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Outcome of open and laparoscopic cholecystectomy without drain insertion

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Abstract

Back ground: Cholecystectomy is the main line of treatment of symptomatic gall bladder diseases. Cholecsytectomy was done either laparoscopic (common) or open (less common).

Routine drainage after cholecsytectomy is still debated.

Objective: we aimed to evaluate the outcome of open and laparoscopic cholecystectomy without drain insertion as related to post operative pain, post operative hospital stay and post operative sub hepatic collection (detected with ultrasonography).

Methods: This study has been done in Alazhar university hospital in Assiut from April 2014 to April 2016. This study conducted on 100 patients suffering from chronic calcular cholecystits. Open cholecystectomy performed on 50 patients without drain and laparoscopic cholecystectomy for 50 patients without drain.

The effect of absence of drain after cholecystectomy was evaluated as regard to incidence of post operative pain, postoperative hospital stay, and post operative sub hepatic collection.

Results: The mean patients' age was 35+0.14 for both sexes. There were 70 women and 30 men. Operative time's range from 30-90 min with mean time 55_+ 0.7 for open cholecystectomy and 57 _+ 0.9 for laparoscopic cholecystectomy. Hospitals stay range from 1-3 day for open cholecystectomy and 1-2 days for laparoscopic cholecystectomy. All patients needed injections of ketolac 30 mg in the first post operative day to relief pain and 3 tablets/day ketolac 10 mg for the subsequent 2-4 days. Sub hepatic collection was seen in 4 patients (8%) of total 50 patients who under open cholecystectomy. Sub hepatic collection was seen in 2 patients (4%) who underwent laparoscopic cholecystectomy.

Conclusion: There were no significant disadvantages of cholecystectomy without sub hepatic drain placement. The operating surgeon should be the best judge to decide whether to place drain or not.

Keywords: Cholecystectomy, drains, ultrasonography, post operative pain, post operative collection.

Introduction

Cholecystectomy is one of the most frequently performed abdominal operations but the Issue of draining the sub hepatic area postoperative still remain unresolved-peritoneal drainage after cholecystectomy has long remained an essential component of procedure since its Introduction by langen bach in 1882 [1].

The benefits of drains derive from the notion that allow the egress of bile leaking from the gall bladder bed, cystic duct or bile duct, as well the blood or exudates resulting from surgical trauma. Even if they don't drain these fluids completely they do worn the surgeons of such leakage and prompt for early and necessary steps to deal with complications. On the contrary it is true that small amount 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 in effective 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 rarely formation of intestinal fistula [2].

Cholecystectomy without drainage referred as the ideal cholecystectomy was introduced in Germany [3].

With a view of easier, shortened hospital stay and lower complication rate vast majority of surgeon still continued the routine practice of placing a drain after simple, elective cholecystectomy [4, 5].

Drain itself may cause minimal pain at drain site and more pain during its removal [6].

In the early years of laparoscopic cholecystectomy most of the surgeon routinely retained a drain in the sub hepatic space, but with gradual acceptance of the technique and increasing experience, many of surgeons tailored the results of randomized trials in open cholecystectomy to laparoscopic one, and omitted drainage 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 open as well as laparoscopic cholecystectomy. Instead use of drain is found to be associated with increased rate of wound Infections [7, 8].

Likewise sub hepatic space has been drained conventionally after cholecystectomy, with its efficacy been rarely evaluated in trials [9].

Patients and methods

1. Patients

This study has been done from April 2014to April 2016 In Al Azhar university hospital.

This study conducted on 100 patients suffering from chronic calcular cholecystits.

Laparoscopic cholecystectomy performed on 50 patients (without drain) and open cholecystectomy for 50 patients (without drain). The median age of the patients was (35 year). 30% of patients were males and 70% females.

The effect of absence of drain after cholecystectomy was evaluated as regard to incidence of sub hepatic collection; hospital stays and post operative pain.

All patients involved in the study underwent open or laparoscopic cholecystectomy without draining for uncomplicated cholelithiasis.

Patients with acute cholecystitis, cirrhotic liver or associated other pathology (peptic ulcer, hiatus hernia) are excluded.

All patients involved in the study were subjected to full history taking, clinical examination, routine laboratory investigation, ECG, chest X-ray and abdominal ultrasonography.

2. Methods

Preparation

- Routine 8 hours fasting
- Prophylactic antibiotic
- Shaving and betadine to the operative filed
- Obese and old patients were wrapped elastic bandages

Anesthesia: General endotracheal anesthesia

Operative: Technique of open cholecystectomy

- A right upper sub costal incision is performed
- The incision should be of sufficient length to provide adequate exposure.
- Anterior rectus sheath was opened
- Rectus muscle was splitted
- Posterior rectus sheath and peritoneum were opened.
- Mop placement: one mop is placed to displace duodenum, transferse colon and coils of small intestine. Second mop is placed to displace stomach.
- Exposure of gall bladder is done by retraction of liver.
- Removal of gall bladder:

Two common methods for removed of gall bladder.

1. Duct first method: cystic duct and artery are dissected and divided.
2. Fundus first method

Dissection is started from fundus of the gall bladder and gradually preceded towards the cystic duct and cystic artery, which are dissected and divided last of all.

- Proper haemostasis of gall bladder bed was done.
- Wound closure without drain insertion.

Operative tech. of laparoscopic cholecystectomy

Generally, the surgeon stands to the patients left, and the first assistant stands to the patient right.

A high quality video laparoscopic with light source is coupled to high-resolution monitor. A high-flow carbon dioxide insufflators, four trocars (two 10-mm trocars and two 5 mm trocars), and approximately ten specialized laparoscopic instrument are required. The necessary instruments include a monopolar electrode, L-hook with suction and irrigation capacity, a fine-tripped dissector, two gall bladder graspers, a large gall bladder extractor, a pair of scissors and a medium to large Haemoclip Applier, A 10 mm stone retrieval grasper is help full to remove spilled gall stones.

Pneumo peritoneum

Laparoscopic cholecystectomy is generally performed at 15 mm Hg pressure. Generally, the Pneumo-peritoneum is abstain by a verses needle through the umbilicus confirming its position by allowing saline to run through the needle from a plunger less syringe and then attaching the needle to tubing from carbon dioxide insufflators. Initial intra abdominal pressures greater than 10 mm Hg nearly the needle is in the abdomen, the flow rate can be increased until an intra abdominal pressure of 15 mm Hg is achieved.

Trocars Placement

The first (10 mm) trocar is placed through the umbilicus. Once the umblical trocar is established a 10 mm telescope is passed through the trocar.

The second a 10 mm trocar is placed in the epigastrium. This trocar enters at the level of the inferior liver edge just to the right of the falciform ligament.

The third trocar is a 5 mm trocar, which is generally placed 2 to 3 cm below the costal margin in the midclavicular line.

The fourth 5 mm trocar is located in a variable position, generally in the anterior axillary line, several centimeters below the fundus of the gall bladder.

Surgical technique

1- Exposure of the porta hepatis

Requires elevation of the gall bladder fundus and liver edge. This elevation is usually achieved by the most lateral trocar.

2- Stripping the peritoneum

The peritoneum is teased toward the common duct until the cyst duct, cystic artery, or lymph node of callot is identifiable. The surgeon pushes the infundibulum medially to strip the peritoneum off the posterior aspect of the gall bladder and cystic duct.

3- Control of the cystic duct and cystic artery

The cystic duct is dissected, artery clip Applier can be passed around it and solid up to the infundibulum of the gall bladder, where it is closed. Two clips are placed on the cystic duct immediately below its junction with the gall bladder, and the cystic duct is divided. Two clips are placed on the cystic artery as it crosses on the gall bladder and the cystic artery is divided.

4- Resection of the gall bladder

Resection is facilitated by use of the retracting (left) hand to pull the gall bladder away from the liver. The small veins and areoler tissue connecting the gall bladder to the liver are divided by diathermy.

5- Removal of the gall bladder

The gall bladder is grasped with a 10 mm grasper, and the gall bladder and trocar are removed. The trocars are all removed under direct vision and the skin is closed without intra abdominal drain.

Post-operative care

Evaluation of post operative morbidity

- Biliary injury

- Intra-peritoneal He
- Wound infection
- Post operative pain
- Post operative hospital stay
- Sub hepatic collection (ultrasound detected)

Results

In our study 50 patients open cholecystectomized patients without drain and another 50 laparoscopic cholecystectomized patients without drain were evaluated. Aged of the patients range from 20-55 years old with a mean of 35+0.14.

30% were males and 70% were females. Six patients were diabetic and controlled by medical treatment post operatively (insulin) two in open cholecystectomy group and four in laparoscopic cholecystectomy group. Four patients were hypertensive and controlled by medical treatment preoperative by two in open cholecystectomy group and two in laparoscopic cholecystectomy group. Operative time ranged from 30-90 min (with mean time 55+0.7 minutes for open cholecystectomy and 37+0.9 for laparoscopic cholecystectomy) time factor depend on difficulty of the case and the occurance of intra operative complication. Intra operative complications (two patients had bleeding from hepatic bed in open cholecystectomy and two patients had injury to cystic artery which have been secured and clipped in laparoscopic cholecystectomy.

Post operative pain: all patients needed injection of ketolac 30 mg in the first post operative day to relief pain and 3 tablets/ day of ketolac 10mg for the subsequent 2-4 days (table I)

Table 1: Postoperative analgesia

	Patients(n=100)			
	Open cholecystectomy		Laparoscopic cholecsytectomy	
	Patients N	Analgesic dose	Patients N	Analgesic dose
1st day	10	2amp	8	2amp
2nd day	27	1amp	36	1amp
3rd day	13	1amp	6	1amp

Table 2: Severity of postoperative pain in the 1st postoperative day

	Patients(n=100)				P value
	Open cholecystectomy		Laparoscopic cholecystectomy		
	N	%	N	%	
Mild	34	68	39	78	0.313
Moderate	12	24	19	20	
Severe	4	8	1	2	

No statistically significant difference (p>0.05)

Table 3: Post operative hospital stay

Day to walk	Open cholecystectomy		Laparoscopic cholecystectomy		P value
	N	%	N	%	
Day 1	25	50.5	35	70.0	0.066 ns
Day 2	15	30.0	15	30.0	1.000ns
Day 3	10	20.0	0	0.0	0.003ns

No statistically difference (p>0.05)
Statistically significant difference (p>0.01)

Post operative sub hepatic collection sub hepatic collection was seen in 4 patients (80%) out of total 50 patients who underwent elective open cholecystectomy. Out of so patients who underwent laparoscopic cholecystectomy sub hepatic collection was seen in 2 patients (4%) Table 4.

Table 4: Incidence of sub hepatic collection

Sub-hepatic collection	Open cholecystectomy		Laparoscopic cholecystectomy		P. value
	N	%	N	%	
Yes	4	8.0	2	4.0	0.21ns
No	46	92.0	48	96.0	

No statistically significant difference (p>0.05)
All collections were dealt with ultrasound grouped by and pigtail catheter insertion.

Discussion

In 1919, thirsty one year after Langen bnch performed the first cholecystectomy, cholecystectomy without drainage was introduced in Germany and referred to as "the Ideal cholecystectomy "[10].

The effectiveness of drains in forestalling the collection of bile and blood is in dispute. When such complications have been reported, they have invariably occurred in instances where drains were employed. Nonetheless 90% of surgeons routinely use drainage offer simple, elective cholecystectomy [11].

Gall stones disease is a frequent medical problem. Gall stones affect 10% of the population and 30% of patients with Gall stones will undergo surgery. Laparoscopic cholecystectomy, laparoscopic common bile duct exploration and endoscopic retro grade management of common bile duct stones play important roles in the treatment of Gall stones [12].

Drainage in open cholecystectomy is a matter of considerable debate. Surgeons use drains primarily to prevent sub hepatic abscess or bile peritonitis from an undrained bile leak. However recent reports have shown there is no benefit of drainage after elective cholecystectomy [13, 14].

A study was conducted by Ghafoor and his colleagues 100 patients, were operated for Cholelithiasis and They were randomly divided in group A and B. Sub hepatic drains was inserted in Group A, and no drain was placed in Group B patients, mortality rate in both groups was zero. Mean hospital stay was 3.7 in group A, as compared to 2.26 in group B [15].

Surgically placed drains have been associated with prolonged hospital stay [16].

In present study post operative hospital stay ranged from 1-3 days for open cholecystectomy and 1-2 days for laparoscopic cholecystectomy.

The drain itself may cause minimal pain at drains site and more during its removal [17].

In a study performed by Jorgensen *et al*. They inserted a suction drain to the right sub diaphragmatic area and determined that the group in which drain was inserted has less shoulder pain than those without drain [18].

Again in another study post operative pain was found to be higher in the group with drain placement than in those without a drain [19].

In a study performed by Georgiou *et al*. the location of drain was not determined.

The pain levels of the groups in which drain were and were not applied were compared and it was stated that patients in which in which drains were inserted has significantly higher pain [20].

Thus when considering the application of drains solely for prevention of post operative pain after laparoscopic cholecystectomy and not those situations in which they are surgically necessary the contradictory results led us to think that the different drain locations may have been a contributory factor [21].

In the present study all patients needed parentral analgesia in the first post operative day and oral analgesia for the subsequent 2-4 days.

In yasir series sub hepatic collection was seen in patients out of total 60 patients who underwent elective open cholecystectomy (6.6%). Out of 30 patients who underwent cholecystectomy without sub hepatic drain sub hepatic collection was seen in 2 patients (6.6%) [22].

In the present study sub hepatic collection was seen in 4 patients (8%) of open cholecystectomy group and in 2 patients (4%) of laparoscopic cholecystectomy group.

Conclusion

There were No significant disadvantages of cholecystectomy without sub hepatic drain placement. The routine use of abdominal drain seems to have unfavorable clinical outcome and the practice should be carefully reconsidered. Drainage should be applied in patients with surgical indications such as excessive blood ooze suspected bile leakage or other organ trauma.

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