

## Ulcerated Gastrointestinal Stromal Tumor (GIST) with Ingested Bone Foreign Body Mimicking a Perforation with Abscess

J. Scott Kriegshauser and Amy K. Hara

Gastrointestinal stromal tumors (GIST) have a variety of appearances and can present as an intraluminal, extraluminal, solid or ulcerated mass. We present an unusual case of a patient presenting with pain, elevated white count, and computed topography (CT) findings suggesting an abscess containing bone. CT guided drainage was performed, and resulted in bowel perforation, leading to surgical intervention and the diagnosis of an ulcerated gastrointestinal stromal tumor containing bone.

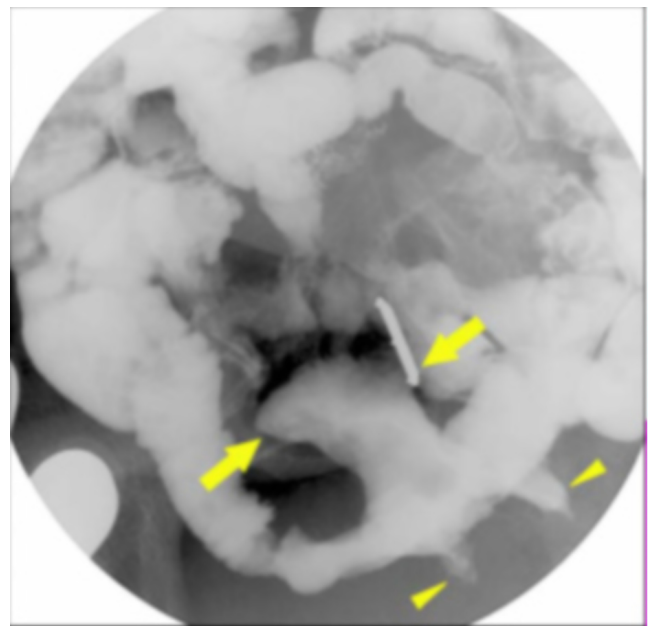
### Introduction

Gastrointestinal stromal tumors (GIST) are the most common mesenchymal tumor of the gastrointestinal tract [1-6]. These tumors can ulcerate and perforation has been reported. To our knowledge, there are no reports in the literature of an ulcerated GIST containing ingested bone and mimicking an abscess. We present this unusual case and describe the clinical presentation and imaging findings of the GIST.

### Case Report

An 84 year-old female presented to her family medicine physician with complaints of mild abdominal discomfort, bloating, and dark stools, found to be heme positive. She was not anemic or hypotensive but her white blood cell (WBC) count was elevated (18.1 x 10<sup>9</sup>/L). She was referred to a gastroenterologist who started the work-up with esophagogastroduodenoscopy (EGD) and colonoscopy,

which were negative. A small bowel follow-through exam showed a fistulous connection from the distal ileum into an extraluminal space (6.5 x 3.2 x 2.0 cm) (Figure 1). A CT of the abdomen and pelvis showed a thick-walled mass in the pelvis containing air, fluid, and a linear ossification, thought to be ingested bone (Figure 2).



**Figure 1.** Image from barium small bowel follow-through showing contrast filling a large, irregular extraluminal space (arrows) through a fistula from the lumen of the ileum. Smaller "ulcerations" projected over the opposite side of the lumen (arrowheads)

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Abbreviations: GIST, gastrointestinal stromal tumor, CT, computed topography, WBC, white blood cell, EGD, esophagogastroduodenoscopy, BP, blood pressure, PET, positron emitting tomography

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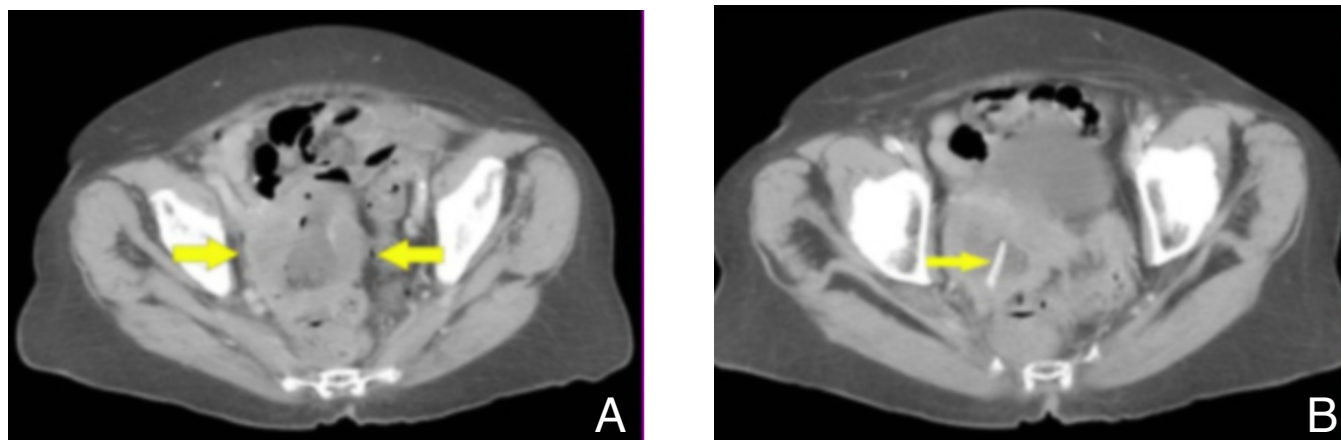
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**Figure 2.** A and B. Axial enhanced CT images showing a mass with an enhancing, thick wall (arrows), with internal air, fluid, and a linear ossific density (arrowhead) suggesting bone.

Although the radiologist raised the question of an ulcerated mass versus abscess, the surgical team requested a percutaneous CT guided drainage to stabilize the patient based on the CT appearance and the elevated WBC count. The fluid obtained had the appearance of old blood. The patient experienced severe pain for several hours after the drainage procedure, which decreased to moderate and continued over the next two days. She became mildly hypotensive at times (lowest blood pressure (BP) was 89 mm Hg systolic and 47 mm Hg diastolic) and was supported with IV hydration. A CT examination two days after the drainage showed no significant change in the air/fluid collection, a small amount of new ascites, and new free intraperitoneal air (Figure 3).

She was taken to surgery where a large GIST was found, arising from the distal ileum. The mass had ulcerated into the small bowel lumen, and had also perforated. Peritoneal metastases were present. The pathologist reported a “foreign body, consistent with possible animal bone, measuring up to 1.6 cm” within the tumor, which was centrally hemorrhagic. No discrete abscess was present.

The patient did well after the surgery and was asymptomatic at a follow-up visit five months later. Additional therapy options were discussed, but she was later lost to follow-up.

### Discussion

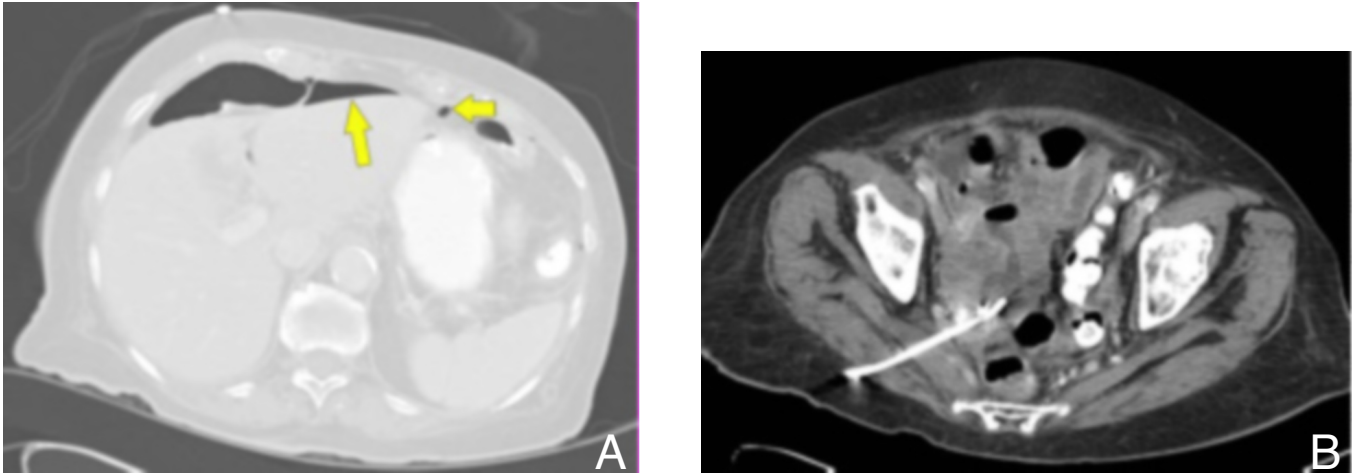
GIST's are uncommon malignancies (1% of alimentary tract tumors) but are the most common mesenchymal tumor of the gastrointestinal tract [1-3]. They arise most often from the stomach and small intestine (80%) [1-6]. Malignant potential is based on tumor size and mitotic activity, but ultimately is determined by tumor behavior, i.e. the presence of local invasion or metastasis. Metastases occur in nearly 50% of patients [6]. Most common sites of metastasis are the liver and peritoneum while lung and lymph node metastases are rare [1-6]. Central ulceration into the bowel lumen is common, as in the case presented here, and can be associated with hemorrhage.

Clinical presentation varies with location and size of tumor. One review states, “GI bleeding is the most common presenting symptom for GIST's at any organ of origin.” [2]. However, not all reports agree, with Hong et al stating, “Occasionally, gastrointestinal bleeding occurs with tumors involving the mucosa.” [6]. Other common symptoms include early satiety, indigestion, bloating, vague abdominal pain, and a palpable mass. Spontaneous rupture into the peritoneal cavity can occur, with associated severe abdominal pain and hypotension.

CT is considered the most useful imaging modality for diagnosis, post-treatment surveillance, and for evaluating treatment response [2, 5-7]. Positron emitting tomography (PET) imaging can be very useful, especially for determining extent of disease, but glucose uptake can be insufficient in a few tumors. Primary GIST's typically present as a large, hypervascular, enhancing mass, which can be intramural, but can also project endoluminally or exophytically. Central low density is common (37-38%) and can be due to hemorrhage, necrosis, cystic degeneration, ulceration, or a fibrous septum [1,4,8]. The tumors often displace adjacent structures, but direct invasion of adjacent organs and vessels is uncommon. Determining the origin of the mass can be difficult [1-3]. Although uncommon, central calcification has been reported, and when absent can help differentiate mesenteric GIST tumors and metastases from carcinoid metastases. Large GIST's can ulcerate, mimicking aneurysmal dilatation of the bowel lumen as seen with small bowel lymphoma. The ulceration of GIST can usually be differentiated from aneurysmal dilatation due to lymphoma by the lack of associated lymphadenopathy. Small bowel obstruction is rare, which helps to differentiate a GIST from a primary adenocarcinoma [1,4-7]. Small GIST's are often incidental findings at CT or endoscopy, and present as homogeneously enhancing masses. If not resected, they are often followed with CT.

Surgical resection is usually the initial treatment of choice for cure, debulking, or symptom palliation. Preoperative percutaneous biopsy is often performed, but the prevalence of postbiopsy hemorrhage or tumor seeding is

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**Figure 3.** A. Axial CT with lung window settings of the upper abdomen showing free intraperitoneal air (arrows). B. Axial contrast-enhanced CT image after percutaneous drainage with drainage catheter within the mass.

unknown [2,6]. Treatment of residual or metastatic tumors with Imatinib has often been successful. The response to treatment can be monitored with CT, based on tumor enhancement, rather than size. Tumor size decrease can take several months. Occasionally, responding tumors can increase in size due to hemorrhage or myxoid degeneration. Monitoring treatment response with PET imaging can be very sensitive, if the attenuation was high initially.

The case presented here was deceptive in its presentation because of the elevated WBC count and the foreign body, favoring a walled-off perforation and abscess involving the ileum. In fact, the ileum is a common site of perforation from an elongated object, such as a bone or needle. The heme-positive stools without anemia would favor a relatively acute or subacute rather than a chronic process. The imaging feature most suggestive that this lesion was due to a tumor rather than an abscess was the thick enhancing wall around the air/fluid collection. Abscesses tend to have thinner enhancing walls unless they are very chronic. It is possible the bone was the cause of the discomfort, bleeding and elevated WBC count, either as a foreign body reaction or a contained perforation.

An argument could be made that percutaneous drainage should not have been attempted in this patient, as it was not a curative procedure due to the presence of the foreign body. Even without the foreign body, a thick walled abscess suggests a more chronic process that would likely best be treated surgically. If a tumor was suspected (especially a GIST), percutaneous drainage could be catastrophic, given the high risk of perforation and risk of peritoneal tumor. In this case, percutaneous drainage was attempted to stabilize the patient prior to definitive surgery, in order to simplify the surgery and reduce complications. In a stable patient with a suspected abscess due to ingested foreign body, surgery would likely be the first step rather than percutaneous drainage.

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