

Primary Closure of Common Bile Duct Over Infant Feeding Tube as a Stent Following Choledochotomy: A Variation In Technique

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Abstract:

Introduction: Even with the emergence of laparoscopic common bile duct exploration, open common bile duct exploration remains the procedure of choice for the surgical management of choledocholithiasis in developing countries. Open CBD exploration is usually followed by a T-tube insertion which has been proven to be safe and effective for post-operative biliary decompression. However, the use of T-tube is not without its complications including post-operative bile leak, bile leak following removal, biliary stricture and tract infection among others. Primary closure of the common bile duct although proven superior to T-tube insertion has not gained popularity due to absence of post-operative biliary decompression. We present primary closure of common bile duct over an infant feeding tube as a stent as an alternative to both T-tube insertion and primary closure of common bile duct.

Materials and Methods: We present a retrospective analysis of 35 operated cases of choledocholithiasis in whom choledochotomy followed by primary closure of CBD over an infant feeding tube as a stent for post-operative biliary decompression was done.

Results: We encountered only a single complication in the form of biliary leak in 3(8.57%) patients which was managed conservatively. In addition to the low complication rates the patients had a short post-operative stay (mean 5.11 days) in the hospital. The infant feeding tube was passed spontaneously in the faeces in the majority of the patients with only 5(14.28%) requiring postoperative endoscopic removal.

Conclusion: Thus, primary closure of CBD following choledochotomy over an infant feeding tube as a stent is a safe alternative to T-tube biliary decompression with a significantly low post-operative stay and an acceptably low complication rate.

I. Introduction:

Choledocholithiasis is frequently encountered incidentally with cholelithiasis. It is managed either by endoscopic sphincterotomy or surgical exploration i.e. choledochotomy¹, which can either be open or laparoscopic. Open choledochotomy still remains the procedure of choice for the management of choledocholithiasis in many centres including our institute. The majority of surgeons insert a T-tube following a choledochotomy, to provide alternate drainage of bile for biliary post-operative biliary decompression as well as a stent over which closure of the common bile duct is done. However, the insertion of a T-tube is associated with a longer hospital stay and complications such as bacteraemia and bile leak post removal². However, reluctance regarding primary closure exists in developing countries, because of the absence of post-operative biliary decompression. We present a case series of thirty five patients who underwent choledochotomy followed by primary closure of common bile duct using an infant feeding tube as a stent.

II. Materials and methods:

We operated thirty five cases of choledocholithiasis from September 2012 to June 2015. All patients underwent routine investigations and on MRCP were diagnosed with choledocholithiasis. All the patients underwent an endoscopic retrograde cholangiopancreatography and only the patients where ERCP failed to remove the CBD calculi, operative intervention was undertaken. The patients were operated using a standard right subcostal incision. Dissection was done in the Calot's triangle and the cystic artery and the cystic duct were doubly ligated. The cystic artery was then divided between the ligatures. The gall bladder was retracted to provide adequate access to the CBD which was identified with aspiration of bile. This was followed by the placement of two stay suture about 1.5cm apart (Fig.1) between which a longitudinal incision measuring 1cm was given over the CBD. Common bile duct calculi are then removed either by retrograde milking or by using a Desjardin's choledocholithotomy forceps. An 8 or 10 Fr diameter infant feeding tube was inserted into the proximal and distal loops and flushed with saline to verify the patency (Fig. 2). The infant feeding tube was cut to a length of around 25 to 30cms and was inserted into the CBD with the distal end coming out into the duodenum. The CBD was then primarily closed with fine absorbable sutures (Fig. 3). Finally, cholecystectomy was done and the abdomen closed after placement of a sub-hepatic drain. The patient was kept nil orally and supine for a period of 48 hours after which mobilization and oral feeds were started. The sub-hepatic drain was removed on the fourth post-operative day if the drain output was less than 30mL over 24 hours. Once oral feeding was tolerated by the patient, he or she was discharged and asked for a followup at 1 week and four weeks.

III. Results:

A record of 35 patients who underwent choledochotomy over the four year period was maintained and retrospective analysis was done. There were 23(65.71%) females and 12(34.29%) males. Only a single complication of bile leak was observed in 3(8.57%) cases which were managed conservatively in all three cases. The mean post-operative stay

was 5.11 days. The feeding tube was passed spontaneously in stool on the 4th to 5th day in majority of the patients. Only three patients (8.57%) required endoscopic removal of the feeding tube.

IV. Discussion:

T-tube placement after choledochotomy has been the standard surgical practice for choledocholithiasis³. The rationale behind the placement of T-tube was biliary decompression till the edema of the sphincter of Oddi subsided and percutaneous removal of retained stones⁴. Various studies have been published which advocate the primary closure of the common bile duct post choledochotomy with comparable complication rates and a significantly reduced operative time⁵⁻⁷. However, surgeons seem reluctant to adopt the technique as there is no stent in place for biliary decompression.

We operated 35 patients of choledocholithiasis and primarily closed the common bile duct over an infant feeding tube as a stent for post-operative biliary decompression. The observed complication rate(8.57%) was comparable to other studies which evaluated primary closure of the common bile duct⁵⁻⁷. Also the mean post-operative stay of 5.11 days was also comparable to other studies of primary closure.

V. Conclusion:

A large number of clinical studies advocate the primary closure of common bile duct post choledochotomy as the procedure of choice. Acceptance of the same by surgeons has, however, been reluctant because of the absence of post-operative biliary decompression and increased apprehension about post-operative leak. As observed in our study the closure of common bile duct over infant feeding tube as a stent has acceptable results and no additional surgical requirements over primary closure with the added advantage of post-operative biliary decompression.

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Fig 1



Fig 2



Fig 3