

# OUTCOME OF LAPAROSCOPIC CHOLECYSTECTOMY WITHOUT DRAIN: AN EXPERIENCE AT GOVERNMENT LADY READING HOSPITAL, PESHAWAR

Ayaz Gul, Imtiaz Ahmad, Muhammad Faisal Khan

## ABSTRACT

**Background:** Laparoscopic cholecystectomy is the main surgery performed for symptomatic gall stones. Placement of drain after laparoscopic cholecystectomy is still controversial due to its benefits and disadvantages.

**Objective:** The objective of our study was to know the outcomes of Laparoscopic Cholecystectomy without drain in terms of abdominal pain, shoulder tip pain and intraperitoneal collection after 24 hours postoperatively.

**Materials and Methods:** This descriptive cross sectional study was conducted on 54 patients in department of general surgery, Government Lady Reading hospital, Peshawar during one year from June, 2016 to June 2017. The data was analyzed with the help of SPSS version 17 and presented in the form of tables.

**Results:** There were 10 (18.52%) males and 44 (81.48%) females. The mean age of patients were 38.45 years  $\pm$  0.43SD. The mean shoulder tip pain was 3.90  $\pm$  1.12SD ( $p=0.0531$ ) and abdominal pain was 2.89  $\pm$  1.78SD ( $p=0.0821$ ). The mean fluid collection in the subhepatic area was 10.34ml  $\pm$  15.56SD. ( $p=0.7011$ )

**Conclusion:** Routine placement of drains in laparoscopic cholecystectomy is not necessary until and unless it is indicated.

**Key words:** Laparoscopic cholecystectomy, Cholelithiasis, Intraoperative drain. Pain

## INTRODUCTION

Gallstones constitute a significant health problem in developed societies, affecting 10% to 15% of the adult population.<sup>1</sup> It is a leading cause of hospital admissions related to gastrointestinal disorders with an estimated 1.8 million ambulatory care visits each year. Laparoscopic cholecystectomy is an increasingly accepted technique worldwide for the treatment of gall stones.<sup>2,3</sup> It is the commonest laparoscopic operation performed worldwide.<sup>4</sup>

Lamgenbuch performed the first cholecystectomy in 1882 and he placed a peritoneal drain as a part of the procedure. Then routine placement of drains becomes a part of operation for a long period of time.<sup>5</sup> The reason that Surgeons routinely place drainage tube after laparoscopic cholecystectomy is because of the fear of collection of bile or blood, to allow CO<sub>2</sub> insufflated during laparoscopy to escape via the drain site, thereby

decreasing the shoulder pain and to avoid nausea and vomiting as high pressure pneumoperitoneum due to carbon dioxide gas was accused for these complications. The reason that Surgeons routinely place drainage tube after laparoscopic cholecystectomy is because of the fear of collection of bile or blood, to allow CO<sub>2</sub> insufflated during laparoscopy to escape via the drain site, thereby decreasing the shoulder pain and to avoid nausea and vomiting as high pressure pneumoperitoneum due to carbon dioxide gas was accused for these complications.<sup>6</sup> Compared to open cholecystectomy, the usefulness of drains in laparoscopic cholecystectomy is not clear<sup>7</sup> and in many instances, prophylactic drains are useless or may even add to the morbidity or cost of a procedure.<sup>8</sup>

## MATERIALS AND METHODS

This descriptive cross sectional study was done at department of general surgery, Government lady reading hospital, peshawar during one year from June, 2016 to June 2017. Patients with symptomatic gall stones were admitted through OPD in general surgery ward. The patients with symptomatic gall stones of either gender with age from 18 to 50 years were included in the study. The exclusion criteria adopted was; healthy volunteers, above 50 years of age, with acute cholecystitis, Empyema Gall Bladder, known choledocholithiasis, upper laparotomy or with hemorrhagic tendency due to any reason and known cirrhosis of the liver were excluded from the study. Those Patients who were not willing to give informed consent and wishing to undergo open cholecystectomy and patients who were converted to

<sup>1</sup> Department of Surgery Government Lady Reading hospital, Peshawar

<sup>2</sup> Department of Surgery, KMU Institute of Medical Sciences, Kohat.

<sup>3</sup> Trainee Registrar, Paediatric Surgical Unit, MTI, Government Lady Reading hospital, Peshawar

### Address for correspondence:

**Dr. Ayaz Gul**

Assistant Professor

Department of Surgery Government Lady Reading hospital, Peshawar

Contact no: 0333-9179481

open cholecystectomy during laparoscopic cholecystectomy were also excluded from the study.

The purpose, risks and benefits of the study were explained to all included patients, they were assured that the study is purely conducted for research and data publication and according to medical ethics. A written informed consent was obtained on agreement from all included patients. All patients were evaluated thoroughly by clinical history, physical examination and standard laboratory tests and ultrasound abdomen were obtained for cholecystectomy. Preoperative laboratory tests, including complete blood count (CBC), serum electrolytes, bilirubin, alkaline phosphatase, alanine aminotransferase (ALT), aspartate aminotransferase (AST), screening for hepatitis B and c and HIV were done in all patients. Three doses of prophylactic antibiotics; 2nd generation cephalosporin “cefuroxime” was given. First dose 15 minutes before the operation, second dose 8 hours after the operation and third dose on the day after the operation. In every case, Nasogastric tube and urethral Catheter was passed after induction of general anesthesia. Surgery was performed using conventional four ports; umbilical port, epigastric port and two ports below right middle and lateral costal margin. Pneumoperitoneum was at a pressure of 12 mmHg. All patients were given parenteral analgesia of ketorolol 30 mg at 8 hours interval. Abdominal and shoulder tip pain was assessed by Visual Analogue Scale (VAS) using a 10cm line labeled at “0” with “no pain” and “10” with “worst pain” as shown below.

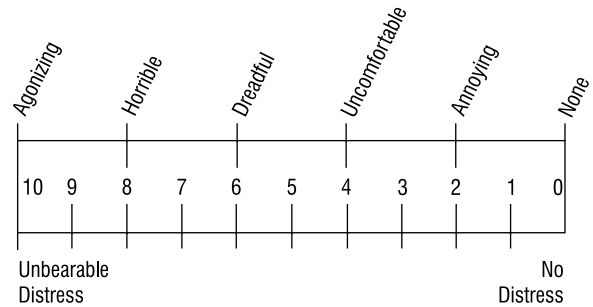
The patients started oral feeding 8 hours postoperatively when bowel sounds were audible on auscultation. Abdominal ultrasound was done for all the patients on first post operative day after 24 hours to show any collection or free fluid in the abdomen. The patients were discharged if less than 10ml intraperitoneal fluid was present and pain was of mild intensity which was affectively controlled with oral NSAIDS and had no other surgical and anaesthesia related complications.

Data was analyzed by using statistical software SPSS version 17.0. Mean  $\pm$  Standard deviation was calculated for age, duration of surgery and amount of abdominal fluid detected on ultrasonography of abdomen. Frequency and percentages were calculated for gender. All the results were presented in the form of tables.

## RESULTS

The total number of patients were 54 comprising of 10 (18.52%) males and 44 (81.48%) females. The mean age of patients were 38.45 years  $\pm$  0.43SD.

The mean shoulder tip pain was 3.90  $\pm$  1.12SD and abdominal pain was 2.89  $\pm$  1.78SD. The postoperative pain according to VAS scores was; 5 (9.26%) males and 21 (38.89%) females were having no shoulder tip pain while 2 (3.70%) male and 4(7.40%) females were



Pain was graded as: Grade 0: No pain (VAS), Grade 1: Mild = 1 – 3 (VAS), Grade 2: Moderate = 4 – 7 (VAS), Grade 3: Severe = 8 – 10 (VAS).

having moderate shoulder tip pain. There were no patients with severe shoulder tip pain. No abdominal pain was observed in 4 (7.41%) males and 8 (14.81%) females while severe pain was noted in 5 (9.26%) females only. Mean of shoulder tip pain and abdominal pain of males and females is shown in table No. 1.

In our study, the overall mean fluid collection in the subhepatic area was 10.34ml  $\pm$  15.56SD. Less than 5ml subhepatic fluid collection on sonography was noted in 4 (7.41%) males with the mean of 3.09 ml  $\pm$  1.36SD and 21 (38.89%) females with mean of 3.08 ml  $\pm$  1.39SD while more than 10ml fluid in subhepatic space was noted in 1 (1.85%) males with mean of 13.19 ml  $\pm$  3.36SD and 2 (3.70%) females with mean of 15.09 ml  $\pm$  0.36SD. Duration of surgery was less than 30 minutes with mean of 24.09 minutes  $\pm$  5.36SD in 6 (11.11%) males and 23.99 minutes  $\pm$  6.00SD in 38 (70.37%) females while it was 30 to 60 minutes in 4 (7.41%) males with mean of 52.50  $\pm$  6.15 and 6 (11.11%) females with mean of 49.1minutes  $\pm$  9.1SD. subhepatic fluid collection detected on sonography and duration of surgery are shown in table no. 2

## DISCUSSION

Laparoscopic cholecystectomy is regarded as standard method for the treatment of symptomatic gallstone disease.<sup>10</sup> Surgeons routinely place drain in the subhepatic space because of the fear of collection of bile or blood which may require again an open procedures and for the reason of draining to allow CO<sub>2</sub> insufflated during laparoscopy to escape via the drain site, which decreases the shoulder pain.<sup>11</sup>

In our study, the mean age of patients was 38.45 years  $\pm$  0.43SD. this mean age is about similar to another national study (40.30 years)<sup>1</sup> but in others it was more (48.4 + 14.1 years,<sup>12</sup> 50 years,<sup>13</sup> 35 years<sup>14</sup> and 47 years<sup>15</sup>.

The main reason to drain the subhepatic area after cholecystectomy is the fear of biliary leakage or bleeding. The use of a drain becomes more important and effective option if there is presence of an aberrant biliary tract, suspicion of clipping the cystic canal, or presence of adhesions which makes the dissection

**Table 1: Mean and frequency of shoulder tip pain and abdominal pain**

	Shoulder tip pain		Abdominal pain	
	Male	Female	Male	Female
No Pain (Grade 0)	5 (9.26%)	21 (38.89%)	4 (7.41%)	8 (14.81%)
Mild pain (Grade 1)	3 (5.56%)	19 (35.19%)	5 (9.26%)	25 (46.29%)
Moderate pain (Grade 11)	2 (3.70%)	4 (7.41%)	1 (1.85%)	6 (11.11%)
Severe pain (Grade 111)	-	-	-	5 (9.26%)
Mean $\pm$ SD	3.9 $\pm$ 0.84	4.0 $\pm$ 0.8	3.54 $\pm$ 0.89	3.74 $\pm$ 1.39

SD = Standard Deviation

P value for shoulder tip pain = 0.0531

P value for Abdominal pain = 0.0821

**Table 2: Mean of duration of surgery and Subhepatic fluid collection on sonography**

Subhepatic Fluid on sonography	Frequency		Mean $\pm$ SD	
	Male	Female	Male	Female
Less than 5 ml	4 (7.41%)	32 (59.26%)	3.09 $\pm$ 1.36	3.08 $\pm$ 1.39
6 to 10 ml	5 (9.26%)	10 (18.52%)	5.22 $\pm$ 2.89	6.24 $\pm$ 3.81
More than 10 ml	1 (1.85%)	2 (3.70%)	13.19 $\pm$ 3.36	15.09 $\pm$ 0.36
Duration of surgery				
Less than 30 minutes	6 (11.11%)	38 (70.37%)	24.09 $\pm$ 5.36	23.99 $\pm$ 6.00
30 to 60 minutes	4 (7.41%)	6 (11.11%)	52.50 $\pm$ 6.15	49.1 $\pm$ 9.1

SD = Standard Deviation

P value for duration of surgery = 0.0331

P value for subhepatic fluid collection = 0.7011

difficult enough and there are more chances of bleeding.<sup>16</sup> In our study, the overall mean fluid collection in the subhepatic area was 10.34ml  $\pm$  15.56SD and this fluid collection was not significant (p=0.7011). Ahmet Gurer et al,<sup>17</sup> in their comparative study has reported fluid collection in the gallbladder area in 26.8% patients with the mean volume of 8.8 $\pm$ 5.2 mL. With regard to the relationship between fluid collection and drains, the difference in the volume of fluid between the groups with and without drains was not significant. Lucarelli P et al<sup>18</sup> Studied subhepatic fluid collection at abdominal ultrasonography as a primary outcome performed 24 h after surgery and postoperative abdominal and shoulder tip pain, use of analgesics, and morbidity as secondary outcome in patients with and without drain. No significant differences in the severity of abdominal and shoulder pain and use of parenteral ketorolac were found in either group. In their study, they were unable to prove that the drain was useful in LC in a selected group of patients.

In our study mean shoulder tip pain and abdominal pain were 3.90  $\pm$  1.12SD and 2.89  $\pm$  1.78SD respectively. The distribution of shoulder tip and abdominal pain was insignificant among male and female genders. Similarly Sharma A et al,<sup>19</sup> has reported no statistical difference in the rate of wound infections, shoulder

pain, nausea, vomiting, and respiratory infections in patients with drain and without drain. El-labban G, et al<sup>15</sup> has also observed no statistically significant difference in postoperative pain, nausea and vomiting, wound infection or abdominal collection between the patients with and without drains in laparoscopic cholecystectomy. However, they noted that the hospital stay was longer in the drain group than in without drain group and it was evident that use of drain delayed hospital discharge. Despite of degassing by placing drain, the patients experience more pain and this has also been documented in the many national studies<sup>20-23</sup>.

In 1962, Myers described 'drain fever syndrome' after cholecystectomy when drain is placed in the subhepatic area for longer than 48 hours, this condition is associated with fever and right upper quadrant pain. This condition occurs in 23% of the group with drains and disappears within 1 to 3 days when drain is removed.<sup>24</sup> This may be explained as that the drain causes a foreign body reaction, it forms a connection between the peritoneal cavity and skin and there is feeling of discomfort due to drain which prevents patients from coughing.<sup>7</sup> This study is a small study and further extended comparative studies are required to clarify the issue of intraperitoneal drain placement in laparoscopic cholecystectomy in our set up.

## CONCLUSION

Laparoscopic cholecystectomy is an accepted gold standard surgery worldwide. Results of this study suggest that in selective cases, routine use of intra peritoneal drainage seems purposeless and has no significant role.

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