

## Angiographic Coil - The Endoscopist Point of View

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### Abstract

We present a case of a migrated angiographic coil following arterial embolization for a bleeding duodenal ulcer. We also review previously reported cases for known complications, treatment strategies and the need for endoscopic follow up.

**Keywords:** Angiography; Coil migration; Gastrointestinal bleeding; Transcatheter arterial embolization

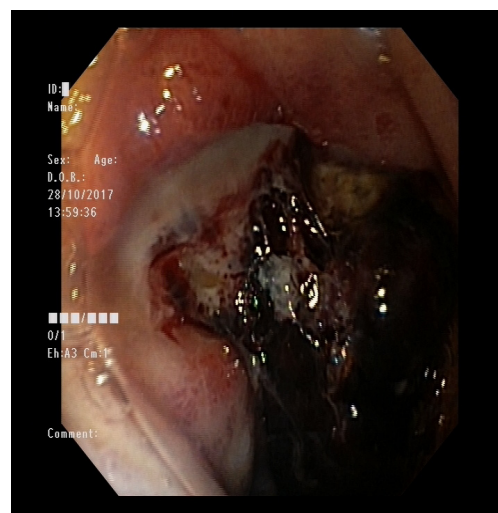
### Introduction

Upper gastrointestinal nonvariceal bleeding is treated by endoscopic hemostasis as a standard, achieving bleeding control in most patients [1-3]. When the source of bleeding is difficult to locate, bleeding is massive, or refractory to endoscopy, Transcatheter Arterial Embolization (TAE) is considered as an alternative. It is a safe and effective treatment, and achieves definitive hemostasis in 80-95% of patients [4]. Pseudo-aneurysms, arterial dissection and perforation are possible complications of TAE, as in other endovascular procedures. However, coil migration is rare, with or without rebleeding. Here, we describe an unusual case of an endoscopically visible coil in the duodenal bulb, 6 months following gastroduodenal coiling. Additionally, we review cases from the literature in an effort to understand this phenomenon and its consequences.

### Case Report

A 71-year-old woman presented with melena and fresh bloody vomiting. After hemodynamic resuscitation, emergent gastroscopy was performed and revealed an actively bleeding 2cm ulcer in the duodenal bulb. A pulsating large blood vessel was identified in the base of the ulcer (Figure 1). The vessel was too large for clipping, therefore an angiography was performed. The

bleeding from the gastroduodenal artery (Figure 2) was resolved successfully by embolization using a metallic coil (Figure 3). In a follow up Esophagogastroduodenoscopy (EGD) 6 months later, a foreign body in the form of a coil protruding from the duodenal bulb was observed, with granulation tissue around it and no signs of bleeding (Figure 4). After a revision of the angiography a decision was made not to intervene, based on lack of symptoms and bleeding stigmata. Follow up gastroscopy was scheduled.



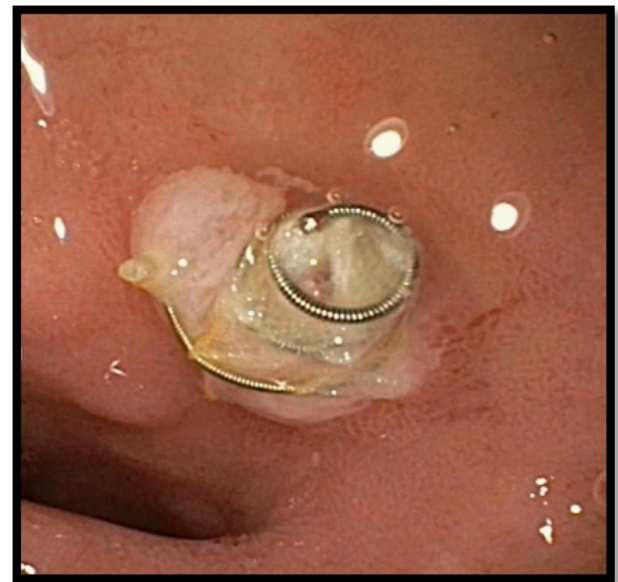
**Figure 1:** Large pulsating vessel in the base of an ulcer in the duodenal bulb.



**Figure 2:** Bleeding from gastroduodenal artery demonstrated by angiography.



**Figure 3:** Angiographic demonstration of the gastroduodenal artery occluded through embolization with metallic coils.



**Figure 4:** Endoscopic view of the coil eroding through the duodenal wall in the previously bleeding vessel.

## Discussion

This case demonstrates a rare finding of a visible protruding coil into the gastrointestinal tract. Published cases describing such findings are both limited and distinct in their context. Thirteen case reports found in the literature of similar findings are listed in Table 1, but each one has a slightly different scenario. These differences include: first Esophagogastroduodenoscopy (EGD) performed as a follow up after the bleeding episode, location and size of the duodenal ulcer, the culprit artery that underwent TAE, treatment chosen whether conservative or surgical and any unique background information about the patient.

	U L C E R							
	Follow up EGD	Location	Size (cm)	Rebleeding	Culprit artery	Background	Treatment	Other
Nackley [5]	No	DB	1x2	NA	GDA	Biliary tumor	Surgery	Biliary tumor
Richard [6]	5 days	Duodenum	3x4	NA	GDA	NA	Conservative	Visible vessel
Ebrahim [7]	6 months	DB	Large	6 months	GDA	HP+, low compliance	Surgery	HP+, low compliance
Rodrigues [8]	3 days	DB, posterior	Large	None after 30 days	Pancreatico duodenal artery	NA	Conservative	Visible vessel

Tey [9]	No	Duodenum	NA	4 years	GDA	NA	Surgery?	
Yi-Cheng [10]	7 days	Duodenum	NA	No (months)	GDA	NA	Conservative	
Chosa [11]	4. 18, 25 days	Duodenum	NA	No (25 days)	GDA	NA	Conservative	
Vleggaar[12]	4 days	DB, posterior	2x2	NA	GDA	NA	Conservative	
Singh [13]	1 day	Duodenum	Large	No (6 months)	GDA	NA	Conservative	
Vardar [14]	7 days	DB, anterior wall	2.2x2.4	NA	GDA	NA	Conservative	
Vardar [14]	6 weeks	Duodenum	Large	NA	GDA	NA	Conservative	
Mohandas [15]	2 years	DB, anterior wall	<0.5	4 years	GDA	NA	Conservative	At 2 years no ulcers seen
Jaurigue [16]	No	DB	Large	5 months	GDA	NSAID use	Conservative	NSAID, visible vessel; refused surgery
EGD - Esophagogastroduodenoscopy; DB - Duodenal Bulb; GDA - Gastroduodenal artery; HP - Helicobacter pylori								

**Table 1:** Care reports of coil visible in duodenum following TAE after upper GI bleeding.

In 10 of the reported cases of upper gastrointestinal bleeding from duodenal ulcers, conservative treatment was chosen, while 3 underwent surgery - one patient had a biliary tumor, the second patient had a recurrent bleeding ulcer and only surgery was considered in the third patient, without further information on the case. In the cases of conservative treatment, 4 had recurrent bleeding after 4 and 5 months and two after 4 years. The culprit artery was the Gastroduodenal Artery (GDA) in all but one-the pancreaticoduodenal artery. Visible vessels were described in only 4 cases. EGD was performed as early as 1 day following TAE, and as late as 2 years. No details on ulcer location were reported in most of the cases. Nine out of 13 ulcers had a diameter of at least 2cm or were described as ‘large’. No cases of fistula or infection were reported.

While many cases described the visible coil as ‘migrating’, 7 reported that the coil was seen endoscopically in the first 1 to 7 days. Presumably, coil extrusion had already occurred during TAE. In 1 case where 3 consecutive endoscopies were performed within a week, the coil at first went from bulging out, then later

became enveloped with mucosa and eventually was not detectable [11]. Thus, the term ‘migrating’ can be misleading. According to cases reported, the visibility of the vessel within the ulcer is not necessarily a predisposing condition for coil extrusion. Post TAE-bleeding in the ulcer site might occur as soon as 4 months and as late as 4 years. In this context, follow up EGD had no yield. Recurrent bleeding occurred both in small and large ulcers. There is not enough data to make a conclusion about predisposing factors for rebleeding.

## Conclusion

An endoscopic finding of coil extrusion following TAE for upper gastrointestinal nonvariceal bleeding is rare, most probably occurring previously, during the angiography procedure. Rebleeding in the ulcer site can occur after months to years, and there is no data regarding predisposing factors. In general, a conservative approach is an acceptable treatment option. Follow up EGD does not offer an added benefit. No cases of coil infection in the above context have been reported.

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