

Management of Common Bile Duct Stones



Medical Science

KEYWORDS : CBD stones

Hitendra K. Desai

Assistant Professor, Surgery Department, New civil hospital, B.J. Medical College, Ahmedabad, Gujarat, India

Alpesh J. Patel

MD pharmacology, Ahmedabad, Gujarat, India

ABSTRACT

Objective: Common bile duct (CBD) calculi usually occur as a complication of gall bladder calculi.

However, left untreated, they cause significant morbidity. Multiple treatment modalities have been developed over the year to treat CBD stones. However, a consensus on the best method for stone removal has not yet been reached. The present study was carried out to study and compare two modalities of treatment, namely open surgery and ERCP in terms of efficacy and safety. Methods: This is a prospective study of management of 40 cases of CBD stones. Of these, 20 were managed by open surgery while the other 20 were managed by ERCP. Each patient was carefully evaluated and analysed according to the data collected on a planned proforma prepared for the study. Results: Out of 40 cases of CBD stones, 20 were managed by open surgery while other 20 were managed by ERCP. Out of 20 open surgery, 15 underwent CDD while 5 underwent CDL with T-tube placement. In ERCP group, 19 patients had EBS with Dormia basketing and stenting while in 1 patient, cannulation was not possible. All patients were followed up immediately post procedure, at 15 days and at 30 days for clinical assessment and laboratory parameters. On follow up, regression of symptoms and laboratory parameters was seen in 19 patients in open surgery group and in 16 patients in ERCP group. The incidence of duct clearance was 95% in open surgery and 80% in ERCP. The incidence of duct clearance in open surgery for large stones was 100% while in ERCP was 75%. The incidence of duct clearance in open surgery for small stones was 86% while in ERCP was 100%. An additional procedure was required in 5 % of patients who underwent open surgery as compared to 20% of patients who underwent ERCP. The incidence of major morbidity was 20% in open surgery while it was 15% in ERCP. The incidence of minor morbidity was 30% in open surgery while it was 60% in ERCP. The incidence of mortality was 5% in open surgery and 0 % in ERCP. Conclusion: Open surgery is more efficacious than ERCP in terms of achievement of common bile duct clearance for common bile duct calculi. For the optimum management of CBD stones, stone size should be taken into consideration. Open surgery is better than ERCP in terms of achievement of common bile duct clearance for large (size > 1 cm) common bile duct calculi. ERCP is better than open surgery in terms of achievement of common bile duct clearance for small (size < 1 cm) common bile duct calculi. Open surgery is more efficacious than ERCP in terms of achievement of regression of symptoms, signs and biochemical parameters for common bile duct calculi. Open surgery is safer than ERCP in terms of incidence of minor morbidity. Open surgery and ERCP are comparable in terms of major morbidity. ERCP is safer than open surgery in terms of incidence of mortality. The use of ERCP necessitates increased number of procedures per patient.

INTRODUCTION

Common bile duct (CBD) calculi are not very common among the general population. They usually occur as a complication of gall bladder (GB) calculi. However, left untreated, they cause significant morbidity, including obstructive jaundice, pain, vomiting and even life threatening complications like pancreatitis, cholangitis and septicemia.

Multiple treatment modalities have been developed over the year to treat CBD stones. However, a consensus on the best method for stone removal has not yet been reached.

Open surgery was the cornerstone for treatment of CBD stones for many decades. However, with increasing medical and scientific research, newer methods of intervention have been developed. Endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic biliary sphincterotomy (EBS) have opened new avenues in management of patients with CBD stones, enabling gastroenterologists and surgeons to treat patients without resorting to a laparotomy.

The most recent innovations include laparoscopic exploration of the biliary tree and stone removal, a procedure gaining popularity as expertise and experience in the field grow.

The present study aims to study and compare two modalities of treatment, namely open surgery and ERCP, in terms of efficacy and safety.

MATERIAL AND METHODS

This is a prospective study of management of 40 cases of CBD stones. Of these, 20 were managed by open surgery while the other 20 were managed by ERCP. Each patient was carefully evaluated by adequate history taking, clinical examination, laboratory tests and non invasive radiological investigations and analysed according to the data collected on a planned proforma prepared for the study.

Types of interventions:

- 1. Open surgery :** Two types of open procedures were performed on the patients namely open choledochoduodenostomy (CDD) with or without open cholecystectomy and open chole-docholithotomy (CDL) with T - tube drainage with or without open cholecystectomy.
- 2. ERCP :** Endoscopic Retrograde Cholangiopancreatography was performed on 20 patients . The therapeutic procedure performed in all patients was Endoscopic Biliary Sphincterotomy + Dormia Basket + Stenting .

Types of outcome measures :

After the intervention, the patients were followed up for a period of 30 days and observed immediately after the procedure, at 15th day and at 30th day post procedure for clinical evidence of cure, biochemical evidence of cure, radiological evidence of cure (duct clearance), morbidity, mortality and additional procedure required.

Data Analysis : The collected data was subjected to analysis using statistical analysis software namely SPSS 17.0.

RESULTS AND DISCUSSION

Types of calculi : On USG and CT scan, we found multiple large calculi in 15 (37.5%) patients, multiple small calculi in 11 (27.5%) patients and single large calculus in 14 (35%) patients.

Diagnosis : Primary CBD stones were found in 1 (2.5%) patient while secondary CBD stones were found in 39 (97.5%) patients.

Endoscopic procedure : Out of 20 ERCP procedures done, cannulation was successful in 19 (95%) patients while it was unsuccessful in 1 (5%) patient. Successful cannulation rate in study done by Sugawa et al was 95% , in Sherman et al was 98% and in Lauri et al was 85% [1] .

Open procedure : Among 20 patients who underwent open

surgery, 15 (75%) underwent open CDD and the remaining 5 (25%) underwent CDL with T- Tube placement. Choice between the two procedures was made depending on size of the CBD, number of stones and the presence of sludge.

Follow up : Out of 20 patients, 19 (95%) showed improvement in both symptoms and lab parameters in the open surgery group while 16 (80%) showed improvement in the ERCP group.

Morbidity in ERCP: Out of 20 patients, the incidence of various morbidities in patients undergoing ERCP was as follows:

Clinical pancreatitis (hyperamylasemia with clinical features of pancreatitis) in 1 (5%) patients, bleeding in 1 (5%), cholangitis in 1 (5%), sepsis in 2 (10%) and hyperamylasemia (>140 SU/L) in 12 (60%) of patients.

Ersoz et al found incidence of hyperamylasemia to be 100% in their study. Mallery et al found incidence of pancreatitis to be 7%, bleeding 2%, cholangitis 1.5% and sepsis to be 1.6% [2].

Morbidity in open surgery : Out of 20 patients in the open surgery group, the incidence of various morbidities was as follow:

Intra abdominal abscess in 1 (5%), sepsis in none, cardiopulmonary event in 1 (5%), sump syndrome in 1(5%), cholangitis in 1(5%), wound infection in 6 (30%) and minor bile leak in 1 (5%).

Deutsch et al found incidence of wound infection to be 14% and that of minor bile leak to be 3% [3]. Ramirez et al found incidence of intra abdominal abscess to be 1.6% [4]. Baker et al found incidence of cardiopulmonary event to be 5%, that of sump syndrome to be 3.3% and that of cholangitis to be 5.7% [5].

Mortality : In our study, mortality in ERCP was 0% as compared to 0% in Sugawa et al , 0.6% in Sherman et al and 0% in Lauri et al studies.

Mortality comparison : In our study, mortality in open surgery was 5% while in ERCP was 0% . This difference is statistically significant (p value < 0.05). Therefore, ERCP is safer than open surgery in terms of mortality .

Morbidity comparison : In our study, the incidence of major morbidity in open surgery was 20% while that in ERCP was 15%. This difference is not statistically significant (p not less

than 0.05). Therefore, open surgery and ERCP are comparable in terms of major morbidity.

In our study , the incidence of minor morbidity in open surgery was 30% while that in ERCP was 60%. This difference is statistically significant (p value < 0.05). Therefore, open surgery is safer than ERCP in terms of minor morbidity.

Duct clearance : In our study , duct clearance in open surgery was found to be 95% as compared to 95% in Hansell et al, 96% in Lamunt et al and 88% in Kullman et al studies [6,7]. In our study , duct clearance in ERCP was found to be 80% as compared to 88% in Sugawa et al, 93% in Sherman et al and 59% Lauri et al studies.

Duct clearance comparison for large stones

(size > 1 cm) : In our study, duct clearance in open surgery for large stone was 100% while in ERCP was 75% . This difference is statically significant (p value < 0.05). Therefore, open surgery is more efficacious than ERCP in terms of duct clearance for large stones (size > 1 cm).

Duct clearance comparison for small stones

(size < 1 cm) : In our study, duct clearance in open surgery for small stone was 86% While in ERCP was 100% . This difference is statically significant (p value < 0.05). Therefore, ERCP is more efficacious than open surgery in terms of duct clearance for small stones (size < 1 cm).

CONCLUSION

Open surgery is more efficacious than ERCP in terms of achievement of common bile duct clearance for common bile duct calculi. For the optimum management of CBD stones, stone size should be taken into consideration. Open surgery is better than ERCP in terms of achievement of common bile duct clearance for large (size > 1 cm) common bile duct calculi. ERCP is better than open surgery in terms of achievement of common bile duct clearance for small (size < 1 cm) common bile duct calculi. Open surgery is more efficacious than ERCP in terms of achievement of regression of symptoms, signs and biochemical parameters for common bile duct calculi. Open surgery is safer than ERCP in terms of incidence of minor morbidity. Open surgery and ERCP are comparable in terms of major morbidity. ERCP is safer than open surgery in terms of incidence of mortality. The use of ERCP necessitates increased number of procedures per patient.

REFERENCE

- Lauri A, Horton RC, Davidson BR, Burroughs AK, Dooley JS. Endoscopic extraction of bile duct stones: management related to stone size. *Gut* 1993; 34: 1718-1721 | 2. Mallery JS, Baron TH, Dominitz JA et al. Complications of ERCP. *Gastrointest Endosc* 2003; 57: 633-638 | 3. Deutsch AA, Nudelman I, Gutman H, Reiss R. Choledochoduodenostomy an important surgical tool in the management of common bile duct stones: a review of 126 cases. *Eur J Surg* 1991; 157: 531-533 | 4. Ramirez P, Parilla P, Bueno FS et al. choledochoduodenostomy and sphincterotomy in the treatment of choledocholithiasis. *Br J Surg* 1994; 81: 121-123 | 5. Baker AR, Neoptolemos JP, Leese T et al. Long term follow up of patients with side to side choledochoduodenostomy and transduodenal sphincterospasty. *Ann R Coll Surg Engl* 1987; 69 (6): 253-257 | | 6. Lamunt DD, Passi RB. Fate of the gallbladder with cholelithiasis after endoscopic sphincterotomy for choledocholithiasis. *Can J Surg* 1989; 32: 15-18 | 7. Kullman E, Borch K, Dahlin LG, Liedberg G. Long term follow up of patients with gallbladder in situ after endoscopic sphincterotomy for choledocholithiasis. *Eur J Surg* 1991; 157: 131-135 |