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Large Element de novo Choledocholithiasis: A case report

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Choledocholithiasis is the presence of stones in the main bile duct, and it is defined as a previous cholecystectomy, lack of signs of bile duct obstruction for two years, presence of an ovoid, soft, or friable calculus, and no long remnant of the cystic duct. The average time for the appearance of primary cholelithiasis after cholecystectomy is between 8 and 12 years. The case is a female 73 years old, with a history of laparoscopic cholecystectomy ten years ago, and is diagnosed with de novo choledocholithiasis. The medical staff conducted two Endoscopic Retrograde CholangioPancreatographies (ERCP). The results of the first one were unresolved choledocholithiasis, endoscopic sphincterotomy, intra and extrahepatic bile duct dilation, and plastic biliary prosthesis placement. In the second one, the results showed an ampulla of Vater with endoprosthesis in situ, which was removed easily. Besides, it was tried to trap the stone with a basket, without success due to dimensions (>45 mm). A Tannenbaum-type biliary stent was placed to ensure biliary drainage. After, the patient was scheduled for a laparoscopic bile duct exploration, and dissection was performed during the surgical procedure until locating a dilated common bile duct of approximately 3 cm. The stone was removed with laparoscopic forceps. Choledochorrhaphy was performed, and a drain was placed.

Keywords Surgery; Choledocholithiasis *de novo*, cholecystectomy, Laparoscopic procedure.

Choledocholithiasis is defined by the presence of stones in the main bile duct. It is classified as primary (85%) or secondary, according to the etiology of the stone. The prevalence of choledocholithiasis in patients with lithiasic cholecystitis reported in the American Society for Gastrointestinal Endoscopy (ASGE) and European Society for Gastrointestinal Endoscopy (ESGE) guidelines is 8% to 18% [1,2]. In Mexico, the proportion is 5% to 10% [3].

Primary choledocholithiasis is defined by the criteria of Saharia et al. [4], which consists of previous cholecystectomy, absence of signs of bile duct obstruction for two years, presence of an ovoid, soft, or friable calculus, and no long remnant of the cystic duct. The average time for the appearance of primary cholelithiasis after cholecystectomy is between 8 and 12 years [5].

Within the classification of gallstones, there is a precise definition for stones that are difficult to manage with criteria such as diameter greater than 15 mm, stone impaction, and periampullary diverticulum, which influence the difficulty and therapeutic failure for the extraction

of stones in the common bile duct [6,7]. In 10% to 20% of cases, stone extraction is not achieved using conventional endoscopic techniques, and it requires instrumentation with different ones such as Litotripsy mechanical, extracorporeal, and electro-hydraulic [8].

Finally, if stone extraction is not achieved with the previously described techniques, there is a need for laparoscopic or open surgical exploration of the bile duct [9]. The absolute frequency of the need for surgical exploration of the bile duct in patients with giant choledocholithiasis is approximately 10% [1].

Presentation of the case

The case was a 73-year-old female with a history of important laparoscopic cholecystectomy ten years ago. She referred to having been approached in a health center by those who diagnosed choledocholithiasis de novo. It was referred to the endoscopy service of the General Hospital of León, and two Endoscopic Retrograde CholangioPancreatographies (ERCP) were performed in this unit.

1. ERCP with findings: unresolved choledocholithiasis, endoscopic sphincterotomy,

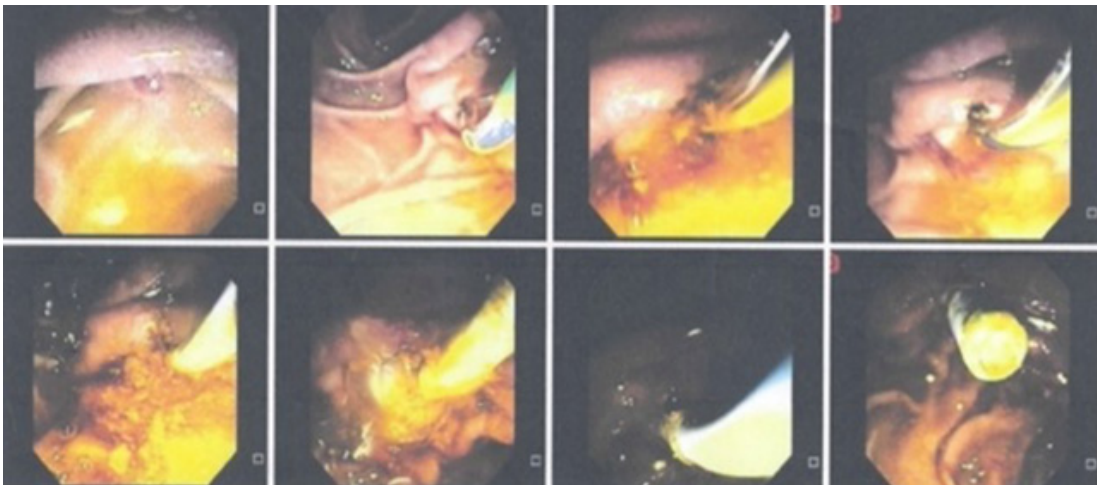

Fig. 1. First ERCP
Source: Medical records

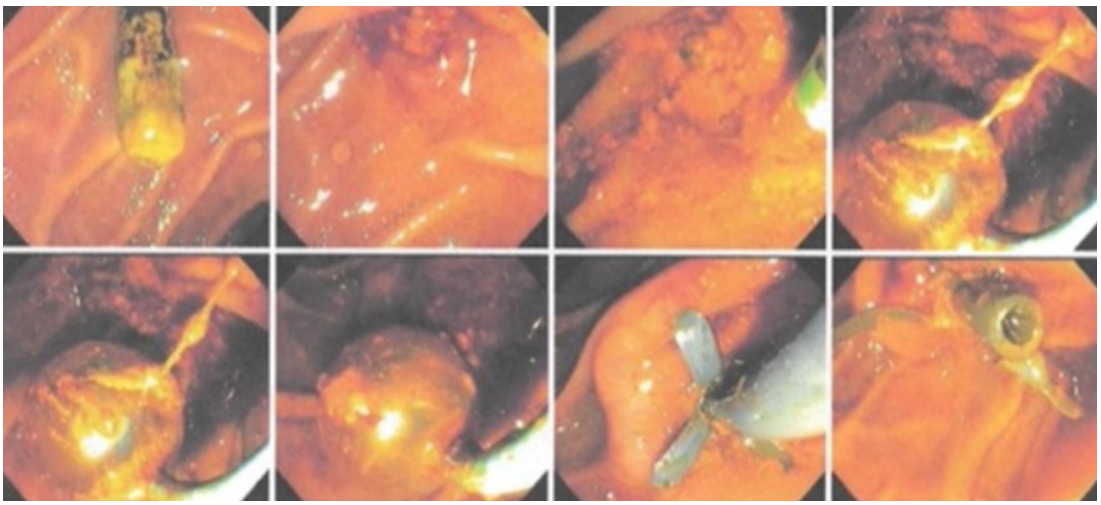

Fig. 2. Second ERCP
Source: Medical records

intrahepatic and extrahepatic bile duct dilation; placement of a plastic biliary prosthesis

2. ERCP with findings: ampulla of Vater with a stent in situ. It was removed without difficulty. An attempt was made to catch the stone with a basket without success due to dimensions (>45 mm). A Tannenbaum-type biliary stent was placed to ensure biliary drainage.

Subsequently, she went to the general surgery clinic, where the patient was diagnosed with a de novo choledocholithiasis of large elements. Therefore, she was sent to the third level unit for electrohydraulic intraductal lithotripsy without obtaining a satisfactory response for administrative reasons. The patient was scheduled for laparoscopic bile duct exploration.

During the surgical procedure, dissection was performed until a dilated common bile duct of approximately 3 cm was located.

A 4 cm longitudinal choledochotomy was performed, with abundant biliary debris coming out. Also, a 12 Fr Foley catheter was introduced, and an attempt was made to drag the stone without success.

A video-gastroscope was inserted through a 12-mm trocar. As choledochotomy was approached, a 30-mm stone was seen towards the distal common bile duct. The extraction with Dormi failed due to the size of the stone. An extractor balloon was inserted, disimpacted, and brought closer to the supraduodenal portion for subsequent laparoscopic extraction. Proximal and distal vacuity was verified.

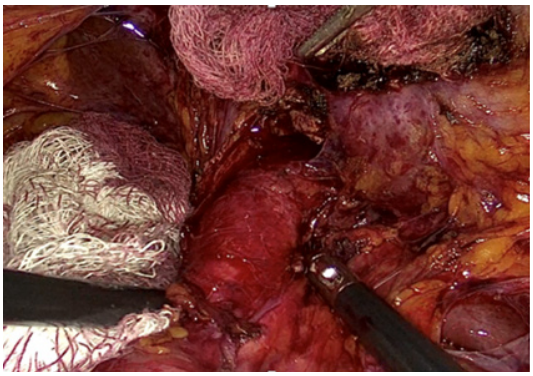

Fig. 3. Common bile duct
Source: Medical records

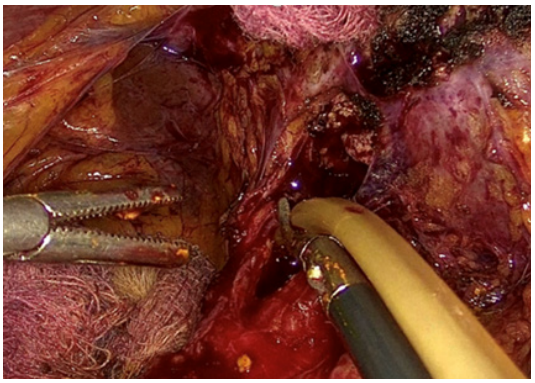

Fig. 4. Foley catheter in choledochotomy for stone removal
Source: Medical records

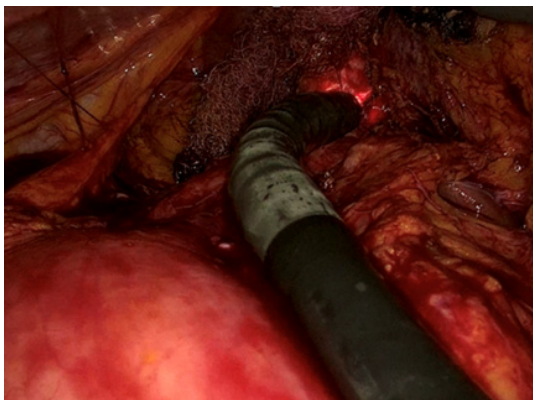

Fig. 5. Video-gastroscope in choledochotomy
Source: Medical records

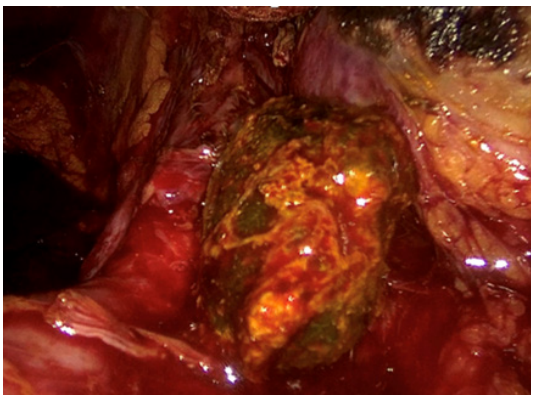

Fig. 6. Stone of large elements outside the common bile duct
Source: Medical records

Finally, the stone was removed with laparoscopic forceps; Choledochorrhaphy was performed, and a drain was placed.

Primary large-element choledocholithiasis is a therapeutic challenge for the general surgeon and endoscopist. The biliodigestive bypass should be reserved for select patients [10].

All the guidelines recommend that choledocholithiasis patient management should be adapted to the resources available in each institution 1. In this case, it was decided to perform laparoscopic bile duct exploration with the support of intraoperative choledochoscopy, obtaining the successful extraction of the stone in the common bile duct.

It is important to note that, during the surgical procedure, multiple attempts were made to extract the stone from the bile duct since its size prevented its easy handling for extraction. Finally, it was achieved with the support of the endoscopy service.

The surgeon's decision to perform laparoscopic bile duct exploration was crucial for managing this case since the stone extraction by ERCP failed on two previous occasions. Therefore, it was decided to perform a laparoscopic procedure.

CONCLUSION

It is established that endoscopic management should be the first guideline for its treatment without neglecting the possibility of surgical resolution. Laparoscopic management is a feasible option if there is experience and resources for its performance and choosing the surgical procedure having the greatest success described in the literature, currently with lower morbidity and mortality for the patient.

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Conflict of interest

All authors declare not to have conflict of interest.

Funding Source

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Ethics

The patient signed the consent form to publish her clinic images.

REFERENCES

1. ASGE Standards of Practice Committee, Buxbaum JL, Abbas Fehmi SM, Sultan S, Fishman DS, Qumseya BJ, et al. ASGE guideline on the role of endoscopy in the evaluation and management of choledocholithiasis. *Gastrointest Endosc*. 2019;89(6):1075-1105.e15. DOI: https://doi.org/10.1016/j.gie.2018.10.001
2. Andriulli A, Loperfido S, Napolitano G, Niro G, Valvano MR, Spirito F, et al. Incidence rates of post-ERCP complications: a systematic survey of prospective studies. *Am J Gastroenterol*. 2017;102(8):1781-8. DOI: https://doi.org/10.1111/j.1572-0241-2007.01279.x
3. Bolivar-Rodríguez MA, Pamanes-Lozano A, Corona-Sapien CF, Fierro-López R, Cázarez-Aguilar MA. Coledocolitiasis. Una revision. *Rev Med UAS*. 2017; 7(3): 138-154. DOI: http://dx.doi.org/10.28960/revmeduas.2007-8013.v7.n3.005
4. Manes G, Paspatis G, Aabakken L, Anderloni A, Arvanitakis M, Ah-Soune P et al. Endoscopic management of CBD stones. Endoscopy. 2019; 51: 472-491. DOI: https://doi.org/10.1055/a-0862-0346
5. Wilkins T, Agabin E, Varghese J, Talukder A. Gallbladder Dysfunction: Cholecystitis, Choledocholithiasis, Cholangitis, and Biliary Dyskinesia. *Prim Care*. 2017;44(4):575-597. DOI: https://doi.org/10.1016/j.pop.2017.07.002
6. Ramírez-Garcia J. Factores Relacionados con la Falla Terapeìutica en la Extraccioìn de Caìlculos Coledocianos por Pancreatocolangiografiìa Retroìgrada Endoscoìpica. Revista Peruana de Gastroenterologia. 2011; 31: 330 – 34. DOI: https://doi.org/10.47892/rgp.2011.314.361
7. Katanuma A, Maguchi H, Osanai M, Takahashi K. Endoscopic treatment of difficult common bile duct stones. *Digestive Endoscopy,* 2020; 22 (Supl.1): S90–S97. DOI: https://doi.org/10.1111/j.1443-1661.2010.00979.x
8. Park CH, Jung JH, Nam E, Hye Kim E, Gang Jim M, Hyun Kim J, et al. Comparative efficacy of various endoscopic techniques for the treatment of common bile duct stones: a network meta-analysis. *Gastrointest Endosc,* 2018;87:43-57. DOI: https://doi.org/10-1016/j.gie.2017.07.038
9. Sun SX, Kulaylat AN, Hollenbeak CS, Soybel DI. Cost-effective decisions in detecting silent common bile duct gallstones during

laparoscopic cholecystectomy. *Ann Surg,* 2016; 263:1164-72. DOI: https://doi.org/10.1097/SLA.0000000000001348

10. He H, Tan C, Wu J, Dai N, Hu W, Zhang Y, et al. Accuracy of ASGE high-risk criteria in evaluation of patients with suspected common bile duct stones. *Gastrointest Endosc,* 2017; 86:525-32. DOI: https://doi.org/10.1016/j.gie.2017.01.0