

North Pacific Surgical Association

Local resection for duodenal gastrointestinal stromal tumors



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Abstract

BACKGROUND: Duodenal gastrointestinal tumors (GIST) present infrequently, and surgical resection with negative margins remains the mainstay of therapy; however, given the lack of lymphatic and submucosal spread and anatomic location near the bile duct and pancreas, the optimal approach for resection is unknown. Options include local resection (LR), segmental resection, and pancreaticoduodenectomy (PD).

METHODS: All cases of gastrointestinal stromal tumors originating from the duodenum from 2000 to 2015 were identified from administrative databases. Clinical and pathologic information was abstracted from the medical record and compared between patients who received LR vs PD. The chi-square with Fisher's exact test was used to detect differences between groups.

RESULTS: Fifteen patients met the inclusion criteria, of which 7 had an LR and 8 had a PD. The second portion of the duodenum was the most common origin of GIST in the PD group, whereas the third portion was most common in the LR group. Patients who underwent LR tended to be younger, but there was no difference in tumor size, mitotic rate, margin positivity, readmission rate, or recurrence. PD was associated with more complications, higher blood loss, and longer length of stay.

CONCLUSIONS: Local resection is a reasonable option for resection of duodenal GIST and should be routinely considered if technically feasible.

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Gastrointestinal tumors (GIST) represent 1% to 3% of all digestive tract neoplasms and are the most common mesenchymal tumors of the digestive tract.¹⁻³ They are spindle cell tumors that are CD 117 (c-kit protein) positive and can arise from anywhere within the gastrointestinal tract but most commonly originate within the stomach (60% to 70%), followed by the small intestine (20% to 25%, of which 3% to 5% arise from the duodenum), large

intestine (5%), and esophagus (3% to 5%).^{4,5} GISTs can arise in any part of the duodenum but most commonly arise from the second portion and account for 30% of primary duodenal neoplasms.⁶ There are few studies investigating medical and surgical management of duodenal GISTs, and reports are limited by small sample size.

A 45-year-old healthy female presented to our institution with persistent upper abdominal pain prompting a computed tomography scan that demonstrated a 2.6 × 2.0 hypervascular mass in the duodenum (Fig. 1A,B). She underwent esophagogastroduodenoscopy with endoscopic ultrasound and biopsy that confirmed the diagnosis of GIST tumor (Fig. 1C,D). Given the location and size of the tumor, she was offered a segmental duodenal resection with duodenojejunostomy through a Kocher incision

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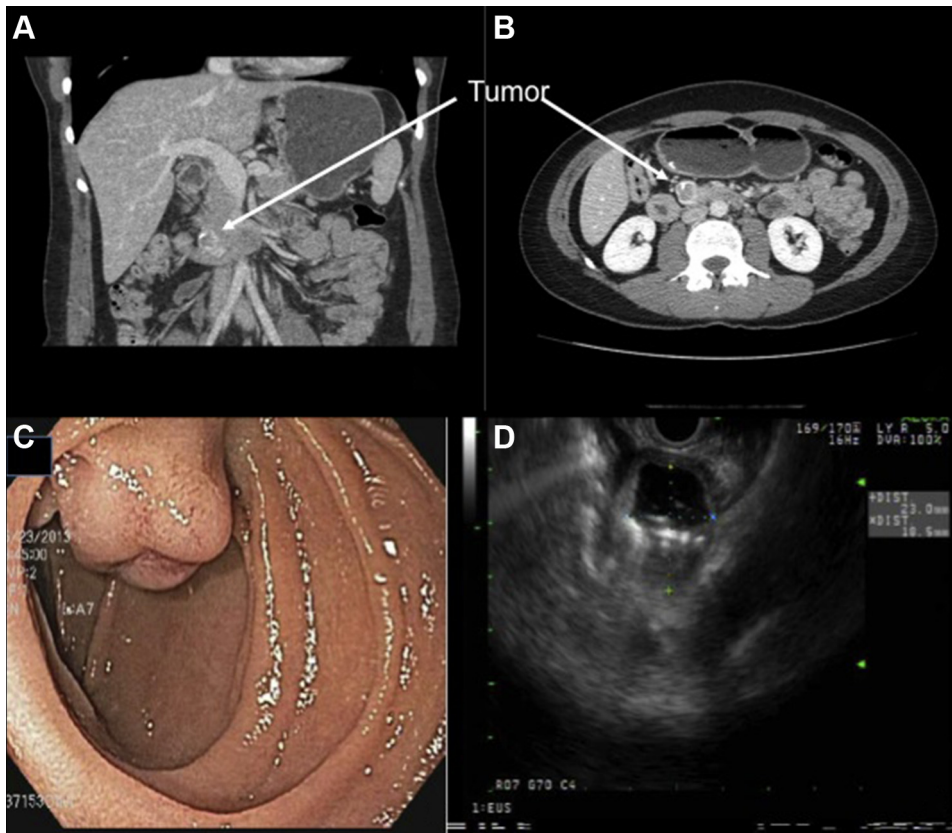


Figure 1 Appearance of duodenal GIST on CT imaging (A and B), endoscopy (C), and endoscopic ultrasound (D).

(Fig. 2). Pathology revealed a 2.5-cm GIST with <1 mitotic figure per 50 high-power fields (HPFs). She had an uneventful postoperative recovery and was discharged home on postoperative day 6. Adjuvant imatinib was not recommended, and the patient remains disease free at 2 years follow-up.

Margin-negative surgical resection remains the mainstay of treatment of duodenal GISTs.^{5,6} Because GISTs rarely demonstrate perineural or lymphovascular infiltration, wide resection margins and regional lymphadenectomy

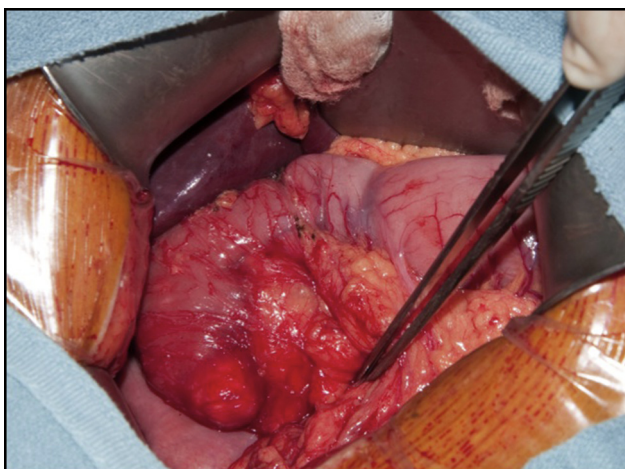


Figure 2 Intraoperative picture of duodenal GIST and relationship to uncinate process of pancreas.

are not indicated. Adequate resection of tumors involving the duodenum is limited by a unique set of challenges presented by the anatomic complexity of the pancreaticoduodenal region including close proximity of the pancreas, common bile duct, ampulla of Vater, and mesenteric vessels.^{2,7} These anatomic relationships make resection of the second portion of the duodenum especially challenging. As a result, pancreaticoduodenectomy (PD) may be indicated depending on tumor size, location, and involvement of surrounding structures for complete and safe tumor extirpation.

Although PD remains a viable option for resecting duodenal GISTs, it is a complex operation that carries a significant risk of both short-term and long-term morbidity. Other surgical options include local resections (LR), such as pancreas-sparing duodenectomy, segmental duodenectomy, and local excision. The relative rarity of duodenal GIST has resulted in a lack of large studies comparing the outcomes of patients who have undergone LR vs PD.⁵

Shen et al⁸ demonstrated that LR is not associated with increased risk of local recurrence compared with PD and that LR is associated with longer hospital stay ($P = .01$), a lower risk of postoperative complications including wound infection, delayed gastric emptying, and anastomotic fistula; however, this finding failed to reach statistical significance. Need for PD was associated with larger tumors ($P = .05$) and with tumor involvement of the second portion of the duodenum and with proximity to the ampulla of Vater.

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