

Three-port Laparoscopic Cholecystectomy with Modification in Technique by Suture Retraction of Gallbladder

การพัฒนาการผ่าตัดนิ่วถุงน้ำดีแบบผ่านกล้องชนิด 3 พอร์ต โดยการเย็บถุงน้ำดียึดติดกับผนังหน้าท้อง

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ABSTRACT

Objective: With increasing surgeon experience, laparoscopic cholecystectomy was undergone many refinements including reduction in port number and size. Three-port LC has been reported to be safe and feasible in various clinical trial. This study reports my experience and feasibility of three-port LC with modification in techniques with suture retraction of gallbladder.

Materials and Methods: To assess the feasibility and safety of three-port LC with modification technique. This study underwent a prospective study with 119 patients at Krathumbaen Hospital, Samut Sakhon Province, Thailand between January 2009 and January 2014. The study offered a benefit of concealed tradition stitch in gallbladder placed for retraction over the conventional three-port LC. All cases were done by one surgeon and criteria of symptomatic gallstones (SGS) and chronic cholecystitis were included in our study.

Results: 119 cases of gallstones and chronic chelecystitis were subjected to modify techniques of three-port LC during 5 years period. 69 cases were female and 50 cases were male. The age range of our patients was between 19 and 79 years with the mean age of 51 years. In total 52 patients (43.6%) were diagnosed with SGS and 67 patients (56.4%) with chronic cholecystitis by histology. Mean operative time was 62 min (range 45-120 min). 3 cases were converted to open cholecystectomy and two case require an additional port in the right hypochondrium for retractor. Mean hospital stay was 3.6 days. 2 patients were developed post operative complication.

Conclusion: Three-port LC with our modification of the traction stitch in gallbladder placed for retraction received good result and patient satisfaction especially in chronic cholecystitis patient due to thickening wall with contracted gallbladder. Thus, it can be recommended as a safe alternative procedure in elective LC especially chronic cholecystitis and long as long positional fold in symptomatic gallstones.

Keywords: Laparoscopic cholecystectomy, Three port, Modification fundic retraction method

บทคัดย่อ

วัตถุประสงค์: เพื่ออธิบายถึงความปลอดภัย ความง่ายต่อการผ่าตัดนิ้วในถุงน้ำดีแบบผ่านกล้องชนิด 3 รู โดยอาศัยเทคนิคการเย็บถุงน้ำดีติดกับผนังหน้าท้อง โดยเฉพาะในผู้ป่วยถุงน้ำดีอักเสบเรื้อรัง

วัสดุและวิธีการ: เป็นการผ่าตัดผู้ป่วยนิ้วในถุงน้ำดี ทั้งที่ได้รับการวินิจฉัยว่าเป็นนิ่ว และถุงน้ำดีอักเสบเรื้อรัง จำนวน 119 ราย ตั้งแต่ มกราคม 2552 ถึง มกราคม 2557 โดยวิธีแบบผ่านกล้องชนิด 3 รู โดยอาศัยเทคนิคการเย็บถุงน้ำดีติดกับผนังหน้าท้อง ทำการผ่าตัดโดยศัลยแพทย์คนเดียวกันตลอดการศึกษา

ผลการทดลอง: ในจำนวนผู้ป่วย 119 ราย ได้รับการวินิจฉัยว่า เป็นนิ่วในถุงน้ำดี 52 ราย (ร้อยละ 43.6) ผู้ป่วยส่วนที่เหลือได้รับการวินิจฉัยว่า เป็นถุงน้ำดีอักเสบเรื้อรังจากนิ่ว 67 ราย (ร้อยละ 56.4) มีการใช้ระยะเวลาในการผ่าตัดเฉลี่ย 62 นาที มี 3 ราย จำเป็นต้องใช้การเปิดหน้าท้องแบบมาตรฐาน มีระยะเวลาในการนอนโรงพยาบาลเฉลี่ย 3.6 วัน ไม่พบผู้ป่วยมีภาวะแทรกซ้อนร้ายแรงจากการผ่าตัด เช่น ท่อน้ำดีบาดเจ็บขณะผ่าตัด

สรุป : การผ่าตัดแบบผ่านกล้องชนิด 3 รู โดยอาศัยเทคนิคการเย็บถุงน้ำดีติดกับผนังหน้าท้องค่อนข้างปลอดภัย และสามารถทำได้ง่าย เพิ่มโอกาสความสำเร็จ โดยเฉพาะในผู้ป่วยถุงน้ำดีอักเสบเรื้อรัง

คำสำคัญ : การผ่าตัดถุงน้ำดีผ่านกล้องชนิด 3 รู เทคนิคการเย็บถุงน้ำดีติดกับผนังหน้าท้อง

Introduction

Three-port LC is a recognized entity accepted by the world literature and reported without any major complications like bile duct injury. The conventional three-port LC technique envisages the port placement at umbilicus, 10 mm optical port and two more working ports at epigastric region, a 5 mm port in the right hypochondrium in right midclavicular line. We tried to modify the conventional three-port LC combined with sutured retraction of gallbladder.

Materials and Methods

This study was conducted in Krathumbaeen Hospital, Samut Sakhon Province, Thailand between January 2009 and January 2014. A series of 119 patients underwent LC with three trocar techniques using the retraction suture (table 1).

Table 1 Demographic data of patients undergoing LC (n = 119)

Characteristics	
Male / Female	69/50
Age	19-79 (Mean 51 years)
Gallbladder lesion	
- SGS	52 (43.6%)
- chronic	67 (56.4%)

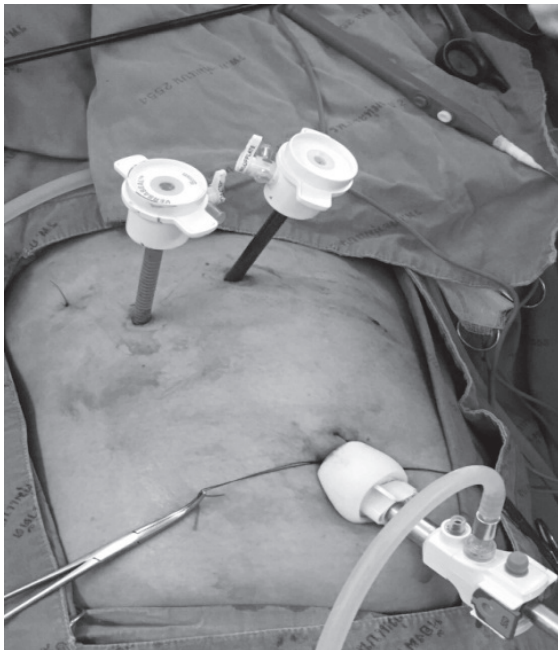


Fig. 1 Port site and suture site

The pneumoperitoneum was created through a 10 mm trocar sheath inserted by open method in the lower part of the umbilicus for 10 mm camera port. The second 5 mm trocar sheath was inserted by puncture in the epigastric paramedian point and used for a coagulation hook. Marryland dissector, clip applicators, or grasping forceps were introduced with 5 mm

trocar sheath in the subcostal area to retract the gallbladder neck and 2-0 monofilament nylon was inserted with a straight needle through the right 7th intercostal space at the anterior axillary line (fig.1). The seromuscular layer at the finding of gallbladder was punctured and retracted toward the abdominal wall (fig.2).

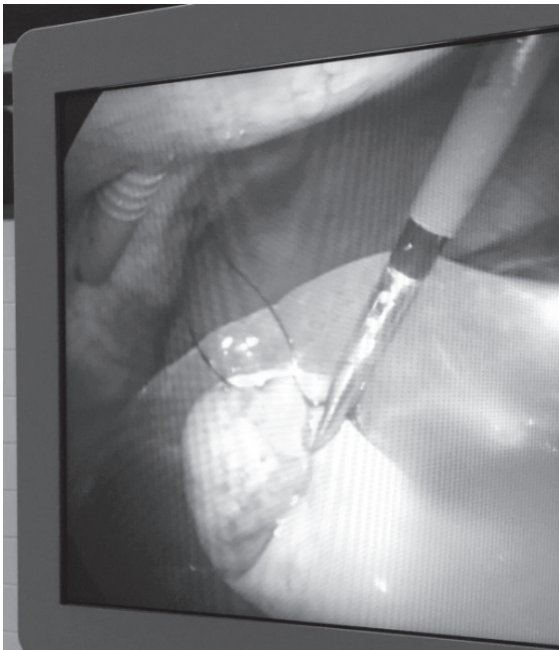


Fig. 2 The fundus was fixed to the abdominal wall.

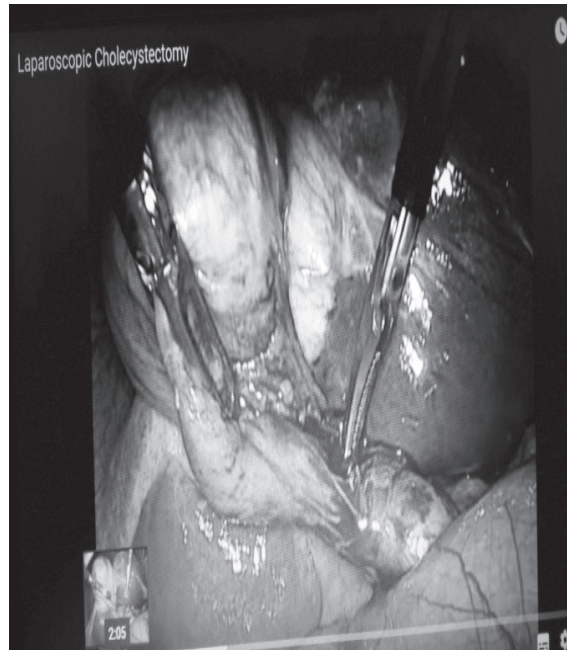


Fig. 3 During the dissection of the gallbladder from the liver bed.

Calot's triangle was clearly exposed by the traction on the gallbladder neck with a single pair of grasping forceps and the cystic duct/artery could be safely clipped and divided, the dissection of gallbladder from liver bed is easily performed using on pair of grasping forcep and

a coagulation neck while the fundus was fixed to abdominal wall (fig.3). The gallbladder was removed via camera port site in the lower part of umbilicus. Usually, the skin was closed with subcutaneous 4-0 vicryl.

Results

Among 119 patients underwent three-trocar with suture retraction of gallbladder method.

1. Age and sex: The median age of patients was 51 years and the range was 19-71 years. There were 69 female and 50 male in the study. There were 22 patients have underlying disease (1 thalassemia, 1 heart disease, 1 ESRD, 19 with DM and HT).

2. Perioperation details: The mean operation time was 62 min, 2 cases (1.6%) needed additional trocars because of severe inflammation and adhesion of Calot's triangle, to retract omentum downward for good exposure to cystic duct and artery dissection, 3 cases (2.5%) were converted to open cholecystectomy because of bleeding and severe adhesion to duodenum and stomach. There was no major bile duct injury in our study.

3. Post-operation details: 1 patient developed fever due to thrombophlebitis and urinary tract infection, 1 patient developed congestive heart failure due to underlying AF and mitral valve stenosis, 1 patient developed wound infection in case conversion to open cholecystectomy, this was managed by opening up the skin suture and antiseptic dressing twice daily with a short course of antibiotic. The mean dosage of analgesic used after operation was 2 doses.
4. Hospital stay: The mean hospital stay was 3.6 days, the range was between 3-10 days. Most of patients were discharged home in the morning of second operative day. The hospital stay got prolonged up to 3 days in patients who developed the above post-operative complications.

Discussion

There have been a number of modifications in the technique of LC, some other trials to reduce the number of trocars and size of ports.¹⁻³ The standard ports LC, the fourth port for the grasper used to retract the dome of gallbladder. It is unnecessary by some surgeons, other used sutures to retract the gallbladder.

However, McMahon MJ and^{4, 5} warned that the three-port LC without retraction of gallbladder may increase the risk of common bile duct injury. Our experience, in the case of long and distended gallbladder is difficulty to dissect Calot's triangle. Shunji Endo and co-worker described, three trocar method with a fundic retraction suture was as safe as the conventional four trocars method and avoided the insufficient

retraction of gallbladder.⁶ There was little technical difficulty in introducing the retraction suture, and no related complication occurred, this study showed three port LC was safe procedure for SGS and CC, considerable advantages over the traditional four port technique in the reduction of length of hospital stay and analgesics requirement,⁷ no major complication was recognized.

Powell and Siriwardena⁸ mentioned that manipulation of this straight needle within the gallbladder risked damaging portal structure and insertion of sutures and the subsequent application of traction through these sites might lead to tearing of gallbladder wall with consequent spillage of bile.

In our experience, no operative complication from the insertion of the straight needle and no post operative peritonitis or wound infection was recognized.

In this study, we found that LC with three-trocar combined with fundic retraction suture could be performed as safety as convention four-trocar method, Benefit of cosmetic post-operative pain and in this technique used of co-worker (2 person) is less than conventional four-trocar method (3 person). It's important for the small size hospital that has minimal co-workers (scrub nurse).

Conclusion

We believe three-trocar combine with fundic retraction suture has great advantages in completing LC as safe and quickly as the conventional four trocar method and recommend for surgeons who begin three-trocar method technique to avoid CBD injury.

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