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Case Report

Foreign bodies in common bile duct in post cholecystectomy status—case series of 8 cases—A single center experience in western India

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ABSTRACT

Foreign bodies in common bile duct (CBD) are rare. Obstructive jaundice in patients who have undergone cholecystectomy may be due to a variety of causes. Common causes of obstruction in these cases are residual stones, inflammatory or ischaemic strictures following CBD injury during cholecystectomy or malignant strictures. Foreign bodies in the bile duct in these post cholecystectomy patients are known but reported very rarely. Clinical features and biochemistry of these patients are no different than those due to other causes mentioned above. Imaging studies will show obstruction due to stones or sludge or narrowing but may not give conclusive diagnosis of a foreign body. Endoscopic ultrasound is helpful in these cases as it shows a hyperechoic foreign body within the stone if the substance is a metallic clip. In our current case series, we are presenting eight such cases with post cholecystectomy foreign bodies, in the form of materials used for ligating or clipping the cystic duct before transection during cholecystectomy, or a mistakenly left behind gauze piece, migrating into the bile duct and forming a nidus for stone formation and causing CBD obstruction. To conclude, if a patient presents with biliary obstruction with a history of cholecystectomy, the possibility of foreign body in the CBD must be considered as a possible differential diagnosis.

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Keywords: Cholangiopancreatography, endoscopic retrograde; Common bile duct; Foreign bodies; Post cholecystectomy; Surgical clip

Introduction

In the era of minimal invasive surgery, Laparoscopic cholecystectomy is the accepted gold standard for cholecystitis due to any cause. Similarly, endoscopic retrograde cholangiopancreatography (ERCP) is the accepted standard of care for management common bile duct (CBD) obstruction due to stones. Migration of suture material used for ligating the cystic duct, a surgical clip applied to cystic duct before transection and a surgical gauze piece, mistakenly left in the gall bladder fossa by the surgeon during dissection, into the CBD are lesser known complications of cholecystectomy. These are rare and very few reports are available in surgical literature.

Here we describe a series of 8 cases that we came across in last five years. All these patients had undergone laparoscopic cholecystectomy and then presented at varying intervals with CBD obstruction secondary to foreign bodies, surrounded by a stone cast.

Case Report

In the last five years, we encountered 8 post cholecystectomy cases wherein we found different types of foreign bodies surrounded by a stone cast in the bile duct. Patient demography, clinical parameters, ERCP findings, outcome and complications if any were recorded and analyzed and presented in Tables 1, 2.

Case 1

A 65-year-old female with epigastric pain, nausea and fever for 5 days. Laparoscopic cholecystectomy 2 years back. Patient had leukocytosis and altered liver function test (LFT). Ultrasonography (USG) and magnetic resonance cholangiopancreatography (MRCP) revealed dilated CBD with elongated echogenic material. Endoscopic ultrasound (EUS)-two parallel hyperechoic structures with shadowing in distal CBD with sludge. ERCP revealed chol-

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Table 1. Demographic Data and Case Details

Case	Age (yr)	Sex	Medical history	Presenting symptom	Duration of cholecystectomy	Other surgery	FB in CBD	ERCP Success rate (%)	Complication	Follow-up/outcome
I	65	Female	None	Epigastric pain Nausea Fever	1 yr	None	Metal clips (2)	100	None	Asymptomatic at 12 mo
II	45	Male	None	Abdominal pain Jaundice	2 yr	ERC and stone extraction 1 month back	Surgical gauze piece	100	None	Asymptomatic at 12 mo
III	56	Male	None	Abdominal pain	2 yr	ERC 2 years back	Surgical suture	100	None	Asymptomatic at 3 mo
IV	45	Male	None	Abdominal pain Jaundice Fever	3 yr	None	Metal clips (2)	100	None	Asymptomatic at 6 mo
V	64	Male	None	Asymptomatic	2 mo	None	Metal clip (1)	100	None	Asymptomatic at 6 mo
VI	53	Female	Hypertension and DM 3 yr	Abdominal pain Nausea Vomiting Fever	17 yr	Bilroth I Hysterectomy Thyroidectomy	Metal clip (1)	100	None	Asymptomatic at 1 mo
VII	71	Male	Parkinsonism 15 yr Hypertension 10 yr	Abdominal pain Fever	3 yr	None	Metal clip (1)	100	None	Asymptomatic at 1 mo
VIII	70	Male	None	Abdominal pain Nausea Vomiting	1.5 yr	Ampullectomy	Hemoclip (1)	100	None	Asymptomatic at 1 mo

FB, Foreign body; CBD, common bile duct; ERCP, endoscopic retrograde cholangiopancreatography; ERC, endoscopic retrograde cholangiography; DM diabetes mellitus.

Table 2. Investigations

Case	Biochemistry				Imaging			
	Total count (/L)	Serum bilirubin (total/direct/indirect) (mg/dL)	Amylase (U/L)	Serum lipase (U/L)	USG abdomen	CECT abdomen	MRCP	EUS
I	13×10^9	4.3/3.1/1.2	17	12	Dilated IHBR, 12.7 mm CBD with elongated echogenic material within? Calculus, Stent	-	Dilated CBD, short biliary stent in distal CBD with abrupt irregular filling defect around stent	Two parallel hyper echoic structure with shadowing in distal CBD with CBD sludge
2	5×10^9	3.0/2.0/1.0	-	-	CBD stones	-	-	-
3	3.3×10^9	1.0/0.8/0.2	-	-	Prominent CBD with sludge	-	-	-
4	12.5×10^9	3.0/2.0/1.0	-	-	Dilated CBD with linear stones within	-	-	-
5	4×10^9	1.2/1.0/0.2	-	-	-	-	-	-
6	12.9×10^9	5.71/3.76/1.97	18	10	-	6 mm CBD, radio opaque filling defect in lower CBD (metallic density with streak artefact)	-	-
7	14.6×10^9	4.47/3.72/0.7	-	-	12 mm CBD, 7 mm hyper echoic structure in terminal CBD possibly stone or D2 perivaterian diverticulum	-	--	Dilated cystic duct and CBD with stone around a hyper echoic structure possibly stone-migrated clip complex
8	16.7×10^9	2.04/0.91/1.13	1,050	153	-	5 mm CBD pneumobilia	-	5 mm CBD, CBD stone with linear hyper echoic structure possibly migrated clip

USG, Ultrasonography; CECT, contrast-enhanced computed tomography; MRCP, magnetic resonance cholangiopancreatography; EUS, endoscopic ultrasound; IHBR, intrahepatic biliary radicles; CBD, common bile duct.

angitis. Two metal clips were removed from CBD and a 10 Fr straight plastic stent. It was removed after 6 weeks (Fig. 1).

We had four more cases (Cases 4–7) where we removed metallic clips from CBD as mentioned in the Tables 1, 2.

Case 2

A 45-year-old male presented with jaundice and abdominal pain. Laparoscopic cholecystectomy 2 years back. Ultrasound revealed CBD stone. LFT was altered. Patient had endoscopic retrograde cholangiopancreatography (ERC), stone extraction with stenting 1 month back. At the time of stent removal, CBD clearance with a dormia basket revealed thin white delicate structure, looking like a

dead worm. But on close examination it turned out to be a “surgical gauze piece”. This was retrieved intact. Occlusion cholangiogram confirmed complete CBD clearance (Fig. 2).

Case 3

A 56-year old male presented with right hypochondriac pain. Emergency ERCP followed by laparoscopic cholecystectomy was done 3 years back. Surgical notes mentioned that cholecystectomy was difficult and surgical suture with metal clip were used for securing cystic duct. LFT was altered. Ultrasound showed prominent CBD with sludge. ERCP revealed thin long fragment, which macroscopically was a surgical suture (Fig. 3).

Fig. 1. (A) Computed tomography showing hyperdense foreign body. (B) Endoscopic retrograde cholangiopancreatography foreign body removal (arrow). (C) Metallic clips removed.

Fig. 2. (A) Endoscopic retrograde cholangiopancreatography (ERC) and foreign body removal. (B) Removed foreign body with sludge. (C) Surgical gauze removed at ERC.

Fig. 3. (A) Endoscopic retrograde cholangiopancreatography (ERC) and foreign body removal. (B) Removed foreign body with sludge. (C) Suture material removed at ERC.

Fig. 4. (A) Endoscopic ultrasound showing hyperdense foreign body (arrow). (B) Endoscopic retrograde cholangiopancreatography (ERCP) and removal of foreign body. (C) Hemoclip removed at ERCP.

Case 8

A 74-year male presented with abdominal pain, nausea and vomiting. He had laparoscopic cholecystectomy done one and half years back. In addition, he had a history of ampullectomy done. He had deranged liver function. USG showed a dilated CBD with a soft stone in it. ERC revealed a sludge ball formed over a hemoclip used for cystic duct ligation (Fig. 4).

Discussion

Common causes of extrahepatic bile duct obstruction are stones and malignant or benign stricturous lesions. Biliary tract foreign bodies like surgical suture material, chicken bone, tomato skin, surgical gauze piece, fish bone, and drum stick are uncommon entities but are reported to present with biliary obstruction.¹ Cimsit et al² claimed to publish the first case of textiloma (surgical gauze) obstructing CBD requiring surgical removal in 2006. Similar case was published by Bhandari et al¹ where a surgical gauze was removed with aid of choledochotomy as ERCP and biliary cannulation failed in their case. Cipolletta et al³ and Giestas et al⁴ reported successful retrieval of surgical gauze piece from CBD with ERCP and sphincterotomy.

With rapidly increasing use of minimally invasive surgery and therapeutic ERCP, more cases of foreign bodies in bile duct, like surgical clips are being reported.

Literature review revealed only 86 reported cases of post cholecystectomy clip migration into CBD. Reported cases showed that age and sex predilections are variable. The time for migration of clip varies from 11 days to 20 years.⁵ The number of migrated clips ranges from 1–6.⁵

The most common symptoms in our series are abdominal pain, jaundice and fever, on occasions asymptomatic. In one such asymptomatic case, foreign bodies were retrieved during a session of removal of previously placed CBD stent. Imaging studies may not give substantial information or a conclusive evidence of foreign bodies in these patients. On occasions, surgical clips were seen on plain X-ray abdomen as radio opacity in the line of bile duct. Contrast-enhanced computed tomography abdomen and MRCP usually report CBD stone with a hyperdense echo. EUS show hyper echoic linear structure with acoustic shadowing. ERCP is diagnostic as well as therapeutic and is the first line of treatment depending upon its availability and expertise. Cholangiogram may show a clip stone complex as a filling defect.

The suggested risk factors are, difficult cholecystectomy, prior abdominal surgery, inaccurate clip placement, use of more than 4 clips, bile duct injuries with resultant stricture and biloma forma-

tion with local suppurative inflammatory processes.⁶

The proposed pathogenesis proposed are inappropriate or more than four clip placements on cystic duct lead to pressure necrosis with resultant local suppurative inflammation which in turn results in clip getting embedded in the wall of the CBD with subsequent migration to biliary system. Secondly, an adjacent structure compressing the clipped cystic duct stump over a period of time resulting in invagination of the cystic duct and clips into the CBD.⁷ Thirdly, cystic duct stump necrosis secondary to pressure, ischemia or inflammatory process followed by migration towards a path of least resistance, most probably into the CBD and lastly retrograde reflux from the duodenum.³

The suggested preventive measures are use of only two clips with proper placement, use of harmonic scalpel guided clip less cholecystectomy, use of absorbable clips and proper counting and disposal of gauze piece used for blunt dissection and haemostasis.

With experience we can now predict such migration looking for hyperdense structure on computed tomography and EUS. The gauze piece was a surprise and a boon for the surgeon who left it by mistake in the gallbladder fossa. We found that not only metal but also the non-metallic hemoclip can migrate into the CBD. It is great way that nature takes care of foreign materials in our body.

To conclude, foreign bodies in CBD are rare but should be considered in cases with a history of cholecystectomy. ERCP remains the first line of treatment for such cases with a high success rate.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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References

1. Bhandari V, Singh M, Vyas HG, Sharma N, Chejara R. Diagnostic dilemma in an

- unusual case of common bile duct obstruction. *Gut Liver*. 2011;5:245-7.
2. Cimsit B, Keskin M, Ozden I, Alper A. Obstructive jaundice due to a textiloma mimicking a common bile duct stone. *J Hepatobiliary Pancreat Surg*. 2006;13:172-3.
 3. Cipolletta L, Bianco MA, Rotondano G, Prisco A, Catalano M, Gatto A, et al. Endoscopic retrieval of a surgical gauze from the common bile duct. *Ital J Gastroenterol Hepatol*. 1997;29:58-61.
 4. Giestas S, Mendes S, Gomes D, Sofia C. Obstructive jaundice due to foreign body in the bile duct: an unusual finding. *GE Port J Gastroenterol*. 2016;23:228-30.
 5. Kitamura K, Yamaguchi T, Nakatani H, Ichikawa D, Shimotsuna M, Yamane T, et al. Why do cystic duct clips migrate into the common bile duct? *Lancet*. 1995;346:965-6.
 6. Dhalla SS, Duncan AW. Endoscopic removal of a common-bile-duct stone associated with a Ligaclip. *Can J Surg*. 1992;35:344-5.
 7. Arnaud JP, Bergamaschi R. Migration and slipping of metal clips after celioscopic cholecystectomy. *Surg Laparosc Endosc*. 1993;3:487-8.