

Endoscopic obturation with tissue adhesive for bleeding gastric stromal tumor: a case report

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Abstract

Primary endoscopic hemostasis for bleeding gastrointestinal stromal tumor (GIST) is rarely reported. Herein, we report the case of a patient with a bleeding GIST that was treated with endoscopic obturation with tissue adhesive. A 46-year-old man presented with hematemesis and tarry stool for 1 day. Upper GI endoscopy revealed a bleeding submucosal tumor at the stomach fundus and an exposed pulsatile vessel was seen at the defect. Endoscopic obturation with tissue adhesive was performed to treat the defect and the bleeding was successfully stopped. No recurrence of bleeding was observed through a gastric tube, and 6 days after endoscopic obturation, the patient underwent laparoscopic partial gastrectomy. Endoscopic obturation with tissue adhesive is a feasible and effective method to treat bleeding GIST.

Keywords

Gastric stromal tumor, bleeding, endoscopy, case report, endoscopic obturation, tissue adhesive

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Introduction

Upper gastrointestinal (GI) bleeding (UGIB) is a common medical emergency, and it refers to esophagus, stomach, or duodenal bleeding.¹ UGIB due to a GI stromal tumor (GIST) of the stomach represents a significant cause of morbidity and mortality. Several cases of primary endoscopic hemostasis for bleeding GISTs have been

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reported, including electrocoagulation, hemoclip, injection, spray of hemostatic, and using an endoloop.²⁻⁵ However, the role of endoscopic obturation with tissue adhesive in bleeding GISTs is unclear, although its utility in GI variceal bleeding has been demonstrated. Here, we report successful endoscopic hemostasis in a patient with bleeding GIST using tissue adhesive.

Case report

A 46-year-old man, with a history of heart valve replacement for rheumatic heart disease and taking warfarin 2.5 mg daily since 2008 was admitted to the emergency department at our hospital with hematemesis and tarry stool without any previous abdominal discomfort. Physical examination showed an anemic appearance with a hemoglobin level of 84.0 g/L without other abnormalities. His vital sign measurements were as follows: body temperature, 36.0°C; blood pressure, 108/44 mmHg; respiratory rate, 18 breaths/minute; and pulse rate, 77 beats/minute. The results of routine blood coagulation tests were as follows: prothrombin time, 21.7 s; international normalized ratio, 1.95; activated partial thromboplastin time, 46.2 s; fibrinogen, 1.47 g/L; and thrombin time, 16.9 s. He underwent upper GI endoscopy and was found to have a bleeding submucosal tumor at the stomach fundus, which is shown in Figure 1. An exposed pulsatile vessel was seen at the defect. The patient and his family consented for him to undergo endoscopic obturation with tissue adhesive, and it was performed to treat the defect, as shown in Figure 2. A modified “sandwich” method was used twice for the treatment. The injection was 2.0 mL of 50% glucose, 0.25 mL of undiluted tissue adhesive, and 3.0 mL of 50% glucose. The bleeding was successfully stopped, as shown in Figure 3. No recurrence of bleeding

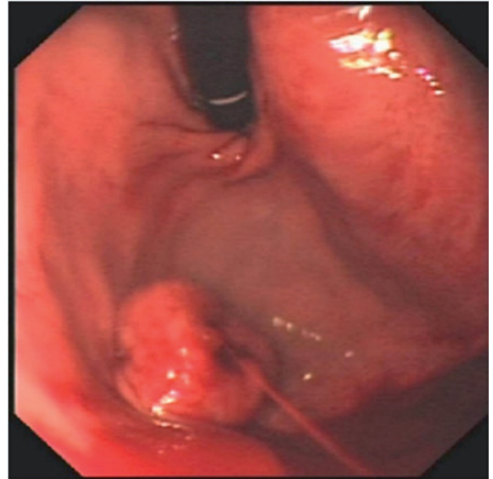


Figure 1. Upper GI endoscopy revealed a bleeding submucosal tumor in the stomach fundus GI, gastrointestinal.

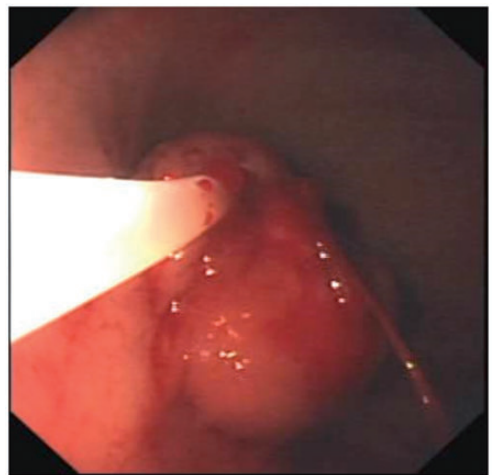


Figure 2. A bleeding gastric stromal tumor was treated by endoscopic obturation with tissue adhesive.

was observed through a gastric tube and 6 days after endoscopic obturation, the patient underwent laparoscopic partial gastrectomy. The tumor size was 4.0 cm × 3.5 cm × 3.0 cm. Histologic analysis of the specimen showed a gastric stromal tumor, and the tumor cells were positive for

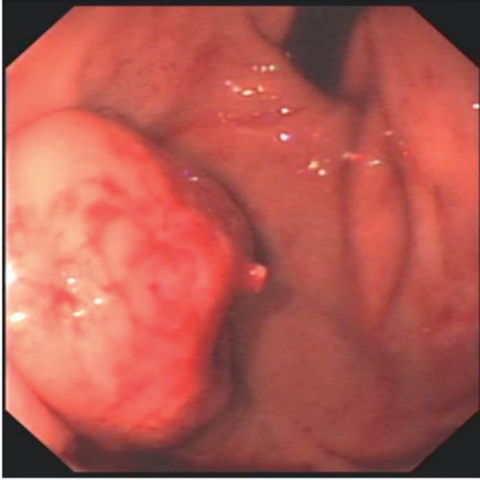


Figure 3. Endoscopic obturation with tissue adhesive was successfully performed to treat the bleeding submucosal tumor in the stomach fundus.

CD117, Dog1, and CD34, as shown in Figure 4. The postoperative course was uneventful, and at the 1-year follow-up, the patient has had no recurrence of GI hemorrhage.

Discussion

UGIB includes variceal UGIB (VUGIB) and nonvariceal UGIB (NVUGIB), which is life-threatening in some severe cases, and it results in significant morbidity and mortality.⁶ GISTs are rare diseases of the GI tract, but they are the most common mesenchymal tumors in the GI tract.⁷ GISTs are often asymptomatic, and most GISTs are identified because of chronic GI symptoms or an obscure GI bleed.⁸ Most GISTs are found in the stomach (55%), followed by the small intestine.⁹ In some GISTs, the tumor can erode the mucosa, and a central ulceration may occur, which may penetrate deeply into the tumor mass and cause potential life-threatening bleeding.⁴ Bleeding caused by GIST is multifactorial, and the incidence rates of gastric and non-gastric bleeding was 26.4% and 54.7%,

respectively.^{8,10} GI hemorrhage is a significant indicator of poor prognosis in GIST patients.¹⁰

The traditional treatment of GIST is open surgical or laparoscopic resection and molecular therapy. Pang et al.⁹ reported that the results of endoscopic resection of selected small gastric GISTs (≤ 5 cm) were superior to surgical resection, and it was associated with better intraoperative results and an equal postoperative course. The Forrest classification is commonly used to identify higher risk lesions that require endoscopic therapy.^{1,11} Urgent surgical or endoscopic intervention is needed for patients with ulcers with spurting blood (Forrest 1a), oozing blood (Forrest 1b), or non-bleeding visible vessels (Forrest 2a).^{1,12} In the case of a GIST with spurting blood, the difficulty is mainly due to the critical condition of the patient, which necessitates immediate intervention, and an emergency surgical resection may be performed. Primary endoscopic therapy can convert emergency surgery into an elective operation, which can improve the resection results and reduce the number of complications. However, reports on primary endoscopic hemostasis for bleeding GISTs are rare.⁴ Endoscopic modalities for NVUGIB treatment include hemoclip placement, injection of dilute adrenaline, coagulation grasper forceps, argon plasma coagulation, thermal coagulation, hemostatic nanopowder spray, and over-the-scope clip placement.¹³ Brkic et al.⁴ considered that injection of epinephrine or application of hemoclips may not be effective for bleeding gastric stromal tumors.

Endoscopic variceal obturation (EVO) with tissue adhesive has been well established in the endoscopic management of GI variceal bleeding, and it can also be used in the endoscopic treatment of duodenal, gastric or anastomotic ulcers, post-mucosectomy bleeding, Dieulafoy's lesions, and duodenal diverticular bleeding.^{14,15}

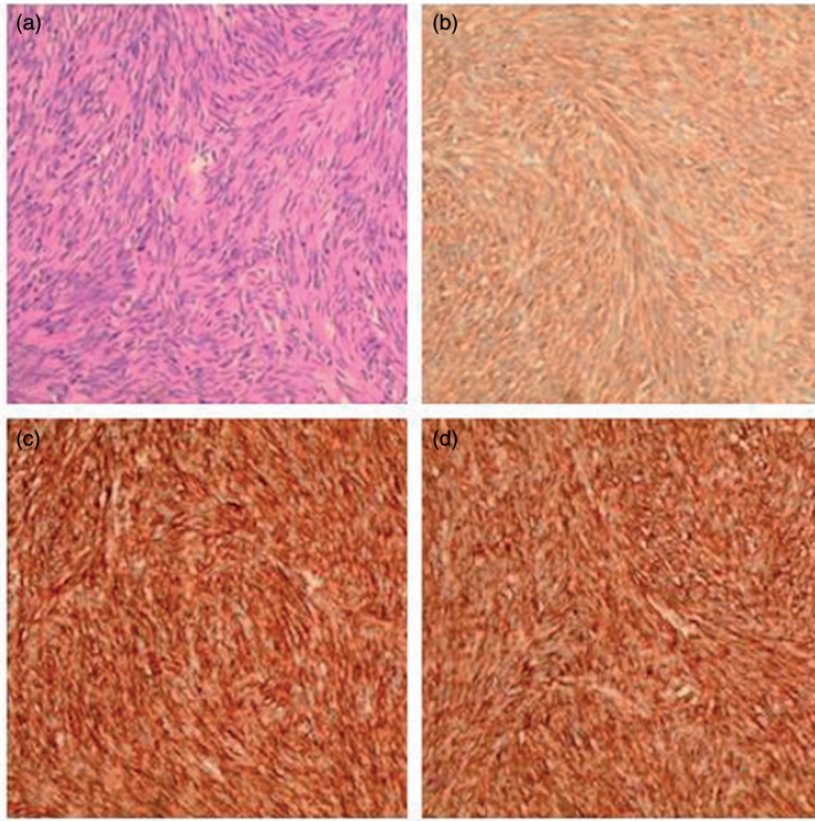


Figure 4. Histologic analysis of the specimen indicated a gastric stromal tumor (a), and the tumor cells were positive for CD117 (b), Dog1 (c), and CD34 (d).

Tissue adhesive, which is safe and without any side effects, can be used for endoscopic hemostasis with high surgical risk. It is also considered to be an effective and inexpensive salvage alternative to surgery when there is no time for selective arterial embolization.¹⁴ There was no time to choose selective transarterial embolization because in this case, the tumor was too large to be clipped. Thus, endoscopic obturation with tissue adhesive was used to treat the life-threatening active bleeding. No late rebleeding was observed before laparoscopic partial gastrectomy, and no complications related to the tissue adhesive injection were recorded.

Histologically, GISTs consist of spindle-shaped epithelial or mixed type cells. Immunohistochemistry with a panel of antibodies showed that the tumor cells showed positive CD34 expression in 70% to 80% of the GIST cases, and more than 95% of cells were c-kit positive (CD117 positive).^{10,16} DOG1 is a new, selective immunohistochemistry marker that is highly expressed in GISTs, which maintains an overall sensitivity that is similar to CD117.^{17,18} In this case, immunohistochemistry confirmed that the lesion was a gastric stromal tumor, which was positive for CD117, Dog1, and CD34.

To the best of our knowledge, this clinical case represents the first incidence of

bleeding GIST that was treated by endoscopic obturation with tissue adhesive, which illustrates the effectiveness of endoscopic obturation with tissue adhesive in a potentially life-threatening bleeding GIST.

Ethics approval and consent to participate

The study was conducted in accordance with the principles of the Declaration of Helsinki and the guidelines of Medical Ethics Committee of The First Affiliated Hospital of University of Science and Technology of China.

Authors' contributions

WS, ZKG, and XM managed the patient. WS and XM performed the endoscopic therapy. WS wrote the manuscript and XM supervised the manuscript writing. All authors read and approved the final manuscript.

Availability of data and material

All data generated or analyzed during this study are included in this published article.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the editor of this journal.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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