Department of surgery at
AL Nahrain University College of medicine

6th stage medical student
Research 2018- 2019

The Effect of Sub hepatic Drainage after Laparoscopic Cholecystectomy

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Acknowledgement

To my supervisor, Dr.NAWFAL K.SALIH who had the great effort in this research, to my beloved branch SURGERY, and to my college.

I would like to convey my thanks to my dear father and mother for support, patience and encouragement.

Contents

Abstract

Background:

Laparoscopic cholecystectomy is associated with a higher incidence of post-operative pain, nausea and vomiting. To determine whether a drain in the Morrison pouch during Laparoscopic cholecystectomy is both clinical and cost effective method of reducing post-operative pain, nausea, vomiting and hospital stay.

Aim of Study:

To evaluate the effect of using sub hepatic drain on postoperative pain, nausea, vomiting and hospital stay in patients with Laparoscopic cholecystectomy.

Patients and Methods:

30 patients undergoing Laparoscopic cholecystectomy randomized blindly to 2 groups: sub hepatic drainage group and a control group, to assess post-operative pain, nausea and vomiting.

Results:

The incidence of nausea was lower in the drainage group in 72 hours, although the severity of pain was lower at 12, 24, 48, 72 hours in the drainage group, the differences were not significant. There was also no differences regarding hospital stay.

Conclusion:

There is no significant effect to use a sub hepatic drain after Laparoscopic cholecystectomy on postoperative pain, nausea, vomiting and hospital stay.

Key words: *drain, laparoscopic cholecystectomy*

Aim of the study

To evaluate the effect of using intraperitoneal right sub hepatic drain on postoperative pain, nausea, vomiting and hospital stay in patients with laparoscopic cholecystectomy.

Introduction

Cholelithiasis is a common problem affecting the gall bladder. The prevalence is higher in women, old patients, in association with multiple pregnancies, obesity, rapid weight loss, certain ethnic groups [Native American (Pima Indian), Scandinavian], certain drugs (postmenopausal estrogens, total parenteral nutrition) as well as ileal disease or resection.[1] The consequences of gallstones vary and ranging from brief episodes of biliary pain to potentially serious complications as acute cholecystitis, CBD stones with or without cholangitis, gallstones ileus, pancreatitis and rarely gallbladder malignancies[2]. Cholecystectomy is the ideal treatment for symptomatic cholelithiasis which is done either by

***1. Open cholecystectomy (OC)*:**

Carl Langenbuch performed the first well-documented excision of the gallbladder or "cholecystectomy" in 1882. [3]

***2. Laparoscopic cholecystectomy (LC)*:**

It is associated with lower morbidity, shorter hospitalizations, smaller incisions, earlier return to normal activity, and less postoperative pain.[4]

The contraindications of laparoscopic cholecystectomy:

There are absolute & relative contraindications to laparoscopic cholecystectomy. The absolute contraindications include unable to tolerate general anesthesia, refractory coagulopathy, suspicion of gallbladder carcinoma, cholangitis, & diffuse peritonitis, while relative contraindications include previous upper abdominal surgery, cirrhosis &/or portal hypertension, chronic obstructive pulmonary disease, cholecystoenteric fistula, morbid obesity & pregnancy.[3]

Complications of laparoscopic cholecystectomy:

Complications of laparoscopic cholecystectomy can be classified into *general* complications, *pneumoperitoneum related* complications & *trocar related* complications. [3]

The *general* complications include hemorrhage, bile duct injury, bile leak, retained stones, pancreatitis, wound infection & incisional hernia. *Pneumoperitoneum related* complications include CO_2 embolism, vaso-vagal reflex, cardiac arrhythmia & hypercarbic acidosis while *trocar related* complications include abdominal wall bleeding & hematoma, visceral injury & vascular injury.[3]

Mourett, in Lyone (France) was the first surgeon to perform cholecystectomy in human using standard laparoscopic equipment. *(5)*
Although there are controversies and wide variations in surgical practice about placing a drain or not after cholecystectomy, still many surgeons continued to drain the sub hepatic area after laparoscopic cholecystectomy. [6,7] In spite of number of reports have shown satisfactory results can be obtained without drainage, these controversial attitudes are present in laparoscopic cholecystectomy .[6]

There are still controversies regarding the use of sub hepatic drain after laparoscopic cholecystectomy, some study reports rarely indicate use of drainage unless there is poorly localized bilious drainage perioperatively[6,8] , other studies stated that there is not any evidence supporting the use of drain after laparoscopic cholecystectomy and it increases wound infection and delays discharge from hospital, while on the other hand other studies adopted the use of intraperitoneal drain after laparoscopic cholecystectomy routinely especially in difficult cases to avoid reoperations due to bleeding and bile leak.[6,7,8]

Pneumoperitoneum which is created by Carbon dioxide because of its high solubility in the blood and the fact that it does not support combustion. Although the physiologic problems resulting from carbon dioxide are well documented, they are becoming of more concern in long and extensive laparoscopic procedures in elderly debilitated patients.[9]

Postoperative nausea and vomiting are the most unpleasant complaints after laparoscopic cholecystectomy, attributed mainly to residual CO_2 [10].

Pneumoperitoneum is also the cause of postoperative pain. The site of pain is variable and is most commonly felt in the abdomen, shoulders, or back. Shoulder pain may occur in up to two third of patients. [11,12,13] Few studies reported effect of intraperitoneal drain on postoperative pain, nausea, vomiting and hospital stay therefore we try to evaluate the effect of drain in our patients.

Patients and Methods

This prospective study was carried out in The Department of Surgery, Al-Kadhmyia teaching Hospital, between October 2018 and April 2019.

This prospective study of LC with or without intraperitoneal drainage, all patients gave signed consent. 30 patients were evaluated (there were 15 cases with drainage, and 15 cases without drainage, controlled group). In addition to demographic data, smoking history, and accompanying systemic disease were recorded.

TABLE (1)

General characteristics of patient groups with and without drainage

	With drain	Without drain
Gender m/f	3/12	2/13
Age	17-55	18-55
Co morbid disease(DM,Hypertension)	5/15	6/15
Active smoking state	2/15	1/15
Nausea before operation	3/15	4/15
Pain before operation	12/15	13/15
Duration of operation	20-75 min	20-70 min
Analgesia injection(once)	14/15	13/15
Antiemetic's requirement	1/15	2/15

Results

Postoperative nausea and vomiting

The incidence of nausea was higher in control group. The number of patients suffering did not differ at different times, but in patients within 72 hours, the incidence is higher in those without drainage group (control groups) in which one patients from 15 patients had nausea, on the other hand no patients in drainage groups had nausea. Vomiting is higher in control group postoperatively (table 2,3 , figer2, 3).

Table 2

Incidence of nausea at different postoperative times

(8-72hours) in patients with and without drainage

Nausea

Postoperative time	With drain	%	Without drain	%
8 hours	3/15	20%	5/15	33%
12 hours	2/15	13%	2/15	13%
24 hours	2/15	13%	3/15	20%
48 hours	1/15	6.6%	1/15	6.6%
72 hours	0/15	0%	1/15	6.6%
Total incidence	8	52.6%	12	79.2%

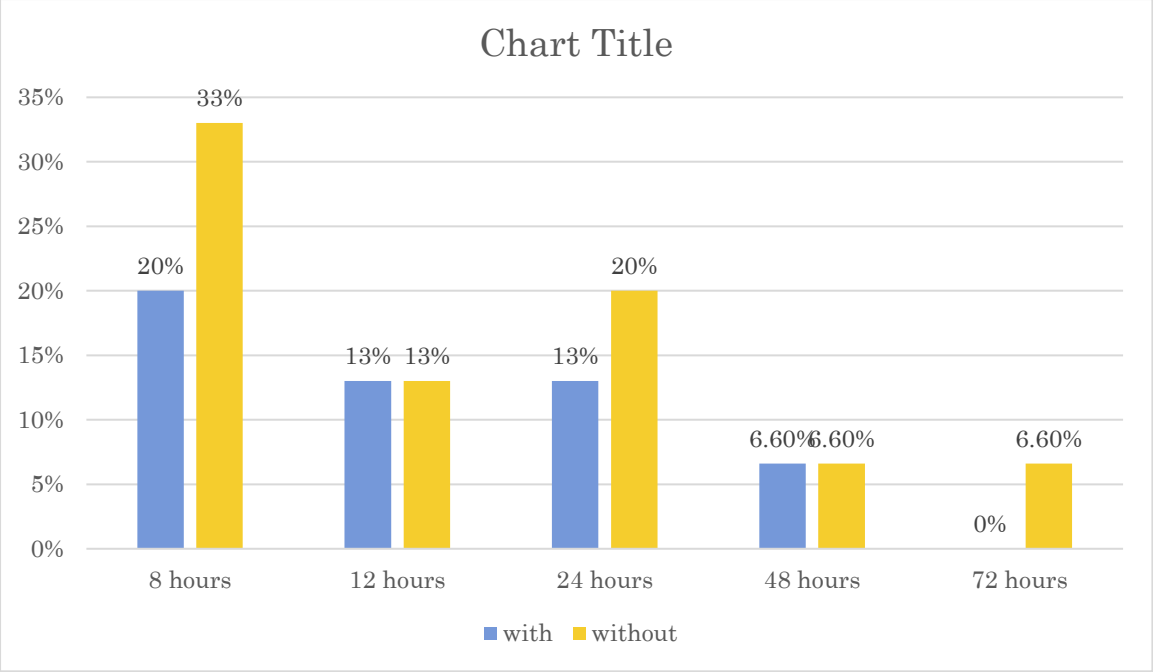

Fig.1

Incidence of postoperative nausea in patients with and without drainage.

Table3

Incidence of vomiting at different postoperative times (8-72huors) in patients with and without drainage.

Postoperative time	With drain	%	Without drain	%
8 hours	1/15	6.6%	2/15	13%
12 hours	1/15	6.6%	1/15	6.6%
24 hours	0/15	0%	0/15	0%
48 hours	0/15	0%	0/15	0%
72 hours	0/15	0%	0/15	0%
Total	2	13.2%	3	19%

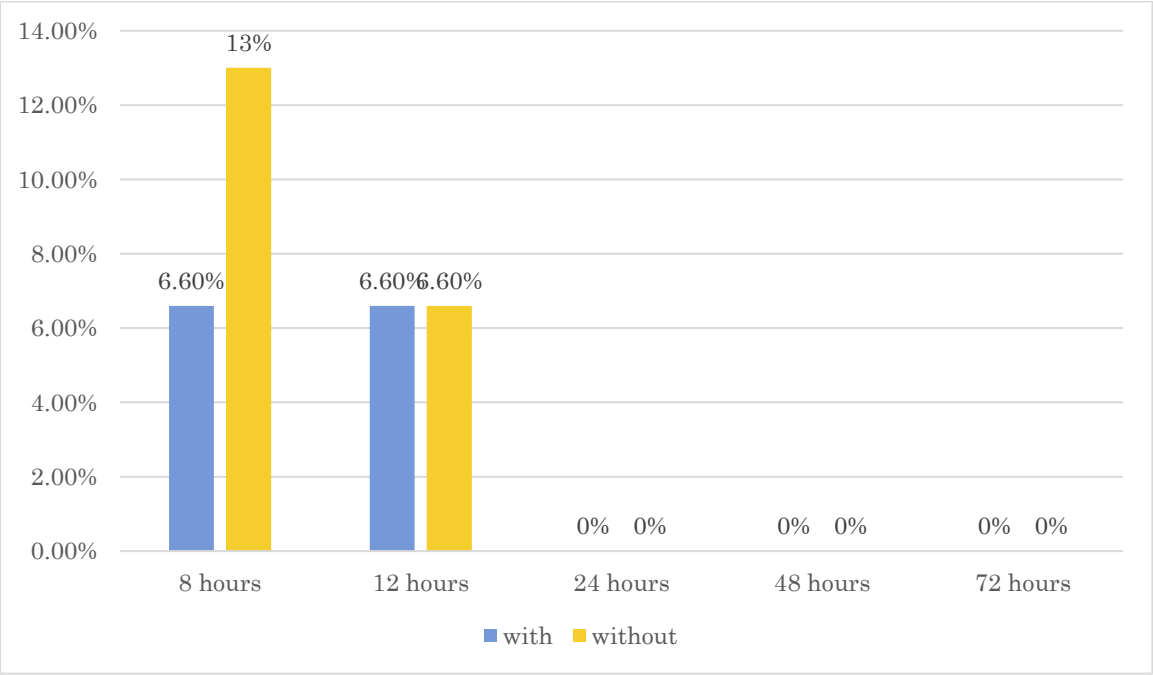

Fig.2

Incidence of vomiting at different postoperative times (8-72hours).

Post-operative pain:

Although the presence of postoperative pain in patients of without drainage group are higher than those of drainage group but neither incidences nor locations differant (table 5).

Table5

Incidence of postoperative pain at different postoperative time (8-72hours) in patients with and without drainage.

time	With drain	%	Without drain	%
8 hours	14/15	93.3%	15/15	100%
12 hours	13/15	86.6%	14/15	93.3%
24 hours	9/15	60%	10/15	66.6%
48 hours	3/15	20%	4/15	26.6%
72 hours	1/15	6.6%	1/15	6.6%

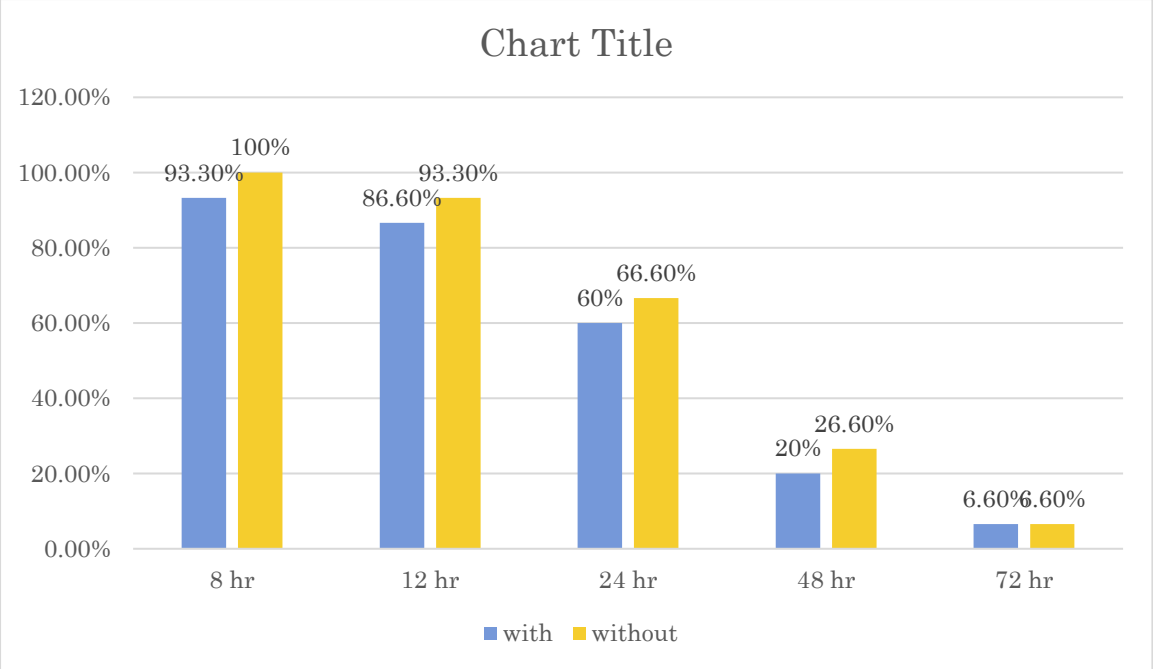

Fig.3

Incidence of pain at different postoperative times(8-72hours)

Hospital stay

The hospital stays in patients without drainage after laparoscopic cholecystectomy are less than those of drainage group but there is no statistical difference regarding hospital stay between the patients of drainage and without drainage.

Table 7

Time of discharge of patients with and without drainage after laparoscopic cholecystectomy

Time of discharge from hospital	With drain	%	Without drain	%
24 hours	9/15	60%	12/15	80%
48 hours	6/15	40%	3/15	20%
72 hours	0/15	0%	0/15	0%

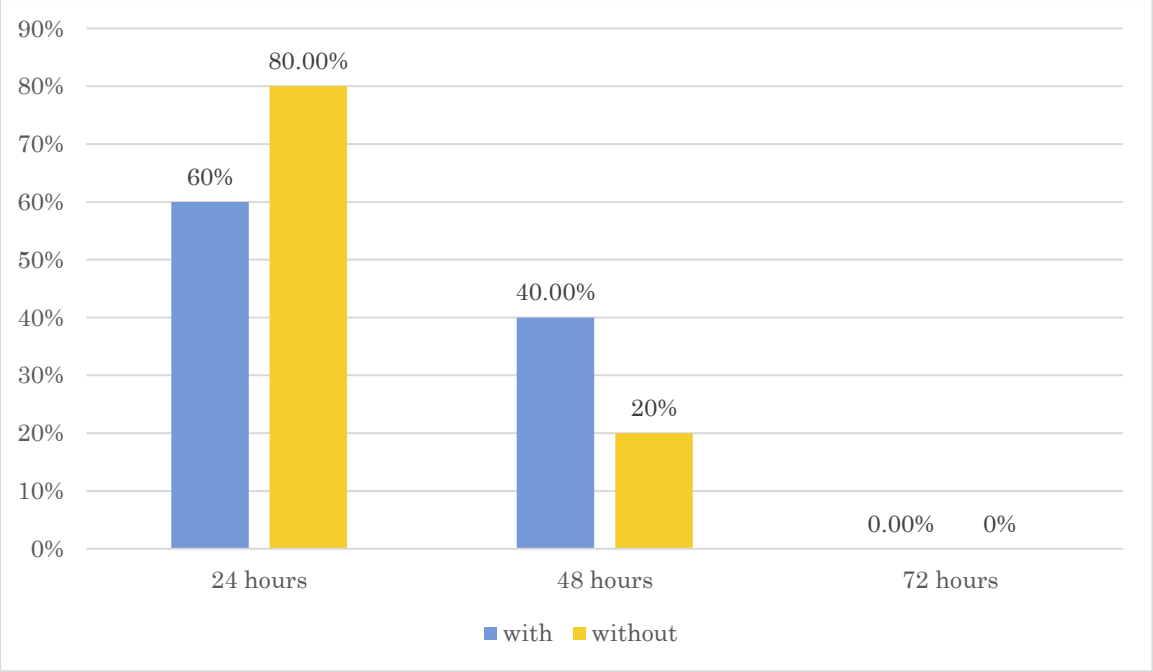

Fig 5

Percentage of discharges patients with and without drainage after LC.

Discussion

Laparoscopic cholecystectomy has become the main treatment for cholelithiasis. The operation is advantageous over traditional cholecystectomy as it leads to less discomfort, shorter hospitalization, and earlier return to normal activity. [14]

There was no mortality and negligible morbidity. In 15 cases drain was kept in Morrison pouch.

Post-operative nausea and vomiting are the most common complaints after surgery. It has emphasized that most patients undergoing laparoscopic cholecystectomy are at higher risk of postoperative emetic symptoms which are most significant in operative day and early first postoperative day. [15,16,17]

The etiology of postoperative nausea and vomiting after laparoscopic cholecystectomy is not fully understood.

Risk factors such as long period CO_2 insufflation, gall bladder surgery, female sex; and postoperative pain may contribute to these episodes. [18,19]

In this study there was statistically difference in postoperative nausea incidence at 72 hours postoperatively between cases with drain 0/15(0%) and those without drains1/15(6.6%), in which one patients from 15 patients had nausea. These differences between the two groups at 72 hours post operatively, were shown in a previous study conducted by Japan Gastroenterologic endoscopy society and American journal of surgery in which drainage was associated with nausea, but this was statistically not significant.[20]

Postoperative pain is a subjective sensation, and its measurement and analysis are difficult. Pain is not only a sensory stimulus but has motivational and affective components, and is experienced in the extent of previous experience, anxiety and depression. [21]

Pain after laparoscopy is common, the site of pain is variable and most commonly felt in abdomen, shoulder or back. Pain after laparoscopy may persist for at least 3 days [22,23]. Prolonged presence of shoulder tip pain suggests excitation of phrenic nerve.[22,23,24] Low pressure CO_2 pneumoperitoneum reduces the number of patients complaining of shoulder tip pain and the intensity of pain after laparoscopic cholecystectomy.[4,25]

There are many trials to assess methods of reducing pain after laparoscopic cholecystectomy such as removal of insufflation gas, NSAID, intraperitoneal local anaesthetic, and wound local anaesthetic. Also the addition of intraperitoneal saline infusion to low- pressure CO_2 pnemoperitoneum seems to reduce the intensity but not the frequency of shoulder tip pain after laparoscopic cholecystectomy, also drainage of insufflation gas will cause reduction of shoulder pain[27,28].

In our study, insertion of subhepatic drain, although there is reduction in incidence of shoulder pain in drainage group but the difference statistically not significant. , were shown in a previous study conducted by Japan Gastroenterologic endoscopy society and American journal of surgery in which drainage was associated with high pain in comparism those without drain, but this was statistically not significant[20].

About 60% (9/15) of cases in drainage group discharged from hospital in first 24 hours postoperatively while in cases without drainage 80% (12/15)

discharged from hospital, and in 72 hours no cases from either group were still present in hospital. In a previous study conducted by American journal of surgery in which drainage was associated with long period of hospitalization in comparison those without drain, but this was statistically significant.[20]

Conclusion

Although there is decreased incidence of postoperative nausea after drainage after 72 hours but there was no difference in the incidence or severity at other different time points. So in conclusion there is no effect of drainage after laparoscopic cholecystectomy in relation to postoperative pain, nausea, vomiting and hospital stay.

The use of drain after simple uncomplicated LC could safely be limited to appropriate patients as judged by the operating surgeon.

Recommendations

Depend on operating surgeon we advise them to do the following:

- Use Low-pressure CO2 pneumoperitonium reduces the nausea and pain after laparoscopic cholecystectomy.
- Removal of as much intraperitoneal gas as possible before incision closure, remains the best practice for reducing postoperative pain.

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