

## Original Research

# Evaluation of Intraoperative Findings Among Patients Undergoing Laparoscopic Cholecystectomy at a Tertiary Care Hospital

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### Abstract

**Background:** Laparoscopic cholecystectomy (LC) represents a significant change in the management of gallbladder disease, and it is the most commonly performed operation of the digestive tract. It is considered as the gold standard treatment for cholelithiasis. The present study was conducted for assessing intraoperative findings among patients undergoing laparoscopic cholecystectomy.

**Materials & Methods:** The present study was conducted for assessing intraoperative findings among patients undergoing laparoscopic cholecystectomy. 100 cases for laparoscopic cholecystectomy were taken. During the surgery, after the insertion of first 10-mm-trocar, a general abdominal exploration with a laparoscope was done and initial view of the gall bladder was photographed once the gall bladder was visualized. The operating surgeon then self-graded the 'initial view' of gall bladder intraoperatively. Intraoperative findings were recorded separately. All the results were recorded and analyzed using SPSS software.

**Results:** In our study in 37 (37%) cases gall bladder was aspirated, 32 (32%) cases had adhesions to gall bladder, 17 (17%) cases had intraoperative bile spillage, 3 (3%) patients underwent partial cholecystectomy, abnormal anatomy of gall bladder was found in 2 (2%) cases. No cases were converted to open surgery. No cases had intra-operative cholangiogram. In our study titanium clips were used in 97 % of patients for cystic duct and artery clipping. Suture was used in 2 (%) patients, endoloop in one patient, Hem-o-lok in 3 (3%) patients. Out of 100 patients 7 (7%) patients were taken for cholecystectomy after ERCP for Common Bile Duct stones. 4 (4%) patients were operated on after treating acute pancreatitis.

**Conclusion:** Knowledge of incidence/ occurrence of various intraoperative findings and events helps surgeons to make necessary preoperative preparations to decrease the morbidity associated with laparoscopic cholecystectomy.

**Key words:** Laparoscopic Cholecystectomy, Adhesions, Gall Bladder, Bile Spillage.

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### INTRODUCTION

Epidemiological studies on the provision of gallbladder surgical procedures in individual countries are of paramount importance as they assess national trends to understand the challenges of the present.<sup>1-3</sup> Laparoscopic cholecystectomy (LC) represents a significant change in the management of gallbladder disease and it is the most commonly performed operation of the digestive tract. It is considered as the gold standard treatment for cholelithiasis. It replaced open cholecystectomy as the first choice of treatment for gallstones and inflammation of the gallbladder. It was made for the

first time in 1987 by Muret. Despite many modified methods (natural orifice transluminal endoscopic surgery - NOTES -, single-incision laparoscopic surgery, LC is still the gold standard for symptomatic gallstone disease.<sup>4</sup> Experience has allowed the development of now well-established technical nuances, and training has raised the level of performance so that safe LC is possible. If safe cholecystectomy cannot be performed because of acute inflammation, LC tube placement should occur. A systematic approach in every case to open a window beyond the triangle of Calot, well up onto the liver bed, is essential for the safe

completion of the operation.<sup>5</sup>Hence; the present study was conducted for assessing intraoperative findings among patients undergoing laparoscopic cholecystectomy.

### MATERIALS & METHODS

100 cases for laparoscopic cholecystectomy were taken. Prior informed consent from the participants was taken. Routine blood examination was carried out. A standardized general anesthesia was given to all participants.

Standardized four-port laparoscopic cholecystectomy was performed in all patients by experienced surgeons. During the surgery, after the insertion of first 10-mm-trocar, a general abdominal exploration with a laparoscope was done and initial view of the gall bladder was photographed once the gall bladder was visualized. The operating surgeon then self-graded the 'initial view' of gall bladder intra-operatively. Intraoperative findings were recorded separately. All the results were recorded and analyzed using SPSS software.

### RESULTS

28 (28 %) of the patients were in the age group 15 -35 years, 42 (42 %) between 36 to 55, 25 (25%) between 56 to 75 years, 5 (5%) of them were more than 75 years. The mean value of Haemoglobin was  $12.21 \pm 1.45$  g/dl, pre-op WBC count was  $7470 \pm 2.81$  cells/mm<sup>3</sup>, PTINR was  $1.33 \pm 0.14$ , RBS was  $123.6 \pm 22.39$  g/dl, urea  $46.08$  mg/dl, creatinine was  $1.24 \pm 0.23$  mg/dl. In our study in 37 (37%) cases gall bladder was aspirated, 32 (32%) cases had adhesions to gall bladder, 17 (17%) cases had intraoperative bile spillage, 3 (3%) patients underwent partial cholecystectomy, abnormal anatomy of gall bladder was found in 2 (2%) cases. No cases were converted to open surgery. No cases had intra-operative cholangiogram. In our study titanium clips were used in 97 % of patients for cystic duct and artery clipping. Suture was used in 2 (%) patients, endoloop in one patient, Hem-o-lok in 3 (3%) patients. Out of 100 patients 7 (7%) patients were taken for cholecystectomy after ERCP for Common Bile Duct stones .4 (4%) patients were operated on after treating acute pancreatitis.

**Table 1: Age-group**

| Age Distribution | No. of Patients | Percentage |
|------------------|-----------------|------------|
| 15-35            | 28              | 28         |
| 36-55            | 42              | 42         |
| 56-75            | 25              | 25         |
| >75              | 5               | 5          |

**Table 2: Biochemical profile**

| Parameter   | Mean  | SD    |
|-------------|-------|-------|
| Haemoglobin | 12.21 | 1.45  |
| TLC         | 7.47  | 2.81  |
| PT INR      | 1.33  | 0.14  |
| RBS         | 123.6 | 22.39 |
| Urea        | 46.08 | 12.22 |
| Creatinine  | 1.24  | 0.23  |

**Table 3: Incidence of Laparoscopic Cholecystectomy after ERCP and Pancreatitis**

| Post Status       | No. of Patients | Percentage |
|-------------------|-----------------|------------|
| None              | 89              | 89         |
| Post ERCP         | 7               | 7          |
| Post Pancreatitis | 4               | 4          |
| Total             | 100             | 100        |

**Table 4: Intra Operative findings**

| Findings                | No. of Patients | Percentage |
|-------------------------|-----------------|------------|
| Gall bladder aspirated  | 37              | 37         |
| Intra op adhesions      | 32              | 32         |
| Intra-op bile spillage  | 17              | 17         |
| Partial cholecystectomy | 3               | 3          |
| Abnormal Anatomy        | 2               | 2          |
| Converted to open       | 0               | 0          |

## DISCUSSION

With the advancement of laparoscopy for diagnostic and stabilization procedures in gynaecological surgery, few general surgeons used it in their surgical practice. The exceptions were pioneering individuals such as George Berci and Alfred Cushiri who used diagnostic laparoscopy for diagnosing and staging patients with abdominal malignancies. In 1987, Philippe Mouret performed the first laparoscopic cholecystectomy in a human. Almost simultaneously Mc Kernan and Saye performed the first laparoscopic cholecystectomy in the United States in 1988.<sup>9,10</sup> In fact, in 1985, Prof. Erich Muhe of Boblingen, Germany had carried out the first laparoscopic cholecystectomy. He presented his technique at the Congress of the German Surgical Society.<sup>11</sup> Unfortunately, his technique was not appreciated by his colleagues and did not become popular. His work was not realized until 1999, when he was recognized by SAGES for having performed the first laparoscopic cholecystectomy. The first laparoscopic cholecystectomy in India was performed in 1990 at the J.J Hospital, Mumbai, followed by few months later in Pune by Dr. Jyotsna Kulkarni.<sup>12</sup> Within a short span of five years laparoscopic cholecystectomy surpassed conventional cholecystectomy as procedure of choice for diseases of gallbladder.<sup>13</sup> Hence; the present study was conducted for assessing intraoperative findings among patients undergoing laparoscopic cholecystectomy.

The mean value of Haemoglobin was  $12.21 \pm 1.45$  g/dl, pre-op WBC count was  $7470 \pm 2.81$  cells/mm<sup>3</sup>, PTINR was  $1.33 \pm 0.14$ , RBS was  $123.6 \pm 22.39$  g/dl, urea 46.08 mg/dl, creatinine was  $1.24 \pm 0.23$  mg/dl. In our study in 37 (37%) cases gall bladder was aspirated, 32 (32%) cases had adhesions to gall bladder, 17 (17%) cases had intraoperative bile spillage, 3 (3%) patients underwent partial cholecystectomy, abnormal anatomy of gall bladder was found in 2 (2%) cases. No cases were converted to open surgery. No cases had intra-operative cholangiogram.

Michael Sugrue et al outlined a new surgical scoring system incorporating key operative findings. English language studies (from January 1965 to July 2014) pertaining to severity scoring and predictors of difficult laparoscopic cholecystectomy were searched for in PubMed, Embase and Cochrane databases using the search terms 'Laparoscopic cholecystectomy or Lap chole' and/or 'Scoring Index or Grading system or Prediction of difficulty or Conversion to open' in various combinations. Cross-referencing from papers retrieved in the original search identified additional articles. Sixteen published papers report a gallbladder (GB) scoring system, but all relate to pre-operative clinical and imaging findings, rather than operative findings. The current scoring system, using operative findings incorporates the appearance of the GB,

presence of GB distension, ease of access, potential biliary complications and time taken to identify cystic duct and artery. A score of <2 would imply mild difficulty, 2–4 moderate, 5–7 severe and 8–10 extreme.<sup>14</sup>

In our study titanium clips were used in 97 % of patients for cystic duct and artery clipping. Suture was used in 2 (%) patients, endoloop in one patient, Hem-o-lok in 3 (3%) patients. Out of 100 patients 7 (7%) patients were taken for cholecystectomy after ERCP for Common Bile Duct stones .4 (4%) patients were operated on after treating acute pancreatitis.

Kumar S et al compared the outcome of intraoperative findings with preoperating scoring to predict DLC. Two-hundred and nine patients were having GSD, operated by a single experienced surgeon in 2-year duration. Various preoperative predictors and intraoperative parameters of DLC were used for scoring and categorizing the difficulties, into (0–5), (6–10), and (10–15) as early, difficult, and very difficult surgical procedures, respectively. History of hospitalization for acute cholecystitis, overweight with BMI  $\geq 27.5$  kg/m<sup>2</sup>, palpable gallbladder, wall thickness >4 mm, and impacted stone were the most accurate preoperative predictors of DLC in the age-group of above 50 years. Statistically, a significant association was determined by comparing preoperative evaluation with the intraoperative outcome. The preoperative and intraoperative scoring system can be helpful for assessment, experience, and decision-making. These scoring systems deserve a large-scale prospective study for validation.<sup>15</sup>

## CONCLUSION

Knowledge of incidence/ occurrence of various intraoperative findings and events helps surgeons to make necessary preoperative preparations to decrease the morbidity associated with laparoscopic cholecystectomy.

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