CASE REPORT

Migrating coil

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Accepted 16 January 2017

SUMMARY

We describe a rare case of a 60-year-old man with known history of peptic ulcer disease who presented with melena and epigastric pain secondary to coil migration into duodenal mucosa 4 years after the initial therapeutic embolisation of the gastroduodenal artery. Upper endoscopy revealed oozing duodenal ulcer at the same site of the previously located duodenal ulcer 4 years ago and metal coil impacted at the duodenal mucosa. It is unclear if the coil migration is the effect or the cause of the bleeding duodenal ulcer. Our patient was treated by surgical intervention due to failed endoscopic haemostasis and medical management.

BACKGROUND

Therapeutic embolisation is a safe and effective option in life-threatening gastrointestinal bleeding from gastroduodenal ulcers refractory to endoscopic haemostasis, and obviates the need for emergency surgery in most patients. Complications from therapeutic embolisation are rare, but it can happen even many years after the initial embolisation. This case presents the possibility of late occurring coil migration as the culprit of recurrent gastrointestinal bleeding.

CASE PRESENTATION

Our patient is a 60-year-old man who presents with epigastric pain for 1 day and dark stool for 1 month. He is an active alcoholic with medical history of chronic hepatitis C and peptic ulcer disease. Pertinent surgical history includes abdomen surgery secondary to stab wound about 15 years ago. He reports drinking 3–5 cans of beer every day for the past 35 years. He smokes 1–2 cigarettes a day.

He presents to the hospital for 1 day history of epigastric pain, sharp in nature radiating to the entire abdomen. This is associated with nausea, no vomiting, no fever or chills. His previous bowel movement was 1 day prior to admission. He described that his stool has been tarry dark black for a month, but he did not seek any medical treatment. He denied haematemesis or bright red blood per rectum.

He had a similar presentation with upper gastrointestinal bleed 4 years prior to current admission. At that time, upper endoscopy showed an oozing cratered ulcer at the duodenal bulb that was initially unsuccessfully treated with epinephrine injection and multiple haemostatic clips. Owing to persistent bleeding, angiographic intervention was carried out with selective coil embolisation of the actively extravasting gastroduodenal artery. Eleven 4 mm×4 mm 0.18 complex helical microcoils were used to

embolise the bleeding vessels without using any other embolising agent (figure 1). Postintervention images confirmed cessation of bleeding.

On this presentation, his vital signs were normal and physical examination was positive for epigastric tenderness and gross melena on rectal examination.

INVESTIGATIONS

His haemoglobin was 11.4 g/dL on arrival, platelet of 131 k/μL, international normalised ratio 1.0. His liver function tests showed elevated aspartate transaminase of 73 IU/L and alanine transaminase of 33 IU/L, pattern suggestive of alcohol liver disease. Other parameters are within normal limits.

CT scan of abdomen showed findings of acute or chronic pancreatitis, thick-rimmed fluid collection about the pancreatic head and tail most likely representing a pseudocyst, and distention of the pancreatic duct involving the region of the pancreatic neck. There were also advanced findings of chronic liver disease and presence of metallic staples along pancreaticoduodenal groove indicating prior surgery (figure 2).

DIFFERENTIAL DIAGNOSIS

At this point, there were a few main differential diagnoses for this patient's presentations of epigastric pain and melena. The most likely explanation for his presentations would be bleeding peptic ulcer given his history. Other differential diagnoses include esophagitis or gastritis. Given his history of chronic alcoholism and evidence of advanced findings of chronic liver disease on imaging, he may be

Figure 1 Selective arteriogram showing multiple microcoils in the gastric duodenal artery resulting in haemostasis.

To cite: Tey KR, Aggarwal A, Banerjee B. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2016-218207

Figure 2 CT of the abdomen (coronal view) showing findings of acute or chronic pancreatitis and metallic staples from his previous surgery.

having variceal bleeding. Other rare causes like haemosuccus pancreaticus should be considered given the findings of a pseudocyst and dilated pancreatic duct on imaging.

TREATMENT

The patient was started on intravenous proton pump inhibitors and intravenous octreotide. On day 2 of hospitalisation, upper endoscopy was performed to further investigate the cause of his melaena. There was an oozing cratered duodenal ulcer with pigmented material, about 2 cm in diameter in largest dimension; this appeared to be located at the same area in which the previous ulcer was seen 4 years ago. At the adjacent area, a foreign body was seen impacted at the duodenal mucosa (**figure 3**). Coil migration was highly suspected. The area of duodenal ulcer was injected with 6 mL of a 1:10 000 solution of epinephrine for haemostasis. The patient continued to have ongoing melaena and down trending haemoglobin after endoscopy. Owing to the high risk of lesion and failed endoscopic and medical management of the duodenal ulcer, surgery was consulted. The patient underwent duodenotomy, vagotomy, Heineke-Mikulicz pyloroplasty and an over sewn duodenal ulcer. The coils were also discovered during the surgery and removed from the duodenal ulcer base.

OUTCOME AND FOLLOW-UP

The patient's hospital course was complicated by delirium tremens. He was closely monitored and started on proton pump inhibitors and there was no further evidence of gastrointestinal bleeding.

DISCUSSION

Endoscopic haemostasis is the initial treatment modality of patients presenting with upper gastrointestinal bleeding. Therapeutic embolisation or surgery should be considered in cases when bleeding is refractory to endoscopic haemostasis.

Figure 3 Upper endoscopy performed during current admission showing oozing duodenal ulcer in the same location as the previous ulcer and a metal material impacted at the duodenal mucosa. This was managed with epinephrine injection.

Therapeutic embolisation has very high success rates with low complication rates and thus should be considered as an alternative to surgery especially in high-risk population.^{1 2}

Late complications of therapeutic embolisation include bowel ischaemia, duodenal stenosis and rebleeding.^{3 4} In our patient, rebleeding from the duodenal ulcer occurred 4 years after the initial embolisation and the previously placed coil was found at the duodenal mucosa. Coil migration cases have been described in the past, and can happen as early as few days after the initial deployment of the coil or can happen few years later.^{5–8} The incidence of coil migration is ~3% in a single-centre review.⁴ In these cases of coil migration, most are managed conservatively by periodic close follow-up. However, in one case, the patient died from massive gastrointestinal bleeding, as a result of development of an aortogastric fistula, after her initial coil embolisation of coeliac trunk aneurysm 10 years earlier.⁸

Our patient has history of bleeding duodenal ulcer that was treated with coil embolisation 4 years ago. He presented with recurrent gastrointestinal bleeding from a duodenal ulcer that appeared to be on the same site as his prior ulcer. It was hard to determine if the initial ulcer had healed but recurred due to the migrating coil eroding down to the duodenal mucosa or the initial duodenal ulcer did not heal and eroded down to expose the coil, causing the subsequent gastrointestinal bleeding. There is no evidence that coil embolisation affects the healing of duodenal ulcer, as there is rich collateral supply to the stomach and duodenum.^{9 10} Patients might be at higher risk of ischaemia from therapeutic embolisation if potential collateral vessels are damaged from previous abdominal surgery, atherosclerosis or previous abdominal radiation therapy.¹⁰ Our patient did have history of abdominal penetrating trauma and postsurgical changes of laparotomy on imaging, which could potentially increase his risk of developing ischaemia due to poor collateral circulation.

There is little evidence on management of coil migration. In most situations, patients can be monitored closely if they are asymptomatic. In patients with recurrent gastrointestinal bleeding from a site of duodenal ulcer complicated by coil migration, earlier surgical management should be sought. Endoscopic haemostasis has been reported in certain cases and is dependent on endoscopist expertise. Presently there is little evidence on each therapeutic option.

Learning points

- In patients with history of previous coil embolisation, migrated coil could represent a rare cause of peptic ulcer rebleed either by poor healing or by denudation of mucosal surface by the migrated coil itself.
- History of prior abdominal surgery could be a potential risk factor of non-healing or delayed healing of peptic ulcer in a patient who received therapeutic embolisation.

Contributors KRT and AA are responsible for drafting of the manuscript. BB is responsible for the drafting of the manuscript and its critical revision for important intellectual content.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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