

POST-OPERATIVE COMPARISON OF LAPAROSCOPIC CHOLECYSTECTOMY CASES WITH AND WITHOUT DRAIN: A CASE CONTROL STUDY AT SMS MEDICAL COLLEGE & ATTACHED HOSPITALS, JAIPUR

General Surgery

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ABSTRACT

Background: Laparoscopic cholecystectomy (LC) is the gold standard for treating symptomatic cholelithiasis. The use of postoperative drainage remains controversial, as it may lead to increased infectious complications and prolonged hospital stays. This study aims to evaluate the merits and demerits of drainage versus non-drainage in patients undergoing LC. **Methods:** A prospective randomized controlled study was conducted at SMS Hospital, Jaipur, involving 100 patients undergoing elective LC. The patients were randomly assigned to two groups: Group A (with drain) and Group B (without drain). Various postoperative parameters, including duration of hospital stay, pain, complications, and infections, were assessed and compared. **Results:** Demographics: The mean age of patients was similar between the groups (Group A: 43.2 years; Group B: 44.5 years). Gender distribution showed a predominance of females in both groups. No significant difference in mean operative time between the groups. Intraoperative Bile Spillage: No significant difference observed. Ultrasound findings on the first postoperative day and after one week showed no significant difference in subhepatic fluid collection between the groups. Pain scores at 12 hours post-surgery, Group B reported significantly lower pain scores ($p=0.000$). However, at 24 hours, pain scores were similar between the groups. Group A required significantly higher doses of analgesics ($p=0.002$). Group A had higher incidences of port site infections ($p=0.025$) and pyrexia ($p=0.044$), and had a significantly longer hospital stay (8.6 days) compared to Group B (4.6 days) ($p=0.002$). **Conclusion:** The study concludes that there is no significant benefit to using drains in elective laparoscopic cholecystectomy. Drain placement is associated with increased postoperative pain, higher analgesic requirements, longer hospital stays, and higher rates of wound infection. Therefore, routine use of drains in LC is not recommended.

KEYWORDS

Laparoscopic cholecystectomy, drain, no drain, postoperative complications, hospital stay, wound infection, pain management.

INTRODUCTION

In India, gallstones are the most prevalent and economically burdensome digestive disease, leading to a significant number of hospital admissions.¹ Laparoscopic cholecystectomy (LC) is now regarded as the gold standard for the treatment of symptomatic cholelithiasis.² The use of drains postoperatively is intended to mitigate complications, but has been associated with increased risk of infections and prolonged hospital stays.³

Cholelithiasis affects 2-3% of asymptomatic individuals annually, and laparoscopic cholecystectomy, introduced in 1987 by Mouret, has largely replaced traditional open cholecystectomy.⁴⁻⁵ The use of subhepatic drains postoperatively remains debated due to potential risks including liver, vascular, and visceral injuries, along with discomfort and pain during removal. The primary goal of postoperative drainage is to prevent bile or blood accumulation, which could lead to infections and necessitate additional interventions.⁶

Despite the advantages, complications such as shoulder tip pain, back pain, nausea, and vomiting are common post-laparoscopic cholecystectomy. Initially, routine drainage was adopted to address these issues, but evidence suggests it may increase infectious complications and hospital stay duration.⁷

This study aims to compare the outcomes of laparoscopic cholecystectomy cases with and without drains, specifically focusing on the length of hospital stay and incidence of postoperative complications.

MATERIALS AND METHODS

This Study was a hospital-based prospective comparative randomized control study conducted between May 2023 to April 2024 at Department of General Surgery, SMS Medical College Hospital, and Jaipur. 45 Patients admitted to surgical wards for elective laparoscopic cholecystectomy with written informed consent. Sampling Technique- Patients were divided into Group A (Drain) and Group B (No Drain) randomly after obtaining written informed consent.

Selection Criteria

All patients undergoing elective laparoscopic cholecystectomy were included in study within the Age group of 18-75 years. While Carcinoma GB, previous abdominal surgeries, peritonitis, bleeding

disorder, cirrhosis, pregnancy patients are excluded from surgery.

Data collected using a predesigned proforma. Parameters assessed included abdominal pain (Visual Analogue Scale), shoulder pain, drain site infection, wound infection, fever, duration of postoperative hospital stay, nausea, vomiting, hemorrhage, and follow-up characteristics.

Statistical Analysis

Data entered into an Excel sheet. Continuous data summarized as mean and standard deviation. Differences in means analyzed using Student's t-test. Discrete data expressed as proportions and differences analyzed using chi-square test. Level of significance set at 95%.

Study protocol reviewed and approved by the Ethical Review Committee of SMS Medical College & Hospital, Jaipur. Institutional clearance obtained, and consent taken from each patient.

RESULTS

The mean age was similar between groups ($p=0.45$). While there were more female patients, the distribution was statistically insignificant ($p=0.000$). With Cholelithiasis was the most common diagnosis. Mean operative time was similar between groups ($p=0.584$).

Intraoperative Bile Spillage: No significant association with drain use ($p=0.749$). No significant association between fluid collection and drain use ($p=0.538$).

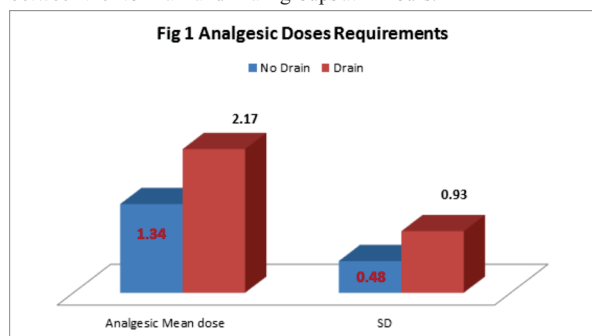
Pain Scores: Higher pain scores in the Drain group at 12 hours ($p=0.000$), but no significant difference at 24 hours ($p=0.50$). With analgesic Dose Requirements are higher in the Drain group ($p=0.002$).

Table 1 Comparison of Pain Scores

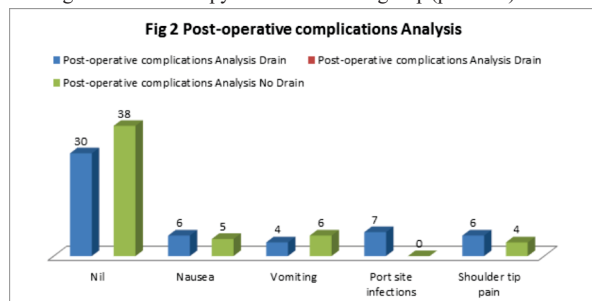
Pain Scale	Group	Mean	SD	P value
VAS (12 Hours)	No Drain	1.21	0.67	0.000
	Drain	2.82	1.37	
VAS (24 Hours)	No Drain	1.08	0.73	0.50
	Drain	1.17	0.65	

The p-value for the comparison of pain scores between the No Drain and Drain groups at 24 hours is approximately 0.50. This suggests that there is no statistically significant difference in mean pain scores

between the No Drain and Drain groups at 24 hours.



No postoperative significant differences in complications are seen, but higher wound infection rates in the Drain group ($p=0.025$). But there was higher incidence of pyrexia in the Drain group ($p=0.044$).



Hospital Stay significantly longer in the Drain group ($p=0.002$). Also wound Infection higher in the Drain group ($p=0.025$).

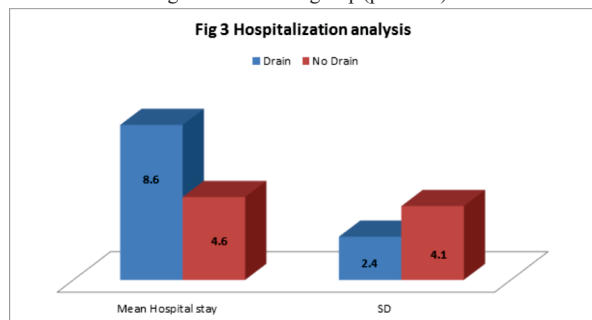


Table: 2 Patient Satisfaction Comparison

Satisfaction Level	Drain Group (n=50)	No Drain Group (n=50)	Total (n=100)	Chi Square	P Value
Very Satisfied	0	12	17	32.83	0.001
Satisfied	14	20	42		
Neutral	22	6	33		
Dissatisfied	10	0	15		
Lost to follow up till 3rd week	4	12	16		

*Patient satisfaction level calculated at the time of 3rd week follow up

- This table shows the distribution of patient satisfaction levels in both the drain and no drain groups.
- The chi-square test value 32.83 and p-value 0.001 indicates statistically significant difference in satisfaction levels between the two groups.

DISCUSSION

Laparoscopic cholecystectomy is the preferred treatment for cholelithiasis due to its minimally invasive nature, offering faster recovery and shorter hospital stays. The routine use of drains has been questioned, with studies indicating no substantial benefit and potential for increased complications.

This study corroborates findings that drains prolong hospital stay and increase wound infection rates, with no significant impact on reducing other complications like postoperative pain, nausea, or vomiting.

CONCLUSION

Postoperative drains in laparoscopic cholecystectomy offer no

significant benefits in terms of reducing postoperative complications. Instead, they prolong hospital stay and increase wound infection rates. Therefore, the routine use of drains in laparoscopic cholecystectomy is not recommended.

This randomized controlled study was conducted on a total of 100 patients with two groups. Findings of the present study demonstrated that there was a statistically significant ($p=0.00002$) difference among no drain group and drain group in terms of duration of hospital stay as it was more in case of no drain group. Mean hospital stay (in days) was significantly higher in case of drain group (3.6 ± 1.6) as compared to no drain group (1.25 ± 0.25) with $p=0.03$.

Similar findings are also been reported by Nagpal A et al (2011)⁸ as mean Hospital stay was higher in drain group as compared to no-drain group. Similar studies were also conducted by Koichi Ishikawa et al (2010)⁹, Rath P.K et al (2009)¹⁰, where it is found that drain use prolongs the hospital stay. Gouda El-labban (2008)¹¹ also reported that hospital stay was longer in the drain group than in group without drain and it is appearing that the use of drain delays hospital discharge.

Present study reported a significant difference ($p=0.02$) in rate of drain site infection with drain use as compared to no drains because more number of patients in drain group i.e. 2 (4%) developed wound infection as compared to 0 (0%) patients in no-drain group. Similar findings are also reported by Abid Halim (2011)¹⁹ that due to more chances of infection it is advised not to place drain in Laparoscopic Cholecystectomy. Gurusamy et al (2007)¹² also reported that concluded that wound infection tended to be higher in those with a drain.

Another major finding of the study was that incidence of nausea and vomiting was slightly higher among patients in drain group as compared patients in no drain group. But these differences were not statistically significant. ($p=0.92$). Similar findings are reported by Picchio M (2012)²⁰, Hawasli A et al (1994)²¹ which stated that there was no statistically significant difference among the incidence of nausea and vomiting in postoperative period with drain use and no use.

Moreover in present study there was no statistically significant difference among patients in no drain group and drain group in terms of fever during postoperative period. In present study other postoperative complication like hemorrhage was absent in all the cases in both drain group and no drain group. Small sample size could be a reason for not observing this complication. On other hand Picchio M et al (2012)²⁰ reported two (1.9 %) significant hemorrhagic events postoperatively. But in case of patients where drain was inserted a total of 6 (20.00%) patients developed drain site infection and majority i.e. 28 (93.33%) of patients complained of pain on drain removal. Other studies by Rath P.K. et al (2009)¹⁸ also reported that it is observed that routine placement of drain after laparoscopic cholecystectomy not only prolongs the post-operative hospital stay; it also leads to drain site pain / discomfort.

Another major finding of the study is that there was statistically significant difference in pain as assessed by Visual Analogue Scale in both drain and no drain group at 0 postoperative day ($p=0.00$) and postoperative day 1 ($p=0.5$). Contrast findings are reported by Kemal Arslan et al (2011) that there was no difference in pain between groups the 2nd, 8th, or 18th hour evaluations. Gouda El-labban, (2008)¹¹ also reported the similar findings that there was no statistically significant difference in postoperative pain.

Present study also reveals that there is no significant effect of drain use on shoulder pain. These findings are supported by Picchio M et al (2012)¹² which reported that there was no statistically significant difference in occurrence of shoulder tip pain with drain use.

This study shows statistically significant differences in patient satisfaction levels in both the drain and no drain groups. The chi-square test value 32.83 and p-value 0.001 indicates statistically significant difference in satisfaction levels between the two groups.

CONCLUSION

So it is concluded that there is no practical benefit of postoperative drain insertion in case of patients with laparoscopic cholecystectomy. It offers no benefit in terms of postoperative abdominal pain reduction, shoulder pain reduction, nausea, vomiting and fever in postoperative period. On the other hand it prolongs the hospital stay can also

increases the chances of wound infection. In addition it adds to pain and discomfort on the drain site. So drain use is not recommended as a routine practice in laparoscopic cholecystectomy.

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