

Surgical management of giant choledocholithiasis.

A case report

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Case Report

General Surgery



Background: Giant choledocholithiasis (GC) (≥ 3 cm) is a rare entity, with less than 1% incidence among patients with gallstones. Endoscopic management using endoscopic retrograde cholangiopancreatography (ERCP) may fail in large stones, requiring surgical resolution.

Methods: This article describes the case of a 39-year-old woman who presented with progressive jaundice and right upper quadrant pain. Imaging (ERCP) revealed a single 4x3 cm stone within the common bile duct. ERCP with sphincterotomy and extraction failed, and only a stent graft was placed. The general surgery department considered surgical treatment. An open choledochotomy was performed with removal of the stone, which was larger than 5x4 cm, and the main bile duct was managed with a 10 Fr x 10 cm Amsterdam-type plastic biliary stent graft, followed by choledochorrhaphy. Postoperative recovery was uneventful; the patient was asymptomatic at 3 months of follow-up.

Results: Giant stones (≥ 5 cm) are rare, with fewer than 50 cases described in the literature. ERCP has limited success in this setting, requiring advanced lithotripsy techniques or surgical exploration. Bile duct exploration remains safe and effective when the endoscopic approach fails.

Conclusions: Giant choledocholithiasis remains a therapeutic challenge. This case demonstrates that open surgery remains a safe alternative after endoscopic failure.

Keywords: giant choledocholithiasis, failed ERCP, choledochotomy, biliary stent graft

Choledocholithiasis is defined as the presence of stones within the common bile duct (CBD). It is a common complication of cholelithiasis, although it may or may not coexist with the presence of gallbladder stones, being the second most common complication of gallstone disease.

Most cases of choledocholithiasis are secondary to stone migration from the gallbladder to the CBD. However, primary choledocholithiasis also exists, where stones form directly within the ducts.

Historically, the diagnosis of choledocholithiasis was based primarily on clinical suspicion and the use of radiological imaging. Currently, thanks to technological advances in radiology, interventional endoscopy, and minimally invasive surgery, an earlier and more accurate diagnosis is achieved. Both endoscopy and surgery remain the mainstays of the diagnostic and therapeutic approach to this pathology.

Although most cases of choledocholithiasis are due to stones considered small, a small percentage of stones are considered large (≥ 3 cm), which are extremely rare, with an incidence of less than 1% (1,2). Thus, stones considered giant (≥ 5 cm) are

anecdotal, with fewer than 50 cases described in the international literature [(3,4)].

Choledocholithiasis, worldwide has an incidence of approximately 10–15% of patients with cholelithiasis. In Mexico, recent studies report an incidence of 12–14% in the adult population with cholelithiasis, with spontaneous resolution (after stone expulsion) in 20–30% of these cases, especially when the stones are small (less than 5 mm) and there is no complete obstruction of the bile duct.

Currently, there is no universally accepted scale for classifying choledocholithiasis, but we have clinical criteria and algorithms that stratify the risk of developing this disease, with an approach based on supporting the physician in his decision-making regarding whether or not to perform ERCP, cholangiography, or some additional imaging study. The most widely used is the ASGE (American Society for Gastrointestinal Endoscopy) risk stratification, which divides cases into high risk (greater than 50% probability of developing choledocholithiasis), intermediate risk (10 to 50% risk), and low risk (less than 10% probability).

Probability	Predictors of choledocholithiasis
	CBD stone on US/cross-sectional imaging
Very strong	or Clinical ascending cholangitis
	or Total bilirubin >4 mg/dL
Strong	Total bilirubin >1.8-4 mg/dL
	Or Dilated common bile duct on US
	Abnormal liver biochemical tests
Intermediate	or Age >55 years
	or Biliary pancreatitis

Table 1. Proposed strategy to assign risk of choledocholithiasis and manage patients with symptomatic cholelithiasis based on clinical predictors

Once choledocholithiasis is diagnosed, ERCP is the initial treatment of choice, with high success rates for small and medium-sized stones. However, for stones ≥ 3 cm, the failure rate can exceed 50%, and for stones ≥ 5 cm, endoscopic removal often requires mechanical or laser lithotripsy, techniques not always available in our setting. [(5,6)].

Surgery with biliary tract exploration, both open and laparoscopic, remains a valuable resource for the resolution of cases of large-scale choledocholithiasis, with resolution rates exceeding 95%. The preference for one technique over the other will depend on the surgeon's experience, as well as the availability of resources, the patient's clinical condition, and the size or number of stones. If a giant stone is identified, a history of failed ERCP, a stable patient, and the lack of laparoscopic equipment, it is acceptable to opt for open surgery, which is safe in experienced hands. This clinical case presents a patient with giant choledocholithiasis measuring 5x4cm, successfully managed with surgery after failure of ERCP, with a review of the literature and comparison with recent reports.

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The surgical approach was performed after regional anesthesia, abdominopelvic asepsis and placement of sterile fields. Surgical technique: A supraumbilical laparotomy identified a tense gallbladder measuring approximately 7x4 cm, filled with stones and purulent bile. The omental adhesions to the gallbladder and liver were released to expose the hepatoduodenal ligament. A Kocher maneuver was performed, palpating the stone, almost impacted in the retropancreatic portion. A choledochotomy and lavage of the CBD, common hepatic duct, right and left hepatic duct were performed with a 16 Fr Foley catheter with abundant sterile solution obtaining biliary debris. Once the bile duct was clean, a 90-degree Randall type extraction forceps was introduced with manual propulsion through the Kocher maneuver, achieving the extraction of a cork-shaped stone measuring 5x4 cm in its largest diameters, in addition to the extraction of the previously placed endoprosthesis, which was replaced with a new endoprosthesis of the same characteristics.

A choledochorrhaphy was performed with Polyglactin 910 and cholecystectomy was performed with transcystic cholangiography which was performed with difficulty due to the diameter of the cystic duct (there was a leak of contrast medium) however we managed to obtain an image of the bile duct without evidence of stones inside, dilated, with the endoprosthesis properly placed, with passage of

Author	Year	Gallstone size	Initial ERCP	Final resolution	Evolution
Our case	2025	5 × 4 cm	Failed	Open choledochotomy	Favorable
Chen W, et al.	2025	6 × 4 × 4 cm	Failed	Open choledochotomy + T-tube	Favorable
Al Mahjoub A, et al.,	2024	7x3cm (with choledochal cyst)	Not reported	Cyst resection + hepaticojejunostomy	Favorable
Gutiérrez-Cuevas J, et al.	2021	>15mm (series, multiples)	Failure in 88% of cases	Choledochotomy	Favorable

Table 2. Published cases of giant choledocholithiasis (>5cm) and therapeutic decisions based on the gallstone size.

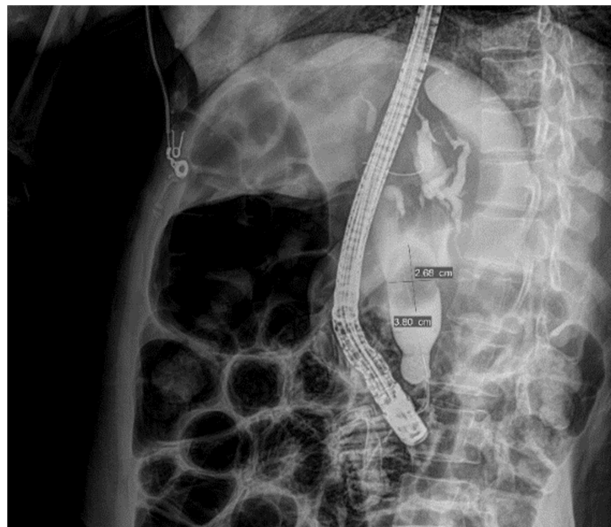


Figure 1. ERCP showing a giant stone measuring 38 x 26 mm impacted in the biliary tract.

contrast medium to the second portion of the duodenum ending with the closure of the cystic duct in the usual way and extraction of the gallbladder. We report as relevant findings pycholecyst, gallbladder measuring 7x5 cm in its largest diameters, full of stones inside and purulent bile, dilated cystic duct 2 cm in diameter, edematous and friable, posterior cystic artery of 3 mm. Dilated extrahepatic bile duct; The supraduodenal portion of the CBD revealed discharge of thick bile and abundant debris, and the stone was embedded in the retropancreatic portion, measuring 5x4 cm in the shape of a cork. Transcystic cholangiography showed adequate passage of contrast medium into the second portion of the duodenum, with no evidence of residual stones.

At the end of the surgical procedure, a Penrose drain was placed in the right flank, opening into the Morrison space and gallbladder bed. No subsequent imaging studies were performed.

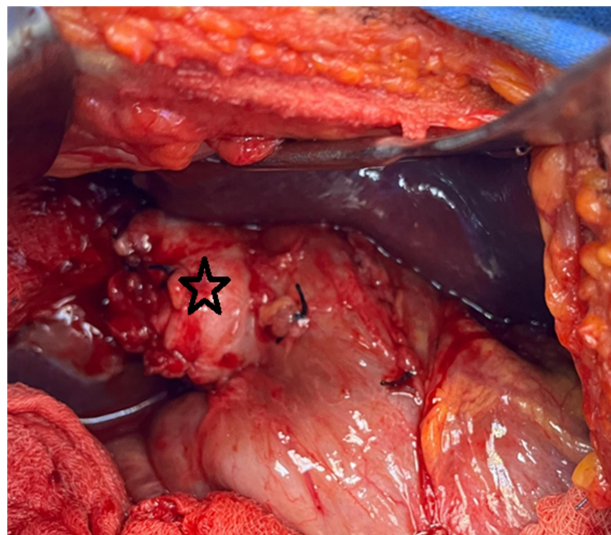


Figure 2. 2 cm cystic duct (star).



Figure 3. On the left, a 5 x 4 cm stone and on the right, a 7 x 5 cm gallbladder.

Discussion

Giant CBD stones (≥ 5 cm) are extremely rare and may be associated with predisposing factors such as chronic biliary dilation, recurrent lithiasis, or distal stricture [(3,7)].

Although ERCP is the first-line standard, its success rate for giant stones is limited ($\leq 12\%$ without advanced lithotripsy) [(5,6)]. In many centers, laser or electrohydraulic lithotripsy techniques are unavailable, so open or laparoscopic surgical exploration remains the definitive management, with success rates $>95\%$ [(8)].

Our case is consistent with recent reports of 5–7 cm stones treated surgically, reaffirming its role in complex cases or after endoscopic failure.



Figure 4. Intraoperative cholangiography showing adequate passage of contrast through the biliary tract and duodenum. Stent graft.

Conclusion

The presence of stones within the CBD poses significant therapeutic challenges, especially when stones exceed 15 mm in diameter. Large CBD stones can lead to complications such as biliary obstruction, cholangitis, and pancreatitis. ERCP is the first-line treatment; however, surgical intervention may be necessary for refractory or failed cases.

Giant choledocholithiasis (≥ 5 cm) is extremely rare and represents a diagnostic and therapeutic challenge. Although ERCP remains the initial approach, its success rate decreases dramatically with large stones. Surgical exploration of the bile duct remains a safe and definitive option after endoscopic failure, as demonstrated in this case.

Conflicts of interests

The authors have no conflicts of interests.

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