

Research Article

Outcome of Post-Operative Shoulder Pain in Laparoscopic Cholecystectomy with and without Drain

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Abstract: Background: The main reason to use prophylactic drainage in laparoscopic cholecystectomy (LC) is to reduce complications such as intra-abdominal collections thereby decreasing the overall mortality and morbidity rate but it has been reported that placement of drain leads to shoulder pain. The pain disappeared spontaneously within 1-3 days and occurred in 23% of the group with drains and 4% in the group without drains [1]. **Materials and Methods:** In this prospective randomized comparative study, 60 patients of ASA physical status I and II belonging to age group of 18-70 years undergoing elective laparoscopic cholecystectomy were randomly allocated into 2 groups of 30 patients each, Group A (LC with drain) and Group B (LC without drain) patients were assessed in terms of post-operative shoulder pain from post-operative day-1 to day-4 which was measured using visual analogue scale (VAS). **Results:** Shoulder pain was significantly higher in Group A (LC with drain) in comparison to Group B (LC without drain) at post-operative day-1 to day-4. **Conclusion:** In the patients undergoing laparoscopic cholecystectomy, use of subhepatic drain is associated with increased shoulder pain.

Keywords: Laparoscopic Cholecystectomy; Visual analogue Scale; Shoulder Pain, DRPGMC Kangra at Tanda.

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INTRODUCTION

LC provides a safe and effective treatment for patients with gallstones as it reduces post-operative pain with almost invisible scar, hospital stay of short duration, and earlier return to work [2]. At present, LC is the gold standard approach for cholecystectomy [3].

Many results suggest that surgeons are now prepared to accept laparoscopic evidence of a dry GB fossa as an indication not to use a drain. In a recent Australian survey, surgeons were evenly divided into those who used drains routinely, those who always used drains, and those who never used drains after LC based on their personal experience, belief or bias [4].

On the other side, many patients complain of shoulder pain post-operatively. High pressure pneumoperitoneum using carbon dioxide was accused for those complications. Thus, a drainage tube is inserted. There is lack of evidence, if drainage is beneficial.

It has been reported that placement of drain leads to shoulder pain. The pain disappeared spontaneously within 1-3 days and occurred in 23% of the group with drains and 4% in the group without

drains [1]. This difference may be explained as follows: 1) the presence of a drain causes a foreign body reaction [5, 6]; 2) the drain forms a connection between the peritoneal cavity and skin [7]; and 3) the feeling of discomfort produced by the drain prevents patients from coughing [8]

MATERIAL AND METHODS

This prospective randomized comparative study was carried out on patients of Department of General Surgery at Dr. Rajendra Prasad Government Medical College, Kangra at Tanda, and Himachal from May 2018 to June 2019.

Subjects & selection method

The study patients were divided into 2 groups.

Group A consisted of patients underwent LC with drainage while group B included the patients who underwent LC without drainage. Decision whether to keep drain or not was made by the operating surgeon. A total of 60 patients were enrolled into the study with 30 patients in each group.

EXCLUSION CRITERIA

1. Pregnant women.
2. Age <18 years and >70 years.
3. Emergency cholecystectomy.
4. Jaundice.
5. Intra-operative injury to bowel.
6. Intra-operative haemorrhage.
7. Gangrenous or Emphysematous Cholecystitis.
8. Obstructive jaundice.
9. Choledocholithiasis.
10. Coagulopathy.
11. Gall bladder rupture during surgery.
12. Exploration of common bile duct.
13. Subtotal cholecystectomy.
14. Cholangitis.
15. Pancreatitis.
16. Previous upper abdominal surgery.
17. Patients not willing to participate in the study.
18. Patients with a history of drug or alcohol abuse.

Procedure methodology

After written informed consent was obtained all the patients with a diagnosis of gall stone disease and admitted to Department of Surgery, Dr RPGMC Kangra at Tanda underwent LC. The study patients were divided into 2 groups. Group A consisted of patients underwent uncomplicated LC with drainage while group B included the patients who underwent uncomplicated LC without drainage. A few surgeons at our institute keep drain as routine, and a few surgeons use drain selectively. Decision whether to keep drain or not was made by the operating surgeon. A total of 60 patients were enrolled into the study with 30 patients in each group. All the patients were enrolled after they provided consent to participate into the study. The patients' demographic details, history, clinical examination, radiological investigations were recorded as per the patient proforma.

The outcomes of the study were assessed in terms of post-operative shoulder pain (measured with VAS).

STATISTICAL ANALYSIS

Data were presented as frequency, percentage, mean, standard deviation (SD), median, and/or inter quartile range (IQR). Normality of the data was assessed using Shapiro Wilk test. Normally distributed data were compared using Student ttest. Nonnormally distributed data were evaluated using Mann-Whitney U test. Chi square test was used to compare categorical variables between 2 groups. P value <0.05 was considered significant. Statistical analysis was performed using SPSS v21.

RESULT

The present study was aimed to evaluate the outcome of laparoscopic cholecystectomy with and without drain. A total of 60 patients were divided into 2 groups (Group A and Group B) and included in the study at Department of Surgery, Dr RPGMC Kangra at Tanda over the period of one year. Results of the study have been described below:

Group-based distribution of patients

All the patients were divided in to 2 groups. Group A included the patients who underwent LC with drain and group B included the patients who underwent LC without drain (Table 1 and Figure 1).

Table-1: Group-based distribution of study population

	Description	n	%
Group A	Patients underwent uncomplicated LC with drainage	30	50
Group B	Patients underwent uncomplicated LC without drainage.	30	50

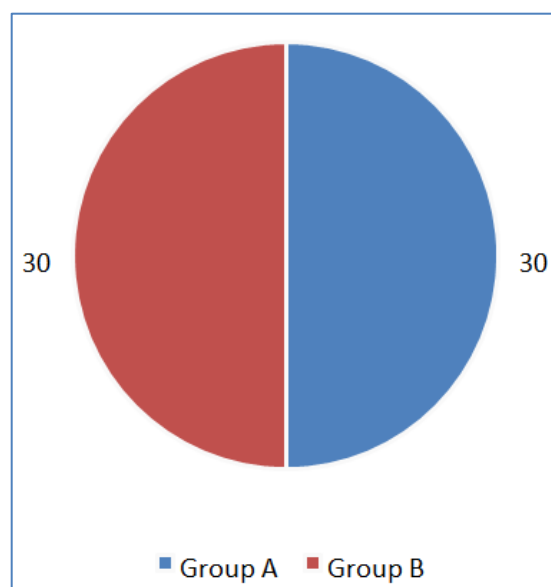


Fig-1: Group-based distribution of study population

Shoulder pain

Our study observed that shoulder pain was significantly higher in drain group in comparison to no drain at post-operative day-1 to day-4.

Table-2: Shoulder pain

	Drain (n=30)	No drain (n=30)	P value
Day-1	2.52±1.12	0.34±0.67	<0.0001
Day-2	1.32±0.89	00.00±0.00	-
Day-3	0.71±1.13	00.00±0.00	-
Day-4	0.40±0.89	00.00±0.00	-

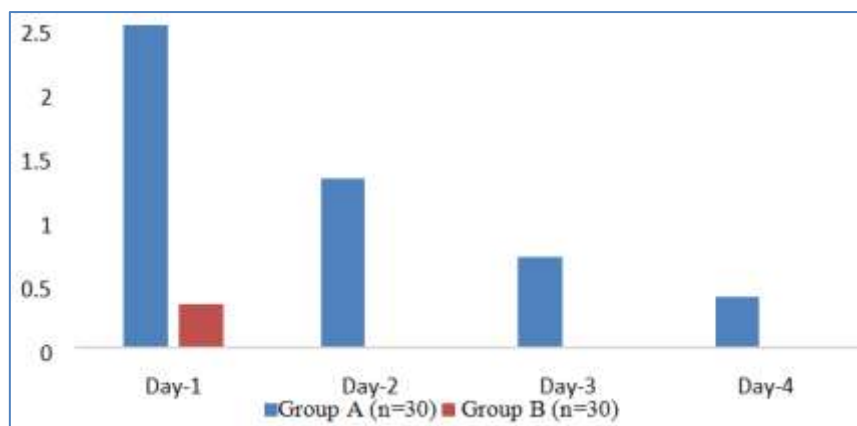


Fig-2: Shoulder pain

DISCUSSION

The origin of referred pain to the shoulder after laparoscopy is only partly understood. The tissue trauma theory is based on the stretching of the peritoneum and diaphragm secondary to pneumoperitoneum. Another theory is based on pockets of residual CO₂ gas left in the abdomen after surgery. The use of drains to minimize shoulder pain is based on the assumption that it can help to evacuate the peritoneal cavity from residual CO₂. This prevents both pockets of gas limiting the suction support on organs and the irritative effect of CO₂ [9].

In the present study, we observed that shoulder pain was significantly higher in the patients with drain when compared with the patients without drain at post-operative day (PoD)-1st to 4th, the patients in drain group had mild to moderate shoulder pain while the patients in without drain group, had no shoulder pain. Singh *et al.* [10] reported that use of drain had no effect on shoulder pain on post-operative day-1 and day-2. It has been observed that drainage was not associated with a reduction in shoulder pain. In a meta-analysis, Donatsky *et al.* [11] observed significant increase in incidence of shoulder pain when drains were used.

CONCLUSION

In the patients undergoing laparoscopic cholecystectomy, use of subhepatic drain is not associated with any benefits to the patients. Rather, use of drain is associated with increased shoulder pain.

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