

MANAGEMENT OF COMMON BILE DUCT STONES AT A TERTIARY CARE HOSPITAL

PURSHOTAMDASS GUPTA ¹, FAHAD TAUHEED ², ANURAG SARASWAT ³ and
VIKRAM SINGH CHAUHAN ^{4*}

¹ Associate Professor, Department of General Surgery, SMS&R, Sharda University, Greater Noida, (UP) India.

² Assistant Professor, Department of General Surgery, Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, New Delhi, India.

³ Assistant Professor, Department of General Surgery, Government Institute of Medical Sciences, Greater Noida, (UP) India.

⁴ Professor, Department of General Surgery, SMS&R, Sharda University, Greater Noida, (UP) India.

*Corresponding Author

Abstract

Background. Common Bile Duct stones are traditionally treated with open cholecystectomy combined with CBD exploration and T-Tube drainage. With advances in endoscopy and laparoscopy, now other options are available. *Methods* 52 cases of CBD stones presenting to a tertiary care hospital in outskirts of Delhi were analysed for presentation and management procedures and outcome *Results* 17 patients underwent ERCP with stone retrieval and CBD stenting followed by Laparoscopic Cholecystectomy. ERCP failed in 4 patients and they were managed by open CBD exploration. 31 patients refused ERCP because of higher cost and were directly managed with open CBD exploration. One patient underwent sphincteroplasty and 5 patients needed biliary enteric anastomosis because stones could not be removed. CBD exploration and T-tube drainage was done in 21 cases and primary closure in 8 cases. Ureteroscope was used to assist stone removal and ensure clearance. *Conclusion* Various options are available for CBD stones like ERCP, Laparoscopic CBD exploration and Open CBD exploration. Open CBD Exploration with use of ureteroscope for ensuring CBD clearance and primary closure of CBD offers a single stage, cost effective procedure.

Keywords: CBD Stones, ERCP with CBD Stenting, Laparoscopic CBD Exploration, Open CBD Exploration, Primary Closure of CBD.

INTRODUCTION

It is estimated that 5–15% of patients undergoing cholecystectomy have common bile duct stones. The patient may present with jaundice, or these stones may be diagnosed in preoperative sonography [1]. These stones need to be addressed before or during cholecystectomy to avoid the post-operative complications.

REVIEW OF LITERATURE

Various methods have been used to tackle the problem of common bile duct stones e.g. Open cholecystectomy with CBD exploration, Pre-operative ERCP with CBD clearance and stenting and Laparoscopic CBD exploration along with Laparoscopic Cholecystectomy. laparoscopic cholecystectomy after endoscopic sphincterotomy is associated with increased conversion rates to open procedure compared to laparoscopic cholecystectomy for uncomplicated gallstones [2]. laparoscopic CBDE was reserved by the majority of surgeons in for very specific indications

and was not favored as a routine maneuver compared to ERCP [3]. In patients with increased CBD diameter who require more than one ERCP in an attempt to clear their duct, the need for open surgery and CBDE should be strongly entertained [4]

MATERIAL AND METHODS

All the patients of CBD stones coming to surgery departments of Sharda Hospital during the period 2019-2023 were studied for compiling the data on demography, presenting features, investigations, treatment offered and the result. Some of these patients were already diagnosed with CBD while others had come with symptoms of cholelithiasis and were diagnosed to have CBD stones subsequently.

Various modalities of management were used in these patients like ERCP and CBD stenting, Open Cholecystectomy and CBD exploration with or without T-tube placement. Biliary enteric anastomosis was done in few cases where complete stone clearance could not be achieved. The institution didn't have the facility for Laparoscopic CBD Exploration (LCBDE).

During open CBD exploration, a ureteroscope was used to ensure complete clearance of CBD. Initially T-tube was placed after stone clearance and was removed after 10-12 days when T-tube cholangiogram confirmed clear CBD and passage of dye into duodenum. Subsequently primary closure was performed when Ureteroscope confirmed complete stone clearance. This approach removed the morbidity associated with T-tube placement and significantly reduced hospital stay.

RESULTS

52 Cases of CBD stone reported to the hospital. Of these 10 were males and 42 were females. Age group ranged between 20-72 years with a mean of 47 and SD 13. Duration of symptoms ranged from 1day to one year with a mean of 96 days and SD 101. All of these patients had pain of varying intensity; jaundice was present in 31 cases (59.6%).

Bilirubin level ranged from 0.2 to 18.3mg% with a mean of 5 and SD of 4. Alk phos level ranged from 95 to 1326 with a mean of 477 and SD 296. CBD size was 7-15 mm with a mean of 11 mm and SD 2. ERCP was attempted in 21 cases (40.3%). It was successful in 17 cases and failed in 4 cases. ERCP, STONE RETRIEVAL AND CBD STENTING followed by LAP CHOLE was performed in 17 cases (32.6%).

CBD exploration with biliary-enteric anastomosis was carried out in 5 cases including one case in which it was done during re-exploration. These were the cases in which CBD was found grossly dilated with multiple calculi and complete stone clearance was in doubt. In one such case Transduodenal-sphinteroplasty was carried out to remove impacted stone.

CBD exploration with T-Tube closure was performed in 21 case (40.3%). One patient had biliary leak in post-operative period. Re-exploration and biliary-enteric anastomosis was carried out in this case.

CBD exploration with primary closure was done in 8 cases (15.3%). We used a Ureteroscope in these cases to confirm that there was no residual stone in CBD. There was no post-operative bile leak in any of these cases.

DISCUSSION

Multiple options are available when diagnosis of CBD stones is available before surgery. ERCP, STONE RETRIEVAL AND CBD STENTING followed by LAP CHOLE was performed in 17 cases (32.6%) in our series. Success rate of ERCP was 81% (17 out of 21) in our hospital. In literature, success rates of 81-98% have been quoted for stone clearance with ERCP [5]. Holly Rochefort quoted that in patients with increased CBD diameter who require more than one ERCP in an attempt to clear their duct, the need for open surgery and CBDE should be strongly entertained [4].

In our series no patient required conversion to open cholecystectomy after successful ERCP. Laparoscopic cholecystectomy after endoscopic sphincterotomy is associated with increased conversion rates to open procedure compared to laparoscopic cholecystectomy for uncomplicated gallstones; laparoscopic cholecystectomy planned early after endoscopic sphincterotomy may reduce this risk [2].

However, a significant number of patients in our series (31 out of 52) refused to undergo ERCP because of financial constraints. High cost of ERCP forced patients to choose alternative treatment in these cases. Open Cholecystectomy with CBD Exploration and Laparoscopic CBD Exploration are other alternatives.

R. Kenny commented that a single-stage surgical procedure is equivalent to two-stage LC and ERCP in terms of clinical outcomes, is associated with a shorter overall hospital stay and may be more cost-effective. On this basis a single-stage procedure is recommended for management of symptomatic gallstones and choledocholithiasis where local resources and expertise permit [6].

Laparoscopic CBD exploration can be performed with high efficiency, minimal morbidity, and mortality. Laparoscopic procedures have advantages over open operations in terms of the length of hospital stay[7]. In experienced hands, both laparoscopic approaches (transductal and transcystic) in common bile duct exploration are safe in patients who are clinically fit to have this intervention. It is associated with a statistically significant lower overall morbidity and shorter duration of hospital stay when compared to open surgery[8]. However, expertise and equipment are two constraints for this approach. Longer operation time is also a factor. Laparoscopic CBDE was reserved by the majority of surgeons in rural area of United States for very specific indications and was not favored as a routine maneuver compared to ERCP[3]. Laparoscopic CBDE needs sophisticated equipment and expertise and was not available in our institution.

Laparoscopic CBDE is a technically demanding and time consuming procedure. Conversion to open surgery in LCBDE was associated with acute edematous CBD in cases of large and multiple stones. Conversion can offset the advantages of LCBDE[9]. Dongbin Liu analysed

that Slender CBD and inexperienced surgeons were the high risk factors for bile leakage after primary closure following LCBDE[10].

In our series we used a Ureteroscope for CBD clearance in case of multiple stones. Muneer Khan suggested that a rigid nephroscope can be used for managing all types of common bile duct calculi irrespective of site, size, composition, or degree of impaction [11].

In early cases we routinely used a T-Tube after CBD exploration. As we gained more experience we stopped using T-tube when stone clearance was achieved without a doubt. In one of the cases where we used T-tube there was post-operative leak and required re-operation. Gustavo Pe´rez stated that although it is true that the T-tube has been used and proven to be a safe, and effective method for postoperative biliary decompression, it is not exempt from complications, which are present in up to 10% of patients [12].

There was no leak in 8 cases where primary closure was employed after stone clearance beyond doubt was achieved with use of ureteroscope. Yazan S. Khaled stated that primary duct closure following LCBDE is safe, can be employed routinely as an alternative to T-tube insertion, and has a short hospital stay and low morbidity rate[13]. Vijay Naraynsingh stated there is still a role for open CBD exploration and primary closure without the necessity of T-tubes and stents[14].

CONCLUSION

CBD stones are common in cases of cholelithiasis. Although significant number of these patients have jaundice but equal number of patients may not show increased bilirubin levels. ERCP followed by early Laparoscopic Cholecystectomy is most favoured approach but has the disadvantage of higher cost and two stage procedure. Laparoscopic cholecystectomy and CBD exploration gives good results but is not available at all places. Open cholecystectomy with CBD exploration with use of choledochoscope (or ureteroscope) followed by primary closure of CBD gives good results.

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