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Surgical outcomes of Mirizzi syndrome and role of laparoscopy: a single institution's experience of 34 cases

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ABSTRACT

Introduction: Mirizzi syndrome (MS) is a rare complication of cholelithiasis and surgery is the treatment of choice. It usually requires conversion to open surgery. In the present study, a retrospective assessment of experience with MS cases was performed with respect to clinical presentation, diagnostic difficulties, surgical procedures, and outcomes.

Materials and Methods: Between January 2014 and June 2017, 768 patients with symptomatic cholelithiasis were operated on. Of these, 34 patients had MS. In that group, 24 patients (70.5%) were women and 10 patients (29.5%) were men.

Results: The most frequent symptom was abdominal pain, seen in 33 cases (97.1%). The mean age at presentation was 65.53±13.40 years. Obstructive jaundice findings were defined with laboratory tests in 18 patients (52.9%). Surgery was performed in 30 patients (88.2%), and the median time from preoperative hospitalization to surgery was 5 days (range: 0–19 days). The distribution by type of involvment according to preoperative imaging was type I in 9 cases (26.5%), type II in 6 cases (17.6%), type III in 6 cases (17.6%), type IV in 5 cases (14.7%) and, type V in 8 cases (23.5%). Two patients were not operated on as a result of co-morbidities. Furthermore, another 2 patients who had gallstone ileus resolved with medical treatment were not operated on due to co-morbidities.

Conclusion: MS is challenging for surgeons. Magnetic resonance cholangiopancreatography and endoscopic retrograde cholangiopancreatography are useful for an accurate diagnosis and reducing operative complications. Laparoscopic surgery should be considered in patients with type I and in selected cases of type II MS.

Keywords: Mirizzi syndrome; modified Csendes classification; surgery.

Introduction

Mirizzi syndrome (MS) is a rare complication of cholelithiasis.[1] Pablo Luis Mirizzi described in 1948 MS as an obstruction of the common hepatic duct caused by compression of an impacted stone in the neck of the gallbladder or cystic duct.[2] Csendes et al.,[3] who divided MS into 4 subtypes based on the extent of bile duct wall involvement. A

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fifth subtype was added in 2007, which refers to any other type of Mirizzi syndrome associated with cholecystoenteric fistula (CEF).[3,4]

Today, the most commonly used classification for MS is the modified Csendez classification;[3,4]

Type I: Compression of the common hepatic duct by an impacted stone located in the neck or infindibulum of the gallbladder or in the cystic duct.

Type II: Presence of cholecysto-biliary duct fistula, which affects 1/3 of the circumference of the bile duct.

Type III: Presence of fistula, which affects 2/3 of the maximum diameter of the common bile duct.

Type IV: Presence of fistula with complete destruction of the the common hepatic duct wall.

Type V: MS associated with CEF

VA: -without biliary ileus,

VB: -with biliary ileus.

Surgery is the treatment of choice which usually requires conversion to open surgery.[5]

In the present study, we retrospectively assess our experience of MS cases with respect to clinical presentation, diagnostic difficulties, surgical procedures and outcomes.

Materials and Methods

We recorded the data included prospectively in the database of patients operated for biliary disease. Between January 2014 and June 2017, 768 patients with symptomatic cholelithiasis were operated. Of these, 34 patients had MS. Demographic, laboratory, and clinical data, diagnostic studies, surgical procedures, operative findings, postoperative complications, and patient follow-up were retrospectively analyzed. All patients underwent hepatobiliary ultrasound (US). The diagnostic protocol of suspected MS -particularly- in case of signs of occluded of the bile duct because of external compression, internal mass or stones.

Are computerized tomography (CT), magnetic resonance cholangiogpancreatography (MRCP), endosonographic ultrasonography (EUS) and endoscopic retrograde pancreatography (ERCP). Csendez classification[3,4] was used to identify the types of MS. Postoperative control was performed approximately 2 months after hospital discharge.

Results

Of the 768 patients admitted for treatment of gallstones, 34 patients (2.24%) had MS. Twenty-four patients (70.5%) were women and 10 patients (29.5%) were men. The most frequent symptom was abdominal pain in 33 cases (97.1%), followed by jaundice in 18 patients (52.9%) and itching in 7 patients (20.6%), retrospectively. Other symptoms at initial presentation were nausea and vomiting in 7 patients (20.6). Gall stone ileus was seen in 3 patients (8.8%) whereas 3 patients (8,8%) had asymptomatic cholelithiasis. The mean age at presentation was 65.53±13.40 years. Obstructive jaundice findings are defined with laboratory tests in 18 patients (52.9%). Preoperative hepatobiliary ultrasound was performed in all patients, followed by CT in 28 (82.3%) patients (88.2%), ERCP 23.5% (n=20), MRCP 23.5% (n=8) and finally EUS in 7 patients (20.5%), retrospectively. Eigtheen patients having biliary duct obstruction underwent endoscopic sfincterotomy and plastic stent placement was required in 14 of them for preoperative biliary drainage. Surgery was performed in 30 patients (88.2%), and the median time from preoperatif hospitalization to surgery was 5 days (0–19 days).

The distribution by type of involvment according to preoperative imaging was: type I in 9 cases (26.5%), type II in 6 cases (17.6%), type III in 6 cases (17.6%), type IV in 5 cases (14.7%) and, finally type V in 8 cases (23.5%), respectively.

Nine patients (20.5%) were operated in emergency conditions due to a diagnosis of acute cholecystitis, whereas 21 patients (61.7%) underwent elective surgery. Two patients were not operated because of their co-morbidity. Also two patients who had gallstone ileus solved with medically treatment were not operated after because of their co-morbidity. Intraoperative cholangiography was carried out in 10 patients (29.4%).

Laparoscopic complete cholecystectomy was performed in 3 patients, conversion cholecystectomy was performed in one patient and laparoscopic subtotal cholecystectomy was performed in 2 patients who had type I MS. One patient with type I MS could not be operated because of her co-morbidity. Periampullary or common bile duct adenocarsinoma was detected in other two patient in whom biliary drainage was achieved with endoscopic stent placement.

Of the 6 patients (17.6%) with Type II MS, two underwent open cholecystectomy, two patients underwent conver-

sion subtotal cholecystectomy, and the remaining two patients had conversion to open cholecystectomy with T-tube placement.

In six patient with Type III; conversion subtotal cholecystectomy was performed in two patients, open subtotal cholecystectomy was performed in three patients and cholecystostomy was performed in the remaining one patient due to peroperative diagnosed malign biliary stricture and peritonitis carcinomatosa. This patient underwent ERCP with metalic stent placement.

In five cases with Type IV; conversion subtotal cholecystectomy was performed in one patient, open subtotal cholecystectomy was performed in one patient, open cholecystectomy and Roux-en-Y hepaticojejunal anastomosis was performed in two patients, respectively. The remaining one patient could not be operated because of his co-morbidity.

In eight cases with Type V; open cholecystectomy and duodenorraphy was performed in four patients. Three patients had gallstone ileus. Of these, one patient underwent surgery whose stone was removed by enterotomy. The remaining two patients did not underwent surgery due to spontaneous fall of the stone into the cecum under conservative follow up. Open cholecystectomy and choledochorrhaphy over T-tube and duodenorraphy was performed in one patient, (Figure 1).

In seven situations started by laparoscopy, but due to the difficulties of dissection and anatomic doubt, conversion proved the best option. The average operative time was 106 minutes, ranging from 50 to 180. Only one patient received blood transfusion during surgery. There was no postoperative mortality. Seven cases (26.4%) had postoperative wound infection, one case had biliary fistula and one case had gastrointestinal bleeding which resolved under conservative treatment.

Histopathological examination diagnosed benign disease in 28 paients (calculi cholecystitis, whether acute or in a chronic outbreak). The remaining two patients had malingnant mass in the common bile duct. Postoperative 2 months follow-up of patients who underwent curative surgical treatment revealed normal physical examination and laboratory findings.

Discussion

MS is formed by an acute or chronic inflammation as a result of the impaction of one or multiple gallstones, in the gallbladder infundibulum, Hartman pouch or cystic duct. It is the complication of long standing cholecistolithiasis.[6,7]

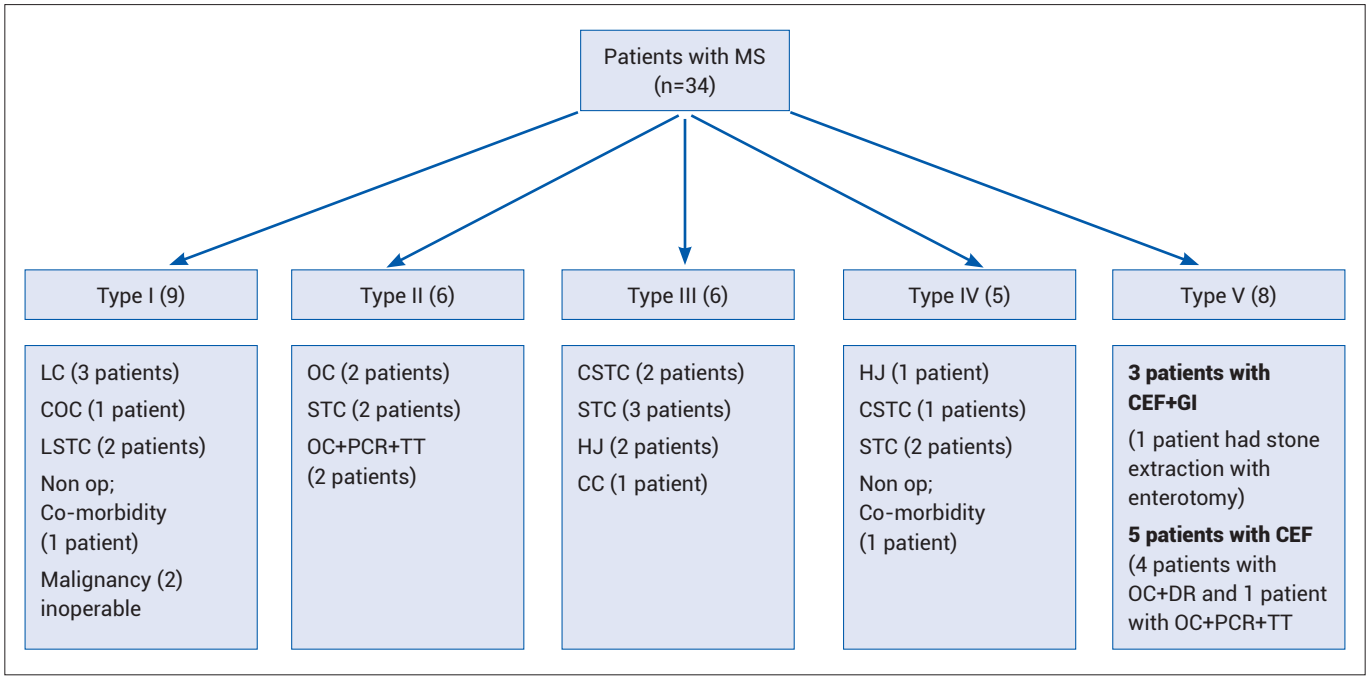

Figure 1. Distribution of patients with Mirizzi Syndrome (HJ: Hepatojejunostom; LC: Laparoscopic cholecystectomy; OC: Open cholecystectomy; PCR: Primary choledochorrhaphy; CSTC: Conversion subtotal cholecystectomy; LSTC: Subtotal cholecystectomy; STC: Subtotal cholecystectomy; TT: T-tube; CC: Cholecystostomy; DR: Duodenoraphy; GI: Gallstone ileus).

In MS with CEF, the calculus usually migrate through the main biliary tract to duodenum which then lead to luminal obstruction of the terminal ilem with an incidence of 0.05 to 2.7%.[8]

It is difficult to diagnose MS because of the absence of pathognomonic signs and symptoms. The most frequent symptoms is abdominal pain followed by jaundice and cholangitis. Nausea and vomiting, itching are less seen. Rarely, acute pancreatitis, gallbladder perforation and weight loss occurs.[7,9–11] Therefore, it is important to consider MS in the differential diagnosis of obstructive jaundice and acute pancreatitis.[12]

Abdominal US is the first preferred imaging method for screening but its sensitivity is low. In the case of doubt, diagnosis should be confirmed by other radiodiagnostic such as abdominal CT, MRCP, endoscopic ultrasonography, ERCP, and /or intra-operative cholangiography.[12,13] ERCP is the most sensitive imaging modality which can also be used for calculi extraction and insertion of the stents. On the other hand MRCP has a diagnostic accuracy of 50%.[14] In our series, MS could preioperative diagnosed in 28 of 34 patients (82.3%).

The surgical treatment of the MS requires meticulous dissection plan of the biliary tract in order to perform the cholecystectomy.[15] In the type I MS, LC is the treatment of choice by retrograde dissection of the gallbladder. In some of cases, subtotal cholecystectomy is an alternative to LC where anatomic plans can not be clearly clarified.

In type II and III MSs, dissection of the gallbladder infundibulum, Hartman pouch, and cystic duct may be difficult. Exposure of the Calot triangle may lead to the opening of the fistulous orifice of the common bile duct. In such condition, one of the alternatives is to use technique on which subtotal cholecystectomy is performed through anterograde routh via with preservation of the infundibulum, followed by opening of the gallbladder, removal of the calculus of its inside, and choledocoplasty with suture of the fistulous orifice on the remaining wall of the gallbladder. In some cases a drain can be inserted into the common hepatic duct proximal to the repair site. The use of the gallbladder infundibulum to close the orifice of the common hepatic duct is an alternative option due to the similar mucosa and vascular tissue as the common bile duct.[15]

In patients with type IV MS, a Roux-en-Y hepaticojejunostomy is usually necessary. Alternatively, subtotal cholecystectomy with choledocoplasty using gallbladder infundibulum can be performed.[16,17]

The organs which can be usually involved by CEF are stomach, duodenum and the colon. The preferred operation for CEF with biliary ileus consist of enterolithotomy, removal of the calculus of its inside and the closing of the fistula. In the absence of gold stone ileus, closing of the fistula orifice by primary repair is often sufficient.[15] Three patients with CEF of the present study had biliary stone ileus. Of these, one patient underwent surgery. The stone was removed by enterotomy. The remaining two patients did not underwent surgery. Their stones fall to the cecum spontaneously during their hospitalization.

According to analyzed series of the literature, from 11% up to 22% patients with MS had concomitant or postoperative biliary strictures requiring dilatation or reoperation and from 10% to 24% of them had biliary fistulas.[14,18] In our series; major postoperative complications of the biliary tract was not seen; only one case with type III MS having biliary fistula resolved by ERCP with plastic stent placement.[18]

The association between MS and gallbladder cancer is not well established. Some studies determine the incidence as approximately 5.3%, but series with the largest number of patients do not signify any report of associated cancern.[12–20] In the present study, there were no related cancer cases associated with MS but perioperative periampullary or common bile duct adenocarcinoma were detected in two patients who underwent metallic stent placement by ERCP.

In conclusion, MS is challenging for surgeons. MRCP and ERCP are useful for an acurrate diagnosis and reducing operative complications. Laparoscopic surgery should be considered in patients with type I and in selected cases of type II.

Disclosures

Ethichs Committee Approval: The study was approved by the Local Ethics Committee.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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