THE ROLE OF ERCP COMBINED LAPAROSCOPIC CHOLECYSTECTOMY IN GALLSTONES AND COMMON BILE DUCT STONES PATIENTS

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Abstract

Introduction: Common bile duct stones are associated in 10% to 15% of patients with gallstones. The advance of endoscopic techniques has changed surgery in regards to management of gallstones associated with common bile duct stones. This has created a dilemma in the management of common bile duct stones. Today, a number of options exist, including endoscopic sphincterotomy (ES) before laparoscopic cholecystectomy (LC) in patients with common bile duct (CBD) stones, laparoscopic cholecystectomy and choledocotomy. **Objectives:** The aim of this work was to assess the treatment of gallstones associated with common bile duct stones (CBDS) by endoscopic retrograde cholangiopancreatography (ERCP+ES) and laparoscopic cholecystectomy (LC). **Patients and methods:** This study was performed on 31 patients with gall stones associated with common bile duct stones diagnosed by ultrasound at Hue Central Hospital. They were treated by ERCP+SE prior to LC, immediately or after an interval. The episode of surgery, surgical operating time, surgical success rate, postoperative complications, and postoperative length of hospital stay were assessed. **Results:** 21 females and 10 males were part of the study, with mean age 63.64 (SD=13.18; range = 38 - 81) years old. All patients were confirmed to have gallstones and CBDS by preoperative ultrasound. All patients were prepared for ERCP and LC in one session. However, in only10 patients (32.3 %) was ERCP and LC performed in single step. ERCP with ES was performed successfully in 31 patients and stones were extracted endoscopically. One patient suffered from open cholecystectomy due to necrotic cholecystitis 2 days after ERCP. 21 patients (77,7%) received LC 2-3 days after ERCP. Cholecystectomy was completed laparoscopically in 30 of 31 patients (96.8%). The mean time of ERCP was 35.15± 15.20 min. The mean time of LC was 45.10 ± 25 minutes. There was no intra-operative complications related to ERCP together with LC recorded. However, one post-operative complication for LC was encountered. Patients were discharged after a mean post operative hospital stay of 5.15 ± 2.3 days. None of the patients presented on postoperative follow-up with symptoms, signs, laboratory or radiological evidence of retained CBDS. The mean duration of the postoperative follow-up was 16.8+4.45 months (ranging from 2 to 24 months). **Conclusions:** The current study suggests that ERCP combined with LC for the management of cholecysto-choledocholithiasis was a safe and effective technique. It offered another alternative for surgeons, especially those who did not practice LCBDE to treat patients. However, additional studies with larger patient populations are needed and should keep in mind the proximity and availability of endoscopic settings, which were limiting characteristics in this study.

1. BACKGROUND

About 10-15% of patients with gallstones are found to have common bile duct stones on admission [7],[8]. Today, laparoscopic cholecystectomy has become the best method for gallstone removal.This can be combined with ERCP (endoscopic retrograde cholangio-pancreatography), meaning that the treatment of common bile duct stones (CBDS) associated with gallstones can now be performed more easily with more choices. Thus, there are currently, two methods for the removal of common bile duct stones: 1) ERCP combined with laparoscopic cholecystectomy (LC); and 2) Laparoscopic cholecystectomy combined with opening the bile ducts to remove stones.

Objectives: *The aim of this work was to assess the treatment of gallstones associated with common bile duct stones (CBDS) by endoscopic retrograde cholangio-pancreatography (ERCP+ES) and laparoscopic cholecystectomy (LC).*

2. PATIENTS AND METHODS

2.1. Patients

From July of 2008 to July of 2011, 31 patients who had gallstones associated with CBD stones were treated by ERCP + sphincterotomy and LC, including 21 females and 10 males. Patients' mean age was 63.64 ± 13.18 years old (ranged from 38 to 81). Seventeen patients (54.8%) were aged 65 years or older.

Ultrasound was performed at least twice for the same result.

Patients having intrahepatic stones, or many stones (> 3 tablets) were excluded from this study. Patients with cholangititis finished stable treatment before surgery.

2.2. Methods

The studied patients underwent ERCP + SE before LC. All patients were prepared for LC immediately after removing CBDS. However, if the patients' condition did not allow LC immediately due to abdominal distention, LC was performed after 2-3 days.

For patients whose stones were not all removed by ERCP the first time, the procedure was repeated after 3-4 days, before LC. ERCP patients failed to get stones to be converted to retrieve CBD stones and laparoscopic cholecystectomy or laparotomy.

Duration of operation, the rate of success, complications during and after surgery, and post-operative hospital stays were recorded per time.

3. RESULTS

3.1. Clinical features

Table 1. Risk factors

Risk factors	**n**	**%**
Hypertension	18	58.1
Hyperglycemia	14	45.2
Heart failure	7	22.6
Decrease respiratory function	8	25.8

Table 2: Clinical features

Clinical feature	**n**	**%**
Jaundice	18	58.1
Direct hypebilirubinenia	20	64.5
Increase transaminasa	12	38.7
Increase phosphatase alkaline	14	45.6
Sonography (+)*	31	100

** : Including gall and CBD stones*

ERCP with LC immediately afterwards was performed with 10 (32.3%) patients. For 21 patients (77.7%), LC was performed 2 to 3 days later. In one patient necrosis cholecystitis was detected 2 days after ERCP , resulting in an emergency open cholecystectomy.

ERCP + SE was successful in all patients (100%). Five patients received a 2nd ERCP 3 days later to remove all stones, including one

stenting ERCP case because of bile leakage after LC. The average time of ERCP + SE was 35.2 ± 15.2 minutes.

3.2. Specification

Table 3. Number of ERCP procedures performed for stone removal

ERCP + SE	n	%
Once	25	80.1
Twice	5	16.1
2 times + stent	1	3.2

LC was successful for 30 patients (96.8%), with an average time of 50 ± 18 minutes. When LC was performed immediately after ERCP (Group 1), the average time was 65 ± 12 minutes. When LC was performed 2-3 days (Group 2) after ERCP, the average time was 45 ± 9 minutes. No complications were observed in Group 2. In Group 1, one patient had a bile fistula of clip position and was treated with bile duct stent.

Table 4. Laparoscopic cholecystectomies

Methods	N	%	Operation Time	Complication
ERCP and LC in same time	10	32.3	65 ± 12	1
LC after ERCP 2-3 days	21	77.7	45 ± 9	0

Hospitalization: 5.15 ± 2.3 days.

The medium follow-up time for patients was 16.8 +4.45 months (2 to 36). No patient experienced recurrent signs and symptoms at follow-up. No patients had complications related to LC and ERCP.

4. DISCUSSION

Currently, LC has replaced 95% of open cholecystectomy procedures and ERCP has become increasingly popular for the removal of CBD stones. Therefore, in the case of gallstones associated with CBD stones, whether to use laparoscopic choledocotomy or ERCP + LC was a question for many surgeons. Laparoscopic cholecystectomy together with choledocotomy has the advantage that the operation can be conducted in one time and by one team. But laparoscopic choledocotomy has a number of limiting factors such as the requirement of experienced surgeons, fibroscopy and electro-lithotripsy. In addition, surgery time and hospital stay is longer and the costs are higher, compared with the alternative. This study showed that the average length of hospital stay for ERCP +LC was 5.15 ± 2.3 days, compared to 6.5 days for laparoscopic cholecystectomy combined with choledocotomy [4].

LC combined choledocotomy isdifficult in elderly patients and associated diseases. The mean age in this study was 63.64 ± 13.18 years, including 17 patients over 65 years old (54.8%). Over 50% of patients suffered from hypertension and nearly 50% of patients had diabetes (Table 1). This is equivalent to a study of patients with Himal H.S study that was elderly and associated diseases patients [6] cannot prolong laparoscopy.

In our previous studies, CBD stones extraction by ERCP has a high success rate (85%), with only 3.5% of patients experiencing complications [3], and other authors have found similar results [1]. In this study, the patients were indicated strictly so the success rate of ERCP in our study was 100%, with no operative complications. Conversion rate in our previous study in 1999 was 12%; the main causes were bile duct perforation, gallbladder necrosis, and inflammatory adhesion at Calot triangle [2]. Other studies have obtaineda conversion rate of 9.8% [10]. There were no conversion patients in this study (0%), in our opinion, because the surgeons were experienced and the patients were indicated correctly.

Two factors to be considered are that cholecystectomy should not be performed immediately after ERCP if there is abdominal distention and should be performed in 2-3 days to avoid inflammation of the gallbladder. Ronnie TPP delayed LC for 6-12 weeks and found a conversion rate of 9.8%. Cholecititis is increased if the delay is beyond 72 hours [7].

In our study, there were 10 LC (32.3%) immediately after ERCP, with 0% conversion rate. However, the operation time was significantly longer if LC was delayed by 2-3 days. We considered the fact that abdominal distention occurring a long time after ERCP could make LC more difficult. In addition, in some cases ERCP did not result in complete stone removal, which may lead to cholecystic canal leakage, as in one case in our study.

There were no significant complications when LC was performed 2-3 days after ERCP. Operation times were shorter than when LC and ERCP were performed together. There was no conversion, but there was one cholecystitis necrosis 2 days after ERCP, which resulted inan open cholecystectomy. In addtion, another advantage of late LC was that we could control CBDS by ultrasound.

Based on this analysis, we believe that the timing of LC should not be fixed, buta combination surgical team should always be on standby. This has two benefits: an emergency operation is possible if complications occur with ERCP, such as bleeding, perforation of the duodenum. Alternatively, immediate LC is possible if the patient's condition allows, such as is the case when the patient has a normal abdomen and no stones according toX-ray. If conditions donot allow, patients could receive LC after 2-3 days.

Some studies show that in the case of cholecystitis, if after 72 hours LC is performed, the inflammation will be elevated, and lead to more difficulties and complications [7]. The results of our study showed that any conversion reinforces this point of view. However, careful monitoring is required to avoid complications after ERCP, including serious cholecystitis necrosis.

5. CONCLUSION

This study showed that ERCP combined with laparoscopic cholecystectomy in the treatment of gallstones with bile duct stones was safe and effective.It has been shown to be an effective approach to treatment, particularly in places where it is not possible to perform laparoscopy to choledocotomy associated with cholecystectomy. This procedure should be performed with large numbers of patients to find out the limitations of the combination of ERCP and laparoscopic cholecystectomy for the treatment of this disease, and the combination of a surgeon and an endoscopist.

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