

Postcholecystectomy Biliary Clip Migration Causing Acute Pancreatitis

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ABSTRACT

Postcholecystectomy biliary clip migration is a rare but important cause of acute pancreatitis (AP). We report the case of a patient with laparoscopic cholecystectomy for cholelithiasis with cholecystitis and recurrent AP 15 and 19 months after. Imaging findings were suggestive of biliary clip migration. Suspected mechanisms for endoclip migration–induced AP include migration of the clip at a site of dehiscence and migration. When considering this diagnosis, a plain radiograph may be helpful as a comparison to previous imaging to assess for changes in the number of endoclips present, and proper diagnosis can help lead to appropriate management.

INTRODUCTION

Both an index episode and a recurrence of acute pancreatitis (AP) should prompt a search for the inciting cause to prevent potential future AP episodes and further damage to the pancreas. Although some physicians may abruptly rule out biliary causes of AP after a cholecystectomy, gallstones, sludge, and surgical complications should still be considered. We report a case of recurrent AP (RAP) due to postcholecystectomy biliary clip migration and review all reported cases of postcholecystectomy biliary clip–induced AP.

CASE REPORT

A 61-year-old man with a history of aortic stenosis, diabetes mellitus, and hyperlipidemia underwent an uncomplicated laparoscopic cholecystectomy (LC) for cholelithiasis with cholecystitis. Subsequently, he had 2 episodes of AP 15 and 19 months post-LC characterized by severe abdominal pain and confirmed on computed tomography (CT) imaging. He denied alcohol, smoking, and family history of AP. CT obtained at his first AP episode showed 6 endoclips at the cystic duct stump and 1 endoclip within the distal end of the common bile duct (Figure 1). After the first episode, he underwent endoscopic retrograde cholangiopancreatography (ERCP) with sphincterotomy without significant findings. At the time of the second episode of AP, repeat CT noted 5 endoclips at the cystic duct stump and 1 endoclip in the duodenum (Figure 2). Subsequently endoscopic ultrasound was performed, which revealed normal bile ducts, as well as pancreatic parenchymal lobularity and honeycombing. During this time, his cholesterol was controlled with statins, his calcium was normal, and he was not taking any medications known to cause pancreatitis. He was managed conservatively with no further AP episodes.

DISCUSSION

This patient presented with RAP, defined as more than 2 attacks of AP without any evidence of underlying chronic pancreatitis. The most common causes of AP are biliary stones or sludge and alcohol use.¹ Other less common causes include hypertriglyceridemia, drug reactions, and genetic abnormalities, among others.¹ In approximately 20% of cases of AP and RAP, the cause is unknown, labeling these patients as idiopathic.² Postcholecystectomy clip migration is rare, but should be considered in patients with no risk factors or other obvious causes of pancreatitis.

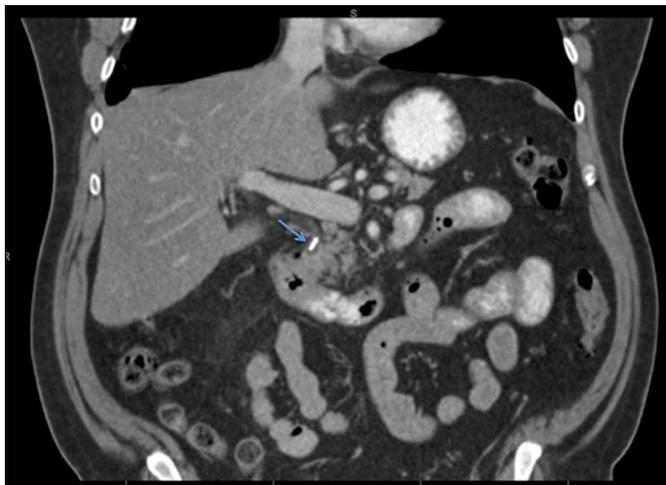


Figure 1. Computed tomography during the first acute pancreatitis episode showing 6 endoclips at the cystic duct stump and 1 endoclip within the distal end of the common bile duct.

LC was first done in the United States in 1988 and currently over 700,000 LCs are performed annually.³ The indications for LC include symptomatic cholelithiasis, gallbladder polyp, gallbladder trauma, biliary dyskinesia, acute cholecystitis, and complications related to common bile duct stones including AP.⁴ The most common complications of LC include bile duct injury, bile leaks, bleeding, and bowel injury.³ AP in the postoperative period may be due to a retained stone or a surgical complication, with estimated incidence of 0.1%–0.34%.^{5,6} Moreover, a Spanish study suggested that 6% of all readmissions within 90 days after cholecystectomy were attributable to AP.⁷

The most common cause of AP after cholecystectomy is retained biliary stone or sludge, but surgical complications can

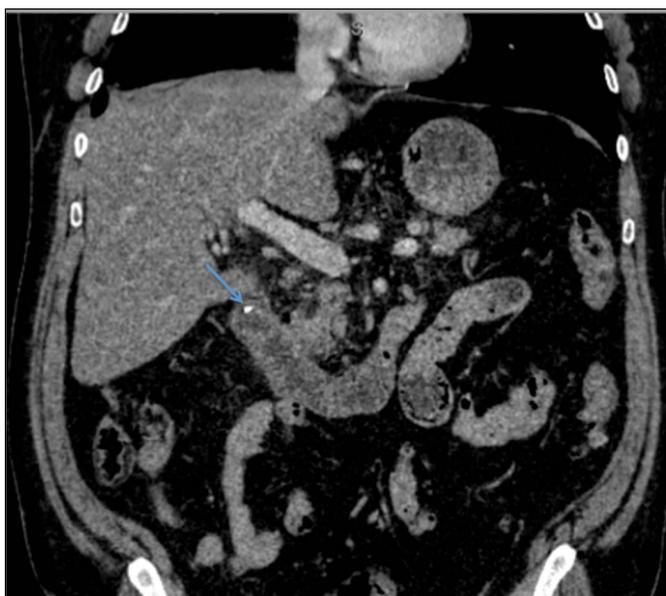


Figure 2. Computed tomography during the second acute pancreatitis episode showing 5 endoclips at the cystic duct stump and 1 endoclip in the duodenum.

also cause AP. These complications include AP resulting from hemobilia, which can present early in the postoperative period, while other complications of cholecystectomy such as endoclip migration can result in AP perhaps up to 5 years postoperatively.^{8–12} Therefore postsurgical complications of LC should be considered by the evaluating physician when no obvious cause of AP is apparent.

Surgical endoclip migration post-LC is a rare but important cause of AP. Our review of the literature found 5 cases (including our own), dating from 1989 to 2018.^{11–14} Patients were 80% female, with a mean age of 58 years (range 36 years–74 years) (Table 1). Mean time from cholecystectomy to AP presentation was 2.56 years (range 15 days–6 years).

Suspected mechanisms for endoclip migration–induced AP include migration of the clip at a site of dehiscence at the cystic duct with biloma or bile leak or inadvertent placement of the clip into the bile duct.¹⁵ It is well recognized that once these endoclips are in the biliary tree, they can become a nidus for stone formation.¹⁶ The clip itself, without stone formation, may also pass through the biliary system. This clip/stone combination can pass through the ampulla without incident or cause obstructive pathology such as RAP or cholangitis.

Notably, most of the reported cases occurred after LC as opposed to open cholecystectomy (OC). This is hypothesized to be due to learning curve with LC at that time.¹⁷ Data from a large retrospective study assessing cases between 1988 and 1994 suggested a 1.79 odds ratio for intraoperative injury in LC vs OC.¹⁷ Therefore based on the above mechanisms suggesting increased risk of migration at a site of dehiscence or leak, we can infer that patients with LC had a greater risk of complications due to endoclip migration compared to patient with OC. Fewer cases are reported in the recent literature and this may be due to improvement in training and technique of LC and/or publication bias; however, considering that endoclip migration can occur many years after cholecystectomy, we should still consider this in our differential of AP.

The diagnosis of clip-induced AP is unique. A plain radiograph may be helpful as a comparison to prior imaging to assess for changes in the number of endoclips present.¹⁸ CT imaging may also delineate the number of clips present and show any changes in clip positioning. Proper diagnosis can help lead to appropriate management, usually with ERCP with biliary sphincterotomy with the goal of preventing RAP episodes and mitigating any further harm to the pancreas and the patient. In summary, biliary clip migration should be considered in patients with AP who are post-LC.

DISCLOSURES

Author contributions: A. Panara wrote the manuscript and is the article guarantor. JA Barkin and JS Barkin revised the manuscript.

Table 1. AP secondary to biliary clip migration

Author	Year	Journal	Age	Nation	Type of cholecystectomy	Gender	Time to AP postcholecystectomy	Increased liver enzymes	Stones present in bile duct?
Farr et al ¹¹	1989	<i>J Clinical Gastroenterol</i>	36	USA	Open	Female	5 years	Yes	Yes
Cetta et al ¹³	1997	<i>Unusual cases and Technical Notes</i>	63	Italy	LC	Female	15 days	Unknown	No
Dolay et al ¹⁴	2007	<i>World J of Gastroenterol</i>	56	Turkey	LC	Female	6 months	Yes	Yes
Benatta et al ¹²	2015	<i>Hepatobiliary Surgery and Nutrition</i>	74	Algeria	LC	Female	6 years	Unknown	Yes
Panara et al	2018	N/A	61	USA	LC	Male	1.25 years	No	No

AP, acute pancreatitis; LC, laparoscopic cholecystectomy.

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