

Laparoscopic Cholecystectomy following ERCP in One Day: A Retrospective Study

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ABSTRACT

Endoscopic retrograde cholangiopancreatography (ERCP) followed by laparoscopic cholecystectomy represents the preferred treatment approach in patients with common bile duct (CBD) stones. However, the best time interval between ERCP and laparoscopic cholecystectomy is a matter of controversy. The aim of this study is to evaluate the one day approach for those patients regarding the clinical results and complications. This is a retrospective study of 32 patients diagnosed as having gall bladder and common bile duct stones. The patients included 19 males and 13 females with 49 years old as a mean age (range 32-73). ERCP and laparoscopic cholecystectomy were done for them in the same day with less than three hours as time interval between the two procedures. Twenty eight patients (88%) were managed successfully without complications. It is concluded that ERCP followed by laparoscopic cholecystectomy as one day approach for management of patients with gall bladder and CBD stones is safe with a low risk of complications.

Keywords: Common bile duct stones, Laparoscopic cholecystectomy, Endoscopic retrograde cholangiopancreatography.

INTRODUCTION

Common bile duct (CBD) stones are present in 10%-15% of patients indicated for cholecystectomy. Unsuspected CBD stones have an incidence of about 4%⁽¹⁾.

CBD stones should be removed once diagnosed to prevent suspected complications, such as ascending cholangitis and acute pancreatitis⁽²⁾. CBD stones are typically predicted by the presence of elevated liver enzymes during episodes of biliary colic or acute pancreatitis and by imaging the bile ducts. Abdominal US is a noninvasive, cheap, and effective method to visualize the extrahepatic bile ducts⁽³⁾. Computed tomography (CT)⁽⁴⁾ and Magnetic resonance cholangiopancreatography (MRCP) are better means to detect biliary stones⁽⁵⁾.

The time plan for endoscopic retrograde cholangiopancreatography (ERCP) in CBD stones is a matter of debate. It can be done before, during, or after laparoscopic cholecystectomy⁽⁶⁾.

Numerous studies confirmed that ERCP is a safe procedure to be done before laparoscopic cholecystectomy in patients with CBD stones as a two stages approach⁽⁷⁻⁹⁾.

However, it still has risks of complications such as pancreatitis, cholangitis or failure of complete CBD clearance⁽¹⁰⁾.

Therefore, some surgeons prefer to do laparoscopic cholecystectomy not less than two days after ERCP for observation to exclude presence of any ERCP related complications. This requires longer hospitalization time for the patient⁽¹¹⁾.

Intraoperative ERCP during laparoscopic cholecystectomy requires a combination of more advanced therapeutic resources, instruments, physicians' experiences and longer operative time⁽¹²⁾.

There is a failure rate (about 5%) for ERCP to remove all stones if done after laparoscopic cholecystectomy, and in these cases another intervention to remove CBD stone will be needed⁽¹³⁾.

Because of the former facts, it is decided to study this group of patients to whom one day approach was implemented. ERCP was done for complete CBD clearance in the endoscopy unit with no immediate post-ERCP complications and followed by laparoscopic cholecystectomy in the operating theater within less than 3 hours as a time interval between the two procedures.

The aim of this study was to evaluate this one day approach regarding the clinical results and rate of complications.

PATIENTS AND METHODS

This is a retrospective study included thirty two patients diagnosed as having gall bladder and common bile duct stones which was confirmed by clinical, laboratory and radiological findings in the form of manifestations of obstructive jaundice, elevated serum bilirubin, elevated liver enzymes, high alkaline phosphatase level and/or dilated common bile duct (diameter > 7 mm by ultrasonography, CT or MRCP).

ERCP and laparoscopic cholecystectomy were done for them in Hai Aljameaa hospital (private hospital in Jeddah, Kingdom of Saudi Arabia) between January 2015 and November 2017. The medical records of all patients admitted for ERCP and laparoscopic cholecystectomy in this period were reviewed and the data were collected for the group of patients with the one day approach.

Patients with the following criteria were excluded from the study:

- American Society of Anesthesiologists physical status (ASA-PS) classification more than class II.
- Failure of complete stone removal by ERCP.
- Immediate post-ERCP complications.
- Suspicion of pathologic condition other than CBD stones (such as malignancy).

The patients included 19 males and 13 females with 49 years old as a mean age (range 32-73). The American Society of Anesthesiologists physical status classification (ASA-PS) for the patients ranged from class I and class II.

The ERCP was done in the endoscopy room with the patient in left lateral position under intravenous conscious sedation using midazolam and pethidine. The patients had continuous cardiopulmonary monitoring during the procedure by an anesthesiologist.

Biliary sphincterotomy, removal of the stones, balloon dilation up to the size of the duct and insertion of a biliary stent were done in all cases.

Laparoscopic cholecystectomy was done under general anesthesia in the operating room within less than 3 hours as a time interval between the two procedures, by using four ports. Oral intake was started once the intestinal sounds became adequately audible. All patients were checked in the outpatient clinic one week or less after discharge. Another follow up during the first post-operative month was recorded for eighty four percent of the patients.

The patients' data including demographic details, clinical presentations, ERCP and surgical results, operative time, length of hospital stay and complications were analyzed. Values were showed up as mean and range.

RESULTS

This study included thirty two patients diagnosed as having gall bladder and CBD stones (Table 1). Twenty five patients (78%) presented by colicky abdominal pain, five patients presented by jaundice (16%) and two patients (6%) presented with acute mild pancreatitis.

The diagnosis was confirmed by ultrasound in 29 patients, by magnetic resonance in 2 patients and by CT in one patient. There was no perioperative mortality.

The mean duration of ERCP was 32 minutes (18-55) and of laparoscopic cholecystectomy was 45 minutes (20-115). The mean time interval between the two procedures was 90 minutes (35-170). The mean length of hospital stay was 2.3 days (1.5-3.8)

Conversion to open cholecystectomy was done in one patient due to uncontrolled bleeding. Two patients developed postoperative mild attack of acute pancreatitis. Wound infection was recorded in one patient.

The previous operative and post operative complication represented in 4 patients with eighty eight percent success rate was accomplished (28 patients).

Table 1: Data of patients and procedures

Demographic data	
Age (years)	49 (32-73)
Sex: male/female No. (%)	19(59%) / 13(41%)
Patients' presentation	
Colicky abdominal pain No. (%)	25 (78%)
Jaundice No. (%)	5 (16%)
Pancreatitis No. (%)	2 (6%)
Imaging investigations	
Ultrasound No. (%)	29 (91%)
MRCP No. (%)	2 (6%)
CT No. (%)	1 (3%)
Durations	
ERCP (min)	32 (18-55)
Cholecystectomy (min)	45 (20-115)
Time interval (min)	90 (35-170)
Hospital stay (days)	2.3 (1.5-3.8)
Operative and Post-operative complications	
Bleeding (conversion)	1(3%)
Pancreatitis	2(6%)
Wound infection	1(3%)

MRCP: Magnetic resonance cholangiopancreatography.

ERCP: Endoscopic retrograde cholangiopancreatography.

DISCUSSION

After laparoscopy became the standard management for gall bladder stones, there was much controversy about the best management for patients who have concomitant gall bladder and CBD stones. The management for these patients depends to a large extent on the experience and skills of the endoscopic and surgical teams than on a specific agreement^(14, 15).

The treatment modalities for CBD stones include laparoscopic treatment only (laparoscopic cholecystectomy with transcystic common bile duct exploration or laparoscopic CBD exploration)^(16, 17), or combined ERCP with laparoscopic cholecystectomy^(18,19).

Laparoscopic CBD exploration is technically demanding, adds time to the standard laparoscopic cholecystectomy procedure and sometimes fails, although in experienced hands the results equal those of ERCP⁽²⁰⁾.

Preoperative ERCP can be diagnostic and therapeutic in patients with CBD stones or in patients with unequivocal signs of CBD stones. However, if the ERCP done days before

laparoscopic cholecystectomy, it will add more hospital stay, higher cost and more discomfort for the patient. The most common complication from the ERCP is pancreatitis, almost of a mild grade. This is due to inattentive cannulation of the pancreatic duct or even only the papilla in rare cases. Other complications may occur as a result of difficulties in gaining access to the bile duct⁽²¹⁾.

ERCP after laparoscopic cholecystectomy is a further maneuver with its related possible morbidity. Moreover, it has a failure rate ranges from 7% to 14%, which requires one more procedure which represents undue risk and cost for the patient^(22, 23).

Also, intraoperative ERCP (one-stage approach) has its drawbacks, including prolonged operative time and technical difficulties during the procedure⁽⁶⁾. A meta-analysis study was done and concluded that the clinical outcome after one-stage laparoscopic/endoscopic management of bile duct stones is not different from the outcome after two-stage management⁽²⁴⁾.

The reason for conversion of laparoscopic to open cholecystectomy in one patient (3%) was

bleeding from cystic artery with obscure anatomy. This rate was similar to those by Hamour (4%)⁽²⁵⁾ and Al-Hadi (2.7%)⁽²⁶⁾, but differ from those reported by Meshikhes (11%)⁽⁸⁾ and Romano (7.3%)⁽²⁷⁾. The conversion rates in other studies were mostly because of severe adhesions⁽⁶⁾.

This approach was safe and only two patients developed postoperative mild attack of acute pancreatitis and one patient developed wound infection. These results differed from other studies^(8,25) which reported a variety of complications such as atelectasis and gall bladder injury which did not occur in this study.

The mean length of hospital stay was 2.3 days (1.5-3.8). This was shorter than that reported by Meshikhes et al.⁽⁸⁾, Al Karawi et al.⁽²⁸⁾, Maiore et al.⁽²⁹⁾ and Hamy et al.⁽³⁰⁾

In this study, one day approach was applied assuming that it provides a shorter hospital stay which leads to reducing patient inconvenience, cost of health services, incidence of hospital acquired infections and hospital beds occupancy by avoiding multiple hospital admissions. It also provides a chance to repeat the ERCP if the first trial fails. Larger studies are required to support this conclusion to use this approach for patients with combined gall bladder and CBD stones.

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