

DISSECTION OF COMMON BILE DUCTS IN LAPAROSCOPIC REPAIR IN THE BILIARY STONES REOPERATION: EXPERIENCE IN 72 CASES

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SUMMARY

Background: Laparoscopic repair used to be contraindicated to the patients who had a history of abdominal operation in general and bile duct surgery in particular. Additionally, the development of techniques in medicine together with surgeon's advanced experience has allowed an expansion of laparoscopic repair in the treatment of cholelithiasis, especially for the cases of reoperation. *Objectives:* This article is conducted to present the author's interesting experience associated with the management of biliary tract reoperation by laparoscopy as well as the features of bile duct dissection in laparoscopic biliary stone reoperation. *Subjects and methods:* Prospective study on a total of 72 patients. *Results:* Laparoscopic surgery in the treatment of biliary stones reoperation in 72 patients from 2013 to 2017. Mean blood loss during surgery was 52.01 ± 9.62 mL. *Conclusion:* Laparoscopic surgery in the treatment of biliary stones reoperation is relatively safe and effective.

* *Keywords:* Biliary stones; Laparoscopy; Reoperation.

INTRODUCTION

The management of choledocholithiasis is a controversial issue in medical literature. The 3 main approaches are endoscopic retrograde cholangiopancreatography (ERCP), open surgery, and increasingly laparoscopic exploration of the common bile duct (LECBD). However, the surgical management of choledocholithiasis in patients who have had cholecystectomy in the "open" era poses a challenge because of the potential difficulty of significant adhesions after open surgery.

In the past, laparoscopic surgery was contraindicated for patients undergoing any prior abdominal surgery. With the

advances in laparoscopic techniques, increasingly complex procedures can be performed for patients with or without prior operations.

Through a study on 72 patients, we provide technical specification of laparoscopic dissection of bile duct in the treatment of biliary stones reoperation.

SUBJECTS AND METHODS

1. Subjects.

A total of 72 patients, 33 males and 39 females (range 24 - 78 years), agreed a reoperation of the biliary tract by laparoscopy from 2013 to 2017 at Department of Abdominal Surgery, 103 Military Hospital.

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Patients had significant symptoms of pain and discomfort in the liver area before surgery. Preoperative ultrasound, computed tomography, and magnetic resonance cholangiopancreatography (MRCP) were used to determine stone location, liver lesions, hepatic biliary system.

2. Methods.

Preoperative preparation was the same as in conventional laparotomy. Since there were adhesions in the abdominal cavity in all cases, open operative instruments were available. All surgeries were performed under general anaesthesia by endotracheal intubation. Patients were placed in reverse Trendelenburg position. The surgeon stood between the legs of the patient and two assistants stood on both sides of the patient, respectively (Fig. 1).

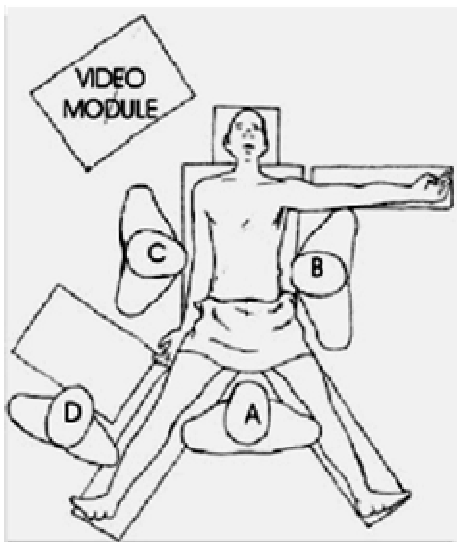


Figure 1: Patient and surgeon's positions.

* Technical implementation:

- Step 1: Place the trocar, pumping CO₂: Commonly used 5 trocars (figure 2).

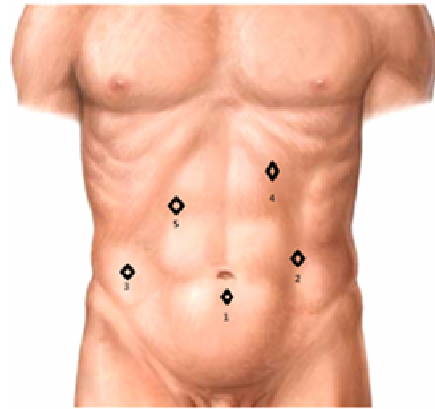


Figure 2: The ports' position.

+ 1st trocar: 10 mm port for laparoscopy and stand for "umbilicus".

+ 2nd trocar and 3rd trocar: 5 mm port for dissecting adhesions.

+ 5th trocar: 5 mm assist operative port.

+ 4th trocar (yes or no): 5 mm assist operative port.

- Step 2: Check, remove the adhesive, biliary disclosed.

We accepted closed or open laparoscopic access to establish 12 mmHg CO₂ pneumoperitoneum. After inserting operative instruments, we dissected adhesions existing between previous incision of right costal margin or rectus abdominis and greater omentum and intestinal canal. The surgeon pressed abdominal wall corresponding to adhesions where we prepared to insert trocar, to assure that all adhesions had been completely dissociated.

Next, we conducted a dissection revealed bile duct. For tubiform tissue not confirmed to be common bile duct (CBD), we often adopted fine needle puncture method and if there was bile leak, it was proved to be CBD.

RESULTS AND DISCUSSION

1. Comment on the process of placing trocar.

- 1st trocar: Usually we put below the navel, located away from the old incision about 3 cm.

According to some authors, general endotracheal anesthesia was used. The abdominal cavity was accessed near the umbilicus. If the previous scar was more than 3 cm from the umbilicus, the blind technique was used to insert the Veress needle. If the scar was less than 3 cm from the umbilicus, the open (Hasson) technique was used. Adhesions under the umbilical incision were dissected using blunt finger dissection [4, 7, 8, 10, 11].

- 4th trocar: In cases of liver sticking to the abdominal wall, we do not remove the stick because the liver is then raised and exposed to the area of the bile duct. So, you may not need to add this trocar.

- 5th trocar: Trocar in medioclavicular line should be placed at 4 cm below costal margin because T-drainage tube is elicited through the trocar which will move headwards 2 ~ 3 cm after pressure of pneumoperitoneum decreases. If the trocar is placed near below right costal margin, T-drainage tube through it will easily twist. In addition, patients may feel intense pain with rhythm of breath due to scrape between T-drainage tube and incision. Chen B et al had the same point of view [1].

2. Comments on the process of exposing the bile duct.

Before surgery, we ultrasound to locate the common hepatic duct. This location is marked on the abdomen.

Based on round ligaments of liver, perform surgery on the lower omentum, go through the round ligaments of liver to the duodenum and right liver to see the artery.

* Dissection from the right:

- With gallbladder: Dissection along close to the shore in the gallbladder under the liver.

- Without gallbladder: Organ dissection stick to the underside of the right liver. It should be noted with portal vein.

As such, the bile duct is located between the arteries of the liver (left) and the gallbladder (right).

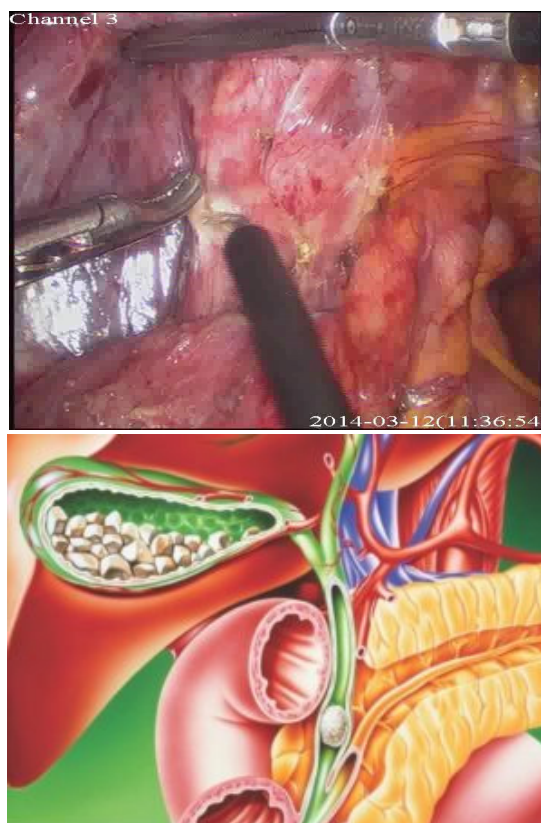


Figure 3: Anatomical location of the liver.

The CBD was localized by aspiration of bile using a long spinal needle directly through the anterior abdominal wall. The needle was grasped intraperitoneally 5 mm from the tip before localization, thus minimizing the risk of the posterior CBD wall by excessive puncture [2].



Figure 4: Technique for minimizing the chances of injury to posterior wall of CBD while aspiration.

Also, usage of tools will touch feeling gravel to gravel cases in the CBD or common hepatic duct. Finally, continue removing sticky part duodenum with bile duct.

For adhesions which do not hamper operation, surgeons do not need to dissect overmuch to spare operative time and lessen trauma. Adhesions at suprahepatic interspaces cannot hamper operations, inversely, they can make liver stick to the abdominal wall facilitating exposition of infra-hepatic interspaces [1].

3. Blood loss during surgery.

Mean blood loss during surgery was 52.01 ± 9.62 mL.

We suggest that surgeons should use ultrasound scalpel or LigaSure to dissect. Ultrasound scalpel is superior to hypercator in laparoscopic operation because it has no effects on heat conduction, avoiding heat injury in case of dissecting tissues, it does not generate smoke, has little effect on operative field and also avoids pneumoperitoneal hypopnesia resulting from releasing smoke frequently when using electrome. Furthermore, blood vessels within 3 mm in diameter can be directly disconnected with it. LigaSure can safely be used for blood vessels smaller than 7 mm in diameter and has effect on permanent closure. It can directly close tissular cords without dissecting blood vessel in them. It can also be used precisely for objective tissues and has few heat injuries which lessens adhesions and is better for dissecting adhesions [1, 4].

CONCLUSION

- This study showed that laparoscopic biliary tract reoperation appears to be a minimally invasive, safe, feasible, and effective method when done by expert laparoscopic surgeons.

- We suggest that surgeons should use ultrasound scalpel or LigaSure to dissect.

- Laparoscopic biliary tract reoperation is an alternative method for patients with choledocholithiasis who have failed in endoscopic sphincterectomy.

- The authors describe, in this paper, their experience in laparoscopic biliary tract reoperation, which is of a certain clinical value.

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