

A Comparison of Complications of Laparoscopic Cholecystectomy with and Without Drainage

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Abstract

Objective: Routine drainage after laparoscopic cholecystectomy is a debatable issue. This study is aimed to compare post-operative complications in patients undergoing laparoscopic cholecystectomy with and without drainage.

Study Design: Randomized Controlled Trial.

Place and Duration of Study: Department of Surgery at Pakistan Institute of Medical Sciences Islamabad from November 2009 to April 2010.

Materials and Methods: This study included 120 patients who underwent elective laparoscopic cholecystectomy for symptomatic gallstones.

Results: Females were more than males (7.5:1). The mean age in both groups was 47.2 years. Patients in the without drainage group had less postoperative pain, wound infections, fever and chest infection as compared to drainage group. Postoperatively patients in the without drainage group were mobilized early and the hospital stay was shorter as compared to the drainage group. There was no mortality in our study.

Conclusion: Laparoscopic Cholecystectomy without drainage is better than laparoscopic cholecystectomy with drainage.

Key Words: *Laparoscopic cholecystectomy, Cholelithiasis, Drains.*

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Introduction

Laparoscopic cholecystectomy is the "gold standard" for the treatment of symptomatic cholelithiasis.¹ Cholelithiasis affects about 10 to 15 % of the adult populations.² Laparoscopic cholecystectomy is associated with more cosmetically acceptable scar, early convalesce, less postoperative pain, nausea, vomiting, chest infection, early mobilization and short hospital stay as compared to open cholecystectomy.³ Till today routine drainage after laparoscopic cholecystectomy is a debatable issue.⁴ Traditionally a drain is placed in the sub-hepatic region if there is concern about leakage from biliary radical or oozing of blood from the area after laparoscopic cholecystectomy.⁵ Numerous randomized control trials were performed on prophylactic drainage after laparoscopic cholecystectomy. A review of multiple

trials on this issue by Petrowsky et al failed to demonstrate any effect of routine drainage on post operative complications.⁶ On the other hand numerous studies have shown that laparoscopic cholecystectomy without drainage has less operative time, lower incidence of chest infections, pyrexia, wound infection, short hospital stay, and lower morbidity compared to drained group.^{6,7} Review of medical literature finds no evidence to support the use of drain after every uncomplicated laparoscopic cholecystectomy and should not be used routinely.⁷

This study is aimed to compare post-operative complications in patients undergoing elective laparoscopic cholecystectomy with and without drainage. It is a common practice to drain every laparoscopic cholecystectomy in our set up. So we wish to compare complications rate in both practices in local scenario, so as to select better option for routine

procedure to expedite patient recovery process and shorten hospital stay to decreasing burden on the health care infrastructure.

Materials and Methods

This randomized controlled trial included 120 patients who underwent elective laparoscopic cholecystectomy for symptomatic gallstones in the department of surgery of Pakistan Institute of Medical Sciences Islamabad during a period of 6 months from November 2009 to April 2010.

All patients were admitted from surgical outpatient department of Pakistan Institute of Medical Sciences Islamabad. Detailed history, thorough clinical examination and relevant investigations were performed. Well understood informed consent obtained from all patients who underwent laparoscopic cholecystectomy regarding placement of drains. All adult patients (both gender, 18 years or above) undergoing elective laparoscopic cholecystectomy for cholelithiasis were included while patients requiring common bile duct exploration for ductal calculi, patients with carcinoma of gall bladder and patients with bleeding disorders were excluded from the study.

Patients were randomized in two groups using random table number. In 'Group A' drainage was performed while in 'Group B' drainage was not performed. Patients were admitted one day before surgery. Standard 4 ports were used to perform cholecystectomy and all laparoscopic cholecystectomies were performed by consultant surgeons. Passive closed drainage system was used in drainage group. Detailed operative and postoperative record was maintained.

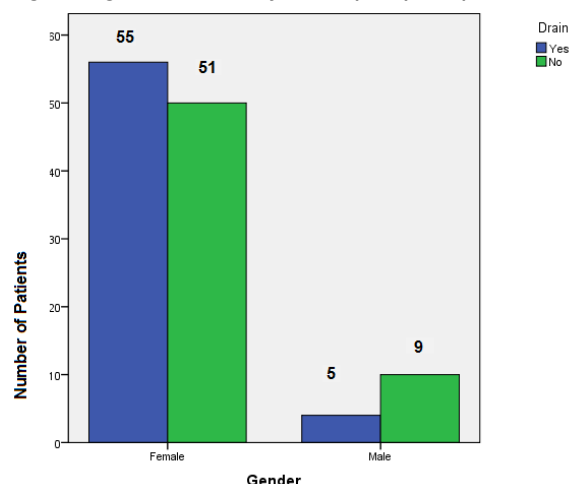
Data collected in post-operative period until patients were discharged. Post-operatively patients were assessed for pain (assessed by using a visual analogue pain scale), early mobility (time in hours since operation), wound infection, pyrexia, respiratory complications and postoperative hospital stay. Patients were advised to come for follow up one week after surgery.

Data was compiled and analyzed using SPSS version 15. Mean and standard deviation calculated for age, operative time, drain amount and length of hospital stay. Frequency and percentage calculated for gender, pain, nausea, mobility (time in hours since operation), wound infection, pyrexia and respiratory complications. Chi Square Test applied at 5% level of significance to compare complications such as pain, nausea/vomiting,

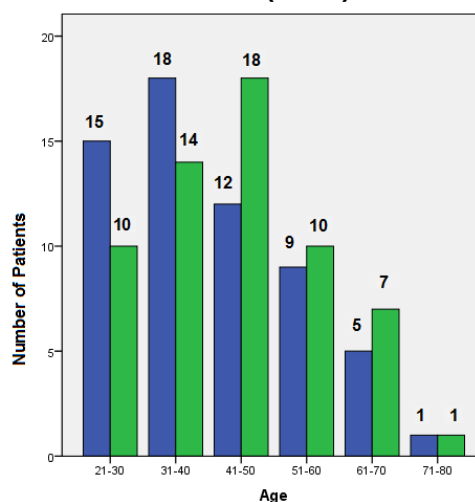
mobility, pyrexia, wound infection and respiratory tract infection in patients with drain and without drain. Independent samples t- test is used to compare the quantitative variables. A p value less than 0.05 considered significant.

Results

Most of the patients in the study were females. (Graph: 1) The mean age in both groups was 47.2 years and the age range was 20-72 years. (Graph: 2)



Graph -1: Gender Distribution (n=120)



Graph-2: Age Distribution (n=120)

Group-A (With Drain) = 60
Group-B (Without Drain) =60

Comparison of post-operative complication in both groups is shown in table: I. There was no mortality in our study and there was no major complication such as bile duct or vascular injury, intra-abdominal abscess, postoperative pancreatitis, deep vein thrombosis or visceral perforation requiring re-exploration.

Table1: Comparison of Laparoscopic Cholecystectomy with and without Drainage (n=120)

Variables		With Drain (n=60)	Without Drain (n=60)	p value
Operative Time (min)		42.5 min	37 min	0.002
Pain (VAS)	Mild	17 28.3%)	26 43.3%)	0.001
	Moderate	33 (55%)	32 53.3%)	0.01
	Severe	10 16.6%)	2 (3.3%)	0.027
Nausea & Vomiting		21 (35 %)	24 (40 %)	0.572
Pyrexia		15 (12.5 %)	2 (1.66 %)	0.001
Pulmonary Infection		25 (20.8 %)	6 (5 %)	0.001
Wound Infection		8 (6.66 %)	1 (0.83 %)	0.015
Mobility (hours)	6 hours	5 (8.3%)	15 (25%)	0.031
	10 hours	20 33.3%)	50 83.33%)	0.001
	14 hours	47 (45%)	58 96.6%)	0.001
	24 hours	55 (91.6 %)	60 (100%)	0.057
Mean Hospital Stay (Days)		1.7	1.3	0.001

Discussion

Laparoscopic Cholecystectomy was performed for the first time in France (Lyon) by Philippe Mouret in 1987 using video technique and has quickly become the treatment of choice of the gallstones.^{8,9} The morbidity and mortality of the cholecystectomy has been decreased to low level in past decade.¹⁰⁻¹³ It is now associated with less morbidity, mortality and early return to the work as compared to open cholecystectomy.¹⁴⁻¹⁷ Traditionally a drain is placed in the sub-hepatic region if there is concern about leakage from biliary radical or oozing of blood from the area.⁵ Some surgeons recommend routine use of the drainage after every laparoscopic cholecystectomy.¹⁸ Numerous randomized control trials were performed on prophylactic drainage after laparoscopic cholecystectomy.¹⁹⁻²¹ Studies have shown that laparoscopic cholecystectomy without drainage has less operative time, lower incidence of chest infections, pyrexia, wound infection, short hospital stay, and lower morbidity compared to drained group.²²⁻²⁴

In our study females were more than males and female to male ratio was 7.5:1. The mean age in both groups was 47.2 years and the age range was 18-72 years. This is comparable with many studies conducted locally and internationally. A study conducted by Hussain reported a mean age of 45 years and female to male ratio 7.3:1.¹⁰ Similarly a study conducted by Malik at Jamshoro reported age range which was 21-72 years.²⁵

The mean operative time in our study for drained group was 42.5 minutes while mean operative time for undrained group was 37 minutes. This shows that laparoscopic cholecystectomy without drainage took less time to complete as compared with drainage group. This is comparable to previous conducted studies. A study conducted by Khan JS recorded a mean operative time of 37 minutes.²³

Postoperative pain was experienced in patients of both groups with variable degree of intensity. Our study showed that intensity of the pain was more marked in the patients in drainage group. Uchiyama showed similar results and showed that patients in the undrained group experienced less pain as compared by the patients in the drainage group.²²

In our study nausea and vomiting was more in the without drainage group 24 (40%) as compared to with drainage group 21 (35 %) but it failed to reach the statistical significance (p=0.572). Petrowsky et al showed that drains helps to reduce the postoperative nausea and vomiting.⁶ In our study we did not find any advantage of drain in reducing the postoperative nausea and vomiting. Nusrat et al reported a reduced but not statistically significant incidence of postoperative nausea and vomiting in drained group as compared to without drainage group.²¹

Mobility is the main issue after major surgery. In our study majority of patients (83 %) in without drainage group were mobile within 10 hours of the surgery as compared to 33% from the undrained group. It shows that there was early mobilization of the patients after surgery in without drainage group as compared to drained group. This could be due to less pain experienced by the patients in without drainage group. This is also comparable with result reported by Gurusamy and Hirohiko who showed that patients were mobilized early in without drainage group.^{2,23}

Wound infection was less in patients in without drainage (1, 1.66%) group as compared to drained group (8, 13.3%). Similar results were shown by the Satinsky, Gurusamy and Uchiyama.^{7,20,22}

Significant number of patients in drainage group had postoperative pyrexia as compared to the without drainage group. Uchiyama in his study reported the significant change in body temperature postoperatively in drain group suggesting use of drains increase the incidence of postoperative fever.²²

An increased incidence of postoperative respiratory tract infection was observed in drained group as compared to

without drainage group in our study. A meta-analysis by Petrowsky showed that incidence of chest infection was three times that of the patients without drain.⁶ The link between the chest infection and drainage had been attributed to decreased ventilation caused by the increased amount of postoperative discomfort related to use of drains.²³⁻²⁶ Due to drain related pain patients were reluctant to be mobilized and furthermore patients were uncooperative for postoperative chest physiotherapy.²¹⁻²³ The hospital stay in the drainage group was longer as compared to without drainage group in our study. Satinsky reported that the patients with mandatory drainage stayed longer in hospital.²⁰ Similarly Gurusamy reported prolonged hospital stay and delayed discharged in drained group.⁷ Thus our study showed that it is of advantage not to place a drain after laparoscopic cholecystectomy as routine and 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. So we recommend that routine use of drainage in laparoscopic cholecystectomy should be avoided.

Conclusion

Laparoscopic Cholecystectomy without drainage resulted in less postoperative, fever, wound infection, chest infection; early mobility and shorter hospital stay as compared to the laparoscopic cholecystectomy with drainage. So on the basis of our study we conclude that laparoscopic cholecystectomy without drainage is better than laparoscopic cholecystectomy with drainage.

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