Case report

Giant choledocholithiasis: a case report

ABSTRACT

Introduction

Large common bile duct stones often pose therapeutic challenges and frequently require surgical exploration. Though endoscopic techniques are the preferred modality of management, they are often unsuccessful in retrieval of larger stones. Here we describe a case report of a giant common bile duct stone and its subsequent management.

Case report

A 75-year-old male presented with right upper quadrant abdominal pain, and on evaluation he was diagnosed to have a giant common bile duct calculous. After failed endoscopic intervention, the patient subsequently underwent surgical exploration where the stone was extracted and Roux-en-Y hepaticojejunostomy was done.

Discussion

Cholelithiasis and choledocholithiasis are clinical entities commonly referred to gastroenterologists for subsequent management, either endoscopic or surgical intervention. MRCP is the most valuable tool and ERCP is considered the standard of care for choledocholithiasis at present. However, the probability of complete stone clarence is low for large and difficult CBD stones.

Conclusion

Surgical exploration plays an important role in the management of common bile duct stones, especially in larger stones. Although surgery is now limited to patients with endoscopic failure, surgery provides better evacuation rates and decreased morbidity for large common bile duct stones.

Keywords: Large common bile duct stone, Choledocholithiasis, Giant, Gallstones

INTRODUCTION

Cholelithiasis and choledocholithiasis are of common occurrence in surgical practice. Currently, Endoscopic retrograde cholangiopancreatography (ERCP) is the preferred and initial modality of treatment for common bile duct (CBD) stones. Choledocholithiasis may be treated as a two-step procedure involving an initial endoscopic CBD stone extraction followed by laparoscopic cholecystectomy, or a single-step procedure which includes laparoscopic CBD exploration along with cholecystectomy. Other indications for surgery include failed ERCP after multiple attempts, large CBD stones, and anatomical factors precluding endoscopic intervention.

CASE REPORT

A 75-year-old man presented with pain in the right upper abdomen for 1 week. He denies any history of fever, yellowish discoloration of eyes, loss of appetite or weight. On examination, mild tenderness was noted in the right hypochondrium. His blood work up was normal except for a mild rise in Alkaline phosphatase of 152 IU/L. Ultrasound of the abdomen revealed dilated common bile duct (CBD) without gallstones or intrahepatic biliary radicle dilatation. Abdominal CT showed a large common bile duct stone of size 8x4cm along with dilatation of CBD and few calcifications in the distal pancreas. (Figure A).

Figure A: Abdominal CT Scan Image

Initial stone extraction was attempted with ERCP but was unsuccessful owing to the size of the stone. After multiple attempts, the patient was planned for open surgical exploration. Intraoperatively, there was gross dilatation of the CBD containing a giant choledocholithiasis of size 8.5 x 4cm. The stone was extracted, and a CBD excision had to be done as it was unhealthy, followed by a Roux-en-Y hepaticojejunostomy along with cholecystectomy (Figure B). Postoperative events were uneventful, and the patient was discharged on postoperative day 6. The patient is on regular surveillance, and the patient is symptom free at six months follow-up.

Figure B: Giant CBD stone specimen.

DISCUSSION

Choledocholithiasis may occur in up to 20% of patients with gallstones, and in around 50% of these patients, they are asymptomatic [1]. In those patients who undergo surgery for cholelithiasis, CBD stones are found in 3-

10% of the patients [2]. Abdominal ultrasound and magnetic resonance cholangiopancreatography (MRCP) are the two commonly used diagnostic modalities for CBD stones [3].Dropped gallbladder caliculi especially in unusual locations often cause diagnostic difficulties[4]. MRCP is a valuable tool to identify numerous hepatobiliary anomalies such as biliary and pancreatic anomalies, Anomalous pancreaticobiliary junction, differentiating stones from malignancy and post-surgical complications[4]. MRCP is considered the gold standard for diagnosing choledocholithiasis, but may miss smaller stones of size less than 5mm [4].Endoscopic ultrasound is a valuable tool for detecting gallbladder microlithiasis and acute pancreatitis of unknown origin [5].

There is no consensus on the definition of a large CBD stone. However, CBD stone of more than 2 cm is considered a large CBD stone[6]. The term 'difficult stone' has been used for large stones, that include stones which are multiple, impacted, or of intrahepatic locations. The risk factors for difficult stones include those that have a high chance of endoscopic failure, which include distal biliary stricture, stone diameter of more than 1.5 cm, multiple stones more thanthree, and presence of a periampullary diverticula[7].

The majority of CBD stones have been successfully removed by endoscopic techniques, such sphincterotomy, using balloon trawling or dormia basket[8]. However, the extraction rates of larger CBD stones (>1cm in diameter) has been low [9], and these patients are often referred for surgical exploration. Though the complete retrieval of large CBD stones has been low with ERCP, few authors have described successful retrieval of giant caliculi using endoscopic techniques such as lithotripsy [10–12].In addition, neglected biliary stents act as a nidus for stone formation[15], sometimes can form large and multiple CBD caliculi requiring endoscopic or surgical intervention [16,17].

With the advent of technological innovations in endoscopic intervention, the role of surgery has reduced considerably. Nevertheless, laparoscopic or open surgery plays an important role in dealing with difficult CBD stones and multiple studies have shown laparoscopic CBD extraction resulted in lower morbidity and complete evacuation of CBD stones[18–20].

CONCLUSION

Choledocholithiasis is a common entity in surgical practice that can occasionally enlarge to form giant stones. Though the endoscopic procedures are becoming the standard of care, surgical exploration provides complete clearance, especially for larger stones.

CONSENT

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) prior to undergoing treatment.

ETHICAL APPROVAL

Not applicable

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

REFERENCES

1. Costi R. Diagnosis and management of choledocholithiasis in the golden age of imaging, endoscopy and laparoscopy. WJG. 2014;20(37):13382.

2. Riciardi R, Islam S, Canete JJ, Arcand PL, Stoker ME. Effectiveness and long–term results of laparoscopic common bile duct exploration. Surg Endosc. 2003 Jan;17(1):19–22.
3. Hungness ES, Soper NJ. Management of Common Bile Duct Stones. Journal of Gastrointestinal Surgery. 2006 Apr;10(4):612–9.
4. Konstantinoff KS, Ludwig DR, Sharbidre K, Arif-Tiwari H, Itani M. Gallbladder and biliary pathology: lessons learned from multidisciplinary conference. Abdom Radiol (NY). 2024 Sep 11;
5. Murphy A, Mudgal P. Magnetic resonance cholangiopancreatography (MRCP). In: Radiopaedia.org [Internet]. Radiopaedia.org; 2014 [cited 2024 Dec 9]. Available from: http://radiopaedia.org/articles/32557
6. Varghese JC, Liddell RP, Farrell MA, Murray FE, Osborne DH, Lee MJ. Diagnostic Accuracy of Magnetic Resonance Cholangiopancreatography and Ultrasound Compared with Direct Cholangiography in the Detection of Choledocholithiasis. Clinical Radiology. 2000 Jan;55(1):25–35.
7. Ardengh JC, Malheiros CA, Rahal F, Pereira V, Ganc AJ. Microlithiasis of the gallbladder: role of endoscopic ultrasonography in patients with idiopathic acute pancreatitis. Rev Assoc Med Bras (1992). 2010;56(1):27–31.
8. Ferrari A, Recchia S, Coppola F, Perotto C, Campra D, Gandini G, et al. [Endoscopic therapy of giant choledochal calculosis]. Minerva Gastroenterol Dietol. 1991;37(3):157–61.
9. Carr-Locke DL. Difficult bile-duct stones: cut, dilate, or both? Gastrointestinal Endoscopy. 2008 Jun;67(7):1053–5.
10. McHenry L, Lehman G. Difficult bile duct stones. Curr Treat Options Gastro. 2006 Apr;9(2):123–32.
11. Bergman JJ, Rauws EA, Fockens P, Van Berkel AM, Bossuyt PM, Tijssen JG, et al. Randomised trial of endoscopic balloon dilation versus endoscopic sphincterotomy for removal of bileduct stones. The Lancet. 1997 Apr;349(9059):1124–9.
12. Lee SI, Lim BH, Heo WG, Kim YJ, Kim TH. Successful Removal of a Large Common Bile Duct Stone by Using Direct Peroral Cholangioscopy and Laser Lithotripsy in a Patient with Severe Kyphosis. Clin Endosc. 2016 Jul;49(4):395–8.
13. Heo J, Jung MK. Removal of a Large, Intractable Common Bile Duct Stone by Direct Peroral Cholangioscopy Using Upper Gastrointestinal Endoscopy and Polypectomy Snare. Korean J Gastroenterol. 2020 Oct 25;76(4):215–9.
14. Yang JS, Park CK, Rim KS. Successful Removal of A Large Stone from the Common Bile Duct by Endoscopic Papillotomy and Lithotripsy. Korean J Intern Med. 1987 Jul 31;2(2):282–5.
15. Barai V, Hedawoo J, Changole S. Forgotten CBD stent (102 months) with stone-stent complex: A case report. International Journal of Surgery Case Reports. 2017;30:162–4.
16. Anandh Sm, Raju K, Kumar S, Harikrishnan A, Palanigoundar R, Babu G. High volume stentolith in a case of neglected CBD stent: A case report. SAJCRR. 2024 Mar 28;11(1):25–7.
17. Kumar S, Chandra A. Giant stentolith: A rare complication of long-dwelling biliary endoprosthesis. Arab Journal of Gastroenterology. 2020 Jun;21(2):132–4.
18. Wang X, Dai C, Jiang Z, Zhao L, Wang M, Ma L, et al. Endoscopic retrograde cholangiopancreatography versus laparoscopic exploration for common bile duct stones in post-cholecystectomy patients: a retrospective study. Oncotarget. 2017 Oct 10;8(47):82114–22.
19. De Silva HM, Howard T, Bird D, Hodgson R. Outcomes following common bile duct exploration versus endoscopic stone extraction before, during and after laparoscopic cholecystectomy for patients with common bile duct stones. HPB. 2022 Dec;24(12):2125–33.
20. Dasari BVM, Tan CJ, Gurusamy KS, Martin DJ, Kirk G, McKie L, et al. Surgical versus endoscopic treatment of bile duct stones. Cochrane Database Syst Rev. 2013 Dec 12;2013(12):CD003327.