

Dieulafoy's Lesion in the Gaster Secondary to the Resection of Lung Cancer: A Rare Case Report Presentation

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Case report

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Abstract

Background: Dieulafoy's lesion is a dilated, aberrant, submucosal vessel that erodes the overlying epithelium without obvious ulceration. Dieulafoy's lesion is a rare disease, meanwhile the lesion secondary to resection of lung cancer is even extremely rare. It is most commonly located in the lesser curvature of the stomach but rarely occurrences in extragastric sites have also been reported. To summarize the key points in the diagnosis and treatments of this disease, we present a clinical case of acute gastrointestinal bleeding due to Dieulafoy's lesion in the gaster secondary to resection of lung cancer.

Case presentation: An 58-year-old woman presented with a clinical condition of haematemesis and haematochezia associated with anaemia and haemodynamic instability, needing blood transfusion. After many changes of body position, when the patient was in prone position, we finally found jet bleeding on the gastric body near the great curvature of gastric fundus under gastroscopy, and then we performed successfully with hemostatic clip placement. Hospitalization occurred without further complications. There was no recurrence after 18 months follow-up.

Conclusion: It is essential to be aware of this lesion as a possible cause of gastrointestinal bleeding and especially thoracic postoperative acute gastrointestinal appears. Timely and effective endoscopy can improve the diagnosis rate of these lesions and reduce the related mortality. At the same time, we need to pay attention to the patients with the risk factors in the perioperative period to reduce the incidence of Dieulafoy's lesion.

1. Background

Acute gastrointestinal bleeding after lung cancer resection is not common, with a potential of significant mortality. Dieulafoy's lesion is a rare cause of acute gastrointestinal bleeding(1, 2). Therefore, as a thoracic surgeon, it is particularly important to improve the awareness of this disease and perform timely and effective treatments.

Dieulafoy's lesion, first reported by Gallard in 1984 and then described in detail by Georges Dieulafoy in 1898 who reported fatal gastrointestinal bleeding in three asymptomatic young male patients [3], is a rare vascular malformation characterized by abnormal submucosal artery dilatation (1–3 mm) which accounts for 1–2% of all gastrointestinal haemorrhage. Since it was first described, it has been considered to be one of the most under-recognised conditions due to the subtlety of the lesion(3). These lesions can be found in any location of the gastrointestinal tract which occur more frequently in the stomach(4). However, Dieulafoy's lesion in the gaster secondary to resection of lung cancer has not been studied.

This uncommon lesion normally presents without associated symptoms. Endoscopy remains the first diagnostic test(3). When the patient presents with bleeding, most cases require therapy to control it,

which is mainly performed by minimally invasive methods, such as endoscopy or angiography(4, 5). A few cases need surgical interventions, mostly in patients with rebleeding after endoscopic therapies(6).

This report presents a clinical case of gastrointestinal bleeding due to Dieulafoy's lesion in the gaster secondary to resection of lung cancer. This article has been written in accordance with the SCARE 2020 criteria(7).

2. Case Presentation

2.1 General information

The patient was a 58-year-old female with multiple medical and surgical backgrounds: hypertension ,grade II obesity, no history of stomach disease and liver disease, long-term history of taking NSAIDs, 12 days after thoracoscopic resection of left upper lobe lung cancer,sudden abdominal pain after eating cold food.

2.2 Predisposing factors

After thoracoscopic surgery, the patient was always in a state of anxiety and took cold food for many times. Because of allergic reaction, the patient had used low dose of glucocorticoid in a short time.

2.3 Diagnosis and treatment process

The patient was admitted to the emergency room with a clinical condition of haematochezia. On admission, the patient was in the condition of unstable vital signs with a heart rate of 110 beats/min and blood pressure of 92/54 mmHg. He was pale with anicteric sclerae. Abdominal examination was unremarkable. She had no history of gastrointestinal or liver disease, no history of alcohol, smoking or drug abuse. Laboratory evaluation revealed haemoglobin level of 7.8 g/dL, thus requiring intravenous fluid therapy and 5 units of erythrocyte concentrate transfusion.

During the first and second gastroscopy, no bleeding point was found due to the coverage of blood clot and the disturbance of gastric emptying. The next two days we chose conservative treatments, but the patient's symptoms of hematochezia did not improve. Through abdomen computed tomography (CT) scan, the amount of gastric bleeding is increased (Figs. 1 and 2).

After the failure of conservative treatments such as nutritional support, anti-inflammatory, acid suppression, hemostasis, volume expansion and blood transfusion, angiographic treatments was performed. Angiographic findings: The celiac artery, the left gastric artery, the gastroduodenal artery, the superior mesenteric artery and the branches of the duodenal artery had no obvious bleeding signs. Combined with the clinical signs and the results of gastroscopy, the possibility of gastric antrum hemorrhage was considered. Therefore, selective embolization of gastroduodenal branches was performed (Figs. 3).However, the patient still had hematochezia and anemia. His haemoglobin levels dropped from 7.8 to 6.2 g/dL (normal, 13.5–17.5 g/ dL) during his hospital stay .

On the morning of the sixth day of hospitalization, the patient vomited violently, and the vomitus was black gastric contents. We were acutely aware that the discharge of gastric contents may expose the specific site of potential bleeding point that we had always suspected. So we decided to give the patient a third gastroscopy. After many changes of body position, when the patient was in prone position, we finally found jet bleeding on the gastric body near the great curvature of gastric fundus under gastroscope, and then we performed successfully with haemostatic clip placement (Figs. 4 and 5). The presence of an isolated protruding vessel surrounded by normal mucosa without any ulcer or associated mass are classic endoscopic findings(8). There was no active bleeding after repeated washing.

2.4 Differential diagnosis

On presentation, the differentials were broad and included peptic ulcer disease, portal hypertension, bleeding disorders, vascular malformation of the gastrointestinal vessels. However, negative hepatitis serologies, laboratory evaluation, abdomen computed tomography (CT) scan and endoscopy findings ruled out all these possibilities.

2.5 Outcome and follow-up

On day 14 of admission, the patient was well oriented with normal vital signs; the haemoglobin levels were stable at 9.8 g/dL. The patients were advised to have a close follow-up with the gastroenterologist. During the 18-month follow-up period, no recurrence of haematochezia was noted. The patient was well oriented with normal vital signs.

3. Discussion

Dieulafoy's lesion is a relatively rare clinicopathological entity, considered as calibre persistent artery and it's a rare vascular malformation which can cause potentially life-threatening bleeding(1, 9). Its presentation depends on its location, ranging from haematemesis or melena to haematochezia. The most common and classic location for this lesion is fundus area of stomach, usually at 5 to 6 cm from the gastroesophageal junction along the lesser curvature(3). They can be found at any gastrointestinal location, including the esophagus, small intestine, colon, or rectum. Most of the haemorrhage is intermittent and severe, with haemodynamic instability present in almost 80% of the cases2-5.

The artery is histologically normal. However, it consists of an aberrant submucosa artery that erodes the overlying mucosa and cause severe gastrointestinal bleeding without an evidence of primary ulcer, erosion or aneurysm, maintaining a diameter of 1 to 3 mm (a calibre 10 times larger than a normal mucous capillary).

This lesion is thought to be the cause of only 1–5% in all gastrointestinal bleeding cases(1). Most of them are asymptomatic, posing a significant challenge as it is usually small, relatively inconspicuous and the lesion may cause bleeding only intermittently. To make matters worse, the lesion are usually visualized only during active bleeding(10). This leads to confusion with more common vascular diseases,

such as arteriovenous malformations and hemangiomas (10). In addition, the focus may be covered by blood clots or active bleeding, making it more difficult to identify (11).

According to the literature, endoscopy is effective in diagnosing about 70% of the patients, and diagnostic accuracy increases with active bleeding (9). But in my opinion, in this case, a large amount of bleeding in the stomach causes excessive blood clots to form in the stomach, which leads to the coverage of blood clot and the disturbance of gastric emptying. Therefore, active bleeding does not mean that diagnostic accuracy can be improved. Gastroscopy should be performed as early as possible, rather than waiting until significant active bleeding is found. Gastrointestinal endoscopy is the first line diagnostic procedure since it allows for diagnosis and a possible therapeutic approach during active bleeding (4, 5). Besides, we also need to accurately grasp the diagnostic criteria for Dieulafoy's disease: (1) active arterial spurting or micropulsatile bleeding from small (< 3 mm) mucosal defects surrounded by normal mucosa; (2) the presence of protruding vessels; (3) fresh, adherent clots with a small point of attachment to the mucosal defect or to normal mucosa (11).

It frequently involves the male patient population at the fifth decade of life without any familial predisposition. The patients with pre-existing comorbidities like diabetes, hypertension, cardiovascular disease, chronic kidney disease and alcoholism are at a higher risk for massive bleeding (9, 12). Despite the exact pathophysiology of a Dieulafoy's lesion is unknown, two main hypotheses have been put forward. The first is that of a congenital base predisposing to the appearance of an abnormally dilated artery with risk of protrusion, rupture, and haemorrhage. The second hypothesis is based on a background caused by oxidative and ischemic stress, such as previous surgeries, chronic gastritis, and alcohol consumption or non-steroidal anti-inflammatory drug usage (8, 12, 13).

According to the two hypotheses recorded in the literature, congenital basilar artery abnormalities exist in this patient's gastric submucosa which we reported. Not only the trauma of operation but also the tension and anxiety of perioperative patient, will aggravate oxidative and ischemic stress. Under the action of multiple factors, the pulsatility of caliber-persistent submucosal arteries with histological normality leads the mucous membrane wall to thinning. Besides, the applications of glucocorticoid and NSAIDs cause a mucosal atrophy and an ischaemic injury. Over time, artery gets exposed to the contents of the stomach. Owing to the abnormal exposure of this vessel, even minor mechanical trauma from food bolus can lead to erosion of this artery causing severe acute gastrointestinal haemorrhage (14).

The final yield of diagnostic upper endoscopy is 70% for the Dieulafoy's lesion while the initial diagnostic value is low. Only 49% of Dieulafoy's lesions were identified during the initial endoscopic examination, 33% of patients required a second examination and 18% required exploratory laparotomy for accurate diagnosis (1). For the case we reported, in the third gastroscopy, we found the bleeding lesion and successfully stopped bleeding. Another important factor for the successful hemostasis of the patient we treated under endoscopy is that we tried to change the patient's position many times during the third gastroscopy examination, so as to reduce the influence of blood clot covering the bleeding site. When the

patient was in prone position, we finally found jet bleeding on the gastric body near the great curvature of gastric fundus under gastroscope, and then we performed successfully with haemostatic clip placement.

Traditionally, surgical resection procedures like proximal gastric resection or wedge resection were considered as the treatments for gastric Dieulafoy's lesions before 1990(15). However, recently endoscopic therapeutic procedures have replaced surgery to a large extent. This approach has been shown to be effective towards bleeding from a Dieulafoy's lesion with a success rate of over 90% (4, 9). When endoscopy fails to find the bleeding source, angiography may be helpful in locating and controlling it, with selective arterial embolization. This approach should be used in endoscopic failure, lesions not accessible by endoscopy and patients unsuitable for surgery(7, 15). Surgical treatment is necessary in less than 5% of cases, being reserved only when endoscopic or angiographic treatments fail(16).

The present case of Dieulafoy's lesion in the gaster secondary to the resection of lung cancer was diagnosed through gastroscopy, performed after patient's stabilization, with effective haemostasis after use of placement of haemostatic clips. The risk of bleeding recurrence varies between 9% and 40%. Repeated endoscopy is the therapy of choice in the evidence of recurrence(8). As for the present case, treatment was effective without recurrence.

4. Conclusion

Dieulafoy's lesion in the gaster secondary to resection of lung cancer is a very rare entity with a potential for massive haemorrhage. Due to the intermittent nature of bleeding, diagnostic approaches have their limitations. As for clinicians, we must not only raise our cognition of this disease and its manifestations which can help guide clinicians to make the correct diagnosis, but also maintain a high index of clinical suspicion for this uncommon condition after the resection of lung cancer. In the meantime, repeated gastroscopy and endovascular localization and changes of body position during gastroscopy ultimately improve patient outcomes.

There are no standard diagnostic or therapeutic guidelines for patients with a Dieulafoy's lesion. Conservative treatment cannot effectively stop bleeding. Endoscopic treatment is the first diagnostic and therapeutic programme due to its effectiveness. In the meantime, clinicians should be aware of triggering risk factors for the disease, such as ☐ Over 50 years old; ☐ Stress of thoracoscopic surgery; ☐ The anxiety of patient after operation; ☐ Food stimulation such as eating cold food; ☐ High risk of grade 1 hypertension; ☐ Corticosteroids were used in perioperative; ☐ Long term use of NSAIDs. In this way, we will be able to differentiate it from others aetiologies and prompt therapeutic management.

Abbreviations:

Declarations

Ethical approval

No ethical approval was obtained as it is a case report but a written consent was taken from the patient.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Availability of data and materials

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

Declaration of competing interest

All authors have nothing to disclose

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Author contribution

Ziqiang Tian: designed the study, drafted and revised the manuscript critically for important intellectual content.

Boheng Liu: Data collection, writing the case presentation.

Yanzhao Xu: Reviewing the paper.

Chunyue Gai and Anran Qie: contributed to the discussion.

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Not applicable

Research registration

Our paper is a case report; no registration was done for it.

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Figures

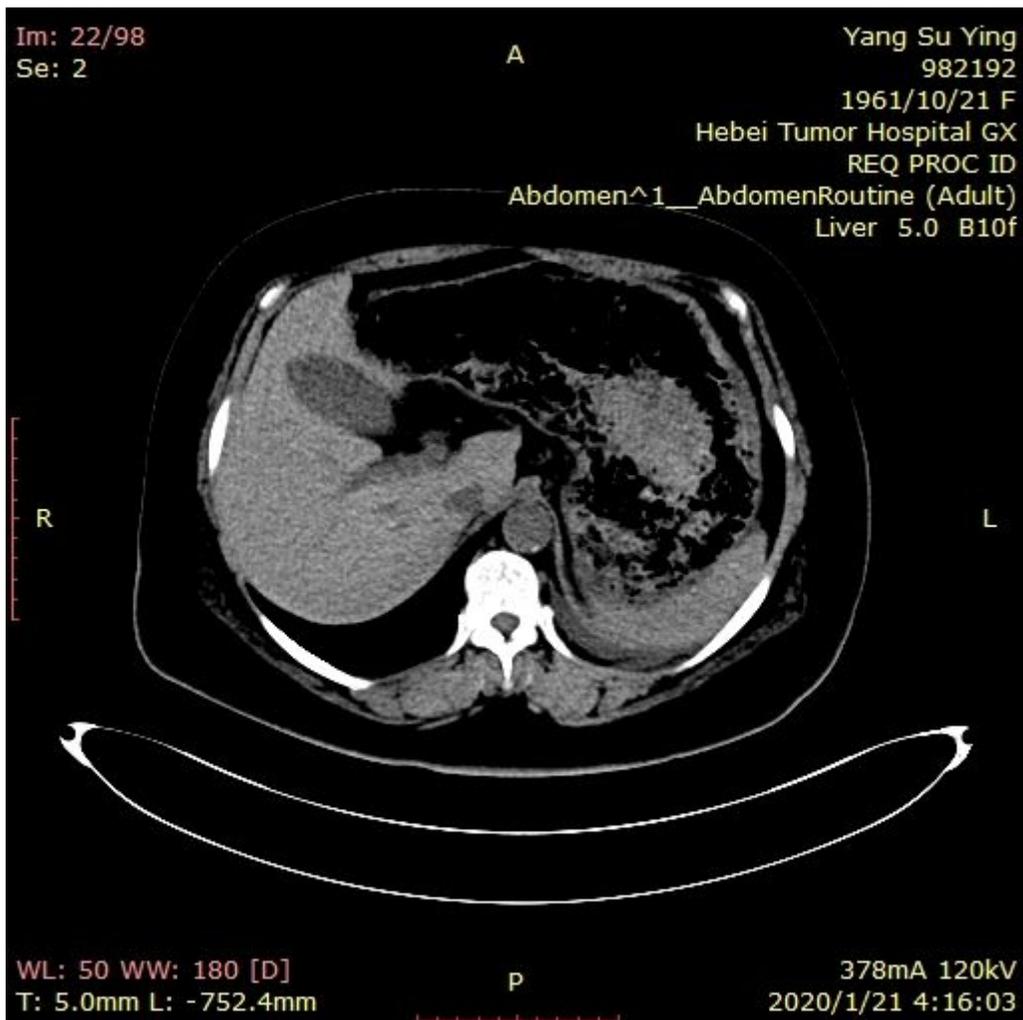


Figure 1

The first abdomen computed tomography (CT) scan shows that the food residue exists in gastric cavity and local visible high density shadow suggests the possibility of hematocele .

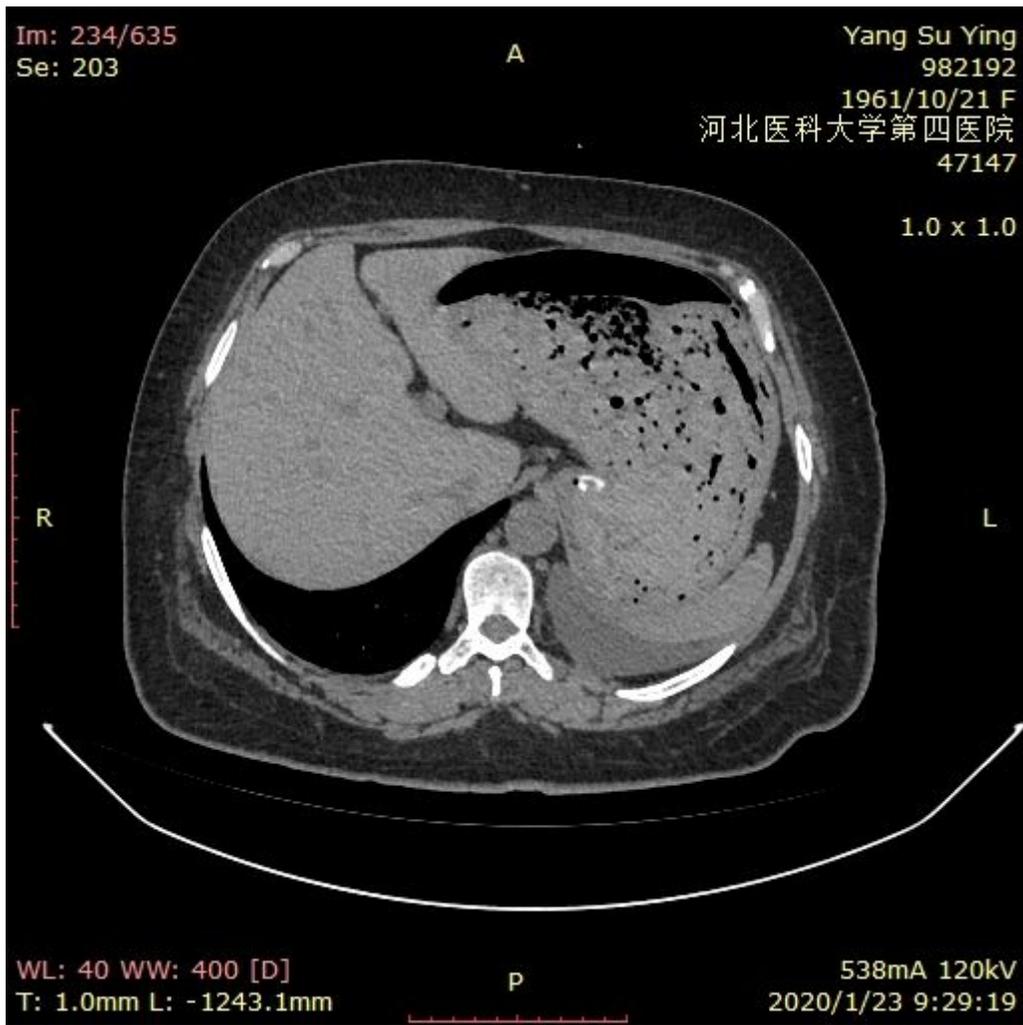
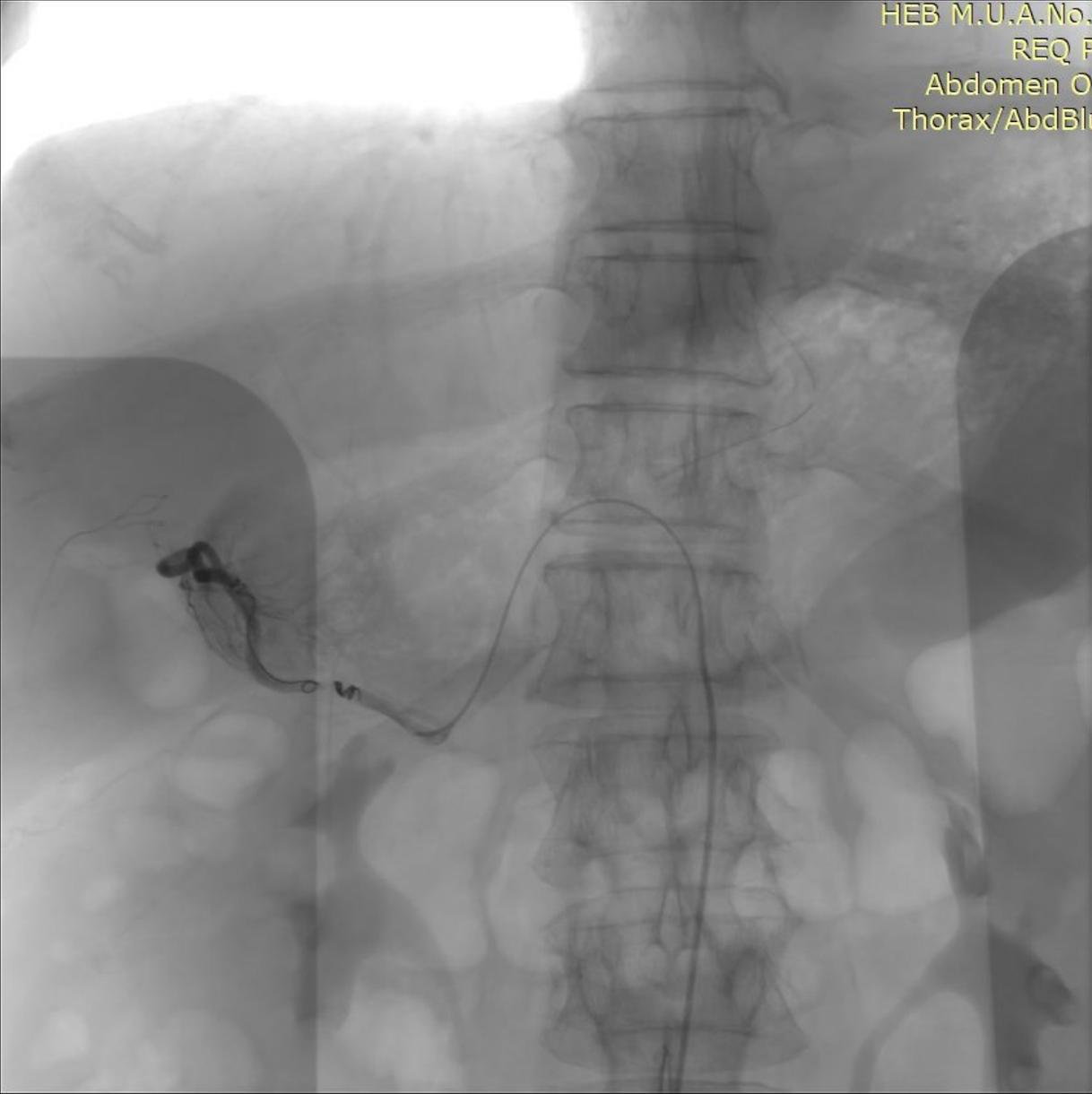


Figure 2

The second abdomen computed tomography (CT) scan shows that there is still active bleeding in gaster, due to increased gastric contents.

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Thorax/AbdBlue 3 fps



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Figure 3

Selective embolization of gastroduodenal branches was performed.

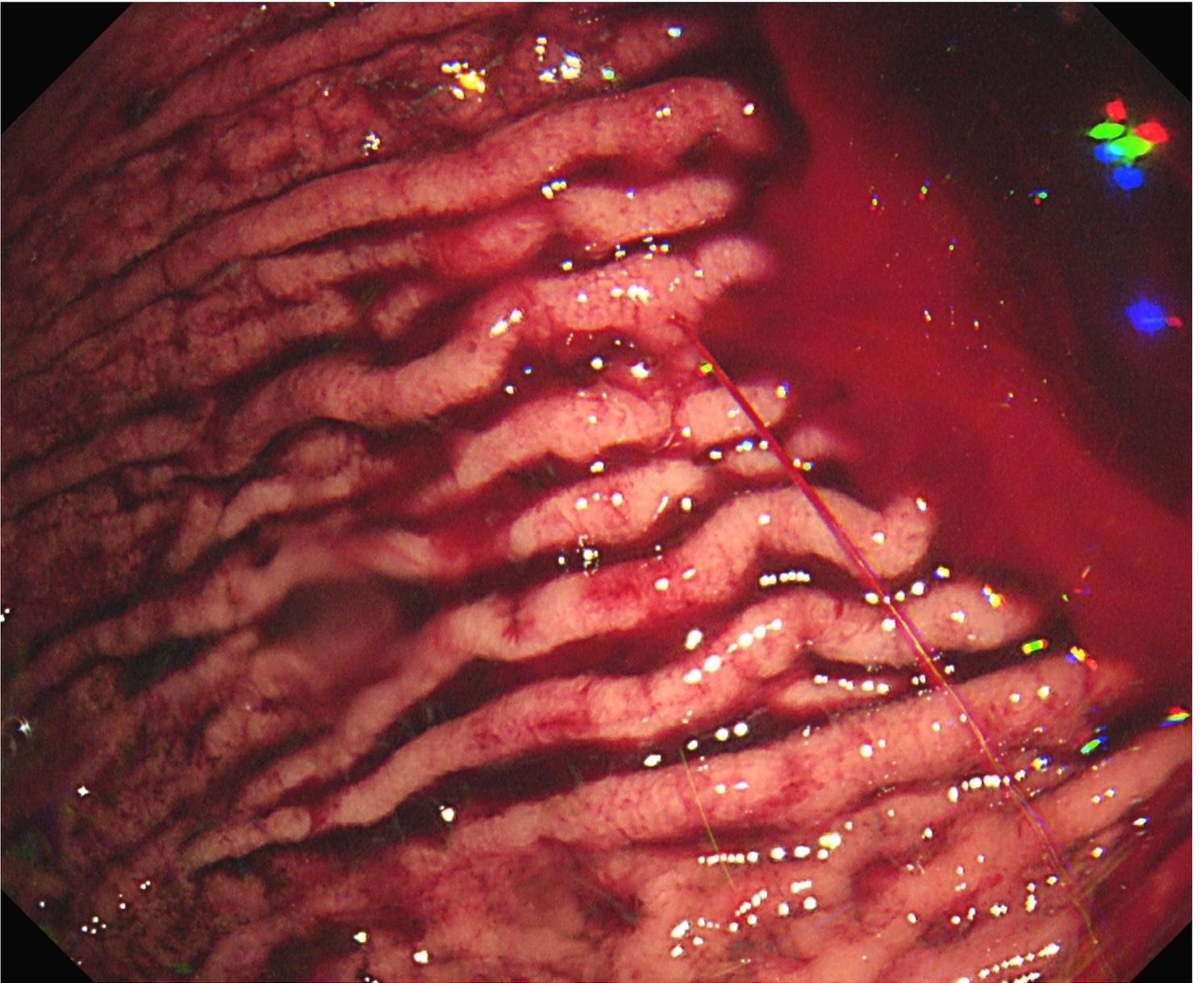


Figure 4

Dieulafoy's lesion with active arterial spurting haemorrhage

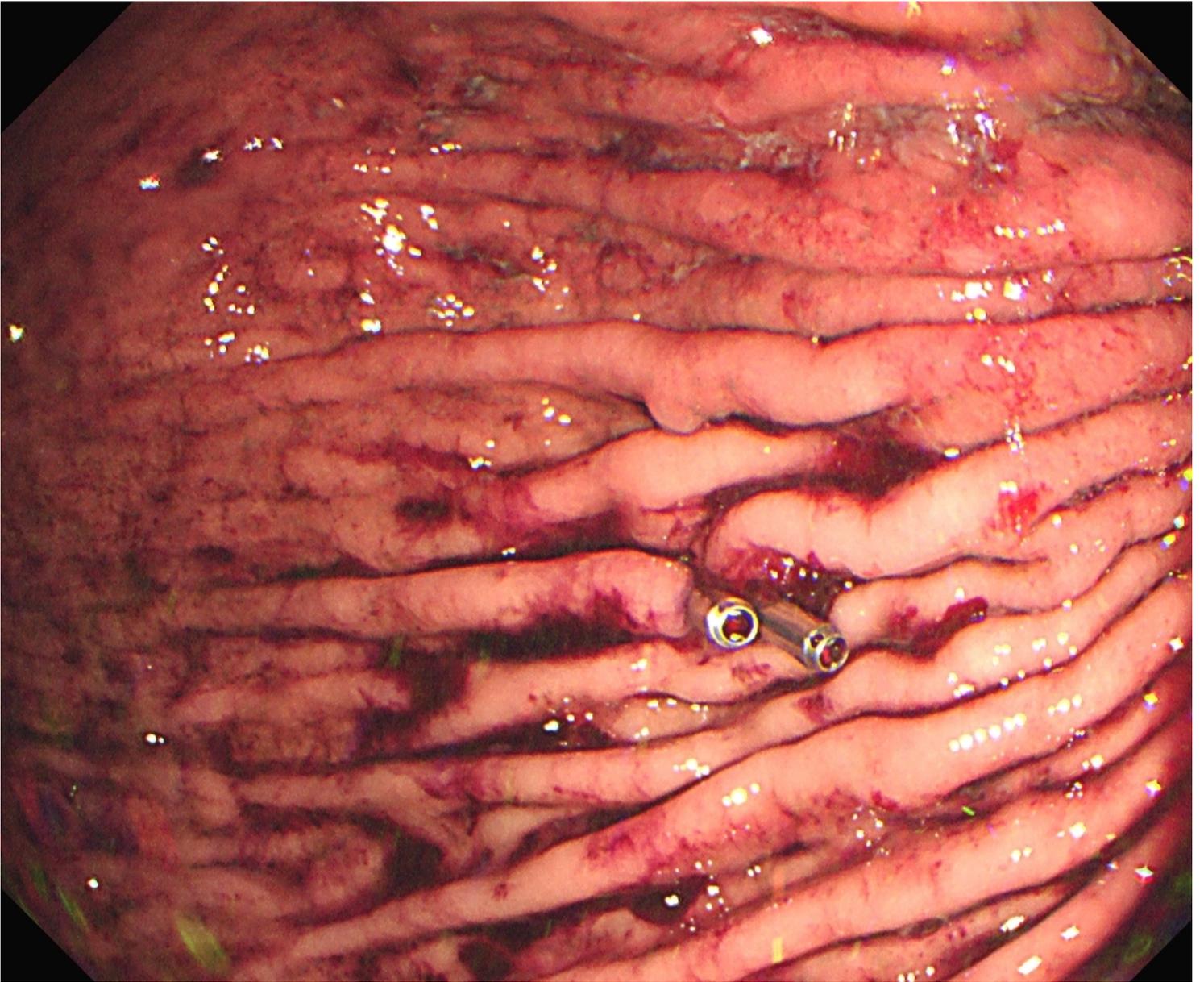


Figure 5

The lesion was diagnosed as a Dieulafoy's lesion and was managed by application of two hemostatic clips.