OUTCOMES OF LAPAROSCOPIC CHOLECYSTECTOMY IN DIFFERENT GRADES OF GALL BLADDER INFLAMMATION A TERTIARY CARE CENTRE EXPERIENCE

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ABSTRACT

Objective: To find the outcomes of laparoscopic cholecystectomy in gall bladders with all grades peri-operative inflammation.

Study Design: Prospective observational study.

Place and Duration of Study: Combined Military Hospital, Rawalpindi, from Nov 2018 to Aug 2019.

Methodology: All patients with symptomatic gall bladder disease who underwent laparoscopic cholecystectomy (emergency/elective procedure) and American Anesthesiology Society (ASA) Score 1 or 2 were included in the study.

Results: A total of 330 patients with a mean ± SD age of 48.01 ± 14.13 years underwent laparoscopic cholecystectomy. Out of 330 patients, 129 (39.1%) had acute inflammation of gall bladder while 201 (60.9%) cases were operated electively. The rate of conversion and complications were somehow lesser in both categories as the overall conversion rate was 15 (4.5%).

Conclusion: Laparoscopic cholecystectomy is the gold standard treatment for symptomatic gall stones. Moreover, it is safe option in acute and chronic inflammation of Gall bladder if performed by a experienced laparoscopic surgeon.

Keywords: Cholecystectomy, Grades, Inflammation, Laparoscopy.

INTRODUCTION

Laparoscopic cholecystectomy evolved as the most acceptable management option for symptomatic gall bladder disease. Since its introduction in 1990s, there has been a huge paradigm shift in the management of the disease both electively and in emergency surgery. Worldwide, cholecystectomy is one of the most common reasons for hospital admission. Mortality associated with the disease varies according to severity of the disease and is reported to be 0.4-6%. The incidence of cholelithiasis varies in different ethnicities and regions of the world from 10-15% and there is 35% lifetime recurrence rate of symptoms or complications in such patients. Laparoscopic cholecystectomy (LC) in comparison to conventional open cholecystectomy is associated with shorter post-operative stay and lower rate of intra and post-operative complications like sepsis, surgical site infection, and improved cosmetic result. However, adopting LC as a new technique of treatment for acute and chronic cholecystitis has introduced a new spectrum of risks and complications. A major risk associated with LC is 0.3-0.8% incidence of injury to the common bile duct. Furthermore, there is also a greater risk of intestinal injuries, pancreatitis, injuries due to cautery in LC as compared to open cholecystectomy. There are various techniques of LC like conventional and standard 4 port and single port technique. Conventional technique is still more popular in terms of outcomes. LC has revolutionized modern surgery to provide a safer and less time taking surgical management option for cholecystitis. There are certain predictors of surgical outcome with this technique which should not be ignored at all. A thorough pre and intra-operative evaluation of the patient in terms of grading of inflammation of gall bladder is one of the pivotal steps regarding the positive outcome in this management option.

The objective of study was to find the outcomes of laparoscopic cholecystectomy in gall bladders with all grades peri-operative inflammation.

METHODOLOGY

It was a prospective observational study carried out in department of General Surgery of Combined Military Hospital Rawalpindi, from November 2018 to August 2019. A written informed consent was taken from all the participants. Protocol of the study was approved by institutional review board (IRB # 129/12/20). Non-probability consecutive sampling technique was used. A sample size of 151 was calculated by Open Epi Software using reference population of 11% and 95% confidence level but we included all the patients operated by laparoscopic cholecystectomy fulfilling strict inclusion/exclusion criteria. All patients with symptomatic gall bladder disease who underwent laparoscopic cholecystectomy (emergency/elective...
procedure) and American Anesthesiology Society (ASA) score 1 or 2 were included in the study. Patients with American Anesthesiology Society (ASA) Score 3 or 4, previous history of any abdominal or laparoscopic surgery (ERCP/MRCP evidence of gall bladder adhesions), history of comorbid conditions (diabetes mellitus, hypertension, liver/renal/cardio pulmonary disease and Obesity; BMI>30) and preoperative diagnosis of gall bladder carcinoma were excluded from the study. Patients’ demographic details, pre-operative, per-operative and post-operative data were documented on a predesigned proforma using Microsoft Excel 360. Laparoscopic cholecystectomy was attempted in all patients with different grades of gallbladder disease. Single Laparoscopic surgeon assessed the grades of gall bladder per-operatively. Grades were categorized as grade 1; thin wall gall bladder without adhesions, grade 2; thin wall gall bladder with adhesions, grade 3; thick wall gall bladder, grade 4; thick wall gall bladder with chronic inflammation, grade 5; thick wall gall bladder with acute inflammation. One investigator documented all the data along with additional information including conversion and reason for conversion to open cholecystectomy during the laparoscopic cholecystectomy, duration of operation (time noted down from skin incision to skin closure) and post-operative stay (number of nights stayed at hospital) in the hospital. Additional information including length of intensive care unit stay (number of nights stayed), post-operative complications, cholelithiasis with number of stones, thickness of gall-bladder wall, Ultrasonography abdomen findings were also documented. Laparoscopic cholecystectomy was performed by a team of laparoscopic surgeons comprising a senior professor of surgery, a laparoscopic surgeon and a fourth year resident general surgery under general anaesthesia and using a 4 port standard technique. A hybrid technique was used to create the pneumoperitoneum. Indications for conversion to open cholecystectomy were Empyema GB, CBD stones, cholecystoduodenal fistula, dense adhesion at calot triangle, difficult anatomy and anomalies.

Statistical analysis was done using SPSS-23 and Microsoft excel 360. Quantitative variables were correlated using a chi-square test and the p-value of ≤0.05 was considered statistically significant.

RESULTS

A total of 330 patients with a mean ± SD age of 48.01 ± 14.13 years underwent laparoscopic cholecystectomy, including 173 (52.4%) females with mean age 46.54 ± 13.85 and 157 (47.6%) males with mean age 49.62 ± 14.31. Out of 330 patients, 129 (39.1%) had acute inflammation of gall bladder while 201 (60.9%) cases were operated electively, they had no active inflammation of gall bladder on ultrasonography. The rate of conversion and complications were somehow lesser in both categories as the overall conversion rate was 15 (4.5%) and details are given in table-I.

In the sample, 4 (1.2%) of the patients had grade 1 inflammation, 177 (53.6%) had grade 2, 66 (20%) grade 3, 20 (6.1%) grade 4, and 63 (19.1%) grade 5. Post operative complications are tabulated in table-II.

Association of gender with the grades of inflam-

| Indication for Conversion to Open Cholecystectomy | Number (Percentage) | Grade 1 4 (1.2%) | Grade 2 177 (53.6%) | Grade 3 66 (20%) | Grade 4 20 (6.1%) | Grade 5 63 (19.1%) | p-value |
|--------------------------------------------------|---------------------|-----------------|-------------------|-----------------|-----------------|-----------------|---------|
| Empyema                                          | 6 (1.8%)            |                 | 2 (0.6%)          | 1 (0.3%)        | 1 (0.3%)        | 2 (0.6%)        | 0.029   |
|                                                  | (Acute Cholecystitis n=4, Chronic Cholecystitis; n=2) |                 |                   |                 |                 |                 |         |
| Common Bile Duct Stone                           | 6 (1.8%)            |                 | 3 (0.9%)          | 1 (0.3%)        | -               | 2 (0.6%)        | 0.017   |
|                                                  | (Acute Cholecystitis n=0, Chronic Cholecystitis; n=6) |                 |                   |                 |                 |                 |         |
| Biliary pancreatitis                             | 3 (0.9%)            |                 | -                 | 1 (0.3%)        | 1 (0.3%)        | 1 (0.3%)        | 0.06    |
|                                                  | (Acute Cholecystitis n=0, Chronic Cholecystitis; n=3) |                 |                   |                 |                 |                 |         |

Table-I: Grades of inflammation of gall bladder vs indications for conversion to open cholecystectomy.

operative complications, cholelithiasis with number of stones, thickness of gall-bladder wall, Ultrasonography abdomen findings were also documented. Laparoscopic cholecystectomy was performed by a team of laparoscopic surgeons comprising a senior professor of surgery, a laparoscopic surgeon and a fourth year resident general surgery under general anaesthesia and using a 4 port standard technique. A hybrid technique was used to create the pneumoperitoneum. Indications for conversion to open cholecystectomy were Empyema GB, CBD stones, cholecystoduodenal fistula, dense adhesion at calot triangle, difficult anatomy and anomalies.

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Association of gender with the grades of inflam-
(0.6%), omentum perforations 1 (0.3%), para-umbilical hernia 2 (0.6%) and solitary stones in 12 (3.6%). We have shared our tertiary care experience of laparoscopic cholecystectomy in patients with symptomatic gall bladder disease. Out of 330 operated cases, 39% had acute inflammation while 61% had chronic inflammation of the gall bladder. The ratio of acute to chronic inflammation is somewhat higher than reported in the similar studies. Cox et al, reported 23% of the laparoscopically operated patients had acute inflammation, 28% had chronic inflammation of gall bladder, and 48.6% patients had symptomatic gall stones but no inflammation of gall bladder. The overall conversion rate reported in our study for both acute and chronically inflamed gallbladders was lesser i.e. 4.5% as compared to other similar studies. Cox et al, reported 33.7% and 21.7% conversion rates in acute and chronic inflammation of gall bladder respectively. Lo et al, reported an overall conversion rate of 11% and Eldar et al, documented a conversion rate of 4.5% for uncomplicated acute cholecystitis. In our study, the commonest cause for conversion from laparoscopic cholecystectomy to open cholecystectomy in acute inflammation of gall bladder was Empyema of gall bladder (1.2%) compared to 28.5% conversion rate reported by Eldar et al, for empyema of gall bladder and 28.5% conversion rate for hydrops in acutely inflamed gall bladders per-operatively found during laparoscopic cholecystectomy. The commonest cause of conversion in chronic inflammation was CBD Stone (1.8%) followed by biliary pancreatitis (0.9%). Post-operative complications like pancreatitis (0.9%), bile leak (0.3%), sep-
sis (0.6%), deep venous thrombosis (0.3%), ileus (0.3%) and Atelectasis (0.3%) were common in higher grades of inflammation of gall bladder i.e. grade 3-5. Post-op complications like common hepatic duct injury (0.6%), surgical site infection (0.9%) and pneumonia (0.3%) were more commonly documented in lower per-operative grades of gall bladder inflammation i.e. grade 1-2 of gall bladder inflammation.

The correlation of both gender i.e. male and female with the grades of inflammation revealed that in both genders, grade-2 inflammation of the gall bladder was the commonest i.e. 61.3% in males and 45.2% in females and the results were statistically significant (p-value <0.05). As far as the operative findings were concerned, dense adhesions (33.3%) were most commonly found in grade-3 inflammation of gall bladder and thin adhesions (66.3%) were commonest in gall bladders with grade-2 inflammation per-operatively. On pre-operative evaluation by ultrasonography Abdomen, the commonest reported finding in our study sample was multiple gall stones in 82.4% patients.

CONCLUSION

LC is the gold standard treatment for symptomatic gall stones. LC is the gold standard treatment for symptomatic gall stones, Moreover, it is a safe option in acute and chronic inflammation of gall bladder if performed by an experienced laparoscopic surgeon. Hospital should consider the patient and treating physicians factors, medical facility and demographic factors when making a decision with respect to the timing of operation.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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