagnostic and therapeutic surgery. This retains its interest even in a context of probable metastatic lesion without contributing histological result.

Surgery therefore has a decisive role in the management of these tumours. Faced with any possibility of duodenal GIST without a precise diagnosis, surgery should be encouraged.

**Conflict of interest:** The authors declare no conflicts of interest.

**Others' contributions:** All authors have contributed to the development of the work and endorse the document.

The have also read and approved the final version of this manuscript.

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