

Original Research Article

A comparative study of laparoscopic cholecystectomy with and without abdominal drain

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ABSTRACT

Background: Laparoscopic surgery has several advantages when compared to open surgery, including faster post-operative recovery and lower pain scores. Laparoscopic cholecystectomy is the main method of treatment of symptomatic gallstones. Routine drainage after laparoscopic cholecystectomy is an issue of considerable debate.

Methods: Study was randomized, prospective, observational and longitudinal including 100 patients, selected according to inclusion criteria.

Results: The sub hepatic fluid collection on first ultrasound at 24hrs was higher in drained group than in non-drained groups. Further, the difference became insignificant on subsequent ultrasound at 72hrs. Incidence of post-operative drain site pain was present in 25% of patients with drain (more at drain site). Incidence drain site infection was present in 16.6% of patients in drain group. Majority of the patients with drain group (n=24) required hospital stay for ≥3 days, while for majority of patients without drain group (n=20), required hospital stay was 1 day.

Conclusions: An uncomplicated gall stone disease can be treated by laparoscopic cholecystectomy without need for drain with reasonable safety by an experienced surgeon. With no usage of drain, it is significantly advantageous in terms of post-operative pain, use of analgesics and hospital stay.

Keywords: Abdominal drain, cholecystectomy, Drains versus no drains, Laproscopic cholecystectomy

INTRODUCTION

Gallstones are still one of the common condition encounter in surgical outpatient department. Laparoscopic cholecystectomy (LC), after its advent in 1987, rapidly established itself as the gold standard treatment of gallstones. Cholecystectomy without sub hepatic drainage was first described in 1913, and since then surgeons were divided whether to use it as a routine drainage or not in uncomplicated cases.¹ Most surgeons continue to use routine sub hepatic drain for the fear of bile leak and bleeding.²⁻⁴ Such complications invariably occurred in spite of sub hepatic drainage. So, there arises

a need for study, whether to put drain or not, and its consequences.

Drains are commonly used after surgical procedures and can be classified as either active or passive. Active drains use negative pressure to remove accumulated fluid from a wound. Passive drains depend on the higher pressure inside the wound in conjunction with capillary action and gravity to draw fluid out of a wound. Closed suction drains are used routinely to drain potential collections after surgery or after bowel anastomosis. In laproscopic surgery most commonly used drain is passive drain. Most of the surgeons are performing laparoscopic cholecystectomy in their practice. There arises a study to

decide whether to put drain or do not put drain in laparoscopic cholecystectomy patient. So, authors have done this study to ensure the best treatment for the cholecystectomy patient. This study is aiming to compare laparoscopic cholecystectomy with and without abdominal drain in following manner like post-operative drain site pain, post-operative drain site infection, introduction of infection into peritoneal cavity, hospital stay.

METHODS

In the present study which was randomized, prospective, observational and longitudinal. Protocol of trial procedure was formed along with Proforma, Patient Information Sheet and Informed Consent. After getting approval from scientific review committee and ethical committee (human research) of the institute, study was started in patients admitted in department of surgery for planned laparoscopic cholecystectomy from the duration 1st January 2016 to 31st September 2017.

Inclusion criteria

Patient with uncomplicated symptomatic gallstone planned for elective laparoscopic cholecystectomy.

Exclusion criteria

- Patient operated for laparoscopic cholecystectomy other than cholelithiasis,
- All patient contraindicated to laparoscopic surgery,
- Emergency operations were excluded.

Patients were divided randomly in two groups as drain group (n=24) and non drain group (n=20), and compared in following aspects:

- Incidence of post-operative drain site pain
- Incidence of post-operative drain site infection
- Introduction of infection into peritoneal cavity
- Hospital stay.

RESULTS

Table 1 shows that, majority of patients in our study belongs to age group 40-49 years in both “drain group” and “No drain group”.

Table 1: Age distribution.

Year	Drain group	NO drain group
<20	0	0
20-29	2	0
30-39	2	0
40-49	4	17
50-59	9	8
>60	8	0

Table 2: Sex distribution.

Sex	No of patients	%
Male	14	28
Female	36	72

Table 2 suggest that, 36 out of 50 patients were female its 72%. (F>M) in both drain group and No drain group. As it is seen that gall stones diseases are more common in female population.

Table 3: Operative time.

Duration	Drain group	No Drain group
51-75min	0	0
76-100min	13	20
101-125min	10	4
126-150min	2	1
Duration	Drain group	No Drain group
51-75min	0	0
76-100min	13	20
101-125min	10	4
126-150min	2	1

Table 3 suggest that, laparoscopic cholecystectomy with drain took slightly more time than laparoscopic cholecystectomy without drain but this difference was not statistically significant.

Table 4: Collection in right subhepatic space in follow up USG.

Collection(ml)	POD1	POD4
Drain group	3.6ml	0.6ml
No drain group	1.6ml	nil

Table 4 shows that, the sub hepatic fluid collection on first ultrasound at 24hrs was higher in drained group than in non-drained groups. Further, the difference became insignificant on subsequent ultrasound at 72hrs. Intraperitoneal collection of blood may cause postoperative pyrexia, prolong the hospital stay, and increase the incidence of wound infection, while the presence of bile in the peritoneal cavity produces peritoneal irritation. However, only some clinically significant abdominal collections may need intervention, while other abdominal collections may not be clinically significant.

In Table 5, incidence of post-operative pain is more in patients with drain (more at drain site). Overall incidence of pain and other complication like drain site infection, stitch like infection is also slightly more as compared to the patients without drain group.

As seen in Table 6, majority of the patients with drain group (24) required hospital stay for >=3 days. While for majority of patients without drain group (20), post op hospital stay is 1 day.

Table 5: Post-operative complication.

Post op. Complications	Number of patients	
	Drain group	No Drain group
Pain over drain site (PD)	6	0
Pain over stitch line (PS)	5	4
Drain site infection (DI)	4	0
Stitch line infection (SLI)	2	1

Table 6: Post-operative hospital stay.

Post op. hospital stay	Number of patients	
	Drain group	No drain group
1 day	0	20
2 day	1	2
>=3 day	24	3

DISCUSSION

Prevention of intra-abdominal collections after LC is the main reason of drainage. The peritoneal cavity usually absorbs serous fluids rapidly, but blood and bile are absorbed more slowly.⁵ Post cholecystectomy collections in the sub-hepatic space are on the whole small, rapidly reabsorbed, and essentially similar in size and number whether a drain is used or not.⁶

Thiebe and Eggert reported that the total number of abdominal collections was higher in the drain group (44%) compared with the no drain group (4.1%). They performed routine ultrasound on the fourth postoperative day, as compared with first and fourth day in this study.⁷ The subhepatic fluid collection on first ultrasound at 24hrs was significantly higher in drained group than in nondrained groups. Further, the difference became insignificant on subsequent ultrasound at 72hrs. Intraperitoneal collection of blood may cause postoperative pyrexia, prolong the hospital stay, and increase the incidence of wound infection, while the presence of bile in the peritoneal cavity produces peritoneal irritation.⁵

However, only some clinically significant abdominal collections may need intervention, while other abdominal collections may not be clinically significant.^{8,9} The only patient requiring intervention in the two trials mentioning treatment of the abdominal collections was in the drain group.^{10,11} The drain may also give false sense of security as it may get blocked and the patient continue to bleed internally and later presenting with signs of shock, as reported in one study.

Another study reported laparotomy for post cholecystectomy bile peritonitis in patients who had drains placed, suggesting that drain placement does not guarantee prevention of this complication.¹² It is assumed that the use of a drain might be helpful for early detection of postoperative bleeding.

However, significant bleeding can also be easily detected by clinical and ultrasonographic signs of intraabdominal haemorrhage if there is no drain.¹²

In this study, authors have found that operative time in both group is not statistically significant. Drain, when put has advantage of early detection of post-operative complication but has a disadvantage of drain site infection compare to non-drain group. Drain can also have slightly longer hospital stay compare to non-drain group.

CONCLUSION

An uncomplicated gall stone disease can be treated by laparoscopic cholecystectomy without need for drain with reasonable safety by an experienced surgeon. With no usage of drain, it is significantly advantageous in terms of post-operative pain, use of analgesics and hospital stay.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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