

**Laparoscopic Re-operative Choledocholithotomy in Elderly Patients with Prior
Complicated Abdominal Operations**

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Running head: Re-do Laparoscopic choledocholithotomy

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Endoscopic retrograde cholangiopancreatography (ERCP) with stone retrieval is a safe and effective non-surgical treatment for dealing with common bile duct (CBD) stones. However, it is not without limitations and complications. Stone extraction via endoscopic approach may encounter extraordinary difficulties if patients had prior abdominal operations with altered anatomy. As expected, there is an increased complication rate of ERCP for elderly patients under such conditions that failure is not uncommon. Recurrent choledocholithiasis were noted in 8.6% of the elderly patients [1]. With increasing experiences, we aim to reassess the feasibility and safety of re-do laparoscopic choledocholithotomy for those elderly patients.

From March 2008 to September 2009, there were 26 patients who were elder than 65 years old and with recurrent CBD stones which could not be extracted endoscopically. All the patients underwent LCBDE with proper pre-operative preparation. 11 of them had no history of abdominal operations and another 8 of them only had prior non-biliary surgeries. The remaining 7 patients met our selection criteria and were enrolled in this study. Operative techniques were summarized as follows: Palmer's point was selected as the designated location to insufflation. The four trocars were positioned similar to those used for laparoscopic cholecystectomy. An intra-operative ultrasonography was used to localize CBD. Stones were retrieved as much as possible under choledochoscopic guidance with a Dormia basket. The

choledochotomy opening was closed over a Kher T tube at the end of procedure.

There were 3 female and 4 male patients with a mean age of 80 years old. Each patient had one or more underlying diseases including hypertension, chronic obstructive pulmonary disease, old cerebrovascular accident, atrial fibrillation and in one particular case with laryngeal cancer. All the patients have had multiple prior abdominal surgeries. In one case, in addition to choledocholithotomy, the patient also has received prior Roux-en-Y choledocho-jejunosomy for recurrence choledocholithiasis. Recurrent CBD stones were diagnosed by ultrasonography or additionally by computerized tomography if there was any doubt. Endoscopic stone extraction were unsuccessful for all of these patients because of difficult access to Papilla Vater in three of them, inadequate stone clearance in two of them, bleeding after sphincterotomy in one patient and narrow larynx due to laryngeal cancer in the last patient. The average time interval between the current operation and nearest prior abdominal operation was 7 years (from 1.5 to 20 years). Common bile duct exploration was achieved laparoscopically without the need of conversion for all the patients with a mean operation time of 135 minutes (ranging from 95 to 215 minutes). Two of the patients had a single CBD stone and the other five had multiple stones. The average size of the largest stone was 17mm (6mm to 30 mm). Complete stone clearance was achieved in 3 of these 7 patients. For the remaining four patients, T tube

cholangiography was performed 3 weeks later and residual stones were retrieved percutaneous through the T-tube tract. The mean hospital stay was 7 days (range 5 to 12 days). No residual or recurrent stone was noted in our patients after a mean followed up of 22 months (from 13 months to 31 months).

LCBDE becomes the treatment of choice when there is a difficulty for endoscopic stone retrieval. Li et al. reported their experiences on laparoscopic CBD re-operations [2]. While most of their 14 cases had received only one prior biliary related surgery, we had more complicated patients as the mean age was 80 years old and they all had multiple prior biliary/non-biliary operations. We found that laparoscopic ultrasonography was particularly useful for the localization of CBD when there was an obscured anatomy. Regarding biliary drainage procedure, although Roux-en-Y choledocho-jejunostomy has been proved to have long-term patency, it was not considered in our patients. This was because for acute obstructive cholangitis in elderly patients, an ideal procedure is the one which could drain properly with a low complication rate[3]. Since laparoscopic choledocho-jejunostomy carries a major complication rate even in the experienced hand we believe that the key to significantly hasten the recovery of our patients from acute cholangitis was by placing a T tube for optimal post-operative drainage. One may argue the role of percutaneous trans-hepatic for these patients, however, serial dilatations and repeated stone retrieval may prolong

the hospital stay[4].

To summarize, LCBDE as a salvage procedure had a comparable outcome to ERCP and percutaneous trans-hepatic approach when both were not feasible or available. Our study demonstrated the efficacy and safety of LCBDE for recurrent CBD stones in elderly patients with multiple prior abdominal operations. With adequate stone clearance and proper T tube drainage, a quick recovery, minimal morbidity and shortened hospital stay could be achieved.

References

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