

Treatment of Common Bile Duct Stones in Era of Minimally Invasive Surgery in General Hospital Settings

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Case report SUMMARY

Although laparoscopic cholecystectomy has become the golden standard in the treatment of the gallstone disease, the treatment of common bile duct stones (CBDS) continues to raise numerous discussions. The frequency of gallstones runs about 12% among the male and about 24% among the female population with 10-30% of the patients developing the symptoms of the disease. In 10-15% of the patients that underwent cholecystectomy, common bile duct stones were found either during the preoperative, intraoperative or postoperative evaluation. The treatment of

common bile duct stones at the department of surgery in our hospital includes open exploration, laparoscopic exploration (LCBDE) and ERCP and ES (preoperative and postoperative). During the period between 2007 and 2009 we have performed 47 open explorations, 9 laparoscopic transcystic exploration, as well as 112 ERCP and ES. The success rate of the cases of open exploration was 95%, in 2 cases postoperative cholangiogram showed concrement residues that were successfully treated later on with ERCP+ES. Out of 9 transcystic LCBDE we have performed (we don't perform laparoscopic choledochotomy), in 4 cases extraction was successful, 3 patients

underwent conversion into open exploration, and 2 patients were successfully treated with postoperative ERCP. Altogether, we have performed 112 ERCP procedures, of which 43 were diagnostic. A total of 69 patients were treated with ERCP, and ES (preoperatively and postoperatively) with the 82% success rate of stone extraction (57 successful extractions). In cases where ERCP and ES failed we opted for open exploration. When it comes to ERCP and ES, we achieved greatest success with cases of CBDS after cholecystectomy (42).

Key words : ERCP, Choledocholithiasis, Laparoscopic cholecystectomy.

1. INTRODUCTION

Although laparoscopic cholecystectomy has become the golden standard in the treatment of the gallstone disease, the treatment of common bile duct stones (CBDS) continues to raise numerous discussions. Development of laparoscopic surgery and improvement of diagnostic procedures have influenced new approaches to biliary surgery. Gradual expanding of spectrum of minimally invasive surgical procedures, have proven feasibility and advantages of lap-

aroscopic approach. The frequency of gallstones runs about 12% among the male and about 24% among the female population with 10-30% of the patients developing the symptoms of the disease. In 10-15% of the patients that underwent cholecystectomy, common bile duct stones were found either during the preoperative, intraoperative or postoperative evaluation (1, 2, 3, 4, 5, 6, 5, 7). Generally accepted strategy is treatment of common bile duct stones in all circumstances, except in select-

ed patients that have contraindications (e.g. refusal of operative or endoscopic treatment etc.), when conservative and expecting modality are accepted (1, 4). Diagnostic algorithm of common bile duct stones consists of clinical aspect, laboratory tests and ultrasound exam followed by radiological (CT, MRCP), endoscopic (EUS, ERCP) and surgical (IOC, IOUS, LCBDE, open approach) procedures (5, 7). Treatment of common bile duct stones traditionally was based on open approach and extraction of

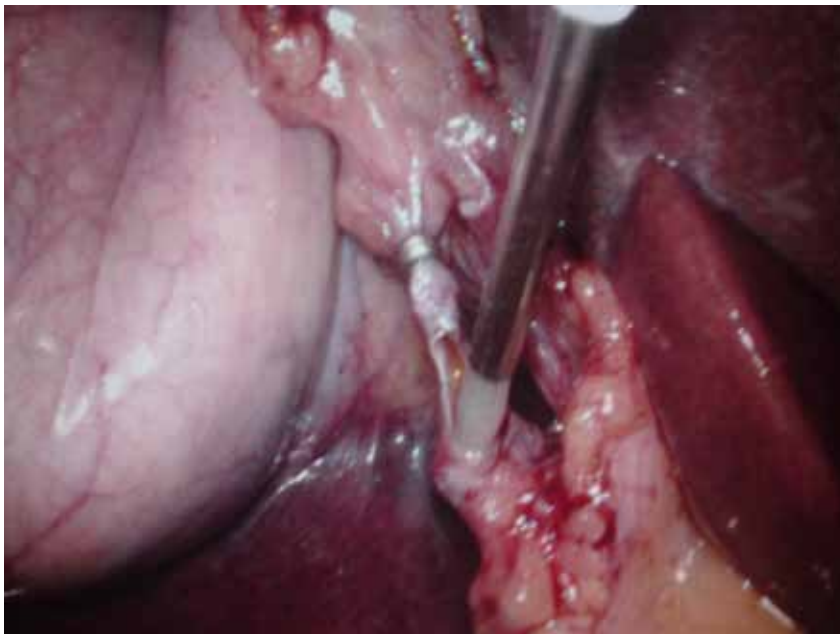


Figure 1. Intraoperative transcystic cholangiogram

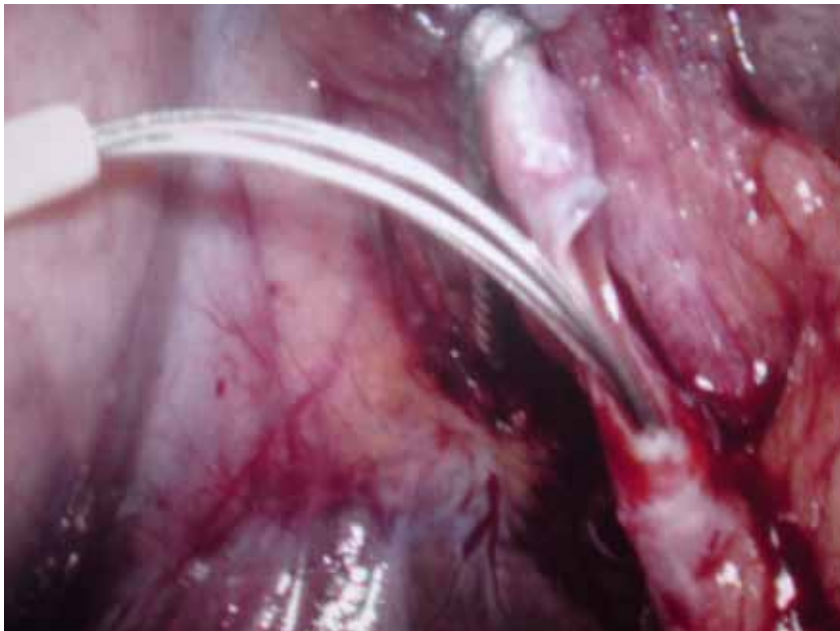


Figure 2. Transcystic extraction of common bile duct stones (Dormia basket)

calculi, but due to rapid development of laparoscopic and endoscopic procedures now-days we have a wide selection of therapeutic options such as laparoscopic transcystic extraction, laparoscopic choledochotomy, ERCP with ES (preoperative, intraoperative, postoperative), transcystic stenting and sfincterotomy. Our attention was focused on most commonly used procedures which we applied in our work.

2. MATERIALS AND METHODS

During the period between

2007-2009 we treated totally 168 patients with common bile duct stones. We included patients that were admitted for elective cholecystectomy as well as other patients admitted with suspicion of common bile duct stones. Age span was 21-78 years, 105 female and 63 male patients. We have performed 47 open explorations, 9 laparoscopic transcystic exploration, as well as 112 ERCP and ES.

3. RESULTS

The treatment of common bile duct stones at the department of surgery in our hospital

includes open exploration, laparoscopic exploration (LCBDE) and ERCP and ES (preoperative and postoperative). During the period between 2007 and 2009 we have performed 47 open explorations, 9. laparoscopic transcystic exploration, as well as 112 ERCP and ES. The success rate of the cases of open exploration was 95%, in 2 cases postoperative cholangiogram showed concrement residues that were successfully treated later on with ERCP+ES. Out of 9 transcystic LCBDE we have performed in 4 cases extraction was successful, 3 patients underwent conversion into open exploration, and 2 patients were successfully treated with postoperative ERCP. Alltogether, we have performed 112 ERCP procedures, of which 43 were diagnostic. A total of 69 patients were treated with ERCP, and ES (preoperatively and postoperatively) with the 82% success rate of stone extraction (57 successful extractions). In cases where ERCP and ES failed we opted for open exploration. When it comes to ERCP and ES, we achieved greatest success with cases of CBDS after cholecystectomy (60% of patients in ERCP group, totally 42 patients).

4. DISCUSSION

Open exploration still remains valuable and effective method in common bile duct stones treatment in cases of stones detected during open cholecystectomy, or large and impacted stones, or in a need for biliodigestive by pass and finally in cases of failure of other methods. We give advantage to this method in cases of portal hypertension, cholangitis with septic schock or periportal inflammation. ERCP and endoscopic sphincterotomy (Figure 3) can be performed as a preoperative, intraoperative or postoperative method. In most cases is used when common bile duct stones are proven preoperatively, in cases of acute cholangitis or biliary pancreatitis, or in patients with high risk of general anesthesia. This method

showed high efficiency in patients with common bile duct stones after performed cholecystectomy. Disadvantages of ERCP include need for endoscopic equipment and experts, in a fact that it is a two stage procedure, and for its complications (pancreatitis, haemorage, secondary cholangitis, perforation). Laparoscopic common bile duct exploration (LCBDE) can be achieved through transcystic approach (Figure 1 and 4) or by performing choledochotomy.

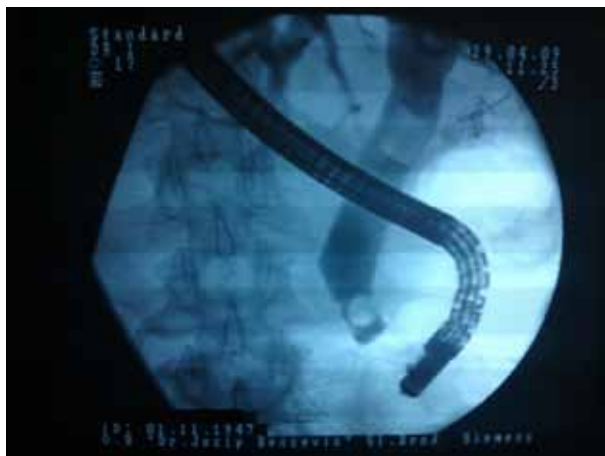


Figure 3. ERCP

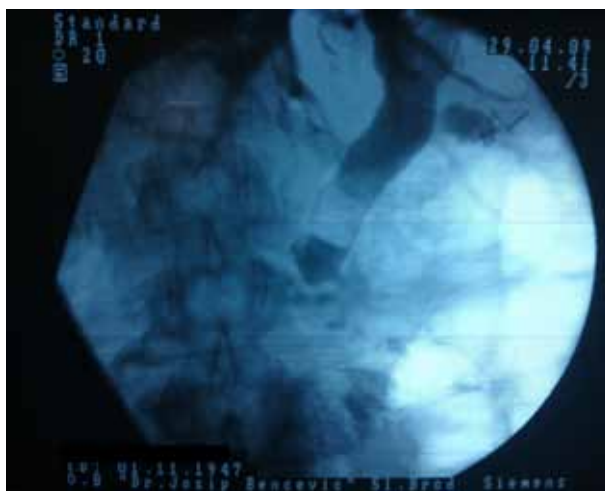


Figure 4. Intraoperative cholangiogram

Transcystic approach (Figure 2) is less invasive but has its limitations due to anatomical variations (relation between cystic and common bile duct) and by the size (>6mm) and number of stones. In such cases method of choice is laparoscopic choledochotomy and extraction. Laparoscopic approach has all the advantages of minimally invasive procedure (less pain, cosmetic effect, shorter hospitalisation) and is done as one stage procedure, and is as effective as ERCP. Failure to extract stones during LCBDE can result in open extraction in same act. In our opinion main disadvantages are prolonged operative time, and lack of trained personal for this complex procedure, especially for laparoscopic choledochotomy and extraction (6).

Last number of published papers have compared effectiveness of mentioned procedures, and debate is still in progress. Open exploration even though most invasive, still remains effective method. [2, 8]. It demands no additional procedures and is method of choice if other meth-

ods fail or are unavailable. Comparison of ERCP+ES and LCBDE haven't proven differences in effectiveness, mortality and morbidity (2, 4, 8). LCBDE needs less procedures and has shown shorter hospital stay than ERCP+ES (2, 3, 4).

5. CONCLUSION

Even though laparoscopic and endoscopic procedures have revolutionized treatment of common bile duct stones, still there is no consensus about golden standard. Treatment in general hospital settings largely depends on availability of endoscopic and laparoscopic equipment and expertise, so every treatment must be individualized according to methods that are available and which are determined by efficiency, morbidity, mortality, cost effectiveness and patients preferences. In our settings we have found that best summary of these demands are achieved by ERCP and

laparoscopic approach.

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