

Drainage in Cholecystectomy: Required or Not? A Comparative Randomized Study in Northern Indian Subjects

Aman Nagpal, Subhash Goyal, Latika Abbey, Abhishek Singh

ABSTRACT

Background: Routine abdominal drainage after laparoscopic cholecystectomy is an issue of considerable debate in surgical fraternity. So a comparative study was planned as an effort to solve the controversy regarding the need of drainage in cholecystectomy.

Aim: The aim of the study was to evaluate merits and demerits of drainage vs nondrainage in patients undergone cholecystectomy.

Materials and methods: Study was carried out in the Department of General Surgery, MM Institute of Medical Sciences and Research between June 2009 and October 2011 on 40 cases of symptomatic gall stone disease. Cases were divided randomly into two equal groups. Group A containing 20 cases with drain placed and group B containing 20 cases without drainage. Subjects were observed for postoperative morbidity in the form of pain—incidence and severity, duration of postoperative hospital stay, analgesia requirement, postoperative nausea, vomiting and antiemetics required.

Results: Mean operative time in groups A and B was 93 and 86 minutes respectively. Gallbladder rupture was most common complication encountered in both the groups. At 12th postoperative hour, 90% of patients of group A and 95% of patients of group B had pain in abdomen.

Conclusion: We found no significant advantage of using drainage after laparoscopic cholecystectomy, as there was higher incidence of postoperative pain and longer duration of hospital stay with its use. Therefore, its routine use cannot be recommended as a means to reducing postoperative morbidity.

Keywords: Cholecystectomy, Drainage, Postoperative care.

How to cite this article: Nagpal A, Goyal S, Abbey L, Singh A. Drainage in Cholecystectomy: Required or Not? A Comparative Randomized Study in Northern Indian Subjects. *World J Lap Surg* 2012;5(2):63-66.

Source of support: Nil

Conflict of interest: None declared

INTRODUCTION

Cholelithiasis is among the most common gastrointestinal illness requiring hospitalization and frequently occurs in young.¹ Cholelithiasis and associated complications are the leading causes of surgical entry into the peritoneal cavity in Northern India. Cholecystectomy remains the treatment of choice of symptomatic gall stones despite the challenges of dissolution therapy and lithotripsy. The introduction of

laparoscopic cholecystectomy has revolutionized this procedure.² The need to put a drain has always been a controversial subject in surgery. There are those who believe that all intraperitoneal operations should be drained and there are others who feel drains are useless. Number of drains available bears witness to the fact that no one is ideal or suitable for universal use.

Therapeutic drains are a necessity, prophylactic drains are in questions and perhaps this can be answered by age old saying that drains cannot substitute a meticulous technique. Higher wound infection has been reported in drain group.³ Hospital stay is also prolonged as none of patient can be discharged on same day. Some studies have demonstrated that infection rate and reoperation rate were not significantly different irrespective of whether drains were put or not. Also, some studies showed that post laparoscopic cholecystectomy, pain was not statistically different between drain and no drain group.

So, in review of this unresolved controversy regarding necessity of using drains in cholecystectomy present study was planned with the aim to evaluate merits and demerits of drainage vs nondrainage in the patients undergoing cholecystectomy. Objectives of the study were to find out incidence of postoperative morbidity in terms of complications among patients undergoing cholecystectomy with and without drain and to detect difference in operative time and hospital stay in the above groups.

MATERIALS AND METHODS

The present study was carried out in the Department of General Surgery, Maharishi Markandeshwar Institute of Medical Sciences and Research (MMIMSR), Mullana (Ambala) between June 2009 and October 2011 in which 40 cases of symptomatic gallstone disease were admitted for cholecystectomy included in the study. These 40 cases were randomized into two groups equally, group A contains 20 cases with drain placed in subhepatic space and brought out through right anterior axillary port and group B contains 20 cases without drain.

The inclusion criteria's for study group were symptoms consistent with biliary colic, fit for general anesthesia and

no clinical biochemical or ultrasonographic evidence of common bile duct (CBD) stones. Exclusion criteria for the study group were acute pancreatitis, previous abdominal surgery, carcinoma gallbladder, history of peritonitis, bleeding disorders, cirrhosis and pregnancy. The drain in group A was removed when the discharge was insignificant. All the subjects were observed postoperatively till discharge from hospital for postoperative mortality in the form of pain–incidence and site of pain, discharge in the drain tube–hemorrhagic fluid or bile, duration of postoperative hospital stay, postoperative pain based on visual analog score (VAS score),⁴ analgesia requirement, postoperative nausea and vomiting and antiemetic required.

Data was analyzed using statistical software SPSS version 11.1. Mean and standard deviation was calculated for continuous variables like postoperative pain incidence and VAS score. Chi-square and t-test was used as test of clinical significance.

RESULTS AND DISCUSSION

Data of 40 patients was included and analyzed in the study. Average age of the patients in present study was 36.25 years in drain group and 37.90 years in no drain group. Male:female ratio in both the groups in our study was 1:3.5 and 1:4 and overall ratio of the study was 1:3 which is comparative with literature having male:female ratio of 1:3.^{5,6}

Intraoperative Comparison of Two Groups

Intraoperative Time in the Study Groups

Mean operative time in groups A and B was 93 and 86 minutes respectively. Others⁷ reported that average operative time in group A was 33 minutes whereas average operative time in group B was 30 minutes. The difference in the operating time depends on the experience of the surgeon. Although the mean operative time is more but difference in time taken between both groups is comparable which is supported by previous studies.

Intraoperative Complications in the Study Groups

Gallbladder rupture was most common complication encountered in both the groups (Table 1).

Postoperative Comparison of Two Groups

Postoperative Incidence and VAS Score of Pain Abdomen in Patients of Two Groups

At 12th postoperative hour, 90% of patients of group A and 95% of patients of group B had pain when compared with

each other. Incidence of abdominal pain is slightly lower in drain group A than in group B except at 6 hours when the incidence is equal in both groups. In both group patients experienced maximum pain at 6 hours postoperatively (3.20 vs 3.85; Table 2). Shoulder tip pain was lower in group A in first 24 hours postoperatively. However, at 48 hours, group A had higher shoulder tip pain than group B.

Postoperative Incidence of Drain Site Pain

Drain site pain in terms of VAS score was significantly higher in group A at all times. Others⁸ also showed concurrence with the present study with drain group having less incidence of abdominal pain (38%) as compared to no drain group. So the present study is in resonance with above authors. Reason for higher drain site pain is due to irritant effect of drain, as the drain can induce a foreign body sensation,⁹ whereas group B had no significant pain at this site. Regarding intensity of pain, contrary to our findings are shown by others⁷ where author showed higher abdominal pain at 23 hours in no drain group (2.24 vs 2.46) and beyond 23 hours (1.70 vs 1.86; Table 3).

Mean Pain Score at Different Sites in Study Groups

Overall mean pain score was higher in group A than in group B (Graph 1).

Comparison of Postoperative Analgesic Requirement and Patients Required Antiemetics

Comparison of postoperative analgesic requirement showed higher usage in group B than in group A but it was not statistically significant. Postoperative incidence of nausea/vomiting in group B was significantly higher than in group A up to 24 hours. Antiemetic requirement was significantly higher in group B than in group A at all times (Table 4). In our study although incidence of abdominal and shoulder tip pain was less in drain group, but this difference was not statistically significant. Moreover, drain site pain was statistically more in drain group. So there was no clear cut benefit in reducing postoperative pain in laparoscopic cholecystectomy.

Table 1: Intraoperative complications in the study groups

<i>Intraoperative complications</i>	<i>Group A(%)</i>	<i>Group B(%)</i>
Gallbladder rupture	7 (35)	5 (25)
Cystic artery hemorrhage	2 (10)	0 (0)
CBD injury	1 (5)	0 (0)
Gastric perforation	1 (5)	0 (0)
Total	11	5

Table 2: Postoperative incidence and VAS score of pain abdomen in patients of two groups

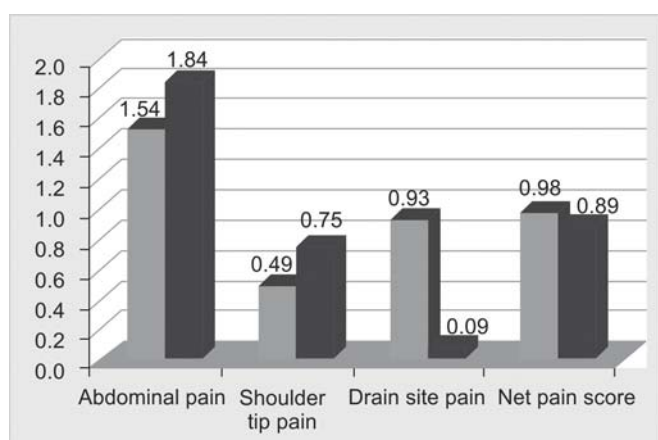
Incidence of pain abdomen				VAS score of pain abdomen				
Time (hrs)	Group A (%)	Group B (%)	p-value	Group A		Group B		p-value
				Mean	Standard deviation	Mean	Standard deviation	
0	5 (25)	7 (35)	0.490	0.55	0.99	1.6	2.30	0.069
6	10 (50)	10 (50)	1.00	3.2	3.39	3.85	3.97	0.582
12	18 (90)	19 (95)	0.548	2.35	1.08	2.70	1.12	0.325
24	13 (65)	14 (70)	0.735	1.3	1.17	0.85	0.74	0.156
48	3 (15)	4 (20)	0.677	0.30	0.73	0.20	0.41	0.597

Table 3: Postoperative incidence of drain site pain (right anterior axillary port site)

Incidence of drain site pain				VAS score of drain site pain				
Time (hrs)	Group A (%)	Group B (%)	p-value	Group A		Group B		p-value
				Mean	Standard deviation	Mean	Standard deviation	
0	11 (55)	14 (70)	0.002	0.80	0.95	0.15	0.48	0.01
6	14 (70)	3 (15)	0.000	1.55	1.60	0.20	0.52	0.001
12	12 (60)	2 (10)	0.000	1.40	1.50	0.10	0.30	0.001
24	9 (45)	0 (0)	0.000	0.60	0.75	0.00	0.00	0.001
48	4 (20)	0 (0)	0.035	0.30	0.65	0.00	0.00	0.048

Table 4: Number of patients given analgesics at different point of time and patients required antiemetics

Time (hrs)	Patients given analgesics			Patients required antiemetics		
	Group A (%)	Group B (%)	p-value	Group A (%)	Group B (%)	p-value
0	16 (80)	18 (90)	0.381	10 (50)	17 (85)	0.019
6	13 (65)	16 (80)	0.294	7 (35)	14 (70)	0.028
12	10 (50)	12 (60)	0.53	5 (25)	12 (60)	0.027
24	4 (20)	5 (25)	0.708	1 (5)	8 (40)	0.008
48	2 (10)	3 (15)	0.636	0 (0)	4 (20)	0.037

**Graph 1:** Mean pain score at different sites in study groups, group A (gray bar) and group B (black bar)

Comparison of Postoperative Stay in Hospital in Both the Groups

Mean hospital stay was 5.75 and 3.65 days in groups A and B respectively, i.e. higher in group A than in group B. Probably this was due to the reason that none of the patient could be discharged before removal of drain thus increasing

the overall stay. Others^{5,6} showed equal stay in both groups. This difference is due to the fact that none of the patient in the drain group could be discharged before removal of the drain, thus increasing overall hospital stay and moreover expenditure.

CONCLUSION

To conclude use of drains in laparoscopic cholecystectomy has not much to offer; in the contrary it can be associated with increased pain. We find no significant advantage of using drain after laparoscopic cholecystectomy, therefore, its routine use cannot be recommended as a means to reduce nausea/vomiting as there is higher incidence of postoperative pain and longer duration of hospital stay with its use. However, in a select group of patients it can be justifiable to leave a drain where there is a fear of unsolved or potential bile leak, i.e. imperfect closure of cystic duct or bile staining in the lavage fluid or gallbladder bed suggesting the possibility that an accessory duct has been missed. Simultaneously while putting the drain one need to bear in

mind that drain placement should not be a source of only false sense of security as it can neither prevent postoperative biliary peritonitis, biloma or bleed nor reduced postoperative pain significantly unless great care is taken during surgery.

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ABOUT THE AUTHORS

Aman Nagpal

Resident, Department of General Surgery, Maharishi Markandeshwar Institute of Medical Sciences and Research, Ambala, Haryana, India

Subhash Goyal

Head, Department of General Surgery, Maharishi Markandeshwar Institute of Medical Sciences and Research, Ambala, Haryana, India

Latika Abbey

Senior Resident, Department of Obstetrics and Gynecology, Hindu Rao Hospital, New Delhi, India

Abhishek Singh

Resident, Department of Community Medicine, Maharishi Markandeshwar Institute of Medical Sciences and Research, Ambala Haryana, India, e-mail: abhishekarleg@gmail.com