

Outcome of Laparoscopic Cholecystectomy with and without drain

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ABSTRACT

Aim: To compare the outcome of laparoscopic cholecystectomy with and without drain.

Study design: Randomized controlled trial

Place and duration of study: Surgical department of CMH Lahore medical and dental college Unit I, II, III and IV, Jinnah hospital, Lahore. 6 months 15-11-2009 to 14-05-2010.

Patient and methods: Five hundred and seventy cases of gallstone disease were registered who fulfilled the inclusion criteria. The allocation of cases to two study groups was settled by random number table. Patients in group A underwent laparoscopic cholecystectomy with drain insertion and those in group B had cholecystectomy without drain.

Results: Five hundred and seventy patients fulfilling the indication of laparoscopic cholecystectomy were subjected to the procedure. Patients were divided equally into Group A (with drain) and Group B (without drain). 12 hours post operatively subjective complaint of pain was assessed and projected to visual analogue scale (already defined). 65(22.8%) patients experienced severe pain in group A as compared to 37(12.98%) patients in group B. Almost equal percentage of patients (67.01% in group A and 68.06% in group B) in both groups experienced mild to moderate pain, however no pain was experienced in 54(18.94%) patients without drain as compared to only 29(10.17%) patients with drain.

Conclusion: Laparoscopic cholecystectomy without drain is better than one with drain, with less post operative pain.

Keywords: Laparoscopic, cholecystectomy, drain, pain.

INTRODUCTION

Gall stone disease is a major health problem worldwide, particularly in adult population¹. Sometimes it remains asymptomatic but most of the times it presents with right upper quadrant pain, nausea and vomiting. If not treated, it may lead to complications like acute or chronic cholecystitis, obstructive jaundice and rarely carcinoma gall bladder². The surgical management of gallstones has been revolutionized after the advent of laparoscopic cholecystectomy since 1985 and has become one of the most common general surgical procedures³. This technique has virtually become the gold standard in the management of cholecystitis^{1,4,5}.

During last two centuries, surgeons have used drains for prophylactic purposes to remove intra peritoneal collections such as ascites, blood, bile, pancreatic and intestinal secretions. These collections might become potentially infected or, in case of bile and pancreatic juice, toxic for adjacent tissues. Theodor Billroth was convinced that prophylactic drainage of peritoneal cavity saved many lives after gastrointestinal surgery. Other

contemporaries believed that drainage of peritoneal cavity is useless^{6,7}. Drains are frequently used after laparoscopic cholecystectomy to prevent abdominal collections⁸. Majority of the patients with laparoscopic cholecystectomy are dealt with as day care cases now a day, hence the insertion of drain in every case would merely delay the patient's discharge.⁹ Drains may be very uncomfortable for some of the patients undergoing cholecystectomy.

Gurusami KS et al demonstrated that wound infection was significantly higher in patients who underwent laparoscopic cholecystectomy with drain. (OR 5.86, 95% CI 1.05 to 32.70)⁹. George Tzovaras et al described significantly increased postoperative pain in patients who had a drain placed; median visual analog scale (VAS) score was 5 (range 1 to 8) versus 3 (range 1 to 8), in the non-drained group ($P < .0001$). So he concluded that use of a drain in elective laparoscopic cholecystectomy has nothing to offer; in contrast, it is associated with increased pain. He suggested that it would be reasonable to leave a drain if there is a worry about an unsolved or potential bile leak, bearing in mind that drain placement, although sometimes providing a false sense of security, does not guarantee either prevention or treatment of postoperative bile collections, bleeding, or bile peritonitis¹⁰.

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Despite evidence based data, questioning prophylactic drainage in many instances, most surgeons around the world continue to use them on routine basis⁵. This study is aimed to demonstrate the frequency of complications (post operative pain) in laparoscopic cholecystectomy with and without drain in our local perspective to select better option for routine procedure to expedite patient recovery process and shorten hospital stay, decreasing burden on health care infra structure.

PATIENTS AND METHODS

Five hundred and seventy cases of fulfilling the inclusion criteria were selected from out patient department of surgical units. These patients were randomly assigned into two groups using random number table. Patients with post operative drain were assigned group A and without drain were assigned group B. Informed consent and demographic profile was taken. Laparoscopic cholecystectomy was done single surgeon. All patients were prescribed standard antibiotics and wound care. Patients were observed on 12 hours for presence or absence of post operative on visual analogue scale (score 0-10). All information was recorded in specially designed proforma (attached). All this work was done by researcher himself. Collected information was entered into statistical package for social sciences SPSS version 12 and analyzed. The variables were age, gender, presence or absence of pain. The numerical outcomes like age were presented as mean and standard deviation while gender and pain were presented as frequency and percentage. Chi-square test was applied for presence or absence of pain for comparison between two groups. P value was considered significant if ≤ 0.05 .

RESULTS

In this study there were 570 patients which were equally divided into two Groups i.e. 285 patients were treated in Group A (Laparoscopic Cholecystectomy with drain) and rest of the 285 patients were treated in Group B (Laparoscopic Cholecystectomy without drain). The average age of patients in Group A was 48.07 ± 12.94 years and the average age of patients in Group B was 47.14 ± 11.58 years. Overall the average age of all patients was 47.60 ± 12.28 years. The minimum and maximum ages were 22-79 years respectively (Table 1). According to table 3; there were 117 (20.5%) males in which 65 were treated in Group A and 52 were treated in Group B. There were 453 (79.5%) female patients in which 220 were treated in Group A and 233 were treated in Group B. (Table 2).

During the follow up i.e. at 12th hour, in 83 (14.6%) patients pain was absent (Group A=18 and Group B=65) and in 487 (85.4%) patients the pain was present (Group A=267 and Group B=220). According to Chi-Square analysis the pain was highly significant in Group A i.e., p-value= 0.000 (Table 3). Moreover, among 487 patients in which the pain was present, 202 had mild (Group A=99 and Group B 103), 183 patients had moderate (Group A =111 and Group B =72) and 102 had severe pain (Group A=57 and Group B =45). The severity of pain was also significantly higher in Group A, i.e., p-value=0.000 (Table 4).

Table 1: Descriptive statistics of age in study groups

	Study Groups		Total
	Group A	Group B	
Mean	48.07	47.14	47.60
Std. Deviation	12.943	11.580	12.278
Minimum	22	22	22
Maximum	79	79	79

Group A = Laparoscopic Cholecystectomy with drain
Group B = Laparoscopic Cholecystectomy without drain

Table 2: Frequency table of Gender in Study groups

Gender	Study Groups		Total
	Group A	Group B	
Male	65(11.40%)	52 (9.12%)	117(20.53%)
Female	220(38.59%)	233(40.88%)	453(79.47%)
Total	285(50%)	285 (50%)	570(100%)

Group A = Laparoscopic Cholecystectomy with drain
Group B = Laparoscopic Cholecystectomy without drain

Table 3: Frequency table of Pain at 12th hour in study group

Pain	Study Groups		Total
	Group A	Group B	
Absent	18 (3.15%)	65 (11.40%)	83 (14.56%)
Present	267(46.84%)	220(38.59%)	487(85.43%)
Total	285(50%)	285 (50%)	570(100%)

Group A = Laparoscopic Cholecystectomy with drain
Group B = Laparoscopic Cholecystectomy without drain
Chi-Square = 31.150 p-value = 0.000 (significant)

Table 4: Frequency of severity of pain 12th hr in study group

Severity	Study Groups		Total
	Group A	Group B	
No pain (0)	18 (3.15%)	65 (11.40%)	83 (14.56%)
Mild (1-3)	99 (17.37%)	103(18.07%)	202(35.44%)
Moderate (4-7)	111(19.47%)	72 (12.63%)	183(32.10%)
Severe (8-10)	57 (10%)	45 (7.89%)	102(17.89%)
Total		285 (50%)	570(100%)

Group A = Laparoscopic Cholecystectomy with drain
Group B = Laparoscopic Cholecystectomy without drain
Chi-Square = 36.41 p-value = 0.000 (significant)

DISCUSSION

Due to advent of minimally invasive techniques and wide spread adoption of laparoscopic cholecystectomy as a gold standard treatment for gallstone disease, threshold of deciding or referring to perform laparoscopic cholecystectomy is significantly decreased. First laparoscopic cholecystectomy was performed by Dr. Philip Mouret of France in 1987¹¹. Since then, much more patients are undergoing laparoscopic cholecystectomy now a day with a little risk of serious post operative complications. So, at most of set ups, laparoscopic cholecystectomy is a routinely performed as a day care procedure. Minutest details are being addressed to reduce patient's suffering and accelerate recovery and ultimately reduce cost of the procedure for both patient as well as the nation. Many routines that were practiced in past traditionally, are being evaluated and if found to be having little or no benefit, are being discarded.

Similar was the case with routine drainage of subhepatic space in Laparoscopic cholecystectomy. Prophylactic drainage in past had wide acceptance as a useful method to prevent complications after gastrointestinal (GI) surgery. Sims was the first surgeon who used prophylactic drains after gynecologic operations in the last quarter of the 19th century¹². Since that time, surgeons have routinely used prophylactic drainage of the peritoneal cavity after abdominal surgery. Theodor Billroth was convinced that prophylactic drainage of the peritoneal cavity saved many lives after GI surgery.¹³ Other contemporaries believed that drainage of the peritoneal cavity is impossible and, therefore, prophylactic drainage is useless^{14,15}.

During the last 3 decades, surgeons have made efforts to investigate the value of prophylactic drainage after abdominal surgery in controlled randomized clinical trials (RCTs). Despite evidence-based data questioning prophylactic drainage in many instances, most surgeons around the world continued to use them on a routine basis. Therefore, we studied and elaborated the outcomes to evaluate role of prophylactic drainage after laparoscopic cholecystectomy.

In my study, I compared the outcome of laparoscopic cholecystectomy with subhepatic drainage and without drainage. Pain at 12 hours post operatively, was measured on visual analogue scale ranging 0 to 10. Pain was further divided into mild (Visual analogue scale score 1-3), moderate (score 4-7) and severe (score 8-10).

Similar study was conducted by George Tzovaras et al, who suggested that it would be reasonable to leave a drain if there is a worry about

an unsolved or potential bile leak, bearing in mind that drain placement, although sometimes providing a false sense of security, does not guarantee either prevention or treatment of postoperative bile collections, bleeding, or bile peritonitis¹⁰. He described significantly increased postoperative pain in patients who had a drain placed; median visual analog scale (VAS) score was 5 (range 1 to 8) versus 3 (range 1 to 8), in the non-drained group ($P < .0001$). So he concluded that use of a drain in elective laparoscopic cholecystectomy has nothing to offer; in contrast, it is associated with increased pain. This was quite comparable to my study¹⁰.

In my study, significantly higher number of patients, who were operated with drain insertion compared to those without drain insertion, had severe pain at 12 hours with pain score ranging from 8 to 10. In group who were operated without drain had less severity of pain as compared to those who were operated with drain (p-value = 0.000). This illustrates that more patients with no pain came from the group; without drain insertion and more patients with severe pain were related to group with drain insertion.

Although the overall results of this study were similar to study conducted by George Tzovaras, yet considerable number of patients in my study had severe pain with higher pain score 8-10. This was not comparable to that study by Tzovaras. Cost of the laparoscopic instruments accounts for this. We re-use metallic instruments multiple times to avoid much expensive disposable gadgets which are sharp and accurate and hence cause less tissue damage with easy maneuverability.

CONCLUSION

This randomized controlled trial concludes that uncomplicated laparoscopic cholecystectomy without drain is better than one with drain in terms of less post operative pain, however beginner or under training surgeons prefer to insert a drain after laparoscopic cholecystectomy just to see any post operative complication hemorrhage or bile leak.

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