

Coils migrate into the biliary-jejunum anastomosis

A case report

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Abstract

Rationale: Coils migration following endovascular treatment of arterial bleeding is rare. There was no clear route to deal with this complication.

Patient concerns: A 55-year-old woman underwent choledochal cyst excision with hepaticojejunostomy. At the 18th day after operation, intra-abdominal hemorrhage occurred. Angiography showed active bleeding of 1 branch of the right hepatic artery and the gastroduodenal artery. That was treated by micro-coils embolization. 122 days after embolization, the patient was readmitted for chills, fever with temperature of 40°C, and jaundice.

Diagnosis: Obstructive cholangitis.

Interventions: Endoscopy was performed, which showed the micro-coils were embedded in biliary-jejunum anastomosis. Biliary sludges were adherent around micro-coils that were considered the cause of obstructive jaundice, which were washed by endoscopy.

Outcomes: Two days later endoscopy therapy, the total bilirubin (TBIL) was decreased to 58.7 μmol/L, and the patient was discharged. After 2 months of follow-up, the level of TBIL was in normal range.

Lessons: Coils migration following endovascular treatment of arterial bleeding is rare. For cases with coils migrated into the biliary tract, further treatment is often needed because of the secondary cholangitis or stones. Endoscopy might be useful to deal with this intractable problem.

Abbreviations: CBD = common bile duct (CBD), MRCP = magnetic resonance cholangiopancreatography, MRI = magnetic resonance imaging (MRI), PTC = percutaneous transhepatic cholangiography, TBIL = total bilirubin.

Keywords: arterial embolization, coil migration, hepaticojejunostomy, obstructive cholangitis, postoperative hemorrhage

1. Introduction

Abdominal bleeding after excision for choledochal cysts is not common, meta-analysis indicates an incidence of 1.3%.^[1] For arterial bleeding, interventional radiologic techniques with coils embolization are always useful.^[2,3] However, coils migration following endovascular treatment is rare. Only some case reports described this complication.^[4,5]

When coils migrate into biliary tracts, symptoms of biliary obstruction always develop, such as obstructive jaundice, cholangitis, stones, and pancreatitis.^[4,6,7] Experience in dealing with this complication is little. Many doctors do not recognize this rare complication and related symptoms, which results in difficult

diagnosis and management. Here, we reported a rare case that embolization coils migrated into the biliary-jejunum anastomosis after choledochal cyst excision with hepaticojejunostomy.

2. Case report

A 55-year-old woman was admitted to her local hospital for an incidentally discovered dilation of common bile duct (CBD) by B-ultrasound scan during routine physical examination. Blood test results, including complete blood count, renal and liver function tests, and tumor markers of carcinoembryonic antigen, carbohydrate antigen 19-9, and alpha fetoprotein, were all within normal ranges. Computed tomography scan indicated a dilated CBD with a maximum diameter of 4.5 cm. Choledochal cyst (Type I) was diagnosed. Cyst excision with hepaticojejunostomy was performed.

After operation, the patient developed bile leakage on the 3rd day. Without special treatment, she was discharged with drainage tube keeping on the 12th day. On the 18th day, intra-abdominal hemorrhage occurred. Angiography showed active bleeding of 1 branch of the right hepatic artery and the gastroduodenal artery. That was treated by micro-coils embolization (Fig. 1A). After hemorrhage was controlled, the patient was having fever almost every day with temperature less than 38.5°C, and biliary fistula became more serious (Fig. 1B). Treatments with anti-infection, enteral and parenteral nutrition supports, and balanced internal environment were carried out. The patient stayed in hospital for another 62 days and was discharged after drainage tube removal.

Two months after the second discharge (122 days after micro-coils embolization), the patient was readmitted to our hospital for

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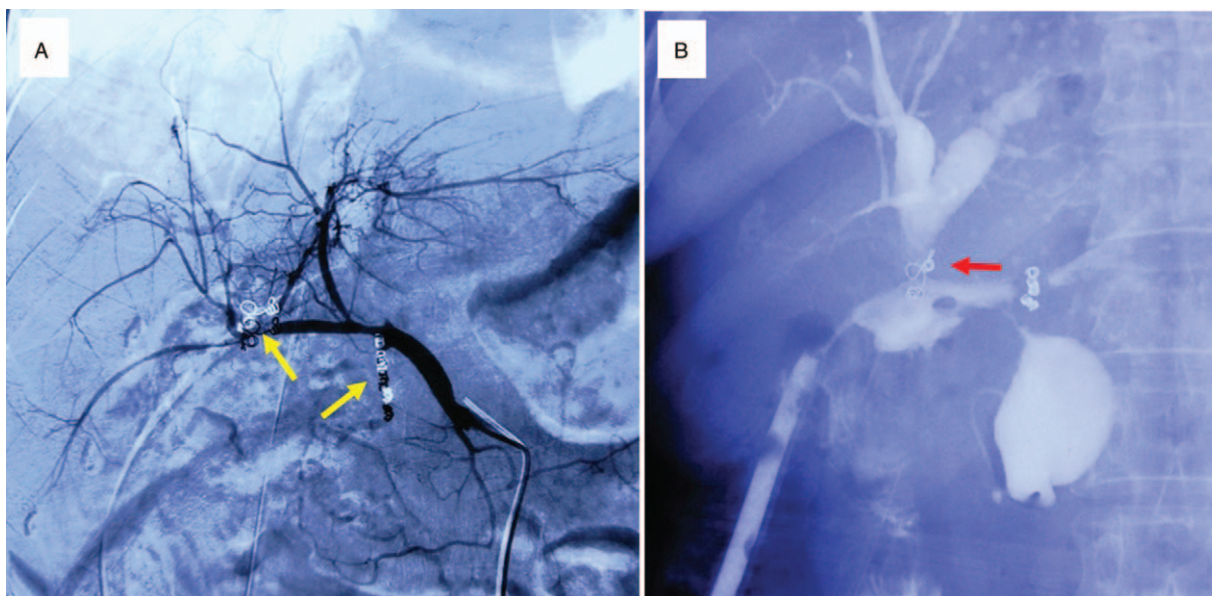


Figure 1. Images after arterial embolization. A, Angiography showed active bleeding of 1 branch of the right hepatic artery and the gastroduodenal artery, which were treated by micro-coils embolization. (Yellow arrows: micro-coils). B, Biliary tracts were visualized by radiography through the drainage tube. (Red arrows: micro-coils).

obstructive cholangitis with systems of chills, fever with temperature of 40°C, and jaundice. Liver function test showed alanine aminotransferase was 41U/L, aspartate aminotransferase was 370U/L, total bilirubin (TBIL) was 310 μmol/L, direct bilirubin was 213 μmol/L, and γ-glutamyl transferase was 397IU/L. Complete blood count showed white blood cells were $19.2 \times 10^9/L$, and neutrophil percentage was 87.2%. Magnetic resonance imaging (MRI) and cholangiopancreatography (MRCP) indicated dilation of intrahepatic bile ducts (Fig. 2A). After conservative treatments of 6 days, including anti-infection, liver protection, and cholagogue, the TBIL decreased to 56.6 μmol/L. However, the TBIL rose again to 138.9 μmol/L 3 days later. So, endoscopy was performed, which showed the micro-coils were embedded in biliary-jejunum anastomosis (Fig. 2B, C). Biliary sludges were adherent around micro-coils, which were considered the cause of obstructive jaundice. Biliary sludges were

washed by endoscopy. Two days later, the TBIL was decreased to 58.7 μmol/L, and the patient was discharged. After 2 months of follow-up, the level of TBIL was in normal range.

The present study was approved by the Ethics Committee of Qilu Hospital, Shandong University. The case was collected and reported in accordance with approved guidelines of Shandong University. Written informed consent was obtained from the patient.

3. Discussion

Coils migration following endovascular treatment of arterial bleeding, pseudoaneurysms, and aneurysms is rare. Skipworth et al^[5] performed a literature search of PubMed, who retrieved only 8 cases up to 2009. By the analysis of these cases, they showed that coeliac trunk and its branches (hepatic and splenic artery) are the most common sites of artery abnormality. The

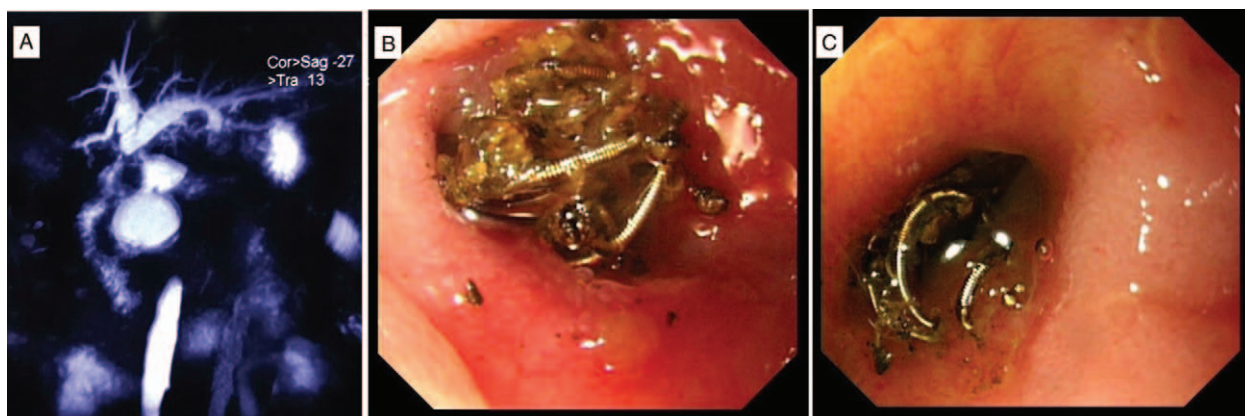


Figure 2. Images when obstructive cholangitis happened. A, MRCP showed dilation of intrahepatic bile ducts. B, Endoscopy showed the micro-coils were embedded in biliary-jejunum anastomosis with biliary sludges. C, Biliary sludges were reduced after washing by endoscopy. MRCP = magnetic resonance cholangiopancreatography.

coils were always migrated into stomach and CBD. The time from coil insertion to migration was ranged 6 weeks to 10 years. Six cases with vascular coil migration from right hepatic artery to common bile duct indicated that time after coils migrated to CBD was ranged 3 months to 8 years.^[4]

It is not clear how coils migrated from the sites of insertion to extravascular visceral organs. In the current case, we speculated 2 potential causes. ① Coils might be migrated due to blood flow's impact during artery embolization, which was then embedded into the biliary-jejunum anastomosis through the fistula. ② The digestive juice or pus corroded the arterial wall, which resulted in coils migration to extravascular site, and then embedded into digestive tract. Some measures might prevent coil migration in cases with coils migrated into biliary-jejunum anastomosis. First, we should prevent delayed postoperative hemorrhage. Bile fistula is the main cause of postoperative hemorrhage, which might result in local infection and then erode artery. High anastomoses are superior to low anastomoses according to the vascularity of the bile duct, which might decrease the incidence of bile fistula. Second, if bile fistula or infection happened, timely and effective drainage should be adopted. Third, some vascular intervention approaches could avoid coils migration, including "sandwich packing"^[8,9] or combination of stenting with a covered stent to main artery flow and coils embolization.^[10]

There was no clear route to deal with this complication. Eight cases listed by Skipworth et al^[5] showed that 5 cases underwent operation and 3 cases had no special treatment. For cases with coils migrated into the biliary tract, further treatment is often needed because of the secondary cholangitis or stones.^[4] Both endoscopic retrograde cholangiopancreatography (ERCP) and percutaneous transhepatic cholangiography (PTC) might be useful to deal with this intractable problem.^[11,12] But, we are not sure which method is the first choice. Van Steenberg et al^[8] failed to remove the coils and stone by ERCP, but removed successfully with PTC. Whereas Kao et al performed biliary drainage by PTC, and then removed the coils and stone by EGFR.^[13] However, both these methods displayed low success rate. A systematic review showed only 3 of 6 cases underwent a successfully treatment by ERCP or PTC, the other 3 cases were needed reoperation.^[4,6,7,11,13,14]

For our case, we took a "wait and see" strategy. After 2 months of follow-up, the level of TBIL was in normal range. Even so, a longer follow-up was needed. Because of the existence of coils in biliary tract, obstructive cholangitis or stones may develop in future, treatment by endoscopy or surgery is necessary.

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