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Surgical Treatment of a Dormia Probe Embedded in the Choledochus, a Very Rare Complication: A Case Report

Diallo Mamadou[1*], Bahri Mohammed Oussama[1], Mohammed El Emin Taleb Maouloud[1], Khalid Ait Taleb[1], Ouadii Mouaqit[1]

[1]Department of Visceral Surgery Hassan II Hospital and University Centre in Fez, Sidi Mohamed Ben Abdallah University, Faculty of Medicine and Pharmacy, Morocco

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***Corresponding author:** Diallo Mamadou
Department of Visceral Surgery Hassan II Hospital and University Centre in Fez, Sidi Mohamed Ben Abdallah University, Faculty of Medicine and Pharmacy, Morocco

Abstract | **Case Report**

Conventional treatment of main bile duct (MBD) lithiasis consists of endoscopic sphincterotomy followed by balloon and/or Dormia loop extraction of the stone(s). Several risk factors are known to contribute to the failure of stone extraction from the main bile duct. Probably the most important factor is stone size greater than 15 mm, or when the diameter of the lower part of the VBP is less than that of the stone, where care must be taken not to impact the stone in the sphincter of Oddi or in the Dormia, so as not to compromise the subsequent extraction. Among the complications linked to the use of the Dormia probe, biliary wounds are a well-known problem for surgeons, but lesions specifically linked to the use of the probe are less well known and appear to be underestimated. We report a case in which the Dormia catheter remained embedded in the common bile duct around a calculus, which itself remained attached without the possibility of removing it after endoscopic exploration, in a 72-year-old patient with lithiasis angiocholitis. Angiocholitis, requiring surgical extraction by choledochotomy. The rarity of this phenomenon leads us to discuss the causes and surgical management.

Keywords: Conventional treatment, main bile duct, stone, lithiasis angiocholitis.

INTRODUCTION

Vesicular lithiasis is accompanied by lithiasis of the main bile duct (MBD) in 7-12% of patients. Its treatment has been the subject of professional practice guidelines [1]. Treatment should be endoscopic when patients have already undergone cholecystectomy, and surgical when a laparoscopic approach is possible. Indeed, in the case of choledochal calculi in patients indicated for cholecystectomy, the results of surgery are equivalent or better than endoscopic treatment in terms of morbidity, whereas endoscopic treatment is associated with a greater number of procedures to obtain clearance of the VBP. Surgical removal of choledocholiths is performed either by trans-cystic or choledochotomy. However, surgery may be less effective in the case of large or multiple stones. Stromberg *et al.*, showed that stone size (greater than 6 mm) and number (greater than 3) were significantly associated with failure to clear the bile duct laparoscopically in 20% of cases [2]. A very rare complication was the occurrence of the Dormia catheter becoming lodged in the common bile duct around a stone which itself remained fixed, with no possibility of removal after two successive attempts at endoscopic exploration. We report the case of a patient who was transferred to our department of visceral and digestive surgery for surgical management.

CLINICAL OBSERVATION

Patient aged 72; with no notable pathological antecedents and never operated on, who was transferred to our department of visceral and digestive surgery for management of a Dormia catheter that remained embedded in the choledochus around a calculus which itself remained attached without the possibility of removal after endoscopic exploration on two successive attempts over the last 48 hours following failed endoscopy using the Dormia loop.

According to the anamnestic elements, the initial examination revealed a calm patient in good general condition. Two (02) Dormia catheters were present, but had remained locked and externalized.

He was eupneic and hemodynamically and respiratory stable, with blood pressure at 13/8cmHg, heart rate at 100 beats per minute, room air saturation at 98% and temperature at 36.5°c.

Physical examination revealed a painful, tender abdomen in the epigastric region. Biological workup: hemoglobin 13.6 g/dl; white blood cells 9000G/L; platelets 341000; renal function corrects with creatinine 8; urea 0.37; C-reactive protein 128mg; liver workup: hepatic cytolysis with GOT 103 us; GPT 137 us; gamma gt 483 us; alkaline phosphatase 271 us; total bilirubin 271 us; direct bilirubin 155 us.

Abdomino-pelvic CT scan: dilatation of the proximal main bile duct and intrahepatic bile ducts upstream of a parietal thickening of its middle third stenosing its lumen. Atrophic and alithiasic gallbladder.

Endoscopic retrograde cholangio-pancreatography (ERCP): para-diverticular papilla with opacification of the VBP showing proximal VBP dilatation at 8mm upstream of a lithiasis measuring approximately 5mm and distal part of the fine VBP measuring 2-3mm; sphincterotomy performed.

Failed balloon extraction of calculus. Unsuccessful stone extraction with Dormia probe. Attempted lithotripsy, rupture of first Dormia loop.

Attempted extraction by a second Dormia probe loop also failed, both Dormia remained inside the proximal biliary tract. Given the failure of endoscopic extraction of lithiasis in VBP, the Dormia probe remained embedded in the common bile duct around a calculus, which itself remained attached without the possibility of removal after endoscopic exploration at two successive attempts, which is one of the very rare complications of the Dormia probe (Figure 1).

Figure 1

Hence the decision and indication for surgery to remove the two Dormia probes and the stone blocked in the proximal part of the VBP.

Under GA, in DD, a log was placed under the shoulders to expose the hepatic pedicle. A right subcutaneous laparotomy revealed a sclero-atrophic gallbladder that was blocked by the greater omentum.

Anterograde cholecystectomy after ligation and section of the cystic duct and artery. Collapse of the lesser omentum, denudation of the common bile duct, tested using a needle with ball exit.

A choledochotomy was performed through a longitudinal incision, allowing extraction of a large stone and the two Dormia handles, as well as the two guide wires in the mouth (Figure 2 & 3).

Figure 2: Dormia probe and calculus in the common bile duct after choledochotomy

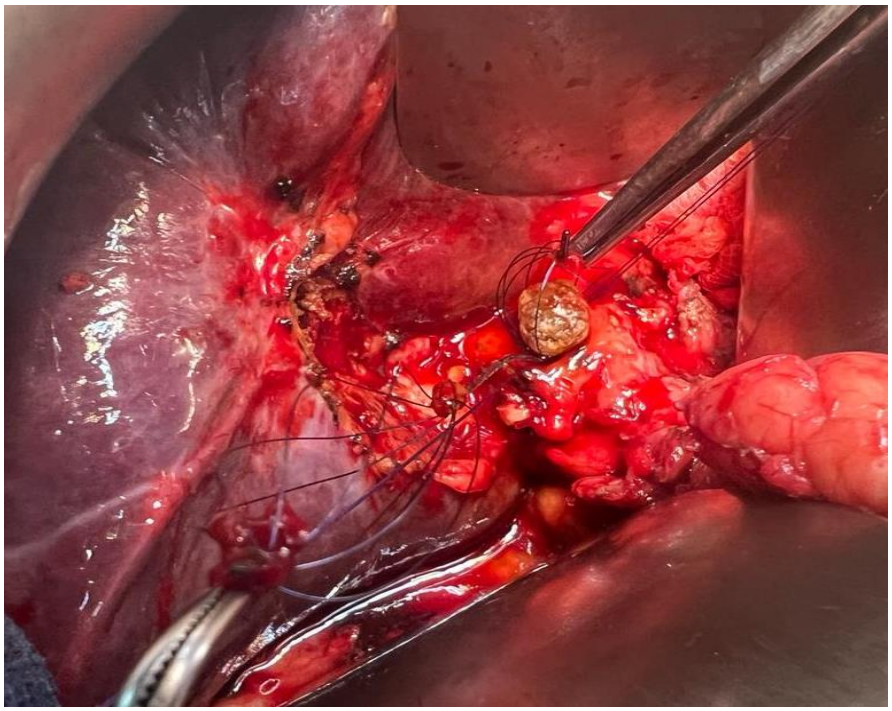

Figure 3: The two Dormia probes and the externalized calculus in the common bile duct

The ball is checked for vacuity using the flush test. Placement of a number 14 Kherr drain.

The evolution was favourable, with no complications detected during hospitalization. We proceeded to clamp the kherr drain at D10 post-op, and to remove it at D12 post-op.

DISCUSSION

Main bile duct lithiasis should be suspected in cases of jaundice and hepatic colic. Fever and leukocytosis also suggest acute angiocholitis. Elevated levels of bilirubin, alkaline phosphatase, alanine aminotransferase and gamma-glutamyl transferase are suggestive of extrahepatic obstruction by lithiasis, particularly in cases of acute cholecystitis or angiocholitis.

Risk factors for the development of gallstones include female gender, obesity, advanced age, North American Indian ethnicity, Western diet, rapid weight loss and family history. In the USA, gallstones are present in over 15% of people aged 60 to 75 [3]. Most biliary tract disorders result from gallstones. Our patient was 72 years old and male, which is consistent with the literature.

Cholelithiasis corresponds to the presence of stones in the bile ducts; the stones may form in the gallbladder or in the bile ducts themselves. The presence of stones in the main bile duct can trigger hepatic colic,

biliary obstruction, biliary pancreatitis or angiocholitis (infection and inflammation of the bile ducts) [4]. Angiocholitis, in turn, can lead to stenosis, stasis and lithiasis of the main bile duct. Diagnosis is mainly clinical and ultrasonographic, but may require visualization of the stones by ERCP (endoscopic retrograde cholangio-pancreatography), which has both diagnostic and therapeutic value. Early surgical or endoscopic release of the bile ducts is indicated [5].

Conventional treatment of PAV lithiasis consists of endoscopic sphincterotomy (ES) followed by balloon and/or Dormia loop extraction of the stone(s), with the main bile duct freed in 85-95% of cases in a single session [6].

Several risk factors are known to contribute to the failure of stone extraction from the main bile duct [7]. Probably the most important factor is stone size greater than 15 mm, or when the diameter of the lower part of the VBP is smaller than that of the stone (habitual narrowing of the intrapancreatic tract or true stenosis). Angulation of the lower VBP is also a risk factor for failure of endoscopic treatment. Stacking and the hard consistency of stones also reduce the chances of achieving complete extraction [11]. These criteria are not always identifiable prior to ERCP, but some of them may eventually be identified by biliary MRI and/or echo endoscopy data [9, 10]. In our patient, none of these complications were detected beforehand. Our patient had undergone Bili-MRI, which revealed dilatation of the proximal PVB, measuring 10mm in maximum diameter, upstream of lithiasis of the upper third of the PVB, measuring 7mm in diameter. Hence the indication for endoscopic retrograde cholangiopancreatography for stone extraction. The complication that arose was the failure of endoscopic extraction of lithiasis in the VBP, and the Dormia probe remained embedded in the choledochus around a calculus which itself remained fixed without the possibility of removing it after two successive attempts - one of the very rare complications of the Dormia probe.

After failure of conventional treatment, recourse to surgery. Our patient underwent a cholecystectomy plus a choledocotomy with extraction of a large stone and the two (02) Dormia loops (Figure 4 & 5) and placement of a Kheer drain.

The evolution was favourable, with clamping of the Kheer drain on postoperative day 10 and removal of the Kheer drain on postoperative day 12.

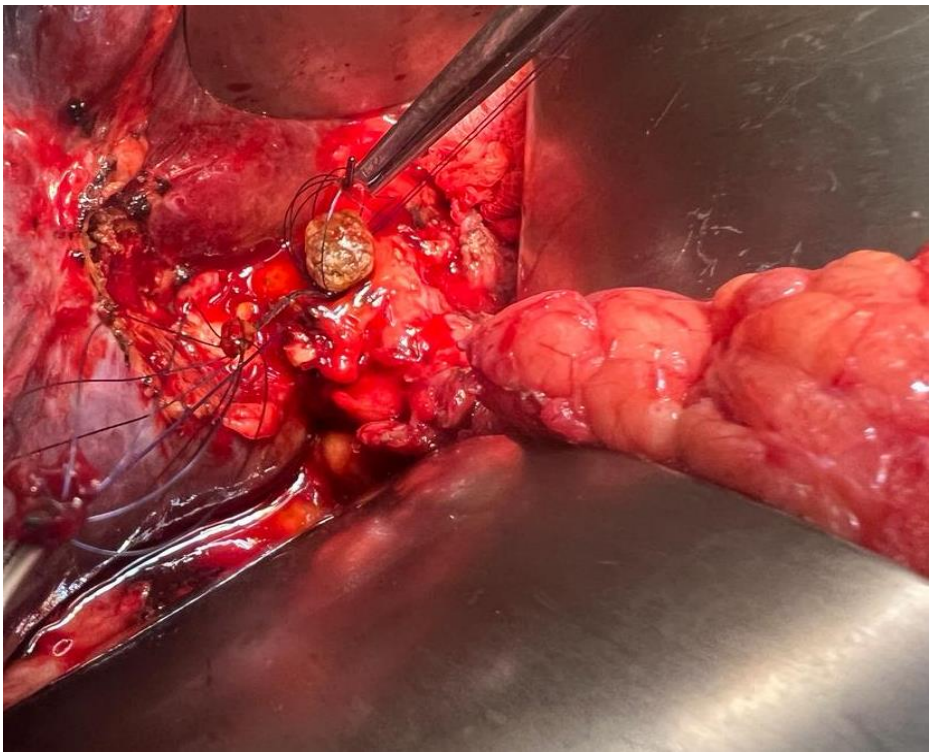

Figure 4: Dormia probe and externalized stones in the common bile duct

Figure 5: Postoperative image of the two Dormia probes and the calculus

CONCLUSION

Vesicular lithiasis is accompanied by main bile duct (MBD) lithiasis in 7-12% of patients. Its treatment has been the subject of professional practice guidelines. Conventional treatment of PML involves endoscopic sphincterotomy (ES) followed by balloon and/or Dormia loop extraction of the stone(s), with the main bile duct freed in 85-95% of cases in a single session.

There are several known risk factors for unsuccessful extraction of a stone from the main bile duct: failure of endoscopic extraction of lithiasis in the VBP, and the Dormia catheter remaining embedded in the common bile duct around a stone that has itself remained attached without the possibility of removing it after two successive attempts, which is one of the very rare complications of the Dormia catheter. This is one of the very rare complications of the Dormia catheter, which remains a formal indication for surgery with choledochotomy to remove the Dormia loop and the stone(s).

Ethical Aspects: The patient's consent was obtained for the use of his data for possible publication. We strictly respect anonymity and no image allows identification of the patient.

Authors Contribution: All authors contributed to the elaboration of the work and approved the document.

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