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A belly of blood: A case report describing surgical intervention in a gastric intramural haematoma precipitated by therapeutic endoscopy in an anticoagulated patient

Sabrina Ngaserin Hui Na Ng (MRCSed MBBS)*, Hiang Jin Tan (MRCSed MD), Christopher Hang Liang Keh (FRCS MD)

Department of General Surgery, Ng Teng Fong General Hospital, Singapore

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ABSTRACT

Gastric intramural hematoma, "intramural dissection" or "false aneurysm", is a rare and dangerous condition which may be more broadly classified as a spectrum of acute gastric mucosal injury. It is postulated that disruption of the mucosa and blood vessels within the submucosal layer results in dissection of the muscularis propria from the mucosa, with eventual clot formation. While a majority of cases resolve with conservative management, we describe a successfully managed case requiring surgical intervention. Progression of the haematoma was documented both endoscopically and surgically in an elderly anticoagulated patient who suffered a complication of therapeutic endoscopic intervention. A review of the literature is presented.

1. Introduction

Gastric intramural hematoma is an uncommon condition in current medical practice. Also termed intramural dissection, this dangerous condition may be more broadly classified as a spectrum of "acute gastric mucosal injury", where disruption of the mucosa and blood vessels within the submucosal layer results in dissection of the muscularis propria from the submucosa, with eventual clot formation.

The condition has been reported throughout the gastrointestinal tract and can be broadly attributed to spontaneous, medical, traumatic or iatrogenic causes. While most cases resolve with conservative management, surgery was mandatory in a few described cases of gastric intramural haematoma due to concomitant perforation or gastric outlet obstruction. To the best of our knowledge, this is the second case documenting both endoscopy and surgery for uncontrolled haemorrhage.

2. Case report

An 81 year old Chinese female was admitted for a fall and managed by the orthopaedics unit at our institution for T12 and L2 compression fractures and a left clavicle fracture. Her prior medical conditions include hypertension, hyperlipidaemia, and osteoporosis. She was provided with analgesia including a course of NSAIDs. During this admission, she also developed a left segmental pulmonary embolus, in the absence of deep vein thrombosis, possibly related to immobility. After thorough investigations to rule out secondary causes, she was started on subcutaneous low-molecular-weight heparin (enoxaparin) at the dose of 1 mg/kg twice daily by her haematologist. Upon initiating treatment, she was found to have progressive iron deficiency anaemia hence an upper gastrointestinal (GI) endoscopy and CT colonography was arranged by her managing gastroenterologist. Enoxaparin was withheld for 12 h prior to the procedure.

Her upper GI endoscopy revealed pangastric erosions and a 4 mm ulcer with visible vessel in the gastric antrum. The Forrest 2a ulcer was treated with adrenaline injection and heater probe. Small biopsies were taken from fundus for urease testing and histology. Haemostasis appeared to be secure at the end of the procedure. An hour later, the patient developed tachycardia, haematamesis, and significant haemoglobin drop of 2 g/dL. An endoscopy was repeated immediately. This revealed large amount of blood clots in the gastric antrum which could not be completely removed by suctioning.

* Corresponding author at: MOH Holdings Pte Ltd, 1 Maritime Square, #11-25 HarbourFront Centre, Singapore.
E-mail addresses: sabrina@ngaserin.com (S.N.H.N. Ng), hiang_jin07@hotmail.com (H.J. Tan), chrishl_keh@juronghealth.com.sg (C.H.L. Keh).

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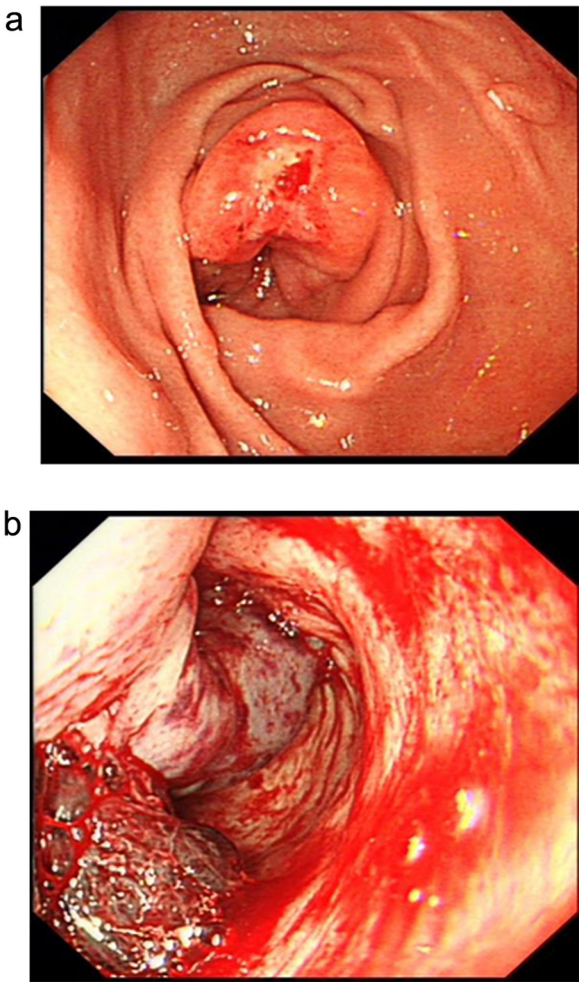

Fig. 1. (a) lanitial upper GI endoscopy – Forrest 2a antral ulcer on a background of non-erosive gastritis. (b) Second upper GI endoscopy – Evolving antral haematoma and fresh bleeding.

Hence the source of bleeding could not clearly identified (Fig. 1a). She was actively resuscitated with fluids and transferred to the intensive care unit.

Angioembolisation was not entertained as a second line modality due to high risk of post-procedure ulcer perforation related to ischaemia. As there was no significant haemodynamic compromise after initial resuscitation with fluids, a second attempt at therapeutic intervention with upper GI endoscopy was performed under general anaesthesia in the operating room. This second upper GI endoscopy in the operating room again revealed a large amount of blood clots as well as on-going oozing of fresh blood. The endoscopist attempted to remove the clots with a snare to better localise the course of bleeding but was unsuccessful. A significant antral submucosal hematoma had begun developing along the anterior wall of the antrum (Fig. 1b). We were unable to localise the source of continuous fresh bleeding and decision was made for immediate exploratory laparotomy.

At laparotomy, it was apparent that a large haematoma had occupied the anterior aspect of the stomach causing extensive serosal stretch from fundus to pylorus (Fig. 2a). The lesser sac was entered and a gastrostomy was performed at the relatively normal posterior wall of the stomach. The tense intramural gastric haematoma was revealed within the stomach lumen. In addition, the mucosa of the anterior wall of the stomach was lacerated at

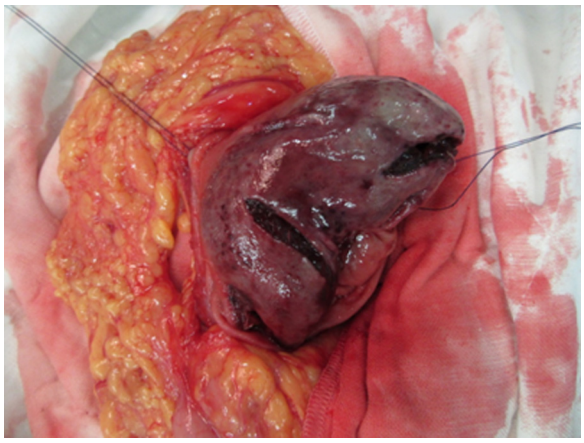

Fig. 2. (a) After opening lesser sac and creating posterior wall gastrostomy – Anterior gastric wall intramural submucosal haematoma with mucosal lacerations.

three parts, demonstrating the tense blood clot spilling into stomach lumen. Small areas of active bleeding were controlled with direct pressure. Haemostasis was quickly achieved. A nasojejunal tube was inserted under direct visualization before closure of the gastrostomy.

The patient recovered well post operatively. She was recommenced on prophylactic dose enoxaprin 48 h after surgery. Proton pump inhibitors were prescribed for the management of her antral ulcer on the background of gastritis. There was no evidence of Helicobacter pylori colonisation. Nasojejunal feeding was continued for one week before diet was gradually escalated back to normal. She was discharged well 14 days later.

3. Discussion

First described by MacLauchlan in the Lancet in 1838 as a false aneurysmal tumour in the duodenum [1], a century later the condition is better understood. However, it remains difficult to obtain an accurate estimate of the incidence of intramural gastrointestinal haematomas as it persists to be a rare clinical and surgical entity. Postulated pathophysiology includes disruption of blood vessel within the submucosal layer which uncommonly results in dissection of the muscularis propria from the submucosa, resulting in a “false aneurysm”.

Intramural gastrointestinal haematomas have been described in the oesophagus, stomach, small bowel and colon. The most common site reported is the duodenum, with over 130 cases in the literature [2]. In these patients, blunt abdominal trauma was the most common causative association, and gastric outlet obstruction, intestinal obstruction and intussusception are known complications [2]. The second most common site is the oesophagus with over 79 cases [3], followed by isolated reports of 47 cases involving the stomach (Table 1).

In gastric intramural haematomas, a review of the literature suggests that the most common aetiology is coagulopathy, with or without contribution by peptic ulcer disease. This is most commonly related to use of anticoagulation [4–15], less commonly in patients with haemophilia [16–19], and one case described a patient with thrombocytopenia from myelofibrosis [20]. Other causes include peptic ulcer disease [21–23], vascular aneurysms [24–27], fish bone ingestion [28,29], as a complication of endoscopy [30–36], spontaneous and idiopathic cases [37–41], and other isolated cases related to amyloidosis [42–44], pancreatitis [45], Ehlers-Danlos syndrome [46], splenic rupture [47], and one case describing haematoma after splenectomy for idiopathic