

Original article:

Evaluation of Complications Occurring in Patients Undergoing Laparoscopic Cholecystectomy: An Institutional Based Study

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Abstract:

Background: Preliminary reports on the performance of LC suggest that the increased rate of intraoperative complications is attributed to technical difficulty. Data from past literature and several other recent large series indicate that major complications occur in less than 3% of patients. Hence; we planned the present study to assess various postoperative complications in patients undergoing LC.

Materials & Methods: The present investigation was conducted for assessing various postoperative complications occurring patients undergoing LC. A total of 42 patients scheduled to undergo LC were included in the present study. All the laparoscopic procedures were performed under the hands of skilled surgeons. Postoperative follow-up records of all the patients were maintained for assessing postoperative complications. All the results were compiled and analyzed by SPSS software.

Results: A total of 42 patients scheduled to undergo LC were included in the present study. The most common cause of intraoperative haemorrhage among these patients was from cystic artery and from gall bladder bed. Bile duct injury was found to be present in 2 patients only. Most commonly encountered complications in the present study were bile leak, postoperative haemorrhage, retained bile duct stone and subhepatic abscess.

Conclusion: LC is associated with significant complications, which a surgeon should be aware of, so that timely management of such conditions can be done.

Key words: Complications, Laparoscopic Cholecystectomy, Postoperative.

INTRODUCTION

Preliminary reports on the performance of LC suggest that the increased rate of intraoperative complications is attributed to technical difficulty.¹ The initial rate of common bile duct (CBD) injury in LC ranged from 0.2% to 3%, or up to 5 times higher than in OC.²⁻⁴ However, experience with LC and improved laparoscopic principles encouraging the accurate anatomical identification of structures, limited dissection within Calot's triangle, and the judicious use of intraoperative cholangiography have stabilized the CBD injury rate to a range of 0.25% to 0.5%.⁵⁻⁷

Laparoscopic cholecystectomy is a safe and effective treatment of cholelithiasis in experienced hands. Mortality is rare. Data from past literature and several other recent large series indicate that major complications occur in less than 3% of patients. The most significant common complication is injury to the bile duct, for which the

greatest risk factor is inexperience. Major biliary injury usually requires reoperations. If injuries do occur, they should be recognized early, and patients should be referred to centers experienced in their treatment.⁴⁻⁶

Hence; we planned the present study to assess various postoperative complications in patients undergoing LC.

MATERIALS & METHODS

The present investigation was conducted in the Department of Surgery, Santosh Medical College & Hospital, Ghaziabad, Uttar Pradesh (India) with the aim of assessing various postoperative complications occurring patients undergoing LC. We obtained written consent from all the patients after explaining them in detail the entire research protocol. Inclusion criteria for the present study included:

- Patients planned to undergo LC,
- Patients between the age group of 25 to 55 years,
- Patients with negative history of any systemic diseases,
- Patients with negative history of any known drug allergy,

A total of 42 patients scheduled to undergo LC were included in the present study. All the laparoscopic procedures were performed under the hands of skilled surgeons. Complete demographic and clinical details of all the patients were obtained. Postoperative follow-up records of all the patients were maintained for assessing postoperative complications. All the results were compiled and analyzed by SPSS software. Univariate regression curve was used for assessment of level of significance.

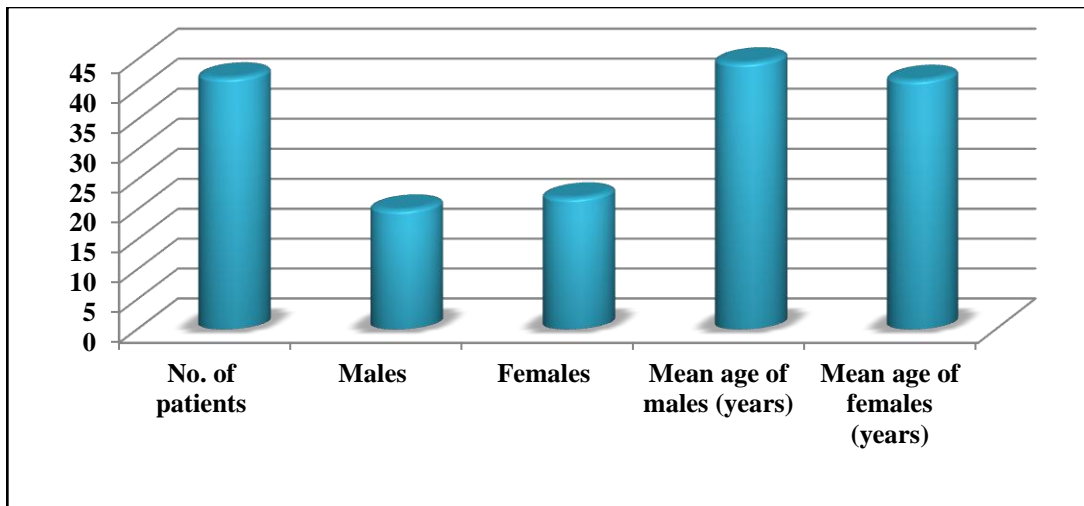
Table 1: Details of the patients

Parameter	Number
No. of patients	42
Males	20
Females	22
Mean age of males (years)	44.5
Mean age of females (years)	41.6

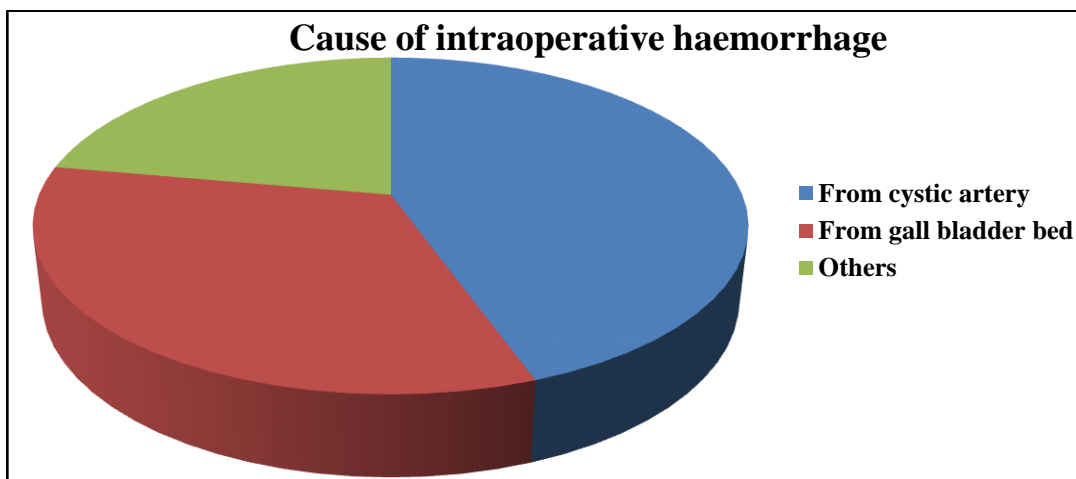
Table 2: Early complications

Complication	No. of patients	Percentage
Bile leak	2	33.4
Postoperative haemorrhage	2	33.4
Retained bile duct stone	1	16.6
Subhepatic abscess	1	16.6
Total	6	100

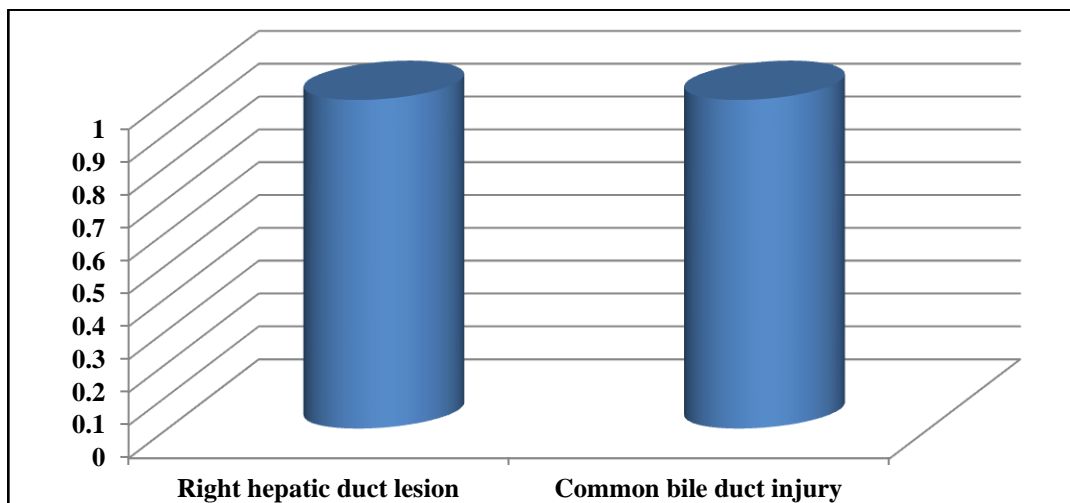
Graph 1: Descriptive analysis of patients



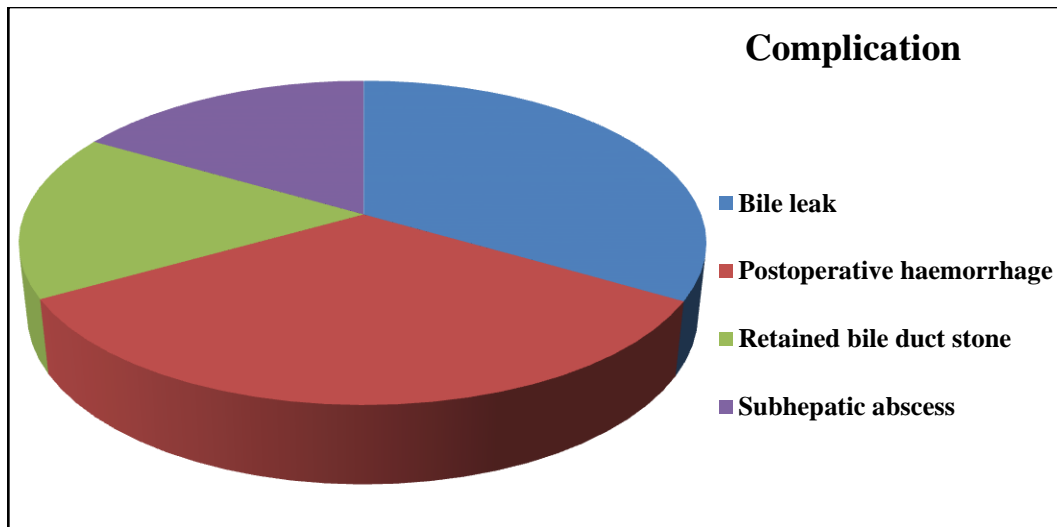
Graph 2: Patients with intraoperative haemorrhage



Graph 3: Bile duct injuries



Graph 4: Early complications observed in the present study



RESULTS

A total of 42 patients scheduled to undergo LC were included in the present study. Among these 42 patients, 22 were females while the remaining 20 were males. Mean age of the female subjects was 41.6 years while the mean age of the male subjects was 44.5 years. In 9 patients, intraoperative haemorrhage occurred. The most common cause of intraoperative haemorrhage among these patients was from cystic artery and from gall bladder bed. Bile duct injury was found to be present in 2 patients only. Most commonly encountered complications in the present study were bile leak, postoperative haemorrhage, retained bile duct stone and subhepatic abscess.

DISCUSSION

In the present study, we observed that in 9 patients, intraoperative haemorrhage occurred. The most common cause of intraoperative haemorrhage among these patients was from cystic artery and from gall bladder bed. Bile duct injury was found to be present in 2 patients only. Most commonly encountered complications in the present study were bile leak, postoperative haemorrhage, retained bile duct stone and subhepatic abscess. Cates JA et al performed a retrospective review of all patients referred to UCLA after having sustained biliary injuries during laparoscopic cholecystectomy. Over a 14-month period, 10 patients were referred to UCLA with 12 major bile duct injuries. One patient had a false positive cholangiogram leading to an unnecessary biliary-enteric bypass and subsequent dehiscence, resulting in a biliary fistula. Six patients were referred on an acute basis, whereas four patients underwent attempted biliary reconstruction at outside facilities and were ultimately referred with either a biliary stricture or a fistula. Review of cholangiograms suggested that bile duct anomalies were present in five patients. There did not appear to be a relationship between the use of either electrocautery or laser and bile duct injuries. To date eight patients have been successfully managed via Roux-en-Y hepaticojejunostomies, with a mortality rate of 0%. Although the exact frequency cannot be ascertained from the current study, our data demonstrate that major biliary complications do occur during laparoscopic cholecystectomy. Most of these injuries, however, can be safely and successfully treated with surgical biliary reconstruction. Early diagnosis and treatment with liberal use of intraoperative cholangiography and a low threshold for conversion to open laparotomy appears to be associated with a more favorable outcome.⁸

Another recent population-based report found that increasing experience (during a 5-year period) was unrelated to the incidence of biliary tract injury during LC. 25 Likewise, a community-based survey of surgeons in one city found that the learning curve was not important in determining when, in a surgeon's experience, an injury to the biliary tree would occur during LC.^{9,10} Archer SB et al determined whether surgical residency training has influenced the occurrence of common bile duct injuries during laparoscopic cholecystectomy. An anonymous questionnaire was mailed to 3,657 surgeons across the United States who completed an Accreditation Council for Graduate Medical Education (ACGME)-approved residency between 1980 and 1990 (group A) or 1992 and 1998 (group B). All surgeons in group A learned laparoscopic cholecystectomy after residency, and all those in group B learned laparoscopic cholecystectomy during residency. Bile duct injuries were more likely to be discovered during surgery if a cholangiogram was completed than if cholangiography was omitted (80.9% vs. 45.1%). Sixty-four percent of all major bile duct injuries required biliary reconstruction, and most injuries were definitively treated at the hospital where the injury occurred. Only 14.7% of injuries were referred to another center for repair. Accepting that the survey bias underestimates the true frequency of bile duct injuries, residency training decreases the likelihood of injuring a bile duct, but only by decreasing the frequency of early "learning curve" injuries.¹¹

Duca S et al analyzed incidents and postoperative complications of laparoscopic cholecystectomy (LC) based on a series of 8002 patients who underwent the procedure during a period of seven years. Conversion rate was 2.02% (161 cases) and 6 (0.07%) death were encountered. Intraoperative hemorrhage (2.43%) could be controlled by intraoperative haemostasis in all but 8 patients (bleeding from the hepatic bed and from the cystic artery) which required conversion. Lesions of the bile ducts occurred in 16 patients (0.2%), 13 of them being identified during the operation and solved by conversion or laparoscopic choledochorraphy (for a tangential lesion). Postoperative complications required re-intervention in 45 patients: 11 for bile leak, 19 for choleperitoneum, 6 for hemorrhage, 4 for subhepatic abscesses and 5 for remnant CBD lithiasis. There was 1 puncture of the Douglas pouch in a case of choleperitoneum, 7 laparoscopic re-interventions and 25 open surgery re-interventions. EST solved postoperative bile leaks (from the gallbladder bed) successfully in 7 cases and remnant CBD lithiasis (5 cases). So, 44% of the cases were treated by minimally invasive means (laparoscopic re-interventions or endoscopic procedures). The majority of the incidents and postoperative complications were linked to the presence of an acute cholecystitis and were partially due to some technical limits of the laparoscopic technique of the gallbladder bed peritonisation. The minimally invasive treatment of postoperative complications, was very efficient and offered optimum healing conditions.¹² Duca S et al analyzed various complications occurring in patients undergoing LC. Most of the postoperative incidents (except bile duct injuries) were solved by laparoscopic means. Among patients with postoperative complications 28.9% required revisional surgery. In 42.2% of cases minimally invasive procedures were used successfully: 15 laparoscopic re-operations (for choleperitoneum, haemoperitoneum and subhepatic abscess) and 22 endoscopic sphincterotomies (for bile leakage from the subhepatic drain and for retained CBD stones soon after operation). The good results obtained allowed them to recommend these minimally invasive procedures in appropriate patients.

CONCLUSION

Under the light of above obtained results, the authors conclude that LC is associated with significant complications, which a surgeon should be aware of, so that timely management of such conditions can be done. However; future studies are recommended.

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