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Research Article

# Effectiveness of Endoscopic Sphincterotomy in the Choledocian Empierrements

**Sanae Lajouad*, Mohamed Acharki, Mouna Salihoun, Nawal Kabbaj**

*CHU Ibn Sina, University Mohamed V Rabat, Rabat, Morocco*

***Corresponding Author**: Sanae Lajouad, CHU Ibn Sina, University Mohamed V Rabat, Rabat, Morocco.

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## Abstract

**Introduction and Aim:** The endoscopic sphincterotomy is an effective method in the support of the lithiasis of the main bile duct (MDB). The purpose of our work is to determine the epidemiological characteristics, cholangiography and correlation; between size and nature of the calculations and the therapeutic approach. As well as the results of the endoscopic treatment of lithiasis (MDB).

**Materials and Methods:** During a period from January 2013 to July 2018, all patients with an MDB lithiasis greater than 2 cm or a choledocian empierrements and having benefited from a therapeutic ERCP were collected.

**Results:** Result from 734 patients having benefited from an ERCP, 582 patients (79.3%) were referred to take endoscopic load LMDB of which 101 have choledocious stone and/or large calculus greater than 2 cm long axis (39%), 10 of which are complicated by cholangitis and 7 of pancreatitis.

There is a female predominance (67.8% women - 32.2% men) with a sex ratio to 2.3 and with an average age of 65 years (35 - 95 years). 49.3% of the patients were cholecystectomized. The size of the calculations varied between 20 and 50 mm (greater than 3 cm in 22% of cases).

79% of the stones were yellowish-brown (cholestetric or mixed), 21% had blackish pigmentary stones never exceeding 1cm in our series, often multiple. A sphincterotomy was performed and the evacuation of calculations was done at Dormia in 72.7% of cases, the balloon in 17% of cases, and with both in 10.4% of cases. a sphincteroclasy was performed for 12.5% of cases, and the precut was performed in 17% of cases. Mechanical lithotripsy was performed for 15 patients (17%) who belonged to the group of patients with large yellowish-brown stones. 5 patients had a combined treatment: a laparoscopic cholecystectomy with endoscopic extraction of the lithiasis of the main bile duct at the same time.

The success of the endoscopic treatment, defined by a complete vacuity of the MBD at the end of the procedure, was obtained in 90.1% of cases: 81 patients (80.2%) during the first session, 10 patients (9.9%) after a repeat of ERCP. The 10 patients (9.9%) who had failed to clear the stones were all in the yellowish-brown calculus group, 6 of whom had undergone a plastic prosthesis (6.8%) and 4 patients have been proposed for surgery (4.5%).

Complications were noted in 7.8% of patients: 4.9% of cases (5 cases) of pancreatitis, 3 cases of bleeding or 2.9%. The average duration of the procedure is 25 minutes and the average duration of hospitalization was 24 hours.

**Discussion:** In our study, endoscopic treatment resulted in 90.1% clearance of MDB, with a significantly lower complication rate and hospital stay than surgery.

**Conclusion:** Endoscopic sphincterotomy is currently the standard in the support of large stones or emperrement of the MDB.

***Keywords:*** *Endoscopic Sphincterotomy; Choledocian Empierrements*

## Introduction

The lithiasis of the MDB is a common pathology that every practitioner is regularly confronted with. It is defined by the presence of calculations in the MDB, which mean from the bifurcation branches of the common hepatic duct until vaterian's stoma of the bile duct (Vater bulb). The lithiasis of the MDB is a rarer affection than vesicular lithiasis most often it is associated with it but it is not necessarily of the same aspect. Calculations usually migrate to the MDB by the cystic duct. Exceptionally, they are primitive nascent in MDB or intrahepatic bile ducts. Some clinical forms of the disease are potentially serious. Echo-endoscopy and bile-MRI have allowed progress in the positive diagnosis less invasive way, but intraoperative cholangiography still the reference exam. Endoscopic biliary sphincterotomy is effective in the treatment of the lithiasis of the main bile duct allowing to obtain a complete vacuity of this one in 85 to 90% of the cases. However, these results may be limited by the presence of large stones or a choledochal. The purpose of our work is to determine the epidemiological, cholangiography and correlation characteristics; between size the nature of the calculations and the therapeutic approach. As well as the results of the endoscopic treatment of the lithiasis (MDB).

## Patients and Methods

### Patients

It's about a retrospective study conducted within the service EFD-HGE from Ibn Sina Rabat Hospital between January 2013 and July 2018.582 patients having benefited from an ERC for lithiasis of MDB was included. The choledocian empierrement (Figure 2) was defined by the presence of multiple stones (more than 3) and fat calculus (Figure 3 and Figure 4) by an obstructive lithiasis whose size is greater than or equal to 2cm.

### Methods

All ERCP were performed under general anesthesia (Propofol) by an experienced endoscopist.

The size, location, number of stones and diameter of the MDB were obtained on cholangiography. The size (major transverse axis) of the calculations and the caliber of the MDB were measured by taking as a reference the diameter of the duodenoscope.

In case of failure to extract the calculations, by the standard technique (use of an extraction balloon or basket of Dormia after endoscopic biliary sphincterotomy (SBE)) complementary maneuvers were undertaken according to the case: mechanical lithotripsy, sphincteroplasty, A second attempt of extraction was performed within 3 to 7 days. If total failure of endoscopic extraction, surgical treatment was performed. A set up of plastic prostheses was realized for the patients with a contraindication to surgical treatment.

The endoscopes and instruments used were: duodenoscopes; sphincterotome triple light; guide wire; basket of Dormia; extraction balloon; lithotripter, Dilation balloon and plastic stents. The success of endoscopic treatment was defined by the complete elimination of all MDP stones.

The overall success was that obtained after additional maneuvers and/or recoveries of the patient. The occurrence of early complications was noted: acute pancreatitis and bleeding.

## Results

### Epidemiological data

Among the 734 patients having benefited an ERCP,582 patients (79.3%) were addressed for supported endoscopic an LMDB of which 39% had a choledocian empierrement and/or a large calculus greater than 2 cm long axis. We notice a female predominance (67.8% women - 32.2% men) with a sex ratio to 2.3. Average age of our patients was 65 years (35 - 95 years). 49.3% of the patients were cholecystectomized.

### Size and nature of calculations

The size of the calculations varied between 20 and 50 mm (greater than 3 cm in 22% of cases).

The aspect of calculations was in 79% of cases yellowish brown type (cholestetric or mixed), 21% had blackish pigmentary stones never exceeding 1cm in our series, often multiple (Figures 1-4).

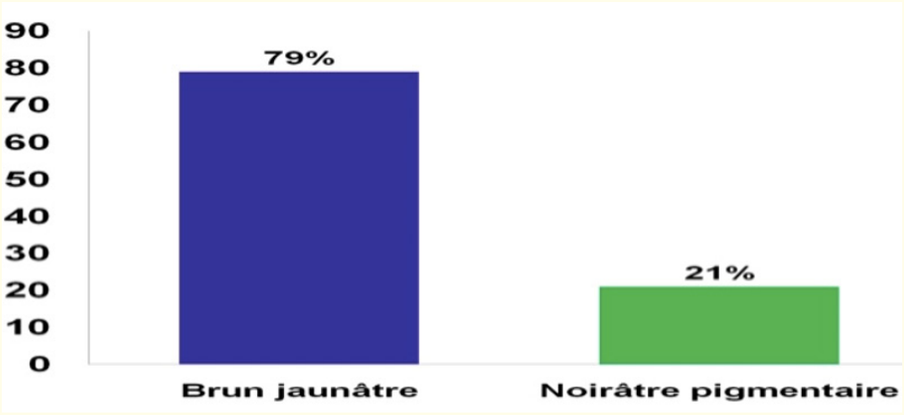


***Figure 1:*** *Distribution according to the nature of the calculations.*

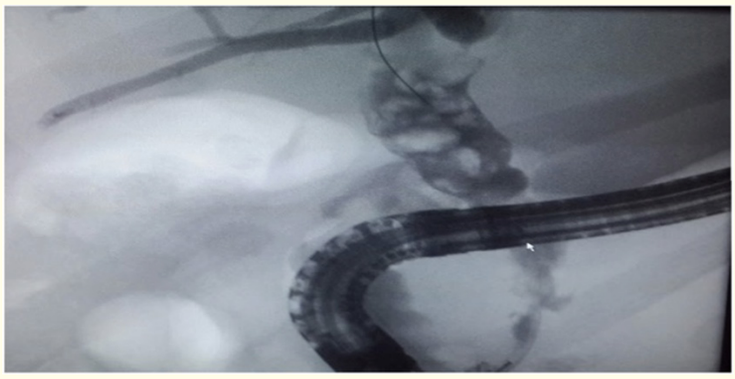

***Figure 2:*** *Radioscopic view of a choledocian emperrement Department of EFD-HGE Hospital Ibn SINA, Rabat.*

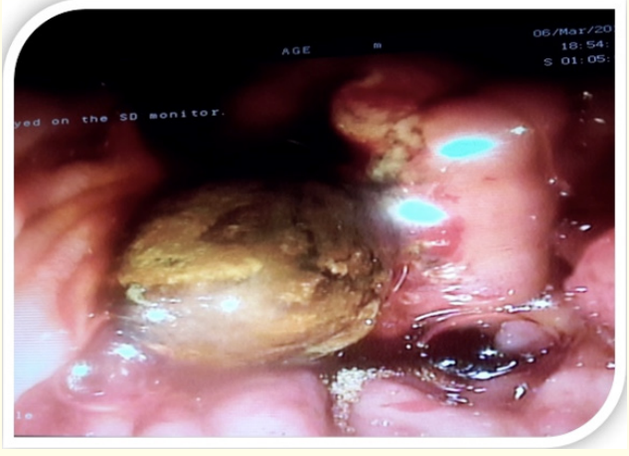


***Figure 3:*** *Image of a large calculation.*

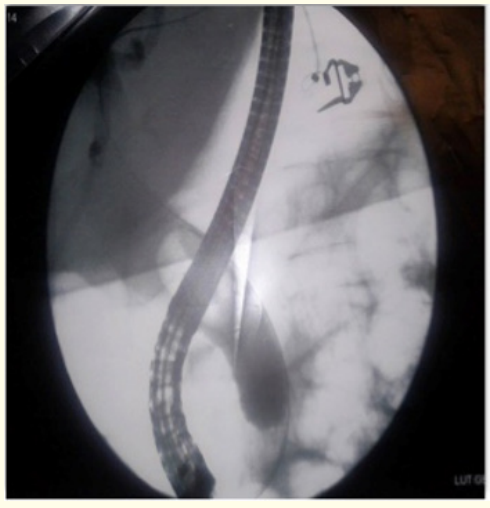

***Figure 4:*** *Radioscopic view of a large calculation.*

## Extraction ways

Sphincterotomy was carried out and the evacuations of the calculations 72.7% of cases were in Dormia, 17% in balloons, and 10.4% in both cases (Figure 5). Sphincteroclasy was performed in 12.5% of cases and the precoup was performed in 17% of cases (Figure 6).

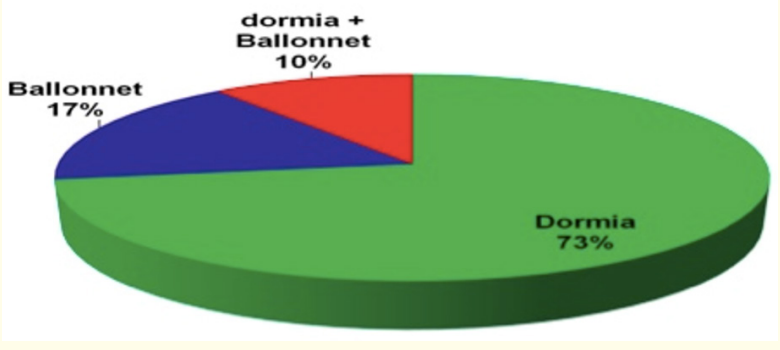


***Figure 5:*** *Extraction ways.*

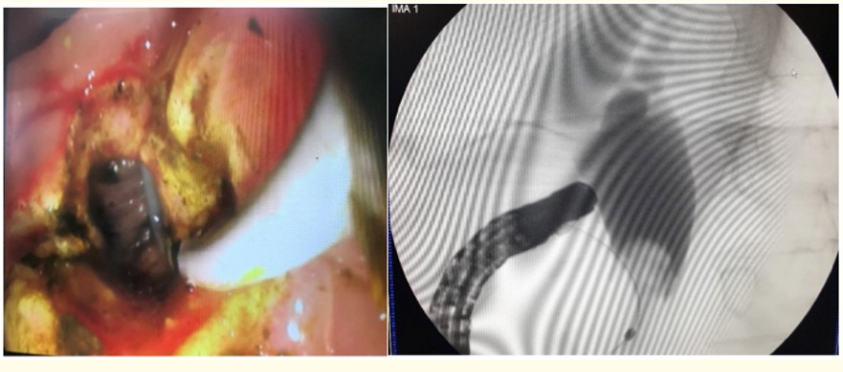

***Figure 6:*** *Large infundibulotomy for extraction of a large calculation.*

Mechanical lithotripsy was performed in 15 patients (17%) who belonged to the group of patients with large yellowish-brown stones. 5 patients had a combined treatment: a laparoscopic cholecystectomy with endoscopic extraction of the lithiasis of the main bile duct at the same time.

### Success rate

The success of endoscopic treatment, defined by complete emptiness of the MDB at the end of the procedure, 90.1% of cases were obtained: 81 patients (80.2%) during the first session, 10 patients (9.9%) after a resumption of ERCP. The 10 patients (9.9%) at whom there was failure to evacuate calculations, are all yellowish-brown calculating group of which 6 of them had received a plastic prosthesis (6.8%) and 4 patients were proposed for surgery (4.5%) (Figure 7).

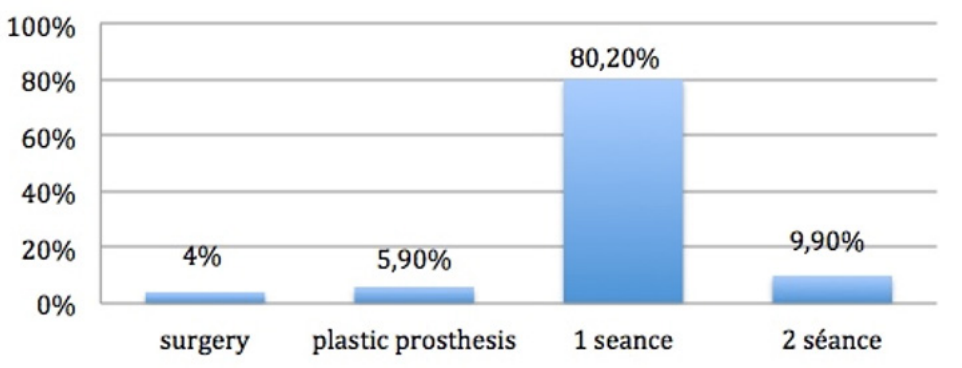


***Figure 7:*** *Therapeutic results.*

### Complications

- The complication rates global precocious 7.8% of cases were:
- Acute pancreatitis: 4.9% (including 3 cases of severe PA (stage E).
- Manageable bleeding: 2.9% of which 1 post-injection recovery of Adrenaline.
- Average length of procedure: 25 minutes.
- Average length of stay: 24h.

## Discussion

Stoning and/or large choledochal stones (diameter greater than 15 mm). Constitute a known difficulty in endoscopic treatment [1-3]. Our study illustrates this reality well. The recovery of the patient and/or the use of complementary techniques were more frequent in case of presence of stones and/or large choledochal stones.

In a study similar to ours [4], the vacuity of MDB could only be obtained in 42% of cases, after a single catheterization in our study was 80.2%. The recovery of the patient and/or the use of complementary maneuvers allow however to overcome the difficulties of extraction of stones. In our study the overall success could be raised to 92% vs 89% in that reported by the Gargouri., *et al.* [4] study.

Several complementary techniques are currently available for the treatment of stone and/or large choledochal stones that cannot be removed directly by standard methods (Dormia probe or extraction flask). The expansion endoscopic sphincterotomy may be attempted

but is at risk haemorrhagic [5]. The fragmentation of the stones and/or sphincteroplasty then becomes necessary to facilitate the extraction of the stones. Failure of these techniques is an indication for stenting [6] or surgical treatment [1,7,8].

Sphincteroplasty (dilation of the papillae after SBE by balloons 12 to 20 mm in diameter) is a technique that combines the benefits of dilated papilla and sphincterotomy. It increases the efficiency of stone extraction while minimizing the complications of both techniques. Overall success rates ranging from 90 to 100% have been reported [9,10]. Fragmentation of calculations can be performed initially by mechanical lithotripsy, simple technique and currently the most commonly used. Mechanical lithotripsy is effective in 79 to 92% of cases [11,12].

The success rate, in the presence of large stones (diameter greater than 15 mm), was 87.6% in the study by Schneider., *et al.* [13] and 90% in that of Chang., *et al* [14]. In our study, mechanical lithotripsy was used in 17% of patients with a success rate of 86%.

The difficulties of endoscopic treatment of the lithiasis of the MDB are of two kinds: some are directly related to the endoscopic technique and the MDB approach; the others are related to the characteristics of the lithiasis itself. In addition to stone and/or big calculations several factors have been reported to be associated with decreased endoscopic treatment success rate of the lithiasis of the MDB: stenosis of the MDB [15] (primary sclerosing cholangitis, recurrent pyogenic cholangitis), the antecedents of digestive bypass, Gastric or choledoco-jejunal, or Billroth Type II intervention, Mirizzi syndrome [16], strong angulation (angle less than 135°) of the MDB distal and short distal arm of it [17]. In our study it was noted that the decrease in the success rate of endoscopic treatment was significantly associated with the presence of cholangitis and choledochal embolism. In our study it was noted that decreasing the success rate of endoscopic treatment was significantly associated to the presence of cholangitis and staining choledochal.

Wan., *et al.* [2] analyzed the results of the ERCP for large stones over 2 cm in diameter. In this study, factors associated with the failure of endoscopic treatment were the stone choledochal and the antecedents a choledochotomy surgical. The earlier complication rate was also higher for patients with large choledochal stones greater than 2 cm. in our study, the presence or not of a stony and/or large choledochal stones, did not significantly influence the earlier complication rate of endoscopic treatment. Several studies [9,14,18,19] have shown that the use of complementary techniques did not significantly increase the morbidity of endoscopic treatment.

## Conclusion

Endoscopic sphincterotomy is currently the standard in the support of large stones or emperrement of the MDB.

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