



Research Paper

Drain V/S 'No Drain' In Elective Non Complicated Laparoscopic Cholecystectomy: An Observational Study

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ABSTRACT

Background: Laparoscopic cholecystectomy is the gold standard way of treating symptomatic gallstones. Routine drainage after laparoscopic cholecystectomy is a never ending issue of considerable debate. Therefore, an prospective analytic study is being done to assess the value of drains in elective laparoscopic cholecystectomy.

Materials and Method: During a one year period (February 2020 - February 2021), 20 patients were simply randomised to have a drain placed (group A), drain was retained at subhepatic space, whereas rest 20 patients were randomised not to have a drain (group B). End points of this trial were to detect any differences in morbidity, postoperative pain, wound infection, complications and hospital stay between the two groups.

Result: There was no mortality in either group and no statistically significant difference were noted in terms of postoperative pain, nausea and vomiting, shoulder pain, wound infection or abdominal collection between the two groups. However, hospital stay was longer in the drain group (A) than in group without drain (B) and thus it appears that the use of drain don't cause any benefit and in fact only delays hospital discharge and increases in compliance to the patient.

Conclusion: The routine use of a drain in non-complicated elective laparoscopic cholecystectomy has no advantage; but it is associated with a longer hospital stay.

Keywords: Laparoscopic cholecystectomy, drain, wound infection, abdominal collection, hospital stay.

Received 15 June, 2021; Revised: 28 June, 2021; Accepted 30 June, 2021 © The author(s) 2021.

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I. INTRODUCTION:

Laparoscopic cholecystectomy provides a safe and effective treatment for patients with gallstone disease, and is "gold standard" management for these patients now a days [1] as it reduces post-operative pain with superb cosmesis, a shorter hospital stay and earlier return to routine work.

On contrary, many patients complain of postop abdominal pain, shoulder tip pain, vasovagal shock, bradyarrhythmia and PONV (post-operative nausea and vomiting). [2] CO₂ pneumoperitoneum is known to cause these complications. Thus, a drainage tube is inserted. The value of surgical drainage in open cholecystectomy is an issue that is yet a controversial fact till now. [3] There is a lack of evidence whether drain insertion is of any valuable benefit in laparoscopic cholecystectomy. In most of the cases of elective and non complicated laparoscopic cholecystectomy, surgeon place a drain, based on their personal experiences. [4]

Therefore, this prospective analytical study was done to assess the value of drain in uncomplicated laparoscopic cholecystectomy, that was done in my department at RIMS Ranchi.

II. MATERIAL AND METHODS:

This prospective analytical study was conducted during the period of February 2020- February 2021 in RIMS Ranchi, in all the admitted cases of gallstone disease of ASA grade I- III awaiting for elective laparoscopic cholecystectomy in surgery ward. Patients who were eligible to enter the study were; age <70 years old, patient not having cholangitis, or pancreatitis; they did not have contraindication for the laparoscopic surgery; and they did not require common bile duct exploration or any other additional procedure. Patients with previous episode(s) of acute cholangitis, or pancreatitis were not excluded. However, patients who refused to enter the study, converted open surgery, any present or previous history of intraabdominal malignancy, chronic

liver disease or bleeding diathesis, and pregnancy were excluded.

40 patients were simply divided before surgical procedure into two groups. *Group A* of 20 patients received a gravity based drain in subhepatic space, and *Group B* of 80 patients received no drain. Informed consent was obtained from all patients and they were told that there is a possibility to be converted to open surgery (if there is a difficulty in laparoscopic procedure). The procedure was performed and supervised by senior professors and team at RIMS Ranchi.

All patients were given a single dose of antibiotic prophylaxis (ceftriaxone 500 mg) intravenously, and postoperative analgesia (Diclofenac sodium 75 mg) intramuscularly. Postoperative pain assessment was performed using a visual analog scale (VAS) with which each patient noted the severity of pain, using a linear scale between zero (no pain) and 10 (strongest conceivable pain). Abdominal drainage was assessed in terms of quantity and quality of drainage. Post operative complications such as PONV, perihepatic collection, bleeding, wound infection were assessed.

Abdominal ultrasonography was done only to patients suspected to have collection (if they have persistent shoulder pain, fever, elevated leucocytic count, persistent vomiting).

Statistical analysis was performed. Mean and standard deviation were estimated for each continuous variable. Independent t-test was used for detection of difference between the two means. Differences were considered significant when $P > 0.05$. Written informed consent was obtained from all patients.

III. RESULT:

The average operative time in the drain group was longer than that of the no drain group (40.5 min versus 31.5 min, respectively). The same for hospital stay, as [Table 1](#) shows that the range in *Group A* was between 1-3 days and 1-2 days in *Group B*. No mortality was observed in either group.

<i>Comparison between Group A and Group B: Characteristic Feature</i>	Group A (n=20)	Group B (n=20)
Age (years)	18-70	18-70
Average Operative time (min.)	40.5	31.5
Hospital Stay (in days)	1-3	1-2
Mild Postop Pain (VAS 1-3)	7/20(35%)	3/20(15%)
Moderate Postop pain (VAS 4-6)	4/20(20%)	2/20(10%)
Severe Postop pain (VAS 7-10)	3/20(15%)	0/20(0%)
Postop Nausea and Vomiting (PONV)	11/20(55%)	10/20(50%)
Wound Infection (SSI)	14/20(70%)	5/20(25%)
Intraabdominal collection	3/20(15%)	4/20(20%)
Incompliance at surgical site	18/20(90%)	7/20(35%)
Delayed suture removal (>8 days)	15/20(75%)	2/20(10%)
Postop Shoulder pain	6/20(30%)	9/20(45%)

IV. Discussion:

Lamgenbuch performed the first cholecystectomy in 1882; he placed drain as a part of the procedure. The routine placement of drains had become a part of operation for past decades. However, controversy has surrounded this practice in elective conventional laparoscopic cholecystectomies, with most surgeons departing from this approach. Surgeons have routinely drained after laparoscopic cholecystectomy because of the fear of collection of bile or blood requiring conversion to an open procedure.[5] Another reason for draining is to allow CO₂ to escape via the drain site, thus decreasing the postop shoulder pain. A higher proportion of patients with nausea and vomiting has also been noted and these complications are less in gasless laparoscopic cholecystectomy.[6] Studies have shown higher wound infection rate, increased postop pain, SSI, delayed suture removal and longer hospital stay in the drain group.

In the present study, the average operative time in the drain group was 40.5 min and 31.5 min in the no drain group but these results show no significant differences.

Hospital stay in drain group ranged from 1-3 days and the majority of cases were discharged on the POD-2, while it ranged from 1-2 days and the majority of cases were discharged on the POD-1 or first quarter of POD-2, in the no-drain group. Gurusamy *et al.*, [7] and Satinsky with his associates [8] have also reported significant differences with longer hospital stay in drained patients.

Hawasli and Brown [9] found that there were minor but not statistically significant differences between

drain group and non drain group in terms of postoperative severity and duration of the abdominal pain and shoulder pain. Also, in this study, postoperative pain was assessed using VAS and there was a significant difference between Group A and Group B patients(Group A patients experienced a quite more postop pain). However, Kazuhisa *et al.*, [10] found that the mean VAS scores were significantly greater in drain group than in non drain group at 24 and 48 hour. On the contrary, Tzovaras *et al.*, suggested that the routine use of a drain in elective laparoscopic cholecystectomy has nothing to offer and it is associated with increased pain. Gurusamy *et al.* and Tarik *et al.* reports showed no significant differences in post operative nausea and vomiting between drain and no drain groups. The same was reported in this study also, as 55% patients were complaining of PONV in Group A and 50% patients in Group B.

Wound infection occurred in 70% patients of drain group versus 25% patients in no drain group and that showed significant difference in consistent with the study of Gurusamy *et al.* However, Hawasli and Brown [11] and Playforth with his team [12] reported that no significant differences were present regarding wound infection.

V. Conclusion:

Patients with drain in situ had a poor outcomes in comparison to those with no drain. Drain group (A) experienced more postop pain, increased SSI thus delayed suture removal, more PONV, noncompliance and a delay in length of hospital stay.

Thus when outweighing the benefits and disadvantages, it is found in this study, that in case of non complicated elective laparoscopic cholecystectomy, the use of drain is not found of any profound benefit, rather have proven, associated with more poor outcomes in comparison to no drainage. Still, it can be used as surgeon's personal preference and experience.

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