

Delayed Bleeding Due to Vascular Pseudoaneurysm After Endoscopic Full-Thickness Resection of Duodenal Subepithelial Lesion: A Case Report

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Abstract

We report a case of delayed gastrointestinal bleeding due to a vascular pseudoaneurysm 17 days after duodenal endoscopic full-thickness resection (EFTR) for a subepithelial lesion. Although EFTR is widely accepted and generally safe, severe complications can occur. Diagnosis required advanced imaging, and definitive treatment was achieved with angiographic coil embolization. Awareness of such delayed vascular events is essential for prompt recognition and management. (*Acta gastroenterol belg.*, 2026, 89, 513-516).

Keywords: Subepithelial lesion; full-thickness resection; pseudoaneurysm; complication.

Introduction

Endoscopic full-thickness resection is a novel, minimally invasive endoscopic procedure that allows curative treatment of small gastrointestinal subepithelial lesions (SELs), particularly those less than 10 mm in size, which are not amenable to standard endoscopic resection techniques like endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD) (1, 2). EFTR has emerged as a potential curative option for select gastrointestinal tumors, including neuroendocrine tumors (NETs) (3). However, data regarding its application in duodenal lesions remain limited (4). Several studies have demonstrated that EFTR is technically feasible and effective in selected upper gastrointestinal lesions, although outcomes depend on lesion size, location, and operator experience (4, 5). As with any invasive procedure, EFTR carries potential risks. The most frequently reported adverse events include bleeding and perforation. Data from the German and Dutch colorectal EFTR registry, comprising 1,892 procedures, reported an overall adverse event rate of 11.3%, with bleeding (6.2%) and perforation (immediate 1.4%, delayed 1.1%) being the most common, and no procedure-related mortality (6). Meta-analyses evaluating gastroduodenal EFTR report adverse event rates ranging from 18.6% to 25.1%, with the majority being mild. Severe adverse events occurred in fewer than 5% of cases and were more commonly related to bleeding rather than perforation (2, 7, 8). Most hemorrhagic complications occur intraprocedurally or within the first post-procedural days and are managed successfully with standard endoscopic hemostatic techniques, with no reported deep thermal injury related to the presence of the transmural clip. Delayed bleeding

beyond the early post-procedural period is rare but potentially life-threatening. This case report describes an unreported delayed vascular complication of EFTR, a gastroduodenal artery pseudoaneurysm, resulting in severe gastrointestinal bleeding.

Case Presentation

A 63-year-old male with a medical history of Erdheim-Chester Disease, hypertension, diabetes type 2 diabetes, and ischemic heart disease underwent EFTR for a presumed duodenal NET located opposite the major papilla. The diagnosis was based on prior endoscopic biopsies obtained during gastroscopy (Fig.1a). However, the final histopathology revealed the lesion to be a lipoma, which had been mistakenly considered a NET, as it was not well photodocumented and reported with details in the first examination. The procedure was performed under general anesthesia using a 12mm internal diameter full-thickness resection device dedicated for upper GI resection (Ovesco Endoscopy AG, Tübingen, Germany). Briefly, after identifying the subepithelial lesion, marking dots were applied using a coagulation probe around the lesion. The target was then grasped with dedicated forceps, with slight suction. The clip was released when sufficient tissue was captured in the cap. Snare closure and cutting were performed as instructed by the manufacturer. Clopidogrel had been stopped 7 days before the procedure. The postoperative course was uneventful, and the patient was discharged the following day on a proton pump inhibitor with a recommendation to resume antiplatelet therapy after one week. Seventeen days later, he presented to another center with hematochezia and hemorrhagic shock. His hemoglobin (Hb) level dropped from a baseline of 13 g/dL to 5 g/dL. Investigation done, including oesophagogastroscope (OGD), colonoscopy, abdominal CT, and video capsule endoscopy (VCE) were all negative. After one week of persistent bleeding requiring

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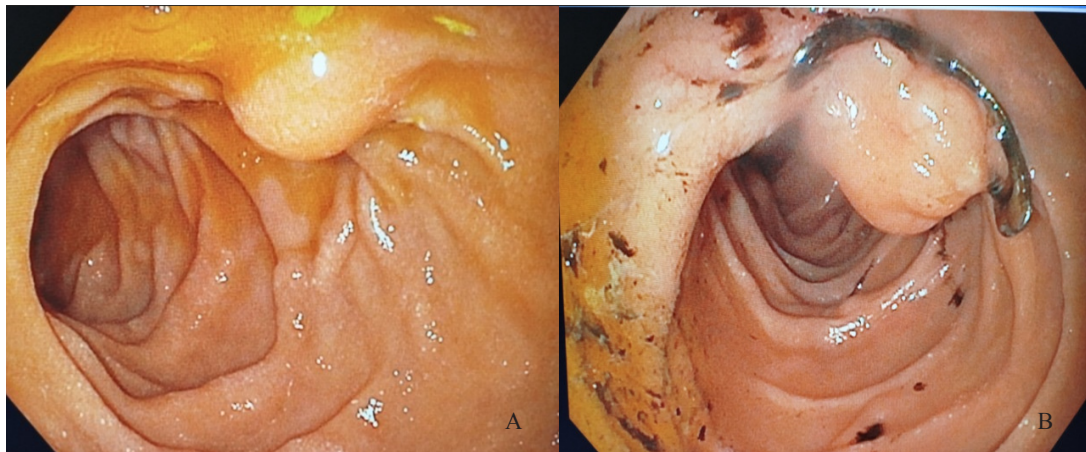


Figure 1. — (a) Duodenal subepithelial lesion in the 2nd duodenum (b) Macroclip after duodenal resection with signs of recent bleeding.

transfusions, he was transferred to our institution. Upon admission, the patient was hemodynamically unstable, with blood pressure of 70/40 mmHg and heart rate of 110 beats per minute, with active GI bleeding without abdominal pain or tenderness. Laboratory results revealed: Hbg 6.5 g/dL, Platelets 135 X 10⁹, INR 1.14, pH 7.08, Lactate 4. Following volume resuscitation, OGD demonstrated a large amount of blood and clots in the stomach. A repeated exam within 24h extending into the proximal jejunum without defining a bleeding source. The Ovesco clip was in place without active bleeding (Fig 1b). VCE showed blood and clots in the stomach, macroclip in the duodenum without active bleeding or ulcerations. Repeated OGD remained inconclusive. CT Angiography identified a suspicious non-bleeding small pseudoaneurysm in a branch of the Gastroduodenal artery (GDA) adjacent to the macroclip that wasn't present in a pre-procedural imaging, suspected to be the source of the bleeding (Fig.2 a,b). Severe atheromatous sub-occlusion of the Celiac trunk complicated the angiographic approach. Despite the absence of active bleeding on all imaging, the patient experienced recurrent episodes of bleeding necessitating repeated transfusions. Given the lack of alternative bleeding sources and the high-risk nature of the pseudoaneurysm, angiographic coil-assisted embolization was performed successfully via a standard celiac approach using a microcatheter. (Fig.2 c,d). The procedure was tolerated well, and no further bleeding occurred during the six-month follow-up, confirming that the bleeding source had been treated. At six months, a 12mm NET in the second duodenum, proximal to the first resected lesion, was identified and resected uneventfully using the band-assisted EMR technique, knowing its smaller size compared to the first resected subepithelial lesion and after the preliminary experience of the patient not willing to undergo a new full thickness resection. Histopathology confirmed a G2 T1N0 NET with free margins (R0). Notably, endoscopic ultrasound was not performed before either resection.

Discussion

We present a case of delayed bleeding from a pseudoaneurysm, a rare, unreported complication following duodenal EFTR. The location of the pseudoaneurysm immediately behind the OTSC, the temporal concordance between the bleeding episodes and the prior resection, and the cessation of bleeding after embolization together strongly support a causal relationship between the use of the OTSC for EFTR and the development of a duodenal pseudoaneurysm. Endoscopic full-thickness resection has emerged as an innovative treatment option for select subepithelial lesions (9). However, despite its advantages complications can still occur with bleeding and perforation being the most common (7, 8). Most bleeding events occur within the first post-procedural day and are typically mild, responding to standard endoscopic interventions (7). The reported rates of delayed bleeding range from 0.07% to 6.6%, with most cases amenable to endoscopic management (7, 8). The most delayed case of post-upper EFTR bleeding was reported by Khashab et al. of mild bleeding 7 days after the procedure, managed conservatively (10). An ultra-delayed case of minor bleeding 112 days after rectal EFTR, originating from granulation tissue, has also been reported (11). Vascular complications, including pseudoaneurysms, are particularly concerning because they can lead to delayed bleeding, sometimes weeks after the procedure. To the best of our knowledge, no studies have reported delayed bleeding due to vascular pseudoaneurysm as a complication of EFTR. The risk of vascular complications in EFTR may be higher when there is inadvertent injury to blood vessels during the resection. Additionally, factors such as lesion size, depth, and suction use during the procedure can influence the likelihood of complications. Ischemia or coagulation issues during the healing process could exacerbate the formation of a pseudoaneurysm. Gastroduodenal artery pseudoaneurysms are rare but carry a rupture risk of up

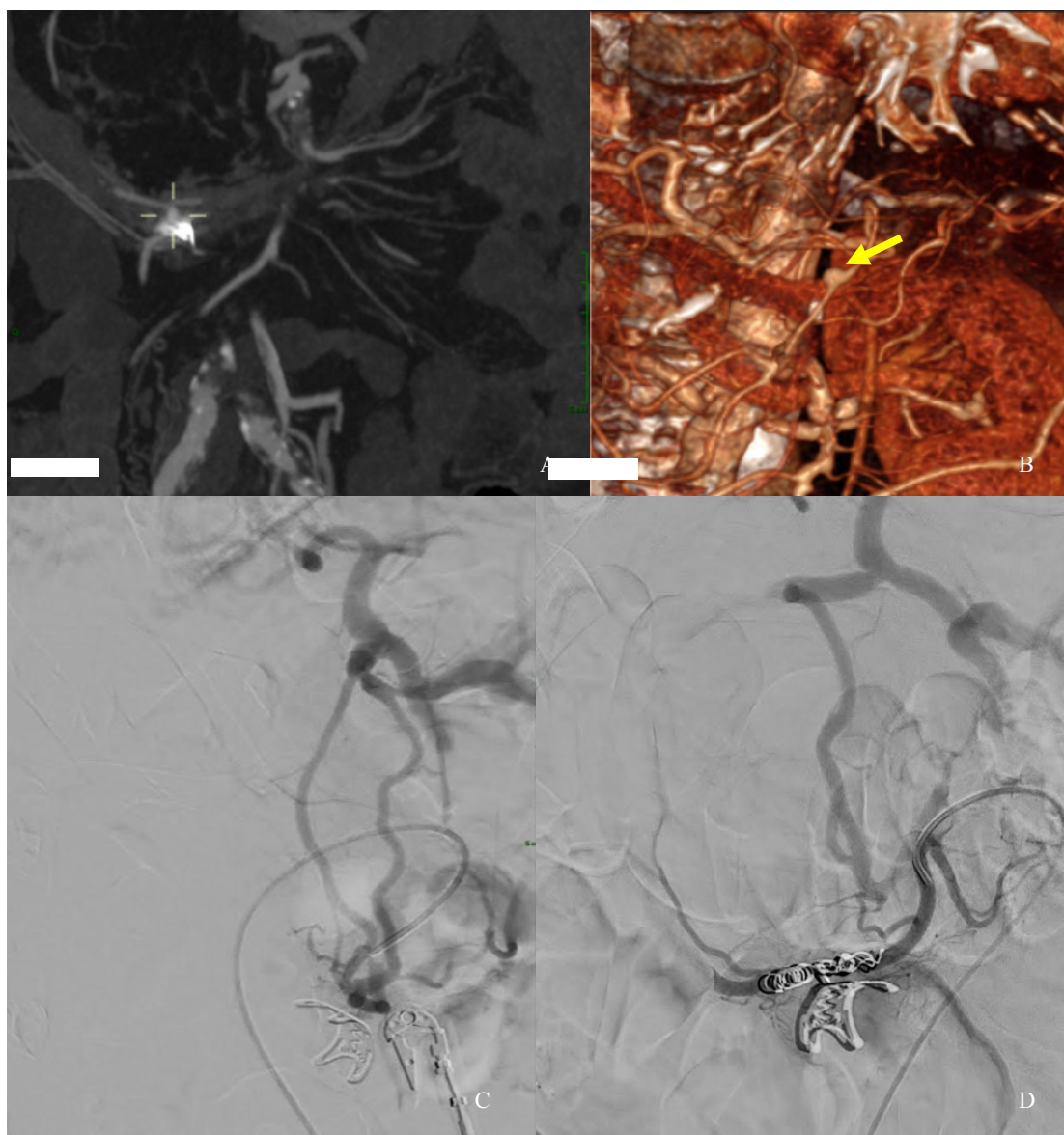


Figure 2. — (a,b) CT Angio showing a pseudoaneurysm in a gastroduodenal artery (GDA) branch (c) The angiographic image of GDA branch with a non-bleeding pseudoaneurysm next to the macroclip. (d) The pseudoaneurysm endovascular treatment with coils.

to 75%, with associated mortality rates approaching 40% due to massive gastrointestinal bleeding (14). Diagnosis can be challenging due to intermittent bleeding and the absence of active extravasation on imaging. Once identified, management depends on patient stability, aneurysm size, and anatomical considerations. Endovascular embolization is considered first-line therapy and has demonstrated high efficacy and safety. Surgical intervention is reserved for cases in which endovascular treatment fails or is not feasible (14, 15).

Conclusions

Although EFTR is effective for SELs, it is not without risk. This case highlights the potential for delayed vascular complications after duodenal EFTR, underscoring the need for careful case selection,

prolonged post-procedure monitoring, and further research to better define long-term vascular risks and reduce complications.

Declarations

Authors contribution: All authors substantially contributed to the concept and the design of the work, drafting, reviewing, and finally approved the version to be published. All authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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