



## A COMPARATIVE STUDY OF LAPAROSCOPIC CHOLECYSTECTOMY WITH AND WITHOUT ABDOMINAL DRAIN WITH RESPECT TO DURATION OF HOSPITAL STAY

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### ABSTRACT

**Background:** Laparoscopic cholecystectomy is the treatment of choice for symptomatic gallstones. It is advantageous when compared with open surgery as it has faster post-operative recovery and lower pain scores. Routine use of drain after Laparoscopic cholecystectomy is a debatable issue.

**Methods:** The study was done in General Surgery department, Jawaharlal Nehru Medical College, Bhagalpur from January 2020 to 15 March 2020. Study was randomized, prospective and observational including 46 patients, selected according to inclusion criteria.

**Results:** Incidence: Post-operative drain site pain was present in 30% of patients with drain (more at drain site). Incidence: Post-operative rise in temperature was present in 26% of patients in drain group. 44% of the patients with drain group (n=23) required hospital stay for  $\geq 2$  days, while majority of the patients (96%) without drain group (n=23), required hospital stay for 1 day.

**Conclusions:** A simple (uncomplicated) gall stone disease can be treated by laparoscopic cholecystectomy without need for drain with reasonable safety by an experienced surgeon. With no usage of drain, it is significantly advantageous in terms of post-operative pain and hospital stay.

**KEYWORDS :** Laparoscopic cholecystectomy, abdominal drain, Cholelithiasis

### INTRODUCTION

Cholelithiasis is one of the most common disease we encounter in our region. Cholecystectomy is most frequently performed abdominal operation-even more so electively, but the issue of draining the sub hepatic area post operatively, though seemingly simple one, still remains unresolved. Cholecystectomy without sub hepatic drainage was first described in 1913, and since then surgeons were divided whether to use it as a routine drainage or not in uncomplicated cases.<sup>1</sup> Most surgeons continue to use routine sub hepatic drain for the fear of bile leak and bleeding.<sup>2-4</sup>

The benefits of drains derive from the notion that they allow the egress of bile leaking from the gall bladder bed, cystic duct, or damaged bile duct, as well the blood or exudates resulting from surgical trauma.

Therapeutic drains are necessary, Prophylactic drains are in questions and perhaps this can be answered by an age-old saying that drains cannot substitute a meticulous surgical technique.

In the early years of laparoscopic cholecystectomy most of the surgeons routinely retained a drain in the sub-hepatic space, as these patients used to have complaints of abdominal pain, shoulder tip pain, and nausea/Vomiting post operatively. High-pressure pneumoperitoneum using carbon dioxide gas was accused for those complication.

The results of recent systematic reviews showed no benefit with the routine use of intra-abdominal drains, after both be open as well as laparoscopic cholecystectomy, use of drain is found to be associated with increased rate of wound infection. Therefore, This controlled randomized trial was designed to assess the value of drains in elective laparoscopic cholecystectomy.

### METHODS

In the present study which was randomized, prospective and observational, protocol of trial procedure was formed along with Proforma, Patient Information Sheet and Informed Consent. After getting approval from scientific review committee and ethical committee (human research) of the institute (AKU Patna), study was started in patients admitted in department of surgery, JLNMC Bhagalpur for planned laparoscopic cholecystectomy from the duration Jan 1 to March 15 2020.

**Inclusion criteria-** Patient with uncomplicated symptomatic gallstone planned for elective laparoscopic cholecystectomy.

### Exclusion criteria

- Patients who refused to enter the study.
- Patients who were converted to open surgery.

- Emergency operations were excluded.
- Patients were divided randomly in two groups as drain group (n=23) and non-drain group (n=23), and compared in following aspect:
- Incidence of post-operative pain
- Incidence of post-operative rise in temperature
- Hospital stay.

### RESULTS

**Table 1.**

Post op. Complications	Number of patients	
	Drain group	No Drain group
Pain over drain site (PD)	7	0
Pain over stitch line (PS)	6	5
Post-operative rise in temperature	6	1

**Table 2.**

Post op. Hospital stay	Number of patients	
	Drain group	No Drain group
1 day	13	22
2 days	8	1
$\geq 3$ days	2	0

### Comparison of Pain Scores

Pain score was assessed by visual analogue scale. (Table 1.) The mean pain scores at 12 hours were 1.2 in no drain group and 2.8 in drain group. This difference was statistically significant with p value less than .05

But this was not the same at 24 hours. The mean pain score of drain group was 1.17 and of no drain group was 1.08, the difference was not statistically significant.

### Post operative rise in temperature

Significant number of patients reported increase in body temperature in post-operative period, 6 were in "Drain" group while only one was in "No Drain" group. (Table 2.)

### Duration of Hospital Stay

Above table summarizes the mean duration of hospital stay of patients

in the two groups after surgery. The patients in “No Drain” group had a lower duration of hospital stay compared to “Drain” group. The mean duration of stay in the “No Drain” group was 1.04 days compared to 1.5 days for the “Drain” group. This difference was statistically significant ( $P=0.002$ )

Most patients were discharged on the 1<sup>st</sup> post-operative day of surgery, however 1 patient in the “No Drain” group and 8 patients in the “Drain” group were observed for 2 days post-surgery as they were not completely free of pain. 2 Patients of “Drain” group were discharged on Day 3.

## DISCUSSION

Prevention of intra-abdominal collections after LC is the main reason of drainage. The peritoneal cavity usually absorbs serous fluids rapidly, but blood and bile are absorbed more slowly.<sup>5</sup> Post cholecystectomy collections in the sub-hepatic space are on the whole small, rapidly reabsorbed, and essentially similar in size and number whether a drain is used or not.<sup>6</sup>

Thiebe and Eggert reported that the total number of abdominal collections was higher in the drain group (44%) compared with the no drain group (4.1%). They performed routine ultrasound on the fourth postoperative day, as compared with first and fourth day in this study.<sup>7</sup> The subhepatic fluid collection on first ultrasound at 24hrs was significantly higher in drained group than in nondrained groups. Further, the difference became insignificant on subsequent ultrasound at 72hrs.

Intraperitoneal collection of blood may cause postoperative pyrexia, prolong the hospital stay, and increase the incidence of wound infection, while the presence of bile in the peritoneal cavity produces peritoneal irritation.<sup>5</sup>

However, only some clinically significant abdominal collections may need intervention, while other abdominal collections may not be clinically significant.<sup>8,9</sup> The only patient requiring intervention in the two trials mentioning treatment of the abdominal collections was in the drain group.<sup>10,11</sup> The drain may also give false sense of security as it may get blocked and the patient continue to bleed internally and later presenting with signs of shock, as reported in one study.

Another study reported laparotomy for post cholecystectomy bile peritonitis in patients who had drains placed, suggesting that drain placement does not guarantee prevention of this complication.<sup>12</sup> It is assumed that the use of a drain might be helpful for early detection of postoperative bleeding.

However, significant bleeding can also be easily detected by clinical and ultrasonographic signs of intraabdominal haemorrhage if there is no drain.<sup>12</sup>

In this study, authors have found that operative time in both group is not statistically significant. Drain, when put has advantage of early detection of post-operative complication but has a disadvantage of drain site infection compare to non-drain group. Drain can also have slightly longer hospital stay compare to non-drain group.

## CONCLUSION

An uncomplicated gall stone disease can be treated by laparoscopic cholecystectomy without need for drain with reasonable safety by an experienced surgeon. With no usage of drain, it is significantly advantageous in terms of hospital stay.

Routine use of drain does not contribute in lowering the incidence of the complications rather it increases the morbidity of the patient and increase hospital stay. In contrast patients without drain had less pain; they were mobilized early and sent home early as well early possible return to their workplace. This increases the productivity of the person in addition to the reducing burden on the healthcare infrastructure.

This study was unable to prove that drains were useful in reducing complications in Laparoscopic Cholecystectomy. Therefore, it is reasonable to avoid drain insertion when a dry operatory field is obtained at the end of the procedure.

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**Ethical approval:** The study was approved by the Ethics Committee

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