



Case Report

Surgical Clip Migration Following Laproscopic Cholecystectomy as a Cause of CBD Stone

Waseem Raja^{*}, Sunil K. Mathai, Benoy Sebastian, Ashfaq Ahmad, Shiraz Salim Khan, Mary George

Department of Gastroenterology, Medical Trust Hospital, Kochi, India

Email address:

waseemgastro2015@gmail.com (W. Raja)

^{*}Corresponding author

To cite this article:

Waseem Raja, Sunil K. Mathai, Benoy Sebastian, Ashfaq Ahmad, Shiraz Salim Khan, Mary George. Surgical Clip Migration Following Laproscopic Cholecystectomy as a cause of CBD Stone. *International Journal of Gastroenterology*. Vol. 1, No. 1, 2017, pp. 9-11.

doi: 10.11648/j.ijg.20170101.16

Received: January 3, 2017; **Accepted:** May 17, 2017; **Published:** July 10, 2017

Abstract: Foreign bodies in the common bile duct (CBD) are either iatrogenic or accidental. Increasing number of biliary interventional procedures both surgical and endoscopic are responsible for iatrogenic foreign bodies in the CBD. Here we report an unusual case of 59 year old female who presented with upper abdominal pain, jaundice and altered LFT with significant past history of laproscopic cholecystectomy. Endoscopic ultrasound revealed a linear hyper-echoic lesion with acoustic shadowing in the distal CBD, suggestive of a stone with central hyperechoic nidus, which was later confirmed by ERCP and removed by Dormia basket. The stone was crushed and two surgical clips were isolated from the stone.

Keywords: Laproscopic Cholecystectomy, Surgical Clips, Complication, Clip Migrations, ERCP

1. Introduction

Despite increasing number of cases of laparoscopic cholecystectomy, choledocholithiasis due to surgical clip migration into the common bile duct (CBD) is a rare phenomenon. We report a case that underwent laparoscopic cholecystectomy and presented with choledocholithiasis due to postsurgical clip migration.

Case History: - A 59 year old female known Diabetic on oral hypoglycemic medications, presented with upper abdominal pain, jaundice, yellow discoloration of urine since three days, with significant past history of laproscopic cholecystectomy twenty years ago in 1996. Baseline investigations showed altered LFT (Total bilirubin 3.5, Direct Bilirubin 2.3, SGOT 208, SGPT 206, ALP 345 U/L, Total Protein 7.3, Albumin 3.4, INR 0.86). Complete blood counts,

Serum Amylase & Lipase within normal limits, USG abdomen post cholecystectomy status only, Endoscopic ultrasound (EUS) revealed a linear lesions with post acoustic shadowing in distal CBD suggestive of a stone with central hyperechoic nidus (Fig 1),. Endoscopic retrograde cholangio-pancreatography (ERCP) showed dilated bile duct, no bile leakage from the cystic duct, and the metallic clips were found embedded in a stone located in the distal part of the common bile duct (figure 2). The stone was removed using a Dormia basket following an endoscopic sphincterotomy (Fig. 3). Later the stone was crushed and two surgical clips were isolated from the stone (Fig. 4). At three months follow-up, the patient was asymptomatic with absolutely normal Liver function test.



Figures 1. Endoscopic ultrasound (EUS) image showing hyper-echoic linear strips casting acoustic shadow in distal CBD.



Figure 4. Metallic surgical clips specimen.

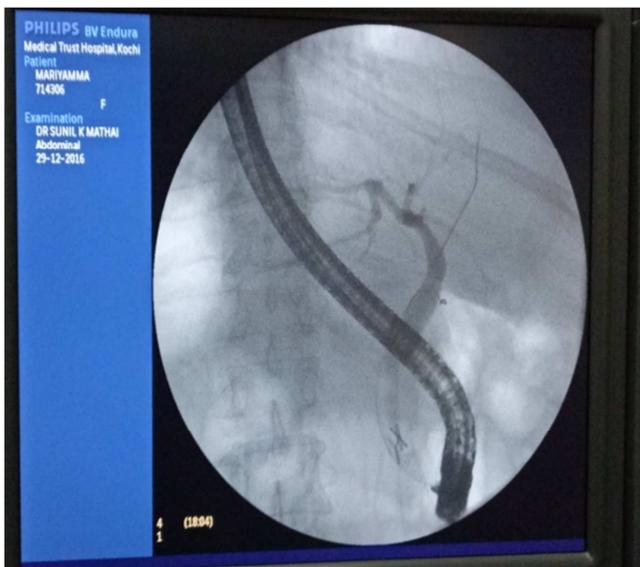


Figure 2. Cholangiogram showing metallic surgical clips in distal CBD.



Figure 3. Cholangiogram showing retrieval of metallic clips from distal CBD by Dormia basket.

2. Discussion

Although a rare complication of laparoscopic cholecystectomy, surgical clip migration is a well documented event. Most of the published reports were originated from the three major continents (North America, Europe, and Asia), reflecting the large number of cholecystectomies performed in these regions. The number of reported postcholecystectomy clip migration (PCCM) in the literature peaked in the period of 1994–1998 and this correlated with the introduction of laproscopic cholecystectomy (LC). This also correlated with higher complication rates of LC reported during the initial period and was attributed to the learning curve for this procedure. [1] As LC became the standard management of gallstones disease coupled with better training programs, complication rates of LC declined. This probably accounted for the subsequent decline in the number of cases reported. There were only 13 cases reported in 12 publications in the last 5-year period (2004–2008). [2-5] with several case reports published. Choledocholithiasis due to surgical clip migration into the CBD has been recognized since 1979 and was first reported in 1992 after laparoscopic procedure. [6, 7] Despite the increasing number of cases of laparoscopic cholecystectomy, extensive literature review revealed less than 100 cases of post-cholecystectomy surgical clip migration.

The mechanism by which surgical clip migration takes place is unclear but is thought to be partly affected by technical factors such as correct placement and use of minimal numbers of clips [8]. A proposed mechanism of clip migration by Kitamura *et al.* [9] initially involves the compression of the clipped cystic duct by the liver. The cystic duct and clips then become inverted into the lumen of the common bile duct. Over time, this structure becomes necrotic, and the clips fall away into the common bile duct where they can then act as a nidus for gallstone formation. The number of clips used during the initial surgery is also an important factor. The use of more than four clips had been

shown to be associated with clip migrations [10]. However, other factors that have been incriminated including local bile duct-associated factors such as short cystic duct (CD) stump after cholecystectomy, CD ischemic necrosis and infective complications resulting in necrosis and weakening of the CD stump.

The time scale for this pathophysiological process can vary. Indeed, the time period between cholecystectomy and development of complications has been reported by Chong et al. [11] to be anything from 11 days to 20 years with a median of 26 months. Our patient presented 20 years after laparoscopic cholecystectomy, which to my knowledge is the first case reported in the searched literature. The most common diagnoses at presentation are obstructive jaundice (37.7%), cholangitis (27.5%), biliary colic (18.8%) and acute pancreatitis (8.7%) [11]. The majority of cases are treated successfully with ERCP (77%) or surgery (20.2%) [11].

In order to avoid Post-cholecystectomy clip migrations, all the above discussed factors need to be considered and avoided. Ideally, only two clips should be left behind after cholecystectomy. Others have advocated to the use of absorbable clips. However, PCCM have also been reported where absorbable clips had been used. [12]. Clipless cholecystectomy using ultrasound activated harmonic scalpel may be an option. It has been shown to be effective, efficient, and a safe alternative for dissection and hemostasis. [13] In addition, harmonic scalpel has also been shown to be associated with fewer complications (mild or major bile leaks and gallbladder perforation) and shorter operation time. Its use in acute cholecystitis has also shown to be safe. [14]

3. Conclusion

Although a rare complication of laparoscopic cholecystectomy, surgical clip migration is a well-documented event with several case reports published. Our case shows that in case of recurrence of symptoms following cholecystectomy, clip migration should be considered in one of the differential diagnosis.

Conflict of Interest

The author declares no conflict of interest related to this work.

References

- [1] Ghazanfari K, Gollapudi PR, Konicek FJ, Olivera A Jr, Madayag M, Warner J. Surgical clip as a nidus for common bile duct stone formation and successful endoscopic therapy. *Gastrointest Endosc* 1992; 38: 611–3.
- [2] Raoul JL, Bretagne JF, Siproudhis L, Heresbach D, Campion JP, Gosselin M. Cystic duct clip migration into the common bile duct: a complication of laparoscopic cholecystectomy treated by endoscopic biliary sphincterotomy. *Gastrointest Endosc* 1992; 38: 608–11.
- [3] Dhalla SS, Duncan AW. Endoscopic removal of a common-bile-duct stone associated with a Ligaclip. *Can J Surg* 1992; 35: 3445.
- [4] Arnaud JP, Bergamaschi R. Migration and slipping of metal clips after celioscopic cholecystectomy. *Surg Laparosc Endosc* 1993; 3: 487–9.
- [5] Mansvelt B, Harb J, Farkas B, Mourou M, Huguet C. Clip-stone” filiation within the biliary tract. *HPB Surg* 1993; 6: 185–8.
- [6] Walker WE, Avant GR, Reynolds VH. Cholangitis with a silverlining. *Arch Surg* 1979; 114: 214–5.
- [7] Onghena T, Vereecken L, Van den Dwey K, et al. Commonbile duct foreign body: An unusual case. *Surg Laparosc Endosc* 1992; 2: 8–10.
- [8] Cetta F, Baldi C, Lombardo F, Monti L, Stefani P, Nuzzo G. Migration of metallic clips used during laparoscopic cholecystectomy and formation of gallstones around them: surgical implications from a prospective study. *JL aparosc Adv* 1997; 7: 37–46.
- [9] Kitamura K, Yamaguchi T, Nakatani H, Ichikawa D, Shimotsuma M, Yamane T, et al. Why do cystic duct clips migrate into the common bile duct? *Lancet* 1995; 346: 965–6.
- [10] Brutvan FM, Kampschroer BH, Parker HW. Vessel clip as a nidus for formation of common bile duct stone. *Gastrointest Endosc* 1982; 28: 222–3.
- [11] Chong VH, Chong CF. Biliary complications secondary to postcholecystectomy clip migration: a review of 69 cases. *J Gastrointest Surg* 2010; 14: 688–96.
- [12] Rizzo J, Tripodi J, Gold B, Opper F. Surgical clips as a nidus for stone formation in the common bile duct. *J Clin Gastroenterol* 1995; 21: 169–71.
- [13] Davis M, Hart B, Kleinman R. Obstructive jaundice from open vessel clip. *Gastrointest Radiol* 1988; 13: 259–60.
- [14] Martinez J, Combs W, Brady PG. Surgical clips as a nidus for biliary stone formation: diagnosis and therapy. *Am Gastroenterol* 1995; 90: 1521–4.