

# Cholangitis Due Residual Stone in Cystic Duct Remnant: Case Report

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## 1. Abstract

Acute cholangitis is a serious disease with an estimated overall mortality of 2.7-10% of patients [1,2]. The diagnosis of acute cholangitis is made by the presence of clinical characteristics, laboratory results, and imaging studies [3]. Choledocholithiasis is ranked as the most frequent etiology of cholangitis (1). A residual stone before cholecystectomy can cause choledocholithiasis.

### 1.1. Case Report

We present the case of a 63-year-old male patient with a history of laparoscopic cholecystectomy one year previously, who presented with cholangitis due to a residual stone in the cystic duct remnant.

### 1.2. Discussion

Management dilemmas regarding the roles of the Endoscopic retrograde cholangiopancreatography and common biliary duct exploration are reviewed in the context of relevant evidence-based literature.

### 1.3. Conclusion

A residual stone before cholecystectomy can cause choledocholithiasis and cholangitis, it is necessary to keep it in mind when making a differential diagnosis for an adequate approach to the pathology of the patients.

## 2. Introduction

Acute cholangitis is a serious disease with an estimated overall mortality of between 2.7 and 10% of patients [1]. The onset of acute cholangitis involves two factors: a) ascent of bacteria in the bile duct, and b) elevated intraductal pressure in the bile duct that allows the translocation of bacteria or endotoxins into the vascular and lymphatic system (cholangiovenous/lymphatic reflux) [2]. The diagnosis of acute cholangitis is made by the presence of clinical characteristics, laboratory results and imaging studies. Acute cholangitis should be suspected in patients with fever, abdominal pain and jaundice (Charcot triad). In more severe cases, patients may suffer confusion and hypotension, known as Reynolds' pentad. Choledocholithiasis is the most frequent etiology of cholangitis [1,3].

Residual choledocholithiasis is defined as the presence of stones within the bile ducts in the first two years after cholecystectomy and is estimated to occur between 5 and 12%. The lithiasis in the remnant of the cystic duct may be retained or recurrent. Retained stones remain in the bile duct during surgery, while recurrent lithiasis forms due to bile stasis [4]. Cases of post-cholecystectomy syndrome have increased and are significantly related to the advent of laparoscopic cholecystectomy. This is because the cystic duct is ligated as close to the gallbladder as possible to avoid injury to the common bile duct, unlike open cholecystectomy, in which the cystic duct is ligated as close as possible to the common

bile duct [5]. There are other causes of cholangitis such as extrinsic compression of the biliary tract due to the external compression of the bile duct, mostly represented by neoplasia. [4] However, in this paper, a case report is made of a patient with Tokyo III cholangitis, caused by external obstruction of the bile duct, of non-neoplastic cause.

## 3. Case Presentation

Male patient 63 years old, native and resident of Saltillo, Coahuila, walks in the emergency room. He begins his disease 6 months after laparoscopic cholecystectomy, he presents jaundice syndrome. Magnetic resonance cholangiopancreatography is performed as a study protocol of jaundice, stenosis of the common bile duct is reported. ERCP and endoprosthesis placement are performed. He remains asymptomatic for 6 months, then the endoprosthesis is removed. Two days after the procedure, the patient begins to have abdominal pain, jaundice, fever, hypotension, tachycardia and altered mental status.

### 3.1. The Patient Had the Next Medical History

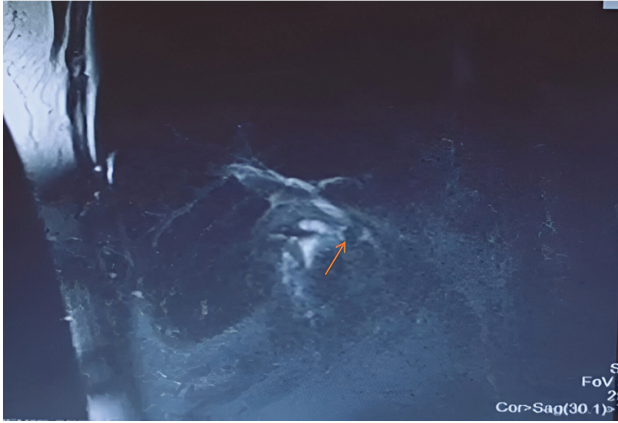
Chronic-degenerative history: Uncontrolled type 2 diabetes mellitus and uncontrolled systemic arterial hypertension.

### 3.2. Surgical History: Laparoscopic Cholecystectomy 1 Year Ago

On examination, the patient had abdominal pain in the right upper side, jaundice, fever, hypotension, tachycardia and altered mental status. The laboratories tests revealed hyperbilirubinemia with an obstructive pattern, acute kidney injury, thrombocytopenia, coagulation test with alterations and metabolic acidosis.

An ultrasound of the liver and biliary tract was performed, reporting dilation of the intra and extrahepatic biliary tract, pneumobilia, and no stones were identified inside. A diagnosis of acute cholangitis, Tokyo III, was integrated.

We identify in the magnetic resonance cholangiopancreatography a filling defect at the level of the remnant of the cystic duct, approximately 1.2 cm in diameter, which displaced and collapsed the common bile duct (Figure 1). The patient underwent surgery, exploration of the biliary tract, choledochotomy was performed and a stone of 1.5 cm in diameter was removed, which was located at the confluence of the hepatic and cystic ducts (Figure 2). The bile duct is bypassed with a 16 French Kehr tube. The surgical procedure is completed. The patient's postoperative progress was good, but he died on the fifth day from an acute myocardial infarction. After the surgical findings, we concluded that after the removal of the biliary stent (48 hours before), extrinsic obstruction of the biliary tract occurred by the stone identified in the remnant of the cystic duct, which caused Tokyo III cholangitis.



**Figure 1:** Magnetic resonance cholangiopancreatography of our patient with B A filling defect (Arrow).



**Figure 2:** Stone found in the remnant of the cystic duct after surgery.

**4. Discussion**

MRCP has a sensitivity of 85-92% and a specificity of 93-97%. (6) ERCP is considered the gold standard for its diagnosis and treatment, with a diagnostic sensitivity and specificity greater than 95% [7,8]. Removal of bile duct stones by this method can be successfully achieved in 90-95% of cases [9]. In this case, the stone was not detected by the radiologist in the MRCP and was also not detected by the endoscopist in the ERCP, despite their respective high sensitivity and specificity. This situation reminds us that patients can have false negatives, and that clinical, biochemical and radiological integration will always be the best way to diagnose our patient and his disease.

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