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Type III Mirizzi, successfully treated with a free gallbladder flap, a case report

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ABSTRACT

BACKGROUND: Mirizzi syndrome is a type of biliary obstruction caused by an impacted stone in the gallbladder neck or cystic duct that causes and extrinsic obstruction of the common bile duct, this condition if left untreated can lead to duct erosion, fistula, and cholangitis. Preoperative diagnosis is difficult since if not diagnosed correctly can elevate the risk of intraoperative bile duct injury.

CASE PRESENTATION: We present the case of a 61-year-old patient, she presented to our hospital with obstructive jaundice, and a type III Mirizzi syndrome was identified. Preoperative diagnosis was completed, and she was successfully treated using a gallbladder free flap. On follow-ups, the patient is doing well.

CONCLUSION: Mirizzi Syndrome is a rare syndrome that can lead to anatomical disturbances and surgical difficulties due to the hostile territory it creates. High clinical awareness, an emphasis on the preoperative diagnosis, and safe surgical techniques minimizing bile duct injury can improve patients outcome

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1. Introduction

Gallstone disease and its complications are among the most common surgical interventions worldwide; the arrival of better diagnostic and treatment modalities has improved patient outcomes [1–3]. Although gallstone disease is generally associated with cholecystitis, rare events such as Mirizzi syndrome can represent a challenge for the biliary surgeon, as they can significantly increase the risk of intraoperative biliary injury [3]. Preoperative diagnosis, safe surgical techniques, and referring the patient to a specialized center can improve the patient's outcome and reduce troublesome complications [1,2]. We present the case of a 61-year-old patient, a type III Mirizzi syndrome was identified and

successfully treated with a gallbladder free flap. On follow-ups, the patient is doing well.

This work has been reported in line with the SCARE criteria [9].

2. Case report

Patient is a 61 years old female with a 5-year history of cholelithiasis. She was diagnosed during a routine medical examination, and she assured us that she remained completely asymptomatic during this period. She presented to the emergency room with a 2-day history of jaundice, fever, and diffuse abdominal pain. On clinical examination, a tachycardic and febrile patient was encountered, pain was discovered in the upper right quadrant with tenderness. Complementary exams revealed hyperbilirubinemia (4.82 mg/dl), leukocytosis ($13,8 \times 10^9/L$), and altered liver exams. (gamma-glutamyl transferase: 524 U/L, and Alkaline phosphatase: 265U/L). Due to this, a magnetic resonance cholangiopancreatography (MRCP) revealed choledocholithiasis and a sizeable 3×2 cm impacted gallstone in the gallbladder neck; the gallstone eroded into the common bile duct creating a fistula that comprised two-thirds of the common bile duct circumference. Extrahepatic ducts dilation was also noted.

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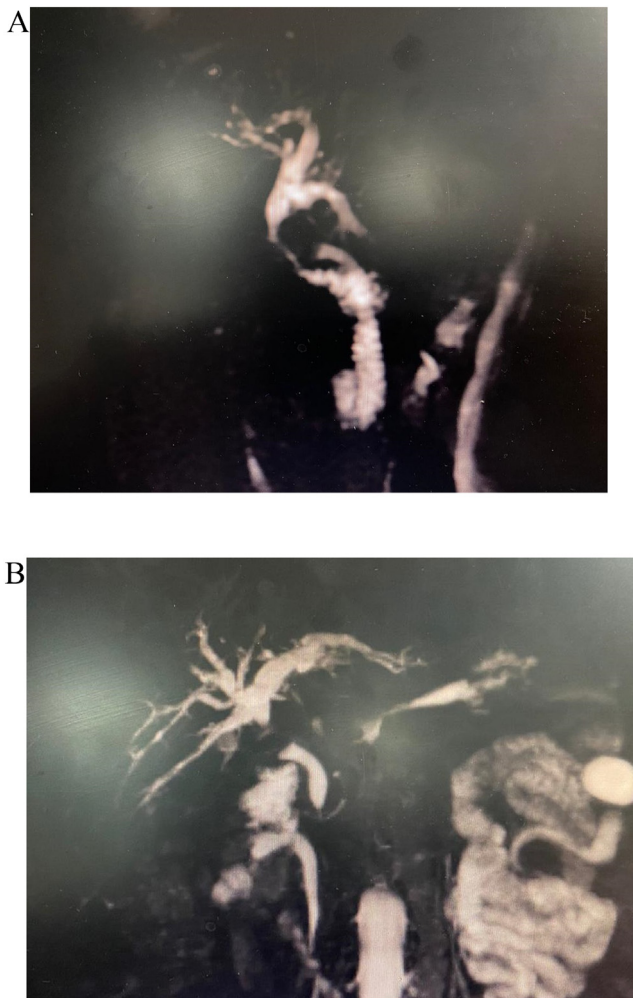


Fig. 1. 1A: MRCP revealing choledocholithiasis. 1B: MRCP, the gallstone can be seen eroding the gallbladder wall into the common bile duct.

A type III Mirizzi was diagnosed (Fig. 1A, B), and surgical consultation was required. An endoscopic retrograde cholangiopancreatography was requested (ERCP); during this procedure, multiple small stones in the common bile duct were removed, two stents were placed, and a sphincterotomy was completed. After this procedure, the patient's bilirubin began to trend down. Nevertheless, the fever persisted, and since the patient's condition was deteriorating, surgery was planned. Multiple dense adhesions were seen at laparoscopic surgery between the liver, gallbladder, omentum, and transverse colon. Using an ultrasonic energy device, the adhesions were released, and the gallbladder was exposed (Fig. 2A, B). The stone was located in the gallbladder neck and was surrounded by severe inflammatory tissue, which prevented safe dissection. Therefore, a partial cholecystectomy with the removal of the stone was planned. Upon opening the gallbladder at its fundus, multiple stones were removed, and the large (3 × 3 cm) stone in the gallbladder neck was extracted.

Pus with necrotic tissue was found within the gallbladder. After debridement, the stents were removed, and the 1.5 cm fistulous defect in the common bile duct was seen (Fig. 2C). As the tissue around the common bile duct was fragile and could not be closed, the viable gallbladder was dissected to form a free flap to repair the defect (Fig. 3A). The flap was sutured around the common bile duct using a 5-0 synthetic absorbable monofilament (PDS Johnson & Johnson-Ethicon), and a T Tube drain was placed. After extensive irrigation and without evidence of leaks (Fig. 3B), a drain was

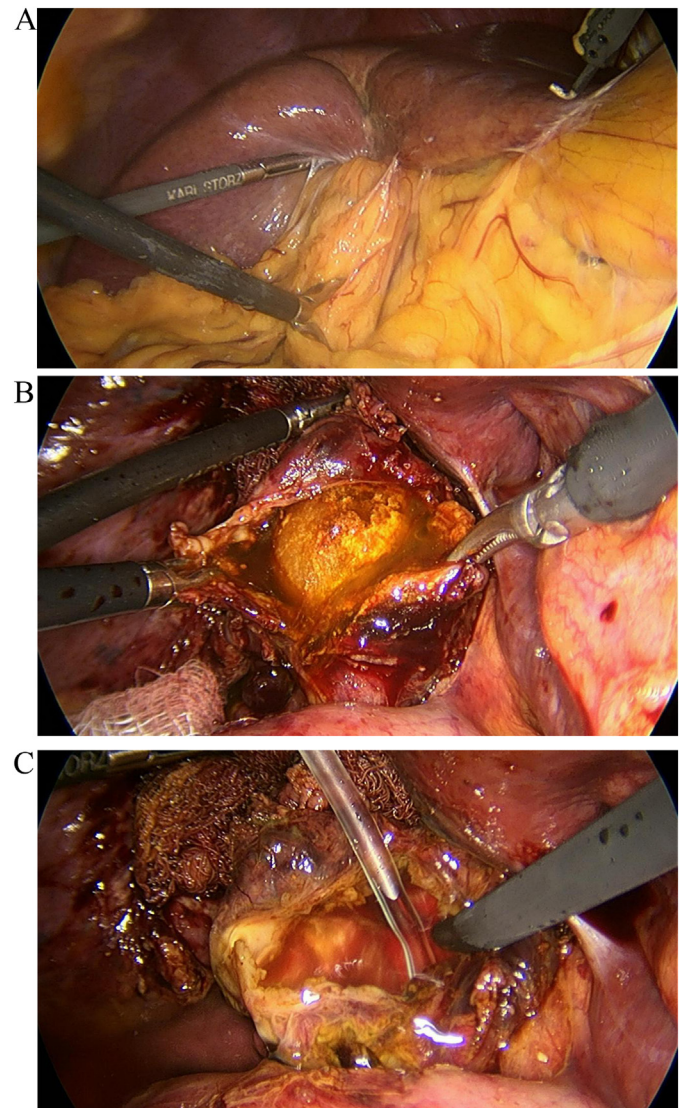


Fig. 2. 2A: Multiples adhesions on laparoscopy. 2B: Gallbladder with the cholecystocholedochal fistula and the stone. 2C: Fistula.

left in this area, and the surgery was completed without difficulties. Her postoperative course was uneventful; she remained stable, without difficulties. After a 7-day course of antibiotics broad-spectrum antibiotics, she was discharged without complications. The patient remained stable on subsequent follow-ups, and her drain was removed due to low and serous output. A new MRCP was done, revealing an average diameter common bile duct without choledocholithiasis. Therefore, the T-tube was removed without complications. Six months after surgery, the patient is doing well without any complaints.

3. Discussion

Pablo Luis Mirizzi was one of the best biliary surgeons of the last century; he was the first surgeon to perform an intraoperative cholangiography successfully. Nonetheless, we usually recognize him by the syndrome that is named after him [1,2]. In 1948 he described the condition in with an impacted stone in the gallbladder infundibulum causes jaundice by extrinsic compression of the common bile duct [1]. The stone can also erode from the gallbladder into the bile duct producing a fistula [2,3]. It wasn't until 1983, where Csendes et al. classified the common bile duct's involvement

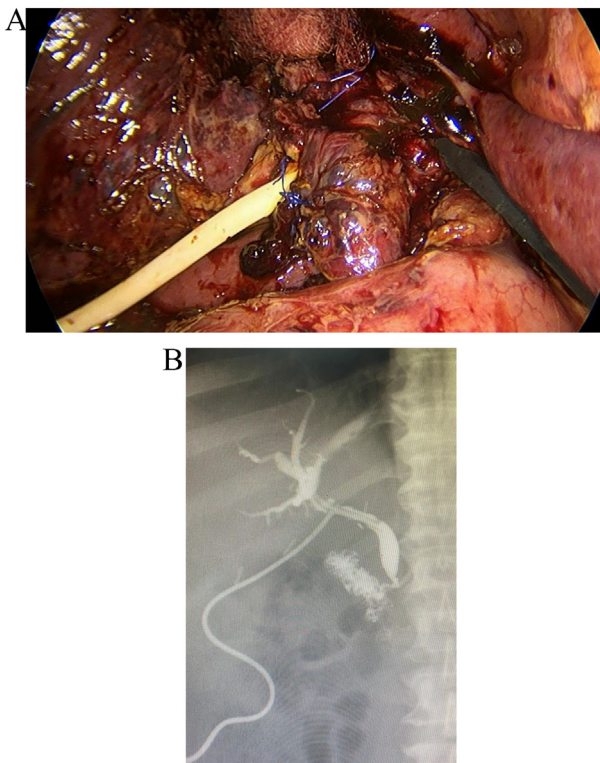


Fig. 3. 3A: Gallbladder free flap sutured to the common bile duct. 3B: Intraoperative cholangiogram without leaks.

in the fistula [1,4]. There are many classifications, including the one by Beltran et al. nonetheless, the first classification of Csendes is useful to establish a preoperative workup and surgical management [4,5]. Mirizzi syndrome is a rare event in the adult population (0.06–5.7%); it is often found in women between ages 50 and 70 [2,3]. In places like South America where surgical care is limited, it can appear in up to 5% of patients with gallstone disease [1]. Clinical presentation is varied, but most patients present with jaundice and abdominal pain [1,6]. As our patient experienced. MRCP, Computed Tomography (CT), or ERCP is needed to establish the diagnosis and for preoperative planning as the risk of common bile duct injury can be as high as 17% without it [6,7]. Nonetheless, on many occasions, Mirizzi syndrome can present as an unexpected intraoperative finding (8–63%), which may increase the risk of severe complications [2,3]. In our case, as the patient presented with obstructive jaundice, an MRCP aided in the diagnosis.

Achieving a critical view of safety and safe surgical techniques, including partial cholecystectomy or cholecystostomy, is appropriate and warranted to prevent dangerous scenarios [1,7]. The risk of bile duct injury is increased as a consequence of the inflammatory response to the impacted stones. Therefore, many authors suggest that stent placement via ERCP is recommended to protect the common bile duct before surgery [1,8]. If the fistula is not detected, the gallbladder can be removed after achieving an adequate view of the triangle of Calot. If not, a subtotal cholecystectomy can be performed, leaving a small portion of the infundibulum to ensure that the bile duct is unharmed.

There are many strategies when a cholecystocholedochal fistula is found; the gallbladder can be removed, and the common bile duct can be sutured with a T-tube, a part of the infundibular wall can be used in the closure of the common bile duct or a bilioenteric anastomosis can be performed [1,2,4]. As the fistulous tract was identified in our patient, a gallbladder flap was used to cover the common bile duct defect.

Laparoscopic or open approaches are feasible depending on the surgeon's experience and the availability of laparoscopic equipment [7,8].

Mirizzi syndrome should be managed by experienced biliary surgeons and after careful evaluation of the circumstances and anatomy, preoperative diagnosis is a key element that can simplify an already complex procedure.

4. Patient perspective

The patient was tremendously nervous during and after surgery, especially when he saw the T-tube; however, he entirely understood the procedure after counseling.

He regretted not having the surgery earlier; however, he was pleased as everything turned out fine.

5. Conclusions

Mirizzi Syndrome is a well-recognized syndrome that highlights the infrequent presentations of advanced gallstone disease. The anatomical disturbance and the technical difficulties in a fibrous territory can lead to dangerous complications. High clinical awareness, an emphasis on the preoperative diagnosis, and safe surgical techniques in specialized hepatobiliary surgical centers can improve patients' outcomes.

Declaration of Competing Interest

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Ethical approval

The authors declare that we obtained permission from the ethics committee in our institution.

Consent

The authors declare that written consent was obtained from the patient before publication of this case.

Author contribution

1. Miguel A. Moyón C. Conceptualization; Data curation; Formal analysis.
2. Gabriel A. Molina Conceptualization; Data curation; Formal analysis.
3. F. Xavier Moyón C. Data curation.
4. Miguel A. Moyón H. Data curation.
5. Becquer G. Echegaray Data curation.
6. Diego R. Yunga Formal analysis.
7. Ligia Elena Basantes Formal analysis.
8. Marcelo Stalin Villacis Formal analysis.

Registration of research studies

The authors declare that the patient gave his consent to publish this case, and as this is a case report not human participants were involved in a study.

Guarantor

Gabriel A. Molina.

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