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ORIGINAL ARTICLE

Laparoscopic Cholecystectomy with and without Vacuum Suction Drain

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ABSTRACT

Objective: To compare the frequency and severity of pain due to vacuum suction drain placement postoperatively, in patients of laparoscopic cholecystectomy.

Patients and Methods: This randomized control trial study was carried out at surgical Unit PAEC General Hospital Islamabad from Jan 2015 to Dec 2016. In total two hundred and twenty cases of gallstone disease were registered who fulfilled the inclusion criteria. The cases were divided into two study groups by random number table. Patients' in-group "A" underwent laparoscopic cholecystectomy with vacuum suction drain placement and those in-group "B" had cholecystectomy without vacuum suction drain.

Results: At 24th hour, a total of 42 patients experienced no pain. Among these 11 were from group A and 31 were from group B. In 178 patients, pain was present (Group A = 109 and Group B = 79). Number of patients suffering from pain was significantly high in group A and severity of pain was also significantly higher in Group A (p-value = 0.002).

Conclusion: Laparoscopic cholecystectomy without drain is better as compared to the one with drain, with less post-operative pain.

Keywords: Drain, Laparoscopic cholecystectomy, Pain.

Author`s Contribution	Address of Correspondence	Article info.
[1] *Conception, synthesis, planning of research and manuscript writing* [2] *Interpretation and discussion* [3] *Data analysis, interpretation and manuscript writing, Active participation in data collection*	*Muhammad Asif* *Email. dr.asif394@yahoo.com*	*Received: August 31, 2017* *Accepted: September 11, 2017*

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Introduction

Laparoscopic cholecystectomy is a safe and effective treatment for patients with gallstones. It reduces post-operative pain with minimal scar with short hospital stay and early recovery.[1] Laparoscopic cholecystectomy has become one of the most common general surgical procedures.[2] This new minimal invasive procedure has become the gold standard in the management of cholelithiasis as well as in acute appendicitis.[2,3] Laparoscopic technology has progressed to single-incision laparoscopic surgery (SILS) and natural orifice trans-luminal endoscopic surgery.[5] Laparoscopy for emergency surgery is now considered easy and is usually preferable management option.[6] Drains are often used after laparoscopic cholecystectomy to prevent post-operative abdominal collections.[7] Majority of the patients with laparoscopic cholecystectomy are dealt with as day care cases now a days, therefore placing drain in every case would merely delay the patient's discharge.[4,5] Drains

may be very uncomfortable for some of the patients undergoing cholecystectomy and may cause increased morbidity, shoulder tip pain and in some cases may increase infective complications.

Use of drain in open cholecystectomy is an issue that is not resolved yet. The same is the issue in laparoscopic cholecystectomy, where the lack of evidence for usefulness of drain is present. Surgeons have different practices; some placing a drain selectively while others never place a drain, based on their individual experience and believes.[4] This randomized controlled comparative study was designed to assess the value of drain in laparoscopic cholecystectomy.

Patients and Methods

This randomized control trial was carried out at surgical Unit PAEC General Hospital Islamabad from Jan 15 to Dec 16. All the patients coming to the PAEC General hospital for laparoscopic cholecystectomy were enrolled in the study. Sample size was calculated using WHO sample size calculator with confidence level of 5%, power of test: 80%, pooled standard deviation: 24.4. Test value of the population mean was 58.68 and anticipated population mean was 39.5.[8] The calculated sample size was 110 patients in each group. Informed written consent was taken from all the patients and the study design was approved from the ethical committee of hospital. Patients with gallstones between18 to 85 years and from either sex were included in the study. While those with acute cholecystitis, COPD or with history of bleeding tendency were excluded. Total 220 cases fulfilling the inclusion criteria were selected from outpatient department of surgical unit of PAEC General Hospital Islamabad. These patients were randomly allotted into two groups using random number table. Patients with post-operative drain were assigned in-group A and without drain were assigned in-group B. All patients were prescribed standard antibiotics and wound care. Patients were observed on 24 hours for presence or absence of post-operative pain on visual analogue scale (VAS) (score 0-10). When there was no pain, it was considered as Zero while 10 was considered maximum pain. All information was recorded on a performa and analyzed on SPSS 20. Data was analyzed for age, gender and presence or absence of pain. Chi-square test was applied and a p-value of $\leq$ 0.05 was considered statistically significant.

Results

The average age of patients in Group A was 49.02 ± 11.94 years and the average age of patients in Group B was 48.07±12.94. In total there were 52 (23.64%) males in which 30 were treated in Group A and 22 were treated in Group B. There were 168 (76.36%) female patients in which 80 were treated in Group A and 88 were treated in Group B (Table 1).

Table 1: Demographic characteristics of participants (n=220)

	Study Groups	
	Group A (n=110)	**Group B (n=110)**
Age (years)		
Minimum	18	18
Maximum	85	85
Mean±SD	49.02±11.94	48.07±12.94
Gender		
Male: No (%)	30 (27.27)	22 (20)
Female: No (%)	80(72.73)	88(80)

During the follow up i.e. at 24th hour, 36 (16.36%) patients were pain free and in 184 (83.64%) patients, the pain was present.

Number of patients suffering from pain was significantly high in group A (Table 2). Out of 184 patients having pain, 74 had mild pain, 71 patients had moderate and 39 had severe pain. The severity of pain was also significantly higher in Group A (Table 3).

Table 2: Number of patients suffering from pain at 24 hour (n=220)

		Study Groups		p-value
		Group A (n=110)	**Group B (n=110)**	
Pain	Absent; n (%)	9 (8.181)	27 (24.54)	0.002
	Present; n(%)	101 (91.82)	83 (75.45)	

Table 3: Severity of Pain in patients at 24 hour (n=220)

		Study Groups		p-value
		Group A (n=110)	**Group B (n=110)**	
Severity	No pain; n (%)	9 (8.18)	27 (24.54)	0.002
	Mild; n (%)	36 (32.73)	38 (34.54)	
	Moderate; n(%)	43 (39.09)	28 (25.45)	
	Severe; n (%)	22 (20)	17 (15.45)	

Discussion

Lamgenebuch performed the first cholecystectomy in 1882, placed a drain. The routine placement of drains evidence. Many surgeons are now not placing drain.

Surgeons used to put drains routinely after laparoscopic cholecystectomy because of the fear of collection of bile or blood, later requiring open procedures. Billroth used to put drains after surgeries.

becomes a part of operation for a long period without any

However, many studies concluded that drain has no advantage and it just prolonged the hospital stay of the patient leading to increase cost of health care. According to Gurusami KS et al wound infection was more in patients who underwent laparoscopic cholecystectomy with use of drain.[9] Sims was the first surgeon who used prophylactic drains after gynecologic operations in the last quarter of the 19th century.[11] Since that time, surgeons have routinely used prophylactic drainage of the peritoneal cavity after abdominal surgery. Many surgeons now consider that drainage of the peritoneal cavity is impossible and, therefore, placing drain after abdominal surgeries is useless.[9-15] Single-Incision Laparoscopic Surgery (SILS) cholecystectomy was first performed in the Anglophone Caribbean in 2009; now getting more popularity is usually drain free procedure. For putting drain in SILS we have to make a second incision so further increasing chance of postoperative morbidity.[16,17]

During the last 3 decades, surgeons have made efforts to investigate the value of prophylactic drainage after abdominal surgery. Even after many studies demonstrating no advantage of placing prophylactic drain, many surgeons are still inserting drains due to fear of post-operative intra-abdominal collections.[18,19] This study was conducted to look for the outcomes and to evaluate role of prophylactic drainage after laparoscopic cholecystectomy. According to Yong L, Guang B pain 24 hours after surgery was less severe in no drain group (MD1.31; 95% CI, 0.96 to 1.65; $p < 0.00001$).[20] Abdominal drainage also causes prolonged operative time.[21] In our study, significantly higher number of patient in-group A had severe pain at 24 hours with pain score ranging from 8 to 10. Group B patients had less severity of pain (p-value = 0.000). Our study had limitations. We did not measure the amount and nature (bile, blood etc.) of body fluids in the drain bottles, so further studies with larger number of patients can be more helpful in future.

Conclusion

In uncomplicated laparoscopic cholecystectomy drain placement will cause more and prolonged pain and discomfort to the patient and therefore should be avoided. We recommend that experienced surgeons may avoid putting a drain in a clean operative case, however younger colleagues with less experience may insert the drain for safety purpose.

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