



Intraoperative Cholangiography is Superior to Laparoscopic Choledochoscopy for Ductal Stone Clearance Control

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Keywords

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Editorial

Laparoscopic Common Bile Duct (CBD) exploration is an established treatment for choledocholithiasis [1,2]. The optimal intraoperative ductal stone clearance control method remains controversial [3,4]. Vindal et al [5] found that Laparoscopic Choledochoscopy (LC) and Intraoperative Cholangiography (IOC) achieve complete removal of Extrahepatic Bile Ducts (EHBD) stones. However, only 2% patients had both methods, LC and IOC for ductal stone clearance control [5]. The aim of our study was to evaluate the discriminative power of IOC against LC for ductal stone clearance following laparoscopic CBD exploration. This was a retrospective cohort study. From May 2004 to June 2009, 1959 patients were identified from the clinical audit of cholecystectomies performed in North Shore hospital, Auckland, New Zealand. The exclusion criteria were open cholecystectomy, conversion of laparoscopic cholecystectomy to open surgery and the absence of EHBD stones. The "gold standard" of the diagnosis of EHBD stones was stones removed during laparoscopic CBD exploration and postoperative Endoscopic Retrograde Cholangiography (ERC). Stata/SE (version 13) software package (StataCorp LP, College Station, TX, USA) was used for statistical analysis. Estimation of the sensitivity, specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV) and Receiver Operating Characteristic (ROC) curve analysis were performed for IOC and LC. Bayes formula was used to calculate predictive values, given prior probabilities of choledocholithiasis of 10% [6]. The areas under the ROC curve (AUC) for LC and IOC were evaluated for the equality of the area under the curves using the algorithm suggested by DeLong et al [7]. P - values less than 0.05 were accepted as statistically significant. This study was registered by the North Shore Hospital Research Office as an audit (RM080712419). The eligibility criteria were met by 16 patients, who in total had 29 IOC and 29 LC. Seven patients had transcystic and 9 transductal LC. One patient had CBD stent inserted preoperatively. Three patients had postoperative ERC for residual ductal stone clearance. With the prevalence of choledocholithiasis of 10%, IOC has the sensitivity of 94.1% (95% confidence interval (CI): 71.3 - 99.9%), the specificity of 92.3% (95% CI: 64 - 99.8%), PPV of 57.6% (95% CI: 17.1 - 90%), NPV of 99.3% (95% CI: 95.4 - 99.9%). With the same prevalence of CBD stones, LC has the sensitivity of 56.3% (95% CI: 29.9 - 80.2%), the specificity of 100% (95% CI: 75.3 - 100%), PPV of 100%, NPV of 95.4% (95% CI: 92.2 - 97.3%). The area under receiver operating characteristic curve of IOC in diagnosing EHBD stones was larger than that of LC, 0.93 (95% CI: 0.83 - 1.0) and 0.78 (95% CI: 0.66 - 0.91), respectively (p = 0.042).

Conclusion

IOC has a superior discriminative power than LC for ductal stone clearance control following laparoscopic CBD exploration.

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