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# Endoscopic Surgical Interventions in Diagnosis and Treatment of Mirizzi Syndrome.

**Vladimir F Kulikovskii*, Alexander V Soloshenko, Aleksandr A Karpachev, Andrei L Iarosh, and Yurii Iu Vlasiuk.**

Belgorod State National Research University, 85, Pobedy Str., Belgorod, 308015, Russia.

**ABSTRACT**

This paper presents the results of treatment of 41 patients with Mirizzi syndrome. In all cases we used a series of endoscopic transpapillary interventions as a first step: cholangiography, papillosphincterotomy, lithoextraction, and nasobiliary drainage. In 4 cases, we performed laparoscopic cholecystectomy after sanitating the biliary tract. Six elderly patients with severe comorbidity underwent the biliary stenting. Fifteen patients (36.6%) underwent open surgeries such as cholecystectomy, choledocholithotomy with drainage of the choledochous duct.

**Keywords:** endoscopy interventions, Mirizzi syndrome, obstructive jaundice

*Corresponding author*

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## INTRODUCTION

The problem of modern surgery in hepatobiliary area is diagnosis and treatment of the Mirizzi syndrome. Recent studies have shown that the Mirizzi syndrome should be considered a complication of gallstone disease, which initial morphological feature is the compression of the proximal part of hepaticocholedochus, culminating in the formation of either a stricture or cholecysto-choledochal fistula. The Mirizzi syndrome is one of the most severe complications of gallstone disease, which requires an individual approach in both diagnosis and treatment. This is especially true for patients with chronic Mirizzi syndrome, most of which are elderly and senile patients, often with severe comorbidities and at high operational and anesthetic risk. These patients typically have no pathognomonic clinical signs, which allow us to accurately suspect this complication; the diagnostics uses the same set of diagnostic measures as in complicated gallstone disease, while the endoscopic retrograde cholangiography and percutaneous transhepatic cholangiostomy detect this disease only in 20.4% of patients [1, 2].

Recently, much attention is given to different methods of surgical correction, including the use of video-laparoscopic technologies. Methods of surgical treatment of the Mirizzi syndrome can be divided into three groups. The first group includes the traditional surgical techniques such as laparotomy, cholecystectomy with T-tube insertion [3-5]. The second includes video-laparoscopic techniques, which currently are the operations of choice in treating the gallstone disease and its complicated forms. A contracted bladder with severe scar changes around, the Mirizzi syndrome and its assumption, an expressed inflammatory infiltrate or scar process in the area of gall bladder neck, which prevents to mark the elements of Calot's triangle, are an indication for laparotomy [6-8]. The third group includes minimally invasive endoscopic and percutaneous endobiliary surgeries. They allow both assessing the state of the bile ducts, and, just as important, changing from the primarily diagnostic procedure to the treatment one such as drainage of the bile ducts [9-11].

## TECHNIQUE

The total number of patients examined and treated at the surgical department No 1 of St. Joasaph Belgorod Regional Clinical Hospital with complicated forms of gallstone disease was 1018 people. This paper deals with analysis of treatment results of 41 patients with the Mirizzi syndrome. 34 (82.9%) of them are women, and 7 (17.1%) – men. Average age – 61.7±13.5 years.

Primary biochemical parameters of the blood of patients with the Mirizzi syndrome are presented in Table 1.

**Table 1: Primary biochemical parameters of the blood of patients with the Mirizzi syndrome.**

| Parameter | Average value | Standard deviation | min | max |
|---|---|---|---|---|
| Total bilirubin (mol/l) | 124.4 | 134.8 | 5.9 | 532.9 |
| Aspartate aminotransferase (U/l) | 129.9 | 158.2 | 13.0 | 906.8 |
| Alanine aminotransferase (U/l) | 178.0 | 236.6 | 7.7 | 1209.6 |
| Amylase (U/l) | 43.6 | 26.7 | 12.0 | 147.0 |
| Creatinine (µmol/l) | 85.8 | 31.9 | 2.5 | 165.5 |
| Urea (mol/l) | 8.3 | 13.9 | 1.8 | 92.0 |

## MAIN PART

In all cases of the Mirizzy syndrome we used endoscopic transpapillary intervention techniques as a first diagnostic and therapeutic measures. We conducted endoscopic retrograde cholangiography, papillosphincterotomy, lithotripsy and lithoextraction. In one instance we managed to successfully conduct a remote shock-wave lithotripsy. In 4 cases, we performed laparoscopic cholecystectomy after sanitating the biliary tract. Six elderly and senile patients with severe comorbidity underwent only the choledochous duct stenting (Table 2).

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**Table 2: The nature of surgical intervention in the case of the Mirizzi syndrome.**

| Nature of intervention | Abs., units | Rel., % |
|---|---|---|
| Endoscopic papillosphincterotomy | 8 | 10.0 |
| Endoscopic papillosphincterotomy, lithoextraction | 5 | 6.3 |
| Endoscopic papillosphincterotomy, nasobiliary drainage | 8 | 10.0 |
| Lithoextraction | 4 | 5.0 |
| Lithoextraction in two tries | 3 | 3.8 |
| Nasobiliary drainage | 15 | 18.8 |
| Remote shock-wave lithotripsy | 1 | 1.3 |
| Biliary stenting | 6 | 7.5 |
| Endoscopic papillosphincterotomy, lithoextraction with further laparoscopic cholecystectomy | 4 | 5.0 |
| Lithoextraction upon recurrent choledocholithiasis | 2 | 2.5 |
| Laparotomy, cholecystectomy, drainage of the choledochous duct | 1 | 1.3 |
| Laparoscopic cholecystectomy | 5 | 6.3 |
| Atypical papillotomy | 3 | 3.8 |
| Laparotomy, cholecystectomy, drainage of the choledochous duct | 13 | 16.3 |
| Laparotomy, cholecystectomy | 1 | 1.3 |
| Laparotomy, cholecystectomy, choledocholithotomy, choledochoduodenostomy | 1 | 1.3 |
| Total | 80 | 100 |

In 4 cases we diagnosed this disease during laparoscopic cholecystectomy, its main signs were infiltrate in the subhepatic space right, the lack of cystic duct with prolapsing the bladder lumen into the lumen of the choledochous duct. The surgery was completed by cutting off the gallbladder from the choledochous duct with the reserve tissues that allowed performing plastic reconstruction by applying mechanical intracorporeal suture.

15 (36.6%) patients underwent open laparotomic intervention. 13 of them underwent laparotomy, cholecystectomy, choledocholithotomy with drainage of the choledochous duct. We performed choledochoduodenoanastomosis in one patient with inadequate bile outflow, the other patient underwent laparothomy and cholecystectomy after papillotomy, mechanical lithotripsy and lithoextraction.

## CONCLUSION

As previously stated, treating the Mirizzi syndrome remains one of the most difficult problems of modern abdominal surgery. This is because of difficulty to diagnose this disease prevailing among elderly and senile patients, when the open laparotomy intervention is impossible [1-3].

There is an apparent fact that the compression of the choledochous duct is transformed into stricture if surgery is delayed, and the disease takes a chronic form, where the periods of well-being interchange with exacerbations. The gallbladder and hepaticocholedochus walls approach each other over time until full contact, which is induced by the presence of a large stone in the gallbladder. Its mass affects the worsening of already existing trophicity disorders, it leads to the perforation (decubitus) of the gallbladder and bile duct walls with subsequent formation of vesicocholedochal fistula. Concrements from the gallbladder get through this pathological connection into the lumen of choledochus duct, and the fistula diameter increases due to tissue loss in the compression zone. As a result, the narrowing of the proximal part of the choledochus duct is liquidated, the gallbladder volume shrinks, and its neck and a large part of the body disappear. There is a lack of cystic duct in the vast majority of patients [1-3, 5, 8-11].

We consider it expedient to widely use endoscopic endobiliary interventions in diagnosing and treating the Mirizzi syndrome. Such interventions allow both assessing the state of the bile ducts, and, just as important, changing from the primarily diagnostic procedure to the treatment one such as drainage of the bile ducts.

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## SUMMARY

Thus, at the present stage, endoscopic methods for diagnosing and treating patients with complicated forms of cholelithiasis allow us in most cases to achieve adequate decompression and sanitation of the bile ducts, and to perform open laparotomic surgery only in 36.6% of patients with the Mirizzi syndrome.

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