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The outcome of uncomplicated laparoscopic cholecystectomy without drain versus with drain

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Article History:	ABSTRACT
Received on: 06.01.2018 Revised on: 25.04.2018 Accepted on: 27.04.2018	<p>One of the most common procedures in our days is the laparoscopic cholecystectomy, is regarded as the best option for the management of gallstones, but the matter of using subhepatic drain or not using it; remain a matter of debate between surgeons. The aim of this study is to evaluate the role of drain in uncomplicated cases of laparoscopic cholecystectomy and its effect in the minimizing the postoperative morbidity. One hundred patients were undergoing laparoscopic cholecystectomy in the Diwania Teaching Hospital chosen randomly from the period 1st of October 2014 to the 30 January 2017, fifty patients from them named as group A and they underwent uncomplicated Laparoscopic cholecystectomy with a drain in the right sub hepatic region and the other group which is group B they also underwent uncomplicated laparoscopic cholecystectomy but with no drain, a Comparison between the two groups take place to detect the incidence of nausea, vomiting, postoperative pain, hospital stay and the morbidity in these two groups by using a visual analog scale. Nausea and vomiting in the two groups show no considerable differences at the various periods postoperatively; while the hospital stays showing significant differences as well as the postoperative abdominal and shoulder tip pain in the group with drain more than the group without drain. The resignation of using drains in the cases of uncomplicated laparoscopic cholecystectomy minimizing the post-operative complication and morbidity.</p>
Keywords:	
Laparoscopic cholecystectomy, Complication, Drain	



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INTRODUCTION

Cholelithiasis is the most common biliary pathology; in some countries, it regards as the most common gastrointestinal illness that required hospital admission; it is more in the young patients ; furthermore, healthy people and it occurs in the prev-

alence of 11% to 36% in the modern society (Jackson and Evans, 2017). The risk factors for the Cholelithiasis are obesity; female gender; fatty foods; old patients; Crohn's disease; gastric surgeries like sleeve gastrectomy; terminal ileal resections; sickle cell disease and thalassemia (C., 2015). The majority of cases >80% are asymptomatic, and < 3% of them will be symptomatic and required cholecystectomy annually. Only 30% of population have classical biliary tree anatomy; therefore, catastrophic surgical complication may result due to insufficient knowledge of the normal anatomy and function of the biliary system, the anatomical variations without sufficient recognition, the priority that might give to the time to finish in short period, and failure for asking a help in some situation (Campanile et al., 2014). The surgical management of cholelithiasis are 1: open cholecystectomy, the cornerstone in the management of gallstone in the previous century was by open cholecystectomy

(OC) (Whalan, 2006), 2: laparoscopic surgery, it is the best option in our days for the treatment of gallbladder stones (Masud et al., 2015) its usefulness over the open cholecystectomy is obvious and worldwide agreeable.

However, it associated with a short hospital stay, early return to normal life activity, small incisions; decrease heat loss; less post-operative pain; more obvious vision for the surgeon and low morbidity than OC. (Ellis and Mahadevan, 2013), thus its benefits are documented well and accepted. So, the aim of the study: to evaluate the benefit of using drains in the uncomplicated laparoscopic cholecystectomy.

PATIENTS AND METHODS

This is a clinical randomized prospective study, it was performed in the Al-Diwaniyah Teaching Hospital, Department of Surgery, between 1st of October 2014 to the 30 January 2017, it is perspective cross-sectional randomized controlled study. 100 patients 70 patients were females (70%) and 30 patients (30%) were male they had uncomplicated gallstone diseases scheduled to undergo LC in Al-Diwaniyah teaching hospital, Al-Diwaniyah, Iraq, written consent was taken from all the patients. The mean age for the patients was 32 years ranging from 18 to 60 years. LC was done by different surgeons and after taken detailed clinical information the physical examination was informed, all patient underwent diagnostic ultrasound for the abdomen, a radiological exam by CXR, ECG, liver function test, hematological and biochemical test.

The excluding criteria for LC were: (1) Multiple upper abdominal scar operation patients (2) Patient with impaired cardiopulmonary function (3) Morbid obesity (4) Abnormal liver function test like high alkaline phosphatase, etc (5) History of jaundice

Patients were randomized into 2 groups:

Group A: Patients drains placed in subhepatic space, in which all of them tube drain were used.

Group B: patients without drains.

Drain placement: The cases that associated with any intraoperative complications like bile spillage, bleeding, retained stone, irrigation is used, and the anatomical abnormality of (cystic artery, cystic duct, and gallbladder) or any other difficulties were not accounted in this research (only the uncomplicated cases that using the routine drain) was accounted The drains are put in the straight-forward operation most of them removed after 24 hr. postoperatively; however, the drains had been removed 3 days later for only 9 patients because of bill leakages the rest of them removed after 24 hours.

Post-operative evaluation

Post-operative complications such as post-operative nausea, vomiting, jaundice, increase or decrease doses of analgesia, abdominal pain, shoulder pain, subhepatic accumulations, amount of collection, duration of the collection, bile spillage, bleeding and wound infection, Nausea, vomiting and the pain was recorded at 2,4,8,16 and 24 hours postoperatively; post-operative bile leakage, bleeding, accumulations and wound infection were also reported. The patients started on oral feeding 6-8 hour postoperatively and usually discharged on the first postoperative day. Most of the patients were discharged to home on the 1st postoperative day unless the drain is still functioning and no other complications had occurred, none of the patients was discharged with drain, and had been checkup after seven days, who they were asked again about pain and surgical site infection (redness, discharge, and pain); PONV and any postoperative complications.

Statistical analysis

Statistic software was used for collecting data and analysis namely statistical package for social sciences SPSS version 18. Parametric test (chi-square) and t-test were used for normally arranged data. P value exceeding 0.05 was regarded as significant.

RESULTS

During the study period, 100 patients prepared for elective LC. entered the trail. Of those 50 patients (50%) were clinically randomized to have a drain (group A) and 50 patients (50%) were selected randomly not to had the drain (group B). Distribution of males to female's ratio was (30/70) and in group A and B respectively. In 100 patients 70 patients (70%) were females and 30(30%) patients were males. The two groups comparable concerning demographics and preoperative characteristics it did not show obvious differences.

Postoperative nausea and vomiting were high at the 1st 2 hours in both drained and non-drained group but no significant differences are seen between two groups throughout all time of admission in both groups as seen in the Figure 1.

DISCUSSION

Laparoscopic cholecystectomy has rapidly appeared as an established manner for the treatment of symptomatic gallstones disease (MASTERS et al., 1994).

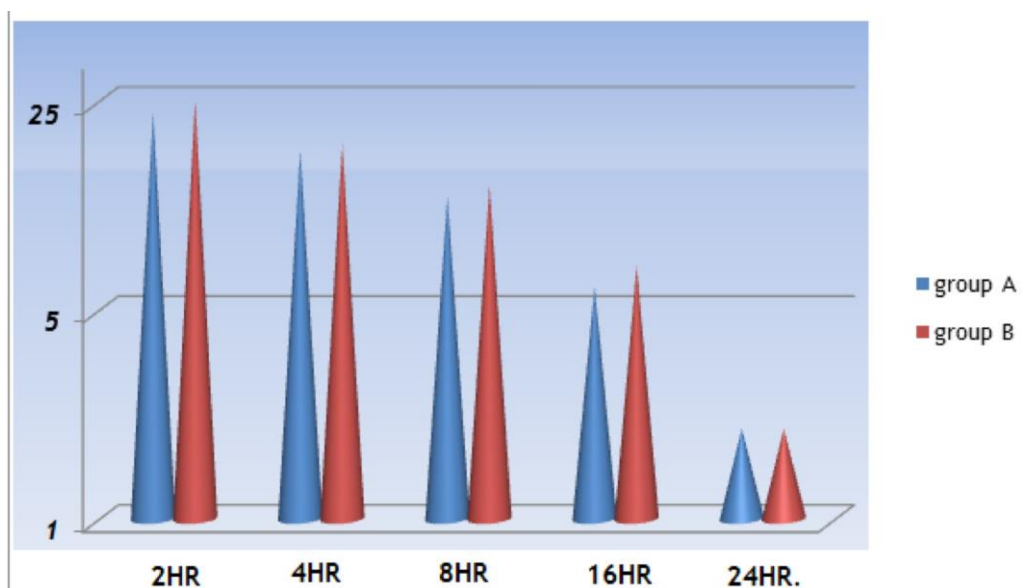
Prophylactic drainage of the peritoneal cavity after different operations has been a routine practice for years based on traditions and customs rather than any scientific evidence with a view to observing

Table 1: Demographics and preoperative characteristics

	Group A(50)	Group B(50)	P value
Gender(male, female)	16/33	14/37	NS
Age	19-62	18-60	NS
Smoking status	10/50	13/50	NS
Body mass index	25.23~4,5	25.88~4,2	NS
Duration anesthesia	47.21	46.1	NS
Operation time	20-75 MIN	20-70 MIN	NS
Bile leakage	0/50	0/50	NS
Mortality	0	0	NS

Table 2: Statistical prominent differences between the two groups regarding duration of hospital stay (p-value <0.05)

Hospital stay	Group A	%	Group B	%
24 hrs	38	76	48	96
48 hrs	3	6	2	4
72 hrs and more	9	18	0	0

**Figure 1: postoperative nausea and vomiting in both groups**

postoperative bleeding anastomotic biliary or pancreatic leakage (Litwin and Cahan, 2008). There have been numerous data, with incompatible results on this topic during the era of an open approach. However, most of these well-designed randomized trials failed to explain any value from putting a drain in open cholecystectomy patients. Indeed, some of them suggesting that the drain may be harmful (Tzovaras et al., 2009). The problem of draining the peritoneal cavity in the subhepatic region after laparoscopic cholecystectomy is debatable as some study recorded a rare indication for using of drainage unless there is poorly localized biliary leakage preoperatively control of cystic duct is challenging, other studies mentioned that there is no any evidence supporting the use of drain after LC. And it increased wound infections and delays hospital stay, while otherwise, some study adopted the use of intra-abdominal drain after LC. Rou-

tinely especially in difficult cases to ceased the re-operations chances due to hemorrhage and bile leakage (Fowler, 2006).

Another cause for draining is to permit the co2 insufflated during laparoscopy to outflow via the drain site (Fielding, 1992). In fig. (1) and table (2) show there were no important differences among group A and B in terms of patients demographic characters and pre-operative characteristics this is compatible with the study done Tzovaras et al. (2009). The current study (table 2) shows that significant difference between two groups in hospital stay, all patients in group B discharged on first postoperative day with no complications, while in group A only (38) patients discharged on first postoperative day with no complication and other (12) patients of group A were discharged on day three and day four postoperative day. The result indicates that drainage prolongs the time of hospital stay and this goes with a study done by McAneny

Table 3: Incidence of abdominal pain at 2hr. in both groups the difference was not significant (p-value less than 0.05)

Postoperative time	Group A	%	Group B	%
2 hrs	48	96	45	90
4 hrs	44	88	40	80
8 hrs	42	84	36	72
12 hrs	30	60	25	50
24 hrs	20	40	18	36
Postoperative time	Group A	%	Group B	
2 hrs	48	96	45	
4 hrs	44	88	40	

There was No significant difference in the incidence of shoulder pain observed between two groups at any time of intervals as shown in the table (3).

Table 4: Shoulder pain comparison between two groups

Postoperative time	Group A	%	Group B	%
2 hrs	47	94	42	84
4 hrs	44	88	40	80
8 hrs	42	84	38	76
12 hrs	39	78	33	66
24 hrs	16	32	13	26

The outcome of the study concerning postoperative morbidity outlined in the table (5) which display incidence of wound infection, the mean amount of leakage per (ml) collection and Periods of hospital stay higher in group A.

Table 5: Comparison between two groups regarding morbidity

	Group A	Group B
Amount of leakage	~50 ml	NS
Duration of leak	2-5 days	NS
Wound infection	5	2
Bleeding	0	0
No. patient with leak	7	0
collection	0	0

(2008) also compatible with a study done by Georgiou et al. (2011) have also been obtained the same result which supports our outcome.

Postoperative nausea and pain is one of the most common complaints after surgery. It has been confirmed that most of the readmissions for outpatient laparoscopic cholecystectomy are due to PONV and pain. The causes are multifactorial, patient-related factors included female gender, obesity, smoking history, and possibly advanced age. In addition to anesthetic techniques, some operation carries a high risk for postoperative nausea and pain, such as laparoscopy. One of the causes is mechanical; because CO₂ increasing the cerebral blood flow which resulting in nausea and vomiting (Georgiou et al., 2011). The current study table (2) in group A (20) patients had been reported with vomiting at 2 hr. this count had been reduced to only 2 patients at 24 hr. in group B (19) patients report vomiting at 2 hr. which reduced to only (3) patients at 24 hr. the number of patients who suffered from vomiting did not different time points. This agree with the study that was done by Field-

ing, (1992). Post-operative pain is a subjective sensation, and its measurement and analysis are complicated. Pain is not only a sensory stimulus, but has motivational and affective components, and is experienced in the extent of cultural learning, previous experience, anxiety, and depression. Pain after laparoscopy is common, and its site is different, however, it most commonly happened in abdomen, shoulder or back. Shoulder pain may occur in more than two-thirds of patients, however, the distention of the abdomen cause pain. Post-operative pain is an important problem after a procedure which is invented for minimal discomfort. Indeed, it is reported to be the most common cause of hospital stay delayed after laparoscopic operations. The incisions for laparoscopy are tiny, but pain related to them is a clear contributor to postoperative pain. It has been underlined that for 1st 3 post-operative days' incisional pain dominates over other types of pain, there are many trails to assess methods of reducing pain after LC. Such as non-steroidal anti-inflammatory drugs, intraperitoneal lo-

cal anesthetic, wound local anesthesia, intraperitoneal saline, and removal of insufflated gas (Fowler, 2006).

Table (3) shows a higher incidence of abdominal pain in patients with drains rather than without drains this was also noticed by Rooh-ul-Muqim et al. (2008). Table (4) shows higher incidence of shoulder pain in patients with drains and without drains were in 1st 12 hours, after that the incidence of shoulder pain decreased in both groups the difference between the two groups were not significant this coincident with that state by Gurusamy Kurinchi Selvan, (2015) because of the lack of many trails under each outcome and because no definite pattern was noted, there is no clear evidence that post-operative drainage reduces pain following LC. Surgical site wound infection was lower in the no-drain group than in the drain group wound infection reported in (5) patients of drain group (10%) while (2) patients in no drain group (4%) and that was significantly inconsistent with the study of Gurusamy Kurinchi Selvan, (2015). All cases responded well to oral antibiotics. However, Domínguez and Martinez-Ferro, (2014) concluded no significant difference regarding wound infection. One of the main causes of using the drain after laparoscopic cholecystectomy is to decrease the intra-abdominal collections (Gurusamy Kurinchi Selvan, 2015). We conclude that the user of the drain may be protective in some cases with bile leak, thus avoiding complications, such as biliary peritonitis, biloma, or intraperitoneal abscesses (Tzovaras et al., 2009) the drain was removed 24 hours after surgery unless bile saw (any amount).the drain removed when it lost its function completely (Litwin and Cahan, 2008). In group A out of (5) patients, 3 patients the drain output was less than 50ml, in two patients who drained about 100 ml the mean value was not significant, biliary leakage was of less than 100ml and the patients did not develop signs of sepsis or peritonitis.

Five patients whom with biliary leakage ceased within 72 hours and the drain was taken out on the fourth postoperative days uneventfully. It is assumed that the use of a drain might be helpful for early detection of postoperative bleeding; none of our patients developed postoperative bleeding in our study. However, this is making sense in case of significant bleeding, which can also be easily detected by clinically and ultrasonographically in the absence of the drain (Curet et al., 2002). Other rare complications of the drain, such as erosion of an adjacent organ, or drain site hernia, have also been described, though none had occurred in this series. The first is related to the kind and length of time for drain use and therefore is unlikely to occur be-

cause the drain is removed soon after LC. Regarding the latter, it is also not suspected to occur due to small drain site wound not larger than 5mm in cases of Lc (Reynolds, 2001).

CONCLUSIONS

The use of drain in uncomplicated LC. has little to offer, and has no importance. The Using of drain increases the rate of surgical site wounds infection and hospital stay. The pain and hospital stay was appearing slightly more in the cases with drain than without.

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