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RETROSPECTIVE STUDY OF 350 PATIENTS OF INTERVAL LAPAROSCOPIC CHOLECYSTECTOMY AFTER ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATICOGRAPHY (ERCP) WITH SPHINCTEROTOMY

Surgery

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ABSTRACT

Introduction: Laparoscopic cholecystectomy after successful endoscopic retrograde cholangiopancreaticography with sphincterotomy is standard management for choledocholithiasis. Interval laparoscopic cholecystectomy in this group of patients can be performed without higher complications and conversion rate.

Methods: A total data of 350 patients post ERCP with sphincterotomy was analysed from Jan 2010 to Dec 2016. Various characteristics were analysed and all patients underwent standard laparoscopic cholecystectomy after six weeks of post ERCP by experienced laparoscopic surgeons.

Results: 7.1% patients had mild pain abdomen post ERCP. 1.1% patients had moderate to severe pain requiring repeat ERCP for common bile duct clearance. 8.6% patients required more than two attempts of ERCP for bile duct clearance. 61 patients (17.4%) had intra operative complications. 5 patients (1.4%) required subtotal cholecystectomy.6 patients (1.7%) required laparoscopic partial cholecystectomy. 32 patients (9.14%) required conversion to open cholecystectomy. 23 patients (6.6%) developed post-operative complications.

Conclusion: Interval laparoscopic cholecystectomy after 6 weeks of post ERCP can be performed without higher complications and conversion rate when performed by experienced laparoscopic surgeons.

KEYWORDS

Laparoscopic cholecystectomy, ERCP, Post-ERCP cholecystectomy

INTRODUCTION:

Laparoscopic cholecystectomy after endoscopic cholangiop ancreaticography with sphincterotomy for choledochocystolithiasis is a preferred management approach (1). Best time between the two procedure is debatable. Studies are establishing the safety and feasibility of early laparoscopic cholecystectomy after ERCP (2). This early strategy is not possible many times because of patient factors, uncontrolled diabetes, hypertension, cardio-pulmonary instability, willingness, patients are coming from other centres and patients coming from remote areas. The safety and feasibility of interval laparoscopic cholecystectomy after acute cholecystitis is well studied (3,4). Only few studies mention the safety of interval cholecystectomy after ERCP. The aim of this prospective observational study is to mention the results of interval cholecystectomy in this early laparoscopic cholecystectomy era. The time interval between ERCP and laparoscopic cholecystectomy has been investigated in many retrospective and few prospective studies (5,6,7,8) but controversies continue to exist.

MATERIAL AND METHODS:

From the period of Jan 2010 to Dec 2016, a total data of 350 patients post ERCP with sphincterotomy undergoing interval cholecystectomy at a tertiary care centre was analysed. Patients characteristics, pain after ERCP, no. Of ERCP attempts, intraoperative findings, post-operative complications and conversion to open were analysed. Visual analogue scale was used for pain grading. Patients who underwent ERCP with sphincterotomy for choledochocystolithiasis were included. Exclusion criteria was patients who developed any ERCP related complications, carcinoma gall bladder, cardiovascular instability, uncontrolled diabetes, uncontrolled coagulopathy, liver failure and patients who underwent any previous upper abdominal surgery. Patients were evaluated by routine blood investigations, liver function tests, ultrasonography abdomen. All patients underwent standard four port interval laparoscopic cholecystectomy (6 weeks). In patients who underwent more than one ERCP, interval was measured from the last performed ERCP. Study points mainly focused on intra operative findings, complications during procedure and after surgery, laparoscopic partial and subtotal cholecystectomy and conversion to open cholecystectomy. Gall bladder adhesion score (8) was used for adhesion evaluation. Grade I, no adhesions, grade II, flimsy adhesions, grade III, chronic pericholecystitis and pericholecystic fibrosis, grade IV, thickened gall bladder wall and anatomical distortion due to intense adhesions around gall bladder, duodenum and colon. The gross appearance of gall bladder (8), normal, hydropic (tensely distended), scleroatrophic (contracted and scarred), buried into the liver, pedunculated or a thick walled gall bladder (making it difficult to grasp gall bladder). Statistical analysis was performed using SSPS 18. Parametric data have been measured as means and standard deviation. Non parametric data were expressed as frequencies and percentages. Paired t test and non Fishers exact test used where applicable. Statistical significance was defined as $p<0.05$.

RESULTS:

Of the total 350 patients, 146(41.7%) were male and 204(58.3%) were female. 84.28% of the study population was less than 50 years of age. More than 50 years of age comprised the remaining study population. Post ERCP, 25(7.1%) patients had mild pain, managed by oral medications on OPD basis. 4(1.1%) patients developed moderate pain abdomen, requiring admission and on evaluation by ultrasonography found to have choledocholithiasis and managed by repeat ERCP and bile duct clearance. 30(8.6%) patients underwent 2-3 ERCP attempts for complete clearance of bile duct stones for multiple stones.

68(19.4%) patients had grade I adhesions, 146(41.7%) had grade II adhesions, 82(23.4%) had grade III and 54(15.4%) had grade IV adhesions score.

84(24%) patients had normal gall bladder wall appearance, 46(13.1%) had tense, 148(42.3%) had contracted,30(8.6%) had buried gall bladder and 42(12%) had thick gall bladder wall.

Total 61(17.4%) patients developed intra operative complications. 25(7.1%) had bleeding from gall bladder bed, 30(8.6%) had bleeding due to adhesiolysis, bleeding was controlled by compression and diathermy. 4(1.1%) patients had bleeding due to cystic artery injury, 2 patients had bile duct injury, underwent laparotomy and bile duct repair over T- tube. Table 1.

TABLE 1. Intraoperative complications:

Variable	Number(Percentage)
GB bed bleeding	25(7.1%)
Bleeding due to Adhesiolysis	30(8.6%)
Bleeding due to cystic artery injury	4(1.1%)
Bile duct injury	2(0.6%)

5(1.4%) patients underwent laparoscopic subtotal cholecystectomy, because of buried and densely adhered gall bladder bed, leaving behind part of posterior wall of gall bladder after defining Calot's triangle. 6(1.7%) patients were underwent laparoscopic partial cholecystectomy because of frozen Calot's triangle and thick wall gall bladder and dense adhesions.

32(9.14%) patients underwent convert to open cholecystectomy, 20(5.71%) converted predominantly because of dense adhesions, 6(1.71%) converted predominantly because of contracted thick wall gall bladder, 4(1.1%) patients converted because of cystic artery injury, 2(0.6% patients underwent conversion because of bile duct injury. Table 2

TABLE 2. Conversion to open

Variable	Number(Percentage).
Dense adhesions	20(5.71%)
Contracted thick GB wall	6(1.7%)
Cystic artery injury	4(1.1%)
Bile duct injury	2(0.6%)

Total 23(6.6%) patients developed postoperative complications. 5(1.4%)developed high drain output around 150ml serosanguinous on day one which gradually decreased. 6(1.7%) developed bile leak, around 20-30ml which reduced spontaneously. 12(3.4%) developed wound infection, 4 open cholecystectomy wound, 6 epigastric port site and 2 umbilical port site, which were managed by drainage and antibiotics.

This is our unit policy to place drain in all post ERCP laparoscopic cholecystectomy patients.

There was no mortality noted in the study.
Out of 32, 12(37.5%) patients underwent multiple ERCP for CBD clearance, suggestive of high conversion rate in these patients.

DISCUSSION:

Laparoscopic cholecystectomy after endoscopic sphincterotomy is a commonly performed practice for choledocholithiasis (1,9). Watchful waiting is no more preferred because of high biliary complications as shown by Boerma et al (10). In their study, 47% patients developed one recurrent biliary complication and 37% required cholecystectomy. In our study, 7.1% patients had mild pain abdomen managed conservatively, 1.1% patients had moderate pain and managed by repeat ERCP before laparoscopic cholecystectomy.

Multiple, impacted stones in common bile duct, manipulation and contrast study of bile duct during endoscopic procedure induced inflammation and adhesions around extrahepatic biliary tree (6). This inflammation is more evident between 1-3 weeks of ERCP, after that this start reducing and allowing extrahepatic biliary tree to cool off and recovery from acute inflammation (11). Because of that inflammation and adhesions, preoperative ERCP has been associated with more frequent intraoperative and post-operative complications (5) and conversion to open surgery (1,5). 8.3% post ERCP vs 3.4% after standard laparoscopic cholecystectomy conversion rate (1). In another study conducted by Erdal Birol et al (8) post sphincterotomy conversion rate was 14% Vs 4& for patients undergoing LC.

In present study, the conversion rate was 9.14% majority because of dense adhesions and thick contracted gall bladder wall.

High conversion rate was associated with multiple preoperative ERCP attempts (8). Our study also yielded the same results, out of 32, 12(37.5%) patients underwent multiple ERCPs attempts for bile duct clearance indicating that ERCP is another important contributor other than gall stone disease.

In our study, we found more adhesions in the patients age >50yrs. Randhawa et al (12) found that age more than 50yrs is associated with more adhesions, fibrosis and difficult Calot's. It is the number of biliary colic's or cholecystitis that is the deciding factor for more adhesions and frozen Calot's rather than longer interval between ERCP and LC without cholecystitis.

Only one study correlated shorter interval and less conversion rate (6) other studies found no correlations between post ERCP time interval and conversion rate (5,7,8).

Because bile duct stones and endoscopic sphincterotomy induce inflammation of the extrahepatic biliary tree and resultant adhesions, fibrosis and frozen Calot's, this group of patients have higher adhesion score and more scleroatrophic and thick walled gall bladder at the time of cholecystectomy. Our study results are consistent with the Erdal Birol et al (8) results in this regard.

CONCLUSIONS:

Though post ERCP early laparoscopic cholecystectomy is feasible and is an emerging trend, it continues to be a topic of debate. Our study shows that post ERCP interval (6weeks) laparoscopic cholecystectomy has an acceptable conversion rate without higher intra and postoperative complications. High conversion rate and complications are not related to the time interval between endoscopic sphincterotomy and laparoscopic cholecystectomy but it is associated with the number of ERCP attempts performed preoperatively.

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