Background: Retained or recurrent common bile duct stones (CBD) and cholangitis after open exploration of common bile duct are major problems in biliary surgery. Repeated surgical intervention on biliary tract to correct complications is a burden on both the patients in the form of increased morbidity and mortality and on the surgeons in form of complex technical difficulties.

Objectives: The study aimed to compare the results of T-tube drainage versus choledochoduodenostomy after open common bile duct exploration.

Patients and methods: This is a retrospective study of 154 patients which compare two surgical treatments of patients with choledocholithiasis from 1992 to 2009. At the beginning of the study all patients were treated by exploration of CBD with T-tube insertion, Group A which included 83 patients. In 1999 the surgeon analyzed and made an audit of the results of this operation. The audit identified the incidence of retained or residual CBD stones and their risk factors. The risk factors were multiples CBD stones, hugely dilated CBD, recurrent stones and papillary stenosis. The second strategy were followed after holding an audit which implemented the use of choledochoduodenostomy for patients with the above mentioned risk factors (Group B) which included 71 patients. The endpoints were mainly retained stones and cholangitis. Analysis was performed to identify risk factors for stone recurrence and whether the new implemented strategy resulted in decrease in prevalence of retained CBD stones. Postoperative follow up was for 12 to 18 months. Statistical analysis with SPSS data base using Chi-Square test and test of comparison of proportions was used to analyze the data of this study.

Results: In group A "Pre-audit", 7 patients developed retained CBD stones, 3 of them needed reoperation and 3 were managed by endoscopic sphincterotomy while in group B "Post-audit", two patient developed cholangitis and improved on conservative treatment, no patient had residual stones and no patients needed re-operation. Statistical analysis with SPSS data base with using Chi-square test and test of comparison of proportions showed that multiple CBD stones, hugely dilated CBD and papillary stenosis were found to be independently associated risk factors for retained or recurrent CBD stones after open exploration of CBD which was significantly reduced by choledochoduodenostomy in p-value <0.05 and 95% confidence interval.

Conclusions: This study demonstrated that with the new strategy "Choledochoduodenostomy", the incidence of CBD stones was reduced. Multiple CBD stones, hugely dilated CBD and papillary stenosis were risk factors for retained CBD stones.