



MANAGEMENT OF CHOLEDOCHOLITHIASIS WITH SPECIAL REFERENCE TO USE OF CHOLEDOCHOSCOPY

General Surgery

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KEYWORDS

INTRODUCTION

Common bile duct stone is defined as retained stone if they are discovered within two years of cholecystectomy or recurrence if they are detected more than two years after cholecystectomy¹. More than 95% of biliary tract disorders are related to gallstone. Most bile duct stones are stones that have passed into bile duct from the gallbladder.

Despite good surgical techniques, about 8% to 16% of patients have retained stones in common bile duct after conventional choledocholithotomy^{2,4}. Moreover surgery has been associated with a discouragingly high incidence of residual stones. Many studies since then have confirmed the value of flexible/rigid choledochoscopy as a reliable method of reducing the incidence of retained biliary tract stones. The reported incidence varied between 0% to 7%. In India, limited study is available regarding the use of operative choledochoscopy in the management of choledocholithiasis.

AIM OF STUDY

1. To evaluate the role of operative rigid choledochoscopy(modified cystoscope) after choledocholithotomy in reducing the incidence of retained stones in the common bile duct.

MATERIALS AND METHODS

This observational study was carried out in RIMS, Ranchi, Department of General surgery. 15 patients admitted through OPD, who had their common bile duct explored for proven common bile duct stones during six months period from March 2019 to August 2019. Initial decision to explore the common bile duct was made by ultrasound in 06 patients, MRCP in 9 patients.

INCLUSION CRITERIA FOR CBD EXPLORATION

1. Cholelithiasis with history of jaundice.
2. Sonographic / MRCP / CT evidence of common bile duct stone.
3. Patient with cholelithiasis with raised serum alkaline phosphatase and raised serum gamma glutamyl transferase.

EXCLUSION CRITERIA FOR CBD EXPLORATION

1. Patient with common bile duct stones who refused operative treatment.
2. Patient with common bile duct stones who were medically unfit for operation.

Conventional common bile duct exploration was done through the choledochotomy incision using Desjardin's forceps. Then common bile duct was explored either through choledochotomy using a choledochoscopy. In our study we used rigid choledochoscopy as diagnostic and therapeutic procedure. The bile duct stone picked up by the choledochoscopy was removed using Dormia basket. Procedure - One port was inserted in epigastrium for distal visualization and T-tube placement and another at lower side for upper CBD visualization and drain placement. Saline irrigation was done to remove biliary sludge. Choledochoscopy was done to examine the common bile duct, common hepatic duct, right and left hepatic ducts.

After confirming there were no residual stones, patients were subjected to surgical procedure based on common bile duct diameter. Patients with dilated common bile duct (>15mm) underwent choledochoduodenostomy or choledochojejunostomy or primary closure of CBD. Patients with undilated common bile duct (<15mm) underwent closure with 'T tube' drainage.

All patients were subjected to liver function tests, ultrasonogram on

fourteenth postoperative day. Similarly, T tube cholangiogram was done on patients who had T tube in situ on the 8th- 10th post operative day.

FOLLOW-UP

All patients underwent magnetic resonance cholangio pancreatogram after twelve weeks to rule out any residual stone. After confirming that no residual stone in the common bile duct and free flow of 31 dye into the duodenum, the T tube was removed on the 12th-14th post operative day and subsequently discharged.

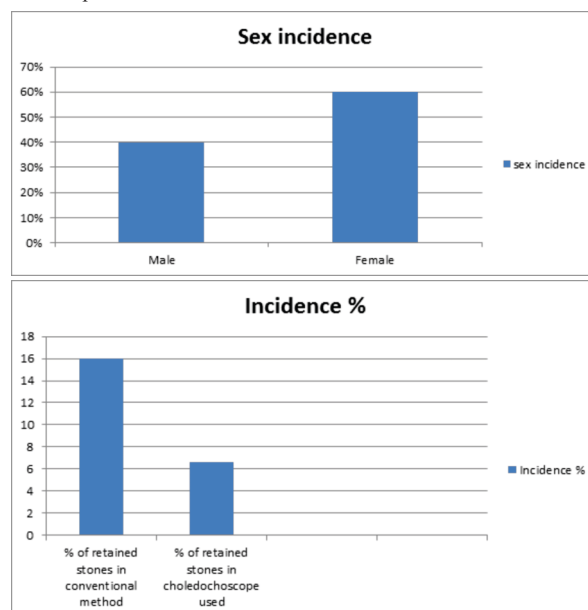
- Serum liver function test was done on the 14th post operative day, which showed raised serum bilirubin (>2mg %) in eight patients that subsequently normalized on routine check-up.
- Postoperative high frequency ultrasound done on the 14th post operative day was normal in all patients.
- Patients were regularly followed up every fifteen days for six months
- Magnetic resonance cholangio pancreatogram was done in all patients on the completion of 12 weeks post operatively. One patient had retained stone in the left hepatic duct (2.27%). The particular patient already underwent choledochojejunostomy and subsequent follow up showed no retained stone.

All patients were regularly followed for a period of six months for clinical evidence of jaundice.

RESULTS

In this prospective analysis, transcholedochotomy with choledochoscopy in 15 patients. Of these one patient showed retained stone in magnetic resonance cholangiopancreatogram which was done postoperatively after twelve weeks.

The failure rate of choledochoscopy accounted to 6.66%. The incidence of retained stone was comparatively lower in the study and it was comparable to international standard.



DISCUSSION

The flexible choledochoscope was first described by Shore and Lippman in 1965⁽⁸⁾

The flexible choledochoscopy was gradually improved and modified by Ashby to the present range, the CHF-20 series.

The choledochoscope commonly used in surgical practice may be rigid or flexible type. In our series we used rigid choledochoscopy(modified cystoscope), The working shaft has a length of 30cm, 4mm of 30° angulation of Karl Storz, sheath -14F for diagnostic and for therapeutic 21F sheath.

Which is shown in figure(1).



Fig 1:- Modified Cystoscope:
Karl Storz 4mm 30°

Comparison Of Conventional Exploration Of Cbd Without Choledochoscopy And With Choledochoscopy

In most series reviewed, stones that are found within the biliary tree after conventional exploration are regarded as retained stones. Retained stones should be expressed as a percentage of the number of stone-positive explorations and should not be related to the total number of common bile duct explorations. The percentage incidence of retained stones is therefore been related to number of stone – positive explorations at which the choledochoscope was used.

Few series are now reported on the results of exploration of the common bile duct where instrumentation alone is carried out and not followed by choledochoscopy (Table 4).

The mean incidence of retained stones is 10.6% (median 10.0 percent) With the use of rigid choledochoscope, the incidence of retained stone is lower with a mean incidence of 3.6 percent. (Median 3.3percent). The use of flexible choledochoscope offers greater versatility and maneuverability allowing a more complete exploration of the duct. When the published data are analysed the mean retained stone rate of 2.0 percent (Median 1.85%) is lower than that achieved with either conventional exploration or rigid choledochoscopy (Table 5).

CONCLUSION

It is now well established that choledochoscopy reduces the incidence of retained common bile duct stones in patients with choledocholithiasis. Hence we recommend that operative choledochoscopy should always be done after exploration of the common bile duct stones to reduce the incidence of retained stone.

Surgical exploration of CBD with conventional method without the use of choledochoscopy have shown 8 to 16% of patients with retained stones. With the use of choledochoscopy, the incidence is reduced to 2% as quoted in various studies. In our study percentage of retained stone after rigid choledochoscopy was (6.66%).

Females were commonly affected by choledocholithiasis.

Conventional use of choledochoscopy gives equivalent results as that of ERCP in the diagnostic and management of CBD stones. Hence in centers where ERCP facilities are lacking, flexible/rigid choledochoscopy plays a major role in reducing the retained stones in CBD. Since patients with choledocholithiasis may be completely asymptomatic, choledochoscopy should be done as a routine in suspected patients.

Choledochoduodenostomy, Choledochojejunostomy, T tube drainage & primary closure of CBD after CBD exploration with flexible choledochoscopy has a definitive role in the management of

choledocholithiasis.

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