

Assessment of incidence of CBD injury who underwent Laparoscopic cholecystectomy patients

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ABSTRACT:

Background: Laparoscopic cholecystectomy (LC), one of the most commonly performed surgical procedures worldwide is accepted as the gold standard in the treatment of symptomatic gallstones. The present study was conducted to assess incidence of CBD injury who underwent LC.

Materials & Methods: 180 patients who underwent laparoscopic cholecystectomy of both genders were included. Predictors of CBD injury were assessed based on grading of degree of difficult LC and visualization of critical view of safety (CVS). BDI was classified according to Strasberg classification.

Results: Out of 180, males were 110 and females were 70. Diagnosis was acute cholecystitis in 90, chronic cholecystitis in 40, empyema gall bladder in 30 and mucocele gall bladder in 20 cases. Degree of difficulty was mild in 46, moderate in 84, severe in 28 and extreme in 22. CVS was seen in 160. The difference was significant ($P < 0.05$). Type of bile duct injury was type A in 5, type B in 1, type D in 2 and type E4 in 3 patients. The difference was significant ($P < 0.05$).

Conclusion: Majority of bile duct injuries, results mainly from the surgeon's inexperience, misinterpretation of anatomy and poor surgical technique.

Key words: Bile duct injury, laparoscopic cholecystectomy, mortality

INTRODUCTION

Laparoscopic cholecystectomy (LC), one of the most commonly performed surgical procedures worldwide is accepted as the gold standard in the treatment of symptomatic gallstones. Morbidity and mortality rates have been traditionally used to measure the outcome in a surgery. The outcome of laparoscopic cholecystectomy in literature has been assessed by many different outcomes measures common bile duct (CBD) injuries, conversion rates, morbidity and mortality.¹

Despite increasing experience and progress in laparoscopic skills of surgeons, the incidence of IBDI is still elevated compared to open cholecystectomy.² The rate of clinically relevant bile leaks after conventional open cholecystectomy ranges between 0.1 and 0.5%. In contrast, biliary leakages have increased in the era of laparoscopic cholecystectomy (LC) by up to 3%. A variety of injuries can occur.³ Besides minor bile leakage of aberrant ducts, cystic stump or the main bile duct, complete occlusion of the main duct or a branch (often an aberrant right duct) can happen. In addition, bile duct strictures and biliary leakages are severe long-term complications after LC. These injuries are associated with high morbidity, mortality, and prolonged hospitalization.⁴ Currently, endoscopic procedures are most frequently used in the management of postoperative IBDI. There are several endoscopic techniques available, e.g. biliary stent placement, biliary sphincterotomy, and nasobiliary drainage.⁵ The present study was conducted to assess incidence and predictors of CBD injury who underwent LC.

MATERIALS & METHODS

The present study comprised of 180 patients who underwent laparoscopic cholecystectomy of both genders. The consent was obtained from all patients.

Data such as name, age, gender etc. was recorded. Grading of degree of difficulty of surgery was assessed on the basis of following aspects; difficulty in access, omental and gall bladder adhesions, appearance of GB, severe sepsis or complications, and time taken to dissect Calot's triangle.

Predictors of CBD injury were assessed based on grading of degree of difficult LC and visualization of critical view of safety (CVS). BDI was classified according to Strasberg classification. The follow up protocol for patients who had bile duct injuries included clinical assessment and liver function test (LFT) every 2 months. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

| Total- 180 | | |
|------------|-------|---------|
| Gender | Males | Females |
| Number | 110 | 70 |

Table I shows that out of 180, males were 110 and females were 70.

Table II Assessment of parameters

| Parameters | Variables | Number | P value |
|----------------------|-----------------------|--------|---------|
| Diagnosis | Acute cholecystitis | 90 | 0.01 |
| | Chronic cholecystitis | 40 | |
| | Empyema gall bladder | 30 | |
| | Mucocele gall bladder | 20 | |
| Degree of difficulty | Mild | 46 | 0.05 |
| | Moderate | 84 | |
| | Severe | 28 | |
| | Extreme | 22 | |
| CVS | Yes | 160 | 0.01 |
| | No | 20 | |

Table II, graph I shows that diagnosis was acute cholecystitis in 90, chronic cholecystitis in 40, empyema gall bladder in 30 and mucocele gall bladder in 20 cases. Degree of difficulty was mild in 46, moderate in 84, severe in 28 and extreme in 22. CVS was seen in 160. The difference was significant (P < 0.05).

Graph I Assessment of parameters

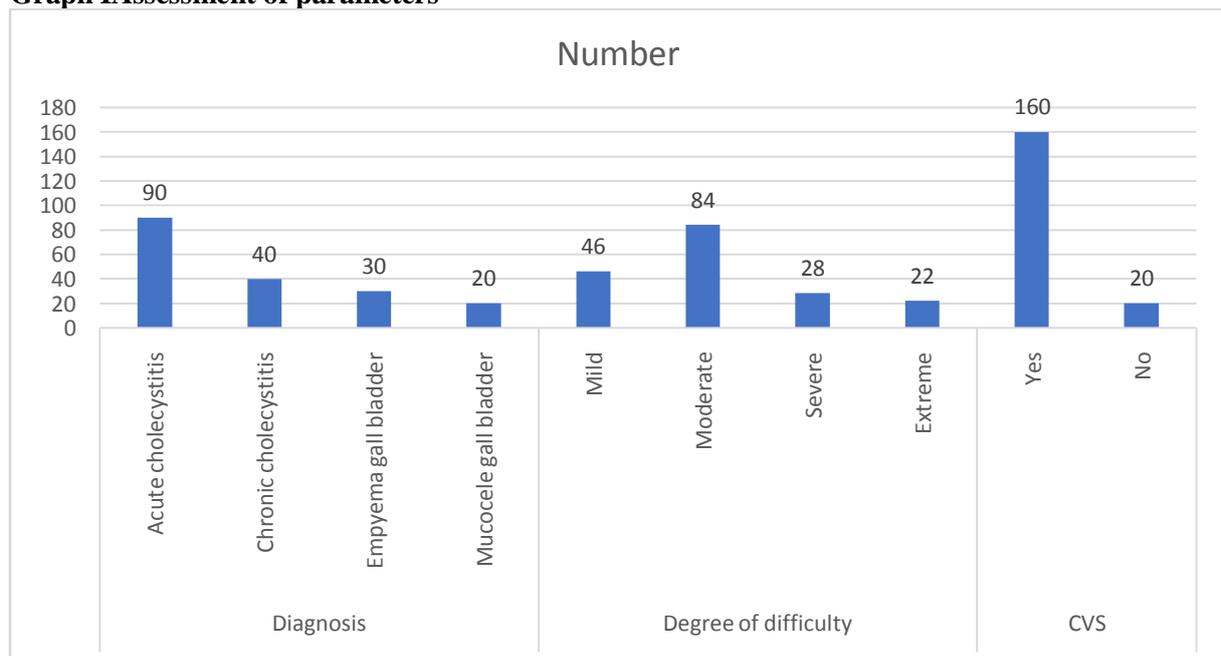


Table III Distribution of patients as per Strasberg classification

| Type of injury | Number | P value |
|----------------|--------|---------|
| A | 5 | 0.01 |
| B | 1 | |
| C | 0 | |
| D | 2 | |
| E1 | 0 | |
| E2 | 0 | |
| E3 | 0 | |
| E4 | 3 | |
| E5 | 0 | |

Table III shows that type of bile duct injury was type A in 5, type B in 1, type D in 2 and type E4 in 3 patients. The difference was significant ($P < 0.05$).

DISCUSSION

Cholecystectomy is one of the most frequently performed procedures in gastrointestinal surgery, and the laparoscopic approach is now the gold standard for symptomatic cholecystolithiasis as well as for chronic and acute cholecystitis.⁶ Besides the advantages of a distinctly faster recovery and better cosmetic results, the laparoscopic approach bears a higher risk for iatrogenic bile duct injury (IBDI) and injury of the (right) hepatic artery.⁷ IBDI is a complication associated with significant perioperative morbidity and mortality, reduced long-term survival and quality of life, and high rates of subsequent litigation.⁸ Despite increasing experience and progress in laparoscopic skills of surgeons, the incidence of IBDI is still elevated compared to open cholecystectomy.⁹ The present study was conducted to assess incidence and predictors of CBD injury who underwent LC.

In present study, out of 180, males were 110 and females were 70. Gupta et al¹⁰ in majority of laparoscopic cholecystectomy encountered moderate degree of difficulty. Extra hepatic bile duct injuries occurred in 1.4% of cases and were classified according to Strasberg classification. Type A injury was most common followed by type E2. Most major bile duct injuries were recognized intraoperatively. No mortality was noted in our study. Bile duct injuries is a major complication of laparoscopic cholecystectomy with significant morbidity and mortality, reduced survival impaired quality of life and subsequent litigations. Majority of bile duct injuries, results mainly from the surgeon's inexperience, misinterpretation of anatomy and poor surgical techniques.

We observed that diagnosis was acute cholecystitis in 90, chronic cholecystitis in 40, empyema gall bladder in 30 and mucocele gall bladder in 20 cases. Degree of difficulty was mild in 46, moderate in 84, severe in 28 and extreme in 22. CVS was seen in 160. Although it has been 25 years since the introduction of LC, as a matter of fact, outcomes remain largely unchanged, with rates of bile duct injury higher in the modern age than in the era of open surgery.¹¹ Efforts to improve safety in LC have greatly increased the body of knowledge regarding all factors relevant to cholecystectomy. These include timing of the procedure and patient selection as well as training and assessment of surgeons performing LC. Endeavors to increase safety of the procedure resulted in optimized intraoperative processes, such as photographic documentation of the 'critical view of safety' (CVS), first described by Strasberg and colleagues almost 20 years ago.¹² Using the CVS technique, the Calot's triangle is completely unfolded by mobilizing the gallbladder neck from the gallbladder bed of the liver. When this view is achieved, the two structures entering the gallbladder (cystic duct and cystic artery) can be definitively detected. Importantly, it is not necessary to see the CBD since such a procedure may disturb bile duct perfusion.

We found that type of bile duct injury was type A in 5, type B in 1, type D in 2 and type E4 in 3 patients. Recently, the Tornqvist study group reported incidence of BDIs was 1.5%. They used intra operative cholangiography (IOC) for earlier detection of injury and reduce the risk of death by 69%.¹⁴

CONCLUSION

Authors found that majority of bile duct injuries, results mainly from the surgeon's inexperience, misinterpretation of anatomy and poor surgical technique.

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