Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Surgery

Migration of Metallic Clip in to the Common Bile Duct after Laparoscopic Cholecystectomy – A Case Report

A.K.M. Ahsan Ullah[1*], Saad Mohammed[2], Alamgir Haider[3], Mostafa Mamoon Warid[4], Samia Mostari[4]

[1]Associate Professor & Head of the Department of Surgery, Aichi Medical College and Hospital, Dhaka, Bangladesh
[2]Assistant Professor, Department of Surgery, East-West Medical College & Hospital, Turag, Dhaka, Bangladesh
[3]Assistant Professor, Department of Anesthesia, Aichi Medical College and Hospital, Dhaka, Bangladesh
[4]Assistant Professor, Department of Surgery, Aichi Medical College and Hospital, Dhaka, Bangladesh

DOI: 10.36347/sjams.2023.v11i02.014 | **Received:** 10.09.2022 | **Accepted:** 18.10.2022 | **Published:** 14.02.2023

***Corresponding author:** A.K.M. Ahsan Ullah
Associate Professor & Head of the Department of Surgery, Aichi Medical College and Hospital, Dhaka, Bangladesh

Abstract **Case Report**

Cholecystectomy is now-a-days done mostly by laparoscopy rather than open procedure. Post- cholecystectomy complications are not uncommon but somewhat it seems post laparoscopic cholecystectomy complications are not fewer in comparison to open. Among various complications, post-cholecystectomy clip migration is one of the rare ones. It can happen anytime but mostly occurring around 2 years of operation. Clinical presentation varies, as described in literatures but mostly presents with choledocholithiasis. Here we present such a case in a 25-year-old lady who was a bit challenging due to unusual presentation and long course of illness.

Keywords: Post-cholecystectomy complication, post-cholecystectomy clip migration, clip migration into the CBD, metallic clip in CBD.

INTRODUCITON

Laparoscopic cholecystectomy is considered as the 'gold standard' treatment for gallstone disease. It has numerous advantages but among them less post-operative pain and shorter hospital stay with earlier return to work and minimal scan as aided its great popularity over open procedure [1]. Despite its benefits, laparoscopic cholecystectomy is associated with a lot of complications, even when done by an experienced surgeon. Commonest of all are common bile duct (CBD) injuries. Others include severe hemorrhage form Gallbladder fossa or vessels injury, injury to liver or duodenum [2]. Laparoscopic post site complications like bleeding form the port site, port site infection and hernia are not uncommon. Post-cholecystectomy clip migration is a rare complication. We came across such a case recently in a young lady in March 2021.

CASE REPORT

In March 2021, a 25-year-old lady came to us in Aichi Medical College and Hospital, with repeated attacks of upper abdominal pain for last 6 months. Pain was mild to moderate in intensity, colicky, used to come after heavy meals and relieved after 3 to 4 hours spontaneously and/or with analgesics. There was no history of fever or jaundice with these attacks of pain. With these complaints she visited different gastroenterology departments for last 3 months. After initial investigation, she was diagnosed of choledocholithiasis and about a month ago, she underwent Endoscopic Retrograde Cholangio-Pancreatography (ERCP) in a private hospital for two times, but stone extraction was failed. Rather she developed cholangitis after the second attempt which was treated conservatively.

After admission, we found her slightly malnourished but non-icteric. In the abdomen, there was mild tenderness in the right hypochondriac and epigastric region.

During detailing her previous history and documents, we found that she underwent laparoscopic cholecystectomy in February 2019 in a private hospital in Sylhet for chronic calculus cholecystitis. She presented at that time with repeated upper abdominal pain with radiation towards the back of her right lower chest for several months.Her preoperative investigations revealed normal findings except INR 1.3 and few bright echogenic structures casting acoustic shadows in the gallbladder in ultrasonography (USG) of abdomen.

Operation notes revealed of no difficulty during the procedure and use of plastic and metallic clips to ligate the cystic duct and cystic artery. A drain in the Morrison's pouch was place after completion of the procedure. Her post-operative period was uneventful and was discharged to home on second post-operative day.

After 2 weeks of discharge, she visited the emergency in the same hospital with severe pain in her upper abdomen for 12 hours. Per abdominal examination revealed only severe tenderness in the epigastric region. She was shifted to Gastroenterology department for further management. Complete blood count (CBC) showed hemoglobin 7.6 gm/dl, total count of WBC 12,000/cumm of blood with neutrophil 80% and normal platelet count. Serum bilirubin was 0.4 mg/dl, SGPT 515 U/L, serum Alkaline Phosphatase (ALP) 102 U/L, INR 1.64, serum albumin 3.6 gm/dl. Serum amylase was 149 U/L and serum Lipase 98 U/L. Peripheral blood film showed severe combined deficiency anemia with neutrophilia. USG of abdomen revealed enlarged liver with inhomogeneous parenchymal echogenicity in the right lobe and one hypoechoic mass (4.4 cm X 3.7 cm) in the right lobe. Alpha-Feto Protein (AFP) level was within normal limits. HBsAg and Anti HCV were negative. She was diagnosed with 'non B non C' Chronic liver disease and was treated conservatively along with blood transfusion. She was discharged on advice after 7 days.

About 3 weeks later she again visited the emergency with severe upper abdominal pain and weakness; this time her Hb% was 8.8 gm/dl, WBC 10,500/cumm of blood. Serum bilirubin was 1.2 gm/dl, SGPT 110 U/L, ALP 109 U/L.Serum amylase and lipase within normal limits. An upper GI endoscopy was performed which came out normal. A contrast CT scan of upper abdomen was done which revealed a large hypodense area (18.8 cm x 12.7 cm x 6.2 cm) in the subcapsular region of right lobe causing compression on adjacent hepatic parenchyma, no remarkable enhancement after IV contrast– suggesting of hematoma. Also, a rounded mixed density area (3.7cm x 3.8 cm x 3.4 cm) in the porta hepatic which showed irregular enhancement after IV contrast – suggestive of vascular lesion. MRCP showed hemorrhagic collection in the gallbladder fossa (3.8 cm x 3.5 cm x 3.1 cm) with a large, encysted collection (18.1 cm x 16 cm x 6.6 cm) at right lateral sub-phrenic region and mild hepatomegaly. Common Bile Duct (CBD) was normal. She was treated conservatively in the department of gastroenterology and was referred to hepatobiliary and pancreatic surgery department in Bangabandhu Sheikh Mujib Medical University (BSMMU).

She was diagnosed with subcapsular hematoma of liver in BSMMU. Since then, she was under follow-up of hepatobiliary and pancreatic surgery department. An USG of abdomen done in May 2019 showed inhomogeneous hypoechoic area (7.8 cm x 7.5 cm) in right lobe of liver with mild fluid collection in the gallbladder fossa. Another USG of abdomen done in September 2019 showed further reduction (5.5 cm x 5.2 cm) in the hematoma in right lobe of liver without any collection in the gallbladder fossa. USG of abdomen in December 2019 revealed no lesion in the liver. After admission in March 2021 in Aichi Medical College and Hospital, we investigated her thoroughly. Her CBC was within normal limits. So were her liver function tests, serum amylase and lipase. CA 19-9 and AFP were also normal. USG of abdomen revealed a hypoechoic lesion (4.4 cm x 3.6 cm) at the anterior inferior aspect of right lobe of liver with a hyperechoic structure in the distal CBD – suggestive of stone. CBD diameter was 1.1 cm. An MRCP was done which revealed anelongated signal void area in the distal CBD with a faint 'T' shaped impression. CBD was 1.3 cm in diameter and no dilatation on intrahepatic channels (Figure 1).

Figure 1: MRCP: signal void area in the distal CBD in a 'T' shape manner

CT scan of abdomen revealed a hyperdense structure at the lower CBD in non-contrast image (Figure 2) – suggestive of stone.

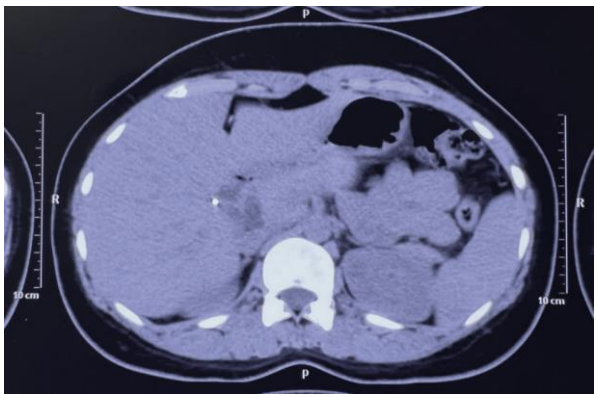

Figure 2: non-contrast CT scan of abdomen: hyperdense structure at the distal CBD

A hypodense lesion of 4.5 cm x 4.1 cm in the right antero-lateral area of right lobe of liver, no enhancement seen after IV contrast – suggesting simple cyst (Figure 3).

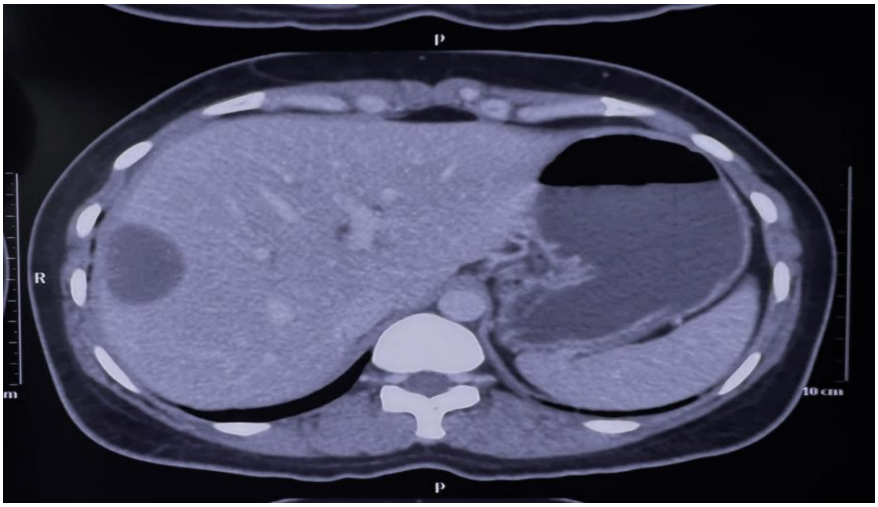

Figure 3: Contrast CT scan of abdomen: hypodense lesion in the right lobe of liver

After adequate preparation and counselling, we opted for laparotomy. We found mild adhesion in the right subhepatic space between the omentum and liver. CBD was mildly dilated (1.5 cm). After Choledochotomy, we retrieved two metallic clips from the distal CBD. There were few concretions around the clips and sludge in the distal CBD, but no stones were found. Patency of proximal biliary tree and distal biliary channel up to the duodenum was ensured with Normal saline irrigation and dilators. Bile duct was repaired with polyglactin 3-0 over 4Fr T-tube. Liver cyst was not disturbed. Her post-operative recovery was uneventful and was discharged on 7th post-operative day. Her T-tube was removed after 4 weeks. We followed her up 2 months after the T-tube removal and she was doing fine.

DISSCUSION

After introduction of laparoscopic technique, it has come a long way with continuous research and development of new instruments, discovering new techniques and safety protocols. Laparoscopic cholecystectomy (LC) is the mainstay of treatment for symptomatic gallstone disease [2, 3]. So this procedure has been the eye of the surgeons as well as the instrument manufacturing and developing industries. Complications of LC were reported higher than the open cholecystectomy in the early days [1, 4, 5]. Due to the recent advancement in this field and development of safety protocols, number of complications is coming down.

Post cholecystectomy complications like common bile duct injury and stricture, injury to the gallbladder fossa and bleeding, duodenal or jejunal perforations have been reported [6, 7]. Metallic clips are commonly used in laparoscopic cholecystectomy. These clips can migrate into the CBD or duodenum and cause stone formation, cholangitis, pancreatitis, surgical jaundice and many more [8]. In 1978, the first case of post-cholecystectomy clip migration was reported [9].

Clinical presentation varies from asymptomatic to abdominal pain, jaundice, fever, pruritus, surgical jaundice, cholangitis, pancreatitis, sometimes biliary colic [10]. Most of the cases present with typical features of choledocholithiasis [10]. In our case we found that she was having recurrent colicky upper abdominal pain for 6 months.

From study, it is predicted that post-cholecystectomy clip migration is more common women and older age group [4]. Though we had a female case; she was of younger age.

The pathogenesis of such clip migration to the CBD is not known. Various foreign body migrations into CBD has been reported like seed, vegetable, toothpick, bullet, shrapnel from blast injury, gauze, fragments of drain tubes [11]. Clip migration process is likely to be same as those. Many factors are considered as contributory such as bile duct injury due to inaccurate clip placement, local suppuration, bile leakage and biloma formation, local infection or inflammation at and near the CBD [11]. Our case had been suffering from gallbladder fossa hematoma/suppuration for a long period of time which may have contributed to the clip migration.

Imaging investigations like CT scan and MRCP can suggest of clip migration but being familiar with such cases can be of greater help. In our case, both the imaging modalities suggested of CBD stone, possibly due to the rarity and unfamiliarity of such cases.

Migration of clip into CBD is mostly associated with stone formation and then escalading the presentation. In our case there were only few concretions around those clips with only sludge formation, suggesting the early presentation.

Migrated clips or smaller stones can easily be extracted by Endoscopic Retrograde Cholangiopancreatography (ERCP) after sphincterotomy [12]. If larger stones are formed choledocholithotomy is preferable. In our case, ERCP was attempted twice but extraction was not possible. We performed choledochotomy and retrieved the clips successfully.

CONCLUSION

Post cholecystectomy clip migration is a rare entity and can create a diagnostic dilemma in the early stage. Better Imaging techniques can help in early diagnosis. ERCP is a good option for retrieval of these migrated clips from the CBD. But familiarity with such cases may help in early diagnosis and appropriate treatment with successful outcomes.

ACKNOWLEDGEMENTS

We acknowledge our respected patient and his relatives who consented to write and publish this case report and provide us with necessary information.

REFERRENCES

1. Williams, L. F. Jr., Chapman, W. C., Bonau, R. A., McGee, E. C. Jr., Boyd, R. W., & Jacobs, J. K. (1993). Comparison of laparoscopic chole-cystectomy with open cholecystectomy in a single center. Am J Surg, 165, 459-65.
2. Lee, V. S., Chari, R. S., Cucchiaro, G., & Meyers, W. C. (1993). Complications of laparoscopic cholecystectomy. *Am J Surg*, 165, 527–32.
3. Ellison, E. C., & Carey, L. C. (2001). Cholecystectomy, cholecystostomy, and intraoperative evaluation of the biliary tree. In Baker JR, Fishcer JE, eds. Mastery of Surgery. *4th ed. Philadelphia: Lippincott Williams & Wilkins.*
4. Reis, L. D. (2000). Surgical clips incorporated into a duodenal ulcer: a rare complication after elective laparoscopic cholecystectomy. *Endoscopy*, 32, S3.
5. Yao, C. C., Wong, H. H., Chen, C. C., Wang, C. C., Yang, C. C., & Lin, C. S. (2001). Migration of endoclip into duodenum. A rare complication after laparoscopic cholecystectomy. *Surg Endosc*, 15, 217.
6. Brutvan, F. M., Kampschroer, B. H., & Parker, H. W. (1982). Vessel clip as a nidus for formation of common bile duct stone. *Gastrointest Endosc*, 28, 222–3.
7. Margolis, J. (1986). Recurrent choledocholithiasis due to hemostatic clip. *Arch Surg*, 121, 1213.
8. Chong, V. H., & Chong, C. F. (2010). Biliary complications secondary to post-cholecystectomy clip migration: a review of 69 cases. *J Gastrointest Surg*, 14, 688–696. PMID: 20049550.
9. Onghena, T., Vereecken, L., Van den Dwey, K., & Van Loon, C. (1992). Common bile duct foreign body; an unusual case. *Surg Laparosc Endosc*, 2, 8–10.
10. Ghavidel, A. (2015). Migration of clips after laparoscopic cholecystectomy; a case report and literature review. *Middle East Journal of Digestive Diseases*, 7(1), 45-49.
11. Farr, C. M., Larson, C., Gladen, H. E., Witherspoon, L., Lesperance, R., & Moseley, D. (1989). An iatrogenic gallstone with pancreatitis. *J Clin Gastroenterol*, 11, 596–7.
12. Martinez, J., Combs, W., & Brady, P. G. (1995). Surgical clips as a nidus for biliary stone formation: diagnosis and therapy. *Am J Gastroenterol*, 90, 1521–4.