CASE REPORT

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Type II Mirizzi Syndrome: A Case Report

Tip II Mirizzi Sendromu: Olgu Sunumu

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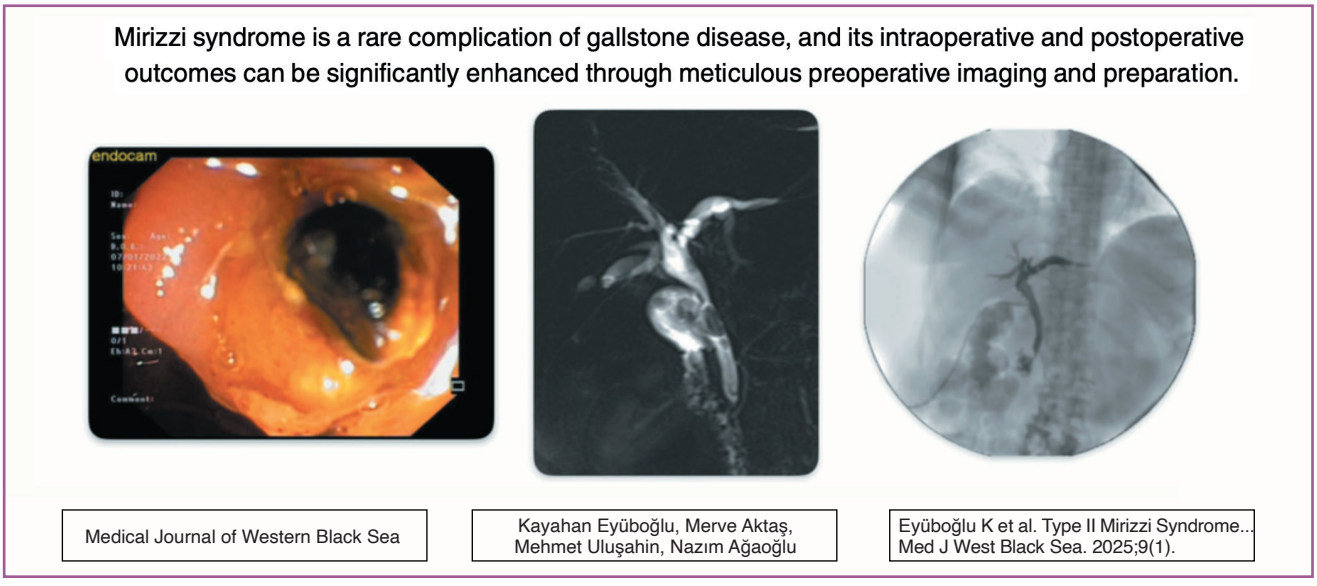
GRAPHICAL ABSTRACT



ABSTRACT

Mirizzi syndrome (MS) is characterized by the blockage of the bile duct due to external compression caused by a large stone located in the Hartmann pouch or cystic duct of the gallbladder. These patients present with obstructive jaundice accompanied by fever and right upper quadrant pain. If it cannot be detected in the preoperative or intraoperative period, it may cause biliary tract injuries during surgery. In this case, a 60-year-old female patient complains of abdominal pain, jaundice, nausea, and vomiting. This case report emphasizes the diagnostic and surgical approach in type II Mirizzi Syndrome and highlights the importance of preoperative imaging, contributing to the literature. ng and was diagnosed with cholelithiasis and choledocholithiasis is presented. The diagnosis of Mirizzi syndrome was clarified with MR cholangiopancreatography (MRCP) after the procedure of endoscopic retrograde cholangiopancreatography (ERCP) for choledochal stone was unsuccessful. Cholecystectomy, common bile duct (CBD) exploration, and T-tube drainage were performed on the patient for whom surgical intervention was decided. The postoperative period ended uneventfully.

Keywords: Mirizzi syndrome, cholelithiasis, choledochal exploration

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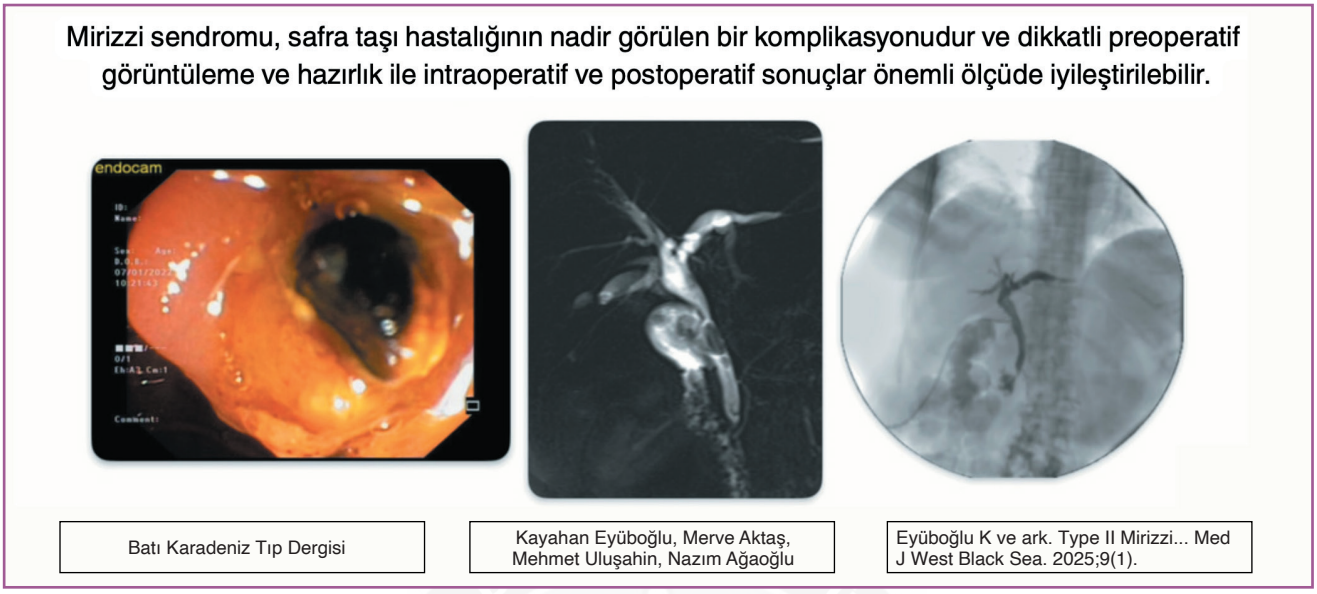
GRAFİKSEL ÖZET



ÖZ

Mirizzi sendromu (MS), safra kesesinin Hartmann poşu veya sistik kanalında yer alan büyük bir taşın dıştan basısının neden olduğu safra kanalının tıkanıklığıyla karakterizedir. Bu hastalarda, obstruktif sarılığa eşlik eden ateş ve sağ üst kadranda ağrı görülür. Eğer preoperatif veya intraoperatif dönemde tespit edilemezse, ameliyat sırasında safra yolları yaralanmalarına sebebiyet verebilir. Bu makalede, karın ağrısı, sarılık, bulantı ve kusma şikâyetleri olan ve kolesistit ve koledokolitiazis teşhisi konulan 60 yaşında bir kadın hasta sunulmuştur. Mirizzi sendromu teşhisi, koledok taşı nedeniyle yapılan endoskopik retrograd kolanjiyopankreatografi (ERCP) işleminin başarısız olması sonrasında MR Kolanjiyopankreatografi (MRCP) ile netleştirilmiştir. Cerrahi müdahaleye karar verilen hastaya kolesistektomi, ortak safra kanalı (CBD) eksplorasyonu ve T-tüp drenajı uygulanmıştır. Hastanın postoperatif dönemi komplikasyonsuz geçmiştir. Bu olgu sunumu, Tip II Mirizzi Sendromu'nun tanı ve cerrahi tedavisindeki yaklaşımı ile preoperatif görüntülemenin önemini vurgulayarak literatüre katkı sağlamaktadır.

Anahtar Sözcükler: Mirizzi sendromu, kolelitiazis, koledok eksplorasyonu

INTRODUCTION

Gallstones (cholelithiasis) are a prevalent gastrointestinal condition and are usually asymptomatic. Their incidence increases significantly in certain populations, such as fertile women aged forty to fifty and those with certain risk factors, including obesity, rapid weight loss, or a family history of gallstone disease. In most cases, gallstones remain clinically silent; however, complications can arise when stones migrate or obstruct biliary structures. Mirizzi Syndrome (MS) is a rare, although potentially serious, consequence of cholelithiasis. MS results from the common bile duct (CBD) mechanical obstruction caused by a large gallstone located in the infundibulum (Hartmann's pouch) or cystic duct, leading to extrinsic compression and biliary obstruction.

Mirizzi Syndrome was first described by Pablo Luis Mirizzi in 1948, who identified the syndrome as a significant cause of obstructive jaundice due to external compression of the bile duct. Since then, the syndrome has been further studied and categorized. In 1982, McSherry et al. introduced two categories of MS; subsequently, Csendes et al. broadened this categorization in 1989 to include four subtypes. These classifications aid in differentiating the extent of bile duct involvement, encompassing the existence of cholecystobiliary fistulas and the severity of biliary wall degradation (1).

The ethology of MS encompasses persistent inflammation, fibrosis, and ultimately adhesion between the gallbladder and biliary tree components, and it is considered an important risk factor for bile duct injuries (2). Untreated cholelithiasis may eventually result in problems including cholecystitis, choledocholithiasis, and Mirizzi Syndrome. The symptoms generally include obstructive jaundice, right upper quadrant pain, and fever. In some cases, the disease progresses insidiously, making early diagnosis difficult. Especially dangerous anatomic alterations make the surgical intervention more complex and riskier. It is important to the importance of preoperative determination of surgical strategies and optimal surgical intervention when diagnosis is done at

the time of operation, particularly for those whose classification was high grade (3). Advanced imaging techniques, including Magnetic Resonance Cholangiopancreatography (MRCP) and Endoscopic Retrograde Cholangiopancreatography (ERCP), are essential for identifying and validating MS when traditional diagnostic methods are inadequate.

This case report highlights the diagnostic and therapeutic challenges related to type II Mirizzi Syndrome, focusing on a 60-year-old female patient who presented with symptoms of abdominal pain, jaundice, nausea, and vomiting. Imaging modalities such as MRCP and ERCP were critical in diagnosing the condition after initial interventions failed. The surgical approach included cholecystectomy, common bile duct exploration, and T-tube drainage, which resulted in a successful recovery. This article highlights the importance of preoperative imaging and a multidisciplinary surgical strategy to prevent problems like biliary damage and postoperative morbidity. The objective is to enhance the knowledge regarding the care of this rare event to improve patient outcomes and address analogous circumstances in clinical practice.

CASE REPORT

A 60-year-old female patient has come to the emergency department complaining of upper abdominal pain and nausea. The patient's history revealed ongoing pain and loss of appetite for several weeks.

Laboratory findings showed cholestasis: ALT 121 U/L, AST 62 U/L, GGT 328 U/L, ALP 246 U/L, direct/total bilirubin 3.92/7.08 mg/dL. White blood cell count was 6.220 μl, and CRP was 87.9. Initial abdominal ultrasonography showed diffuse thickening of the gallbladder wall (5.5 mm), multiple millimetric stones, and slight prominence in the intrahepatic bile ducts. To clarify the preliminary diagnosis of obstructive icterus, endoscopic retrograde cholangiopancreatography (ERCP) was performed and revealed a stone approximately 2 cm in size at the junction of the common bile duct and cystic duct, which could not be removed. Instead, a 7 cm 10 Fr plastic stent was placed in the common bile duct. Magnetic Resonance Cholangiopancreatography (MRCP) imaging was performed in the preoperative preparation phase after the failed ERCP procedure. In MRCP several stones were observed within 15mm diameter located at cystic duct - choledochal junction common bile duct & neck region exerting pressure on main bile causing dilatation on proximal main hepatic & intrahepatic tract respectively (Figure 1 and 2).

Based on clinical, laboratory, and imaging findings, the patient was diagnosed with type II Mirizzi Syndrome. Subsequently, open cholecystectomy was planned. Through a right subcostal incision, the gallbladder was removed, and adhesions between the cystic duct and common bile duct were released. The gallbladder neck was opened, and multiple stones were removed by irrigation, followed by the removal of the stent. A T-tube was inserted into the common bile duct, and the defect on the duct's wall was repaired using a flap from Hartmann's pouch. Intraoperative cholangiography confirmed clear bile ducts, and the surgery was completed with the placement of a suction drain in the subhepatic area.

Postoperatively, the patient's liver function tests improved, and bilirubin levels decreased (Table 1).

Oral intake began on the second postoperative day. The drain was removed on the fourth day, and T-tube cholangiography on the tenth day showed no complications. The T-tube was removed two days later, and the patient was discharged fully recovered. (Figure 3).

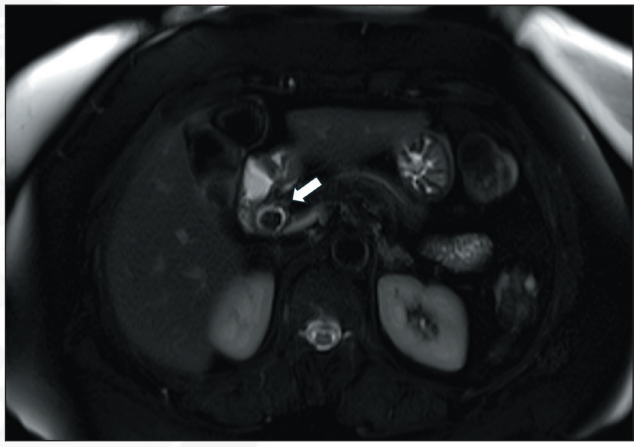


Figure 1: MRCP shows that the gallbladder appears contracted. At the junction of the cystic duct and choledochal duct, several stones, the largest of which is 15 mm in diameter, are observed in the choledochal and gallbladder neck. The stone in the neck of the gallbladder compresses the common bile duct and there is dilatation of the proximal common hepatic bile duct and intrahepatic bile ducts (Mirizzi syndrome).

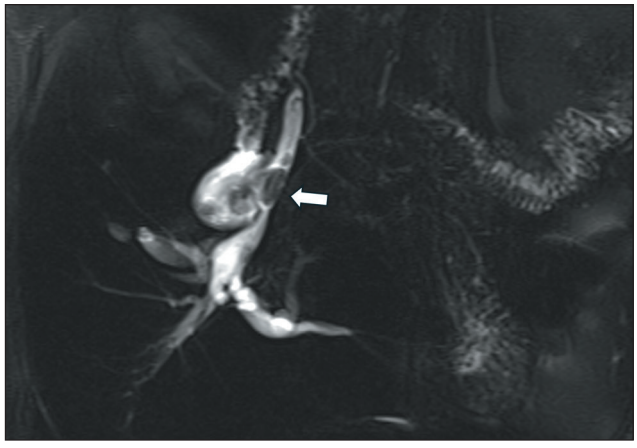


Figure 2: A view of the biliary tree

Table 1. Patient's laboratory results.

Blood Tests	Normal Range	Emergency Department	After ERCP	Post-op 1st day	Post-op 2nd day	Post-op 3rd day	Discharge Day 12th
ALT	0-45 U/L	121	69	56	35	23	25
AST	0-35 U/L	62	69	43	29	18	20
GGT	0-55 U/L	328	25	30	25	29	44
ALP	30-120 U/L	246	72	62	61	64	77
T.Bil.	0.3-1.2 mg/dL	3.92	0.33	0.43	0.52	0.29	0.1
D.Bil.	0-0.2 mg/dL	7.08	1.99	2.47	2.82	1.8	0.48
WBC	3710-10190 μL	6220	16860	16350	11310	8670	6750
CRP	<5 mg/L	87.9	4.5	74.5	217	182.5	4.9

ALT: Alanine Aminotransferase, **AST:** Aspartate Aminotransferase, **GGT:** Gamma-Glutamyl Transferase, **ALP:** Alkaline Phosphatase, **T.Bil.:** Total Bilirubin, **D.Bil.:** Direct Bilirubin, **WBC:** White Blood Cell, **CRP:** C-Reactive Protein, **ERCP:** Endoscopic Retrograde Cholangiopancreatography.

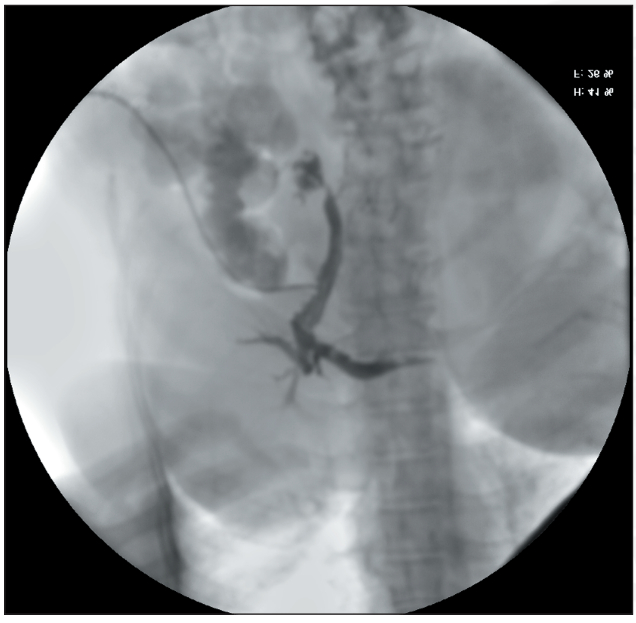


Figure 3: Evaluation of the biliary tract by postoperative t-tube cholangiography.

DISCUSSION

Partial biliary duct obstruction due to gallstones was first reported by Hans Kehr in 1905. In 1948, Pablo Luis Mirizzi drew attention to this situation with his article titled "Sindrome del conducto hepatico" and MS was first described.

MS was divided into four types with the Csendes classification in 1989, and in 2007, having a colo-enteric fistula with one of these types was defined as type 5 (4,5):

There are five different varieties of Mirizzi syndrome, and each one is characterized by a unique set of symptoms. The external compression of the common bile duct that is induced by a gallstone is what distinguishes Mirizzi type I from other types. On the other hand, the occurrence of a cholecystobiliary fistula that affects about one-third of the bile duct's circumference is what distinguishes Mirizzi type II from type I. The cholecystobiliary fistula can involve up to two-thirds of the bile duct's circumference if it is a Mirizzi type III, which is the most severe form of the condition. The most severe form, known as type IV Mirizzi, happens when the cholecystobiliary fistula not only grows to an extensive size but also causes the destruction of the wall of the bile duct, which encompasses the entirety of the duct's perimeter. Any variant of the Mirizzi syndrome that is linked with a bilioenteric fistula is considered to be Mirizzi type V, regardless of whether or not gallstone ileus is present in the patient (6). The purpose of all definitions is to ease the decompression of the biliary tree, prevent a recurrence, and decrease biliary tract injuries and morbidity during the operation.

Diagnosing MS can be challenging due to the lack of distinct signs and symptoms that are unique to the condition. The most observed symptom is abdominal pain, which is often followed by jaundice and cholangitis. Nausea, vomiting, and itching are less frequently encountered (7). ERCP and MRCP are valuable imaging methods in preoperative diagnosis. Especially in ERCP, obstruction in the common bile duct, presence of impacted stone in the gallbladder neck or cystic duct, size of the stone, presence of biliobiliary fistula, duodenal, pancreatic and ampullary pathologies and possible findings of malignancy can be detected. It allows biliary decompression by placing a stent in the same session (8). However, in cases where ERCP cannot be technically performed due to external compression, MRCP is a guiding method with high sensitivity and specificity (9).

The significance of MR Cholangiopancreatography (MRCP) in accurately diagnosing Mirizzi syndrome, particularly when conventional methods like endoscopic retrograde cholangiopancreatography (ERCP) prove inadequate, is

underscored in this case study. Furthermore, surgical interventions, encompassing cholecystectomy and exploration of the common bile duct, have proven to be highly effective in managing this condition and facilitating a successful patient recovery, as exemplified by the presented case.

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None.

Author Contributions

Concept: **Nazım Agaoglu, Mehmet Ulusahin, Kayahan Eyüboğlu,** Design: **Mehmet Ulusahin, Kayahan Eyüboğlu, Merve Aktas,** Data collection or processing: **Mehmet Ulusahin, Kayahan Eyüboğlu, Merve Aktas,** Analysis or Interpretation: **Nazım Agaoglu, Mehmet Ulusahin, Merve Aktas,** Literature search: **Mehmet Ulusahin, Kayahan Eyüboğlu, Merve Aktas,** Writing: **Mehmet Ulusahin, Kayahan Eyüboğlu, Merve Aktas,** Approval: **Nazım Agaoglu, Mehmet Ulusahin.**

Conflicts of Interest

The authors have no conflicts of interest to declare.

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Ethical Approval

Written informed consent was obtained from the patient for the publication of the case report.

Review Process

Extremely and externally peer-reviewed and accepted.

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