

# Laparoscopic Cholecystectomy without the use of Drain in Selected Cases

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## ABSTRACT

**OBJECTIVE:** To observe the effects of omitting the routine drainage after laparoscopic cholecystectomy, with respect to hospital stay, morbidity, and mortality.

**METHODOLOGY:** This comparative observational study was carried out in the Department of Surgery, Liaquat University of Medical and Health Sciences, Jamshoro, from January 2009 to December 2009. During study period 100 consecutive cases of cholelithiasis, underwent laparoscopic cholecystectomy. The patients were divided in two groups; group A without drain and group B with drain. The effects of omitting the drain, regarding hospital stay, morbidity, and mortality were observed.

**RESULTS:** This study consists of 100 patients (male 22 and females 78) with male female ratio of 1:3.54 and mean age of 37.86 years. Post operative hospital stay in patients without drain was 2.1 days as compared to 3.58 days for those with drain (p-value 0.000). Moreover the use of drain has also been found to be associated with significant drain site pain / discomfort. There was no mortality in any group.

**CONCLUSION:** We have observed that routine placement of drain after laparoscopic cholecystectomy, not only prolongs the post-operative hospital stay; it also leads to drain site pain / discomfort.

**KEY WORDS:** Cholelithiasis, cholecystectomy, drain, hospital stay, morbidity, mortality.

## INTRODUCTION

Cholecystectomy is one of the most frequently performed abdominal operation – even more so electively, but the issue of draining the subhepatic area post-operatively, though seemingly simple one, still remains unresolved.

Peritoneal drainage after cholecystectomy has long remained an essential component of procedure, since its introduction by Langenbach in 1882<sup>1</sup>. The benefits of drains derive from the notion that they allow the egress of bile leaking from the gallbladder bed, cystic duct or damaged bile duct, as well the blood or exudates resulting from surgical trauma. Even if they do not drain these fluids completely, they do warn the surgeons of such leakage and prompt for early and necessary steps to deal with complications. On the contrary it is true that small amounts of fluids are effectively absorbed by the peritoneum, while leakage of large amounts, sufficient to be of any clinical significance is uncommon, and if happens the drain sometime found ineffective as this often get blocked by omental plug or blood clot. Furthermore, the drains have been incriminated for a number of complications; converting a sterile collection into an infected one, secretion of serous fluid, and even at times the intestinal fistula formation<sup>2</sup>.

Despite the fact that, back in 1919, cholecystectomy without drainage referred to as “the ideal cholecystec-

tomy” was introduced in Germany<sup>3</sup>, with a view of easier convalescence, shortened hospital stay and lower complication rate, vast majority of surgeons still continued the routine practice of placing a drain after simple, elective cholecystectomy. During the era of open cholecystectomy there have been many contradictory reports regarding the usefulness of drains. Though many of the randomized trials contradict their benefits, some of these showed that the use of drains might be harmful rather than beneficial<sup>4,5</sup>. In the early years of laparoscopic cholecystectomy most of the surgeons routinely retained a drain in the subhepatic space, but with gradual acceptance of the technique and increasing experience, many of the surgeons tailored the results of randomized trials in open cholecystectomy to laparoscopic one, and omitted draining the area routinely. Generally speaking opinion and practice of laparoscopic surgeons vary from routine drainage after cholecystectomy, drainage in selected cases to no drain at all.

The results of recent systematic reviews showed no benefit with the routine use of intra abdominal drains, after both the open as well as laparoscopic cholecystectomy, instead use of drain is found to be associated with increased rate of wound infection<sup>6,7</sup>.

The primary objective of this study is to observe the effects of omitting the routine drainage after laparoscopic cholecystectomy, with respect to hospital stay, morbidity, and mortality and secondarily to compare

the results with cases where drain is used.

## METHODOLOGY

This comparative observational study was carried out prospectively in the Department of General Surgery, at Liaquat University of Medical and Health Sciences, Jamshoro, for a period of one year, from January 2009 to December 2009. The study comprised of 100 patients of cholelithiasis, undergoing laparoscopic cholecystectomy, with 78 females and 22 males. The mean age of patients was 37.86 years, with a range of 15 to 70 years.

The exclusion criteria from study were; 1, patients with acute cholecystitis, cholangitis, or pancreatitis 2, patients requiring common bile duct exploration or other procedure simultaneously 3, cirrhotic patients 4, patients having difficult cholecystectomy and converted to open cholecystectomy 6, patients with uncorrected coagulopathy.

Laparoscopic Cholecystectomy was performed by three different surgeons, with the most senior consultant being always there, either as a member of the team or supervising the procedure.

Surgery was performed using conventional four port method, two midline the umbilical and one below the xiphoid 1 cm each, and two lateral one below the costal margin and other in right lumbar region 5mm each. The patients were divided into two groups: in group A the drain was not placed, while in group B, a drain of size 18 Fr was placed through lateral 5 mm trocar. The practice in most of the institutions is to place a suction drain and remove it on next morning but in our study drain was gravitational, that is no suction was applied, and attached to a drain bag. When placed, the drain tube was removed 48 hours postoperatively, unless ongoing leak of blood or serum of more than 30 ml/day, or bile of any amount was observed. The patients, in whom the drain was not kept, when suspected of having any leakage, underwent sonography to detect fluid collection in peritoneal cavity. Most of our patients in whom the drain was not kept, were discharged after 48 hours. Pain assessment was done by verbal categorical rating scale. The effects of omitting the drain in respect of hospital stay, morbidity, and mortality were observed. Data were analyzed by using SPSS version 15 and P-value was obtained by applying student's t test.

## RESULTS

This study consists of 100 patients; male 22 and females 78 with male female ratio 1:3.54. In group A

(without drain) the mean age of patients was 38.30 years, while in group B (with drain) it was 37.42 years. In group A there were 40 females and 10 males, and in group B there were 38 females and 12 males.

In group B, the drain output was less than 50 ml, except in two patients who drained about 100ml. The mean output of the drain was 24.8 ml, with blood stained in 48, and biliary in 2 patients. Biliary leakage was of less than 100 ml, and the patients did not develop signs of sepsis or peritonitis. It settled within 72 hours, and the drain was taken out on fourth postoperative day. While in one patient of group A, where drain was not placed there was a need for re-exploration, due to peritonitis. He was re-operated on 3rd postoperative day; duodenal perforation found that dealt accordingly. He was discharged in good health on 7<sup>th</sup> post operative day of second surgery.

Regarding outcome of the two groups, as mentioned in **Table I**, there was no wound infection in either group, but postoperative pyrexia of greater than 100 °F was observed in 4/50 (8 %) patients in whom the drain was placed, while in group in which the drain was omitted it was seen in 3/50 (6 %) patients.

With drain 13/50 (26 %) patients complained of mild pain or discomfort at the site of drain tube, while this was out of question in patients without drain.

The patients were discharged from hospital when their general health found satisfactory, and they have started oral intake. Most of our patients in whom the drain was not placed, were discharged at 48 hour after surgery, while some were even discharged at 24 hours, with a few staying for 3-4 days. The mean hospital stay of the patients without drain was 2.1 days, in contrast to 3.58 days for the patients in whom the drain was placed. Thus, avoiding the drain decreased the mean hospital stay with statistical significant difference of 0.000 (student t test) as shown in **Table II**.

**TABLE I: OUTCOME: WITH V/S WITHOUT DRAIN**

|                        | Group A - No Drain ( no 50) | Group B - Drain ( no 50) |
|------------------------|-----------------------------|--------------------------|
| Wound infection        | 0                           | 0                        |
| Drain site pain        | N/A                         | 13/50 (26 %)             |
| Amount of leakage      | N/A                         | 24.8 ml (0-100ml)        |
| Post operative pyrexia | 3/50 (6 %)                  | 4/50 (8 %)               |
| Re-exploration         | 1                           | 0                        |

**TABLE II: HOSPITAL STAY: WITH V/S WITHOUT DRAIN**

|        |                             | Mean | N  | Std. Deviation | Std. Error Mean | P-Value |
|--------|-----------------------------|------|----|----------------|-----------------|---------|
| Pair 1 | Hospital Stay with Drain    | 3.58 | 50 | .731           | .103            | 0.000*  |
|        | Hospital Stay Without Drain | 2.10 | 50 | 1.282          | .181            |         |

## DISCUSSION

Prophylactic drainage of peritoneal cavity after different operations has been a routine practice for years, based on traditions and habits, rather than any scientific evidence, with a view to watch postoperative bleeding, anastomotic, biliary or pancreatic leakage. However, recent reports have not only disputed their benefit after a range of intra-abdominal operations, but have also claimed the drains to be associated with a number of complications, including intra-abdominal and wound infection, increased abdominal pain, decreased pulmonary function, and prolonged hospital stay<sup>8,9,10</sup>.

Likewise, subhepatic space has been drained conventionally after cholecystectomy, with its efficacy been rarely evaluated in trials<sup>11</sup>. When the gallbladder bed can be obliterated completely, the use of drain in the absence of any suppurative process or bleeding seems to be unnecessary. The studies conducted in this regard in open cholecystectomy have shown that the routine drainage is not only unnecessary but it also associated with increased morbidity and prolonged hospital stay<sup>12, 13</sup>.

The drain itself may cause minimal pain at drain site and more pain during its removal. If drainage is minimal it can be removed next day and patient discharged. However if the drainage is more than usual and is blood or bile, then the drain has to be retained. If there is no drain and there is clinical picture of intra abdominal collection and the patient will not be discharged. The placing of drain itself does not cause prolonged stay. Its placement is prophylactic and for early recognition of complication.

In the recent past there has been a dramatic change in practice, a shift from open to laparoscopic cholecystectomy, the latter being now considered as gold standard, due to the small incisions causing less post operative pain, early recovery and shortened hospital stay.

In present study we found no difference with regard to wound infection and post operative pyrexia between the two groups, similar results were also described by a previous study<sup>1</sup>, who report none of these complications in either group. But we have observed that drain is obviously associated with significant pain at drain site and discomfort, as is also reported by Tzovaras et al<sup>14</sup>, as well as Uchiyama et al<sup>15</sup>, while Hawasli et al<sup>1</sup> could not detect any significant difference in pain be-

tween two groups in their study. Remarkable feature of omitting the drain in our study has been a much reduced hospital stay, being the main advantage of minimally invasive surgery due to less post operative pain and early recovery, with an end point of being cost effective. The similar ones are the findings revealed by Hawasli et al.<sup>1</sup>

## CONCLUSION

The use of drain does increase morbidity, but the operating surgeon should be the best judge to decide whether to place a drain or not.

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