

Original Research Article

Outcome of uncomplicated laparoscopic cholecystectomy with and without drain: A prospective study

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Abstract

Background: Gall stone disease remains one of the major causes of abdominal morbidity and mortality through the world. The present study was a prospective study to evaluate the outcome of uncomplicated cholecystectomy with and without drain. **Materials & Methods:** 60 patients were divided into 2 groups. Group A consisted of patients underwent uncomplicated LC with drainage while group B included the patients who underwent uncomplicated LC without drainage. The outcomes of the study were assessed in terms of post-operative abdominal pain, shoulder pain (measured with VAS), incidence of surgical site infection, duration of hospital stay. **Results:** The mean age in drain group was comparable to the no drain group (50.00 ± 12.46 vs. 44.23 ± 13.88 ; $P=0.96$). 90% of the patients were females. We also observed that there was no sex-based difference between the groups ($P=0.389$). 16% of the patients were in ASA grade I. There was no ASA grade-based difference between the groups ($P=0.488$). The mean SGOT in drain group was significantly higher to the no drain group (38.96 ± 22.74 vs. 29.20 ± 11.08 ; $P=0.039$). **Conclusion:** In the patients undergoing uncomplicated laparoscopic cholecystectomy, use of subhepatic drain is not associated with any benefits, as regard to bile leak, to the patients. Rather, use of drain is associated with increased shoulder pain and pain abdomen. In addition, post-operative hospital stay is also prolonged in these patients in whom we have used the drain.

Keywords: laparoscopic cholecystectomy, subhepatic drain, Shoulder pain

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Introduction

Gall stone disease remains one of the major causes of abdominal morbidity and mortality through the world[1]. Nowadays, gallbladder disease is a frequent problem in developed countries, representing a major health problem. More than 20 million Americans suffer from gall stone disease, and 80,000 patients are hospitalized for gall stone disease every year[2]. Cholecystectomy is the second most common operation in gastrointestinal surgery after appendectomy. The first cholecystectomy was performed in Germany by Carl Langenbuch on July 15th, 1882 [3]. Traditionally, drains were used for the early detection of bile leaks and any unsuspected haemorrhage. In the era of open cholecystectomy, a meta-analysis showed that drains increased morbidity without providing any additional benefit for patients. At present, laparoscopic cholecystectomy (LC) is the gold standard approach for cholecystectomy[4]. The main reason to use prophylactic drainage in LC is to reduce complications such as intra-abdominal collections that require treatment and to detect bile leak, thereby decreasing the overall mortality and morbidity rates. At present, the rate of biliary complications after LC is 0.4% (range, 0.1% to 0.9%) and postoperative haemorrhagic complications are similarly very rare[5]. Nevertheless, it has been shown a consistent trend in favour of the no drain approach in terms of overall morbidity, a result that may be attributed to the combined effect of other more common complications[6]. The present study was a prospective study to evaluate the outcome of uncomplicated

cholecystectomy with and without drain.

Materials & Methods

The present prospective observational study was conducted among sixty patients aged <70 years of both sexes with a diagnosis of gall stone diseases admitted to Department of Surgery, Dr RPGMC Kangra at Tanda. Uncomplicated LC was defined as in whom dissection was easy. The study patients were divided into 2 groups. Group A consisted of patients underwent uncomplicated LC with drainage while group B included the patients who underwent uncomplicated LC without drainage. A few surgeons at our institute keep drain as routine, and a few surgeons use drain selectively. Decision whether to keep drain or not was made by the operating surgeon. A total of 60 patients were enrolled into the study with 30 patients in each group. All the patients were enrolled after they provided consent to participate into the study. The patients' demographic details, history, clinical examination, radiological investigations were recorded as per the patient proforma. The primary outcomes included bile leakage in patients with drain and deteriorating clinical condition/ ultrasonography in patients without drain. The secondary outcomes of the study were assessed in terms of post-operative abdominal pain, shoulder pain (measured with VAS), incidence of surgical site infection, duration of hospital stay after surgery and re-admission within 30 days of the surgery. Data were presented as frequency, percentage, mean, standard deviation (SD), median, and/or inter quartile range (IQR). P value <0.05 was considered significant. Statistical analysis was performed using SPSS v21.

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Results**Table 1: Demographic characteristics of the study subjects**

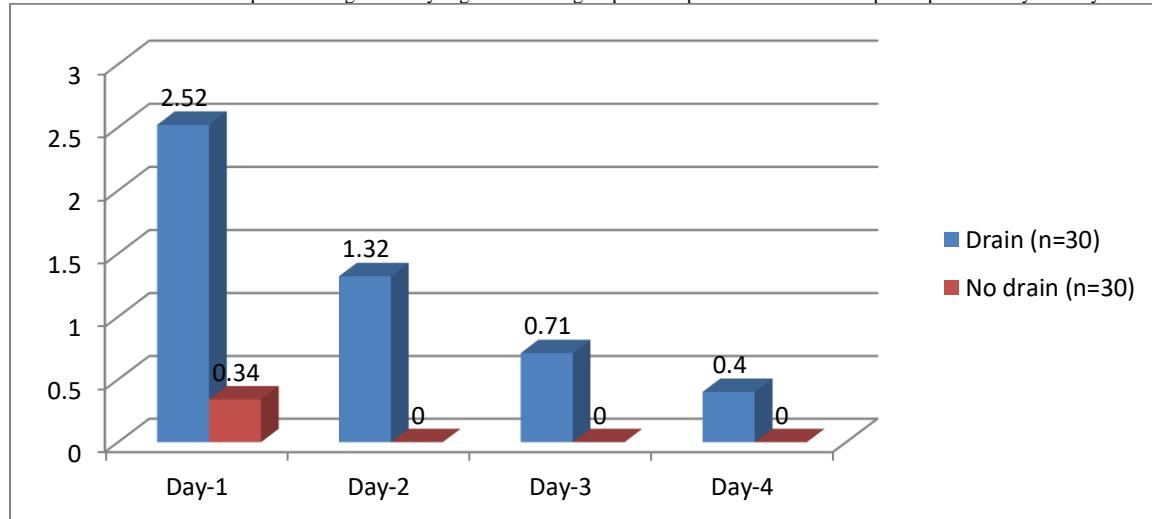
		Group A (n=30)	Group B (n=30)	P value
Age (Years)	Mean	50.00±12.46	44.23±13.88	0.96
Sex	Female	26	28	0.389
	Male	4	2	
ASA Grade	I	24	26	0.488
	II	6	4	
Laboratory Investigations	Hb (mg/dl)	11.95±1.40	12.18±1.31	0.516
	Albumin	6.12±9.06	4.44±0.68	0.314
	Urea	20.26±9.19	22.43±9.47	0.372
	Creatinine	0.76±0.95	0.86±0.21	0.49
	Total Bilirubin	0.63±0.31	0.57±0.35	0.459
	Conjugated Bilirubin	0.14±0.07	0.14±0.09	0.736
	SGOT	38.96±22.74	29.20±11.08	0.039
	SGPT	39.50±21.89	33.40±15.44	0.217
	TLC	7099.33±1794.04	7545.51±1727.60	0.335
	Hb (mg/dl)	11.95±1.40	12.18±1.31	0.516
	Albumin	6.12±9.06	4.44±0.68	0.314

Table I shows that, mean age in drain group was comparable to the no drain group (50.00±12.46 vs. 44.23±13.88; P=0.96). 90% of the patients were females. We also observed that there was no sex-based difference between the groups (P=0.389). 16% of the patients were in ASA grade I. There was no ASA grade-based difference between the groups (P=0.488). The mean SGOT in drain group was significantly higher to the no drain group (38.96±22.74 vs. 29.20±11.08; P=0.039).

Table 2:Shoulder pain

Days	Drain (n=30)	No drain (n=30)	P value
Day-1	2.52±1.12	0.34±0.67	<0.0001
Day-2	1.32±0.89	0.00±0.00	
Day-3	0.71±1.13	0.00±0.00	
Day-4	0.40±0.89	0.00±0.00	

Table 2 shows that shoulder pain was significantly higher in drain group in comparison to no drain at post-operative day1 to day 4.

**Fig 1:Shoulder pain****Table 3: Duration of post-operative hospital stay**

	Drain (n=30)	No drain (n=30)	P value
Duration of post-operative hospital stay	2.0 [1.75, 3.0]	1.0 [1.0, 1.0]	<0.0001

Table 3 shows that mean duration of post-operative hospital stay was significantly higher in group A in comparison to group B (2.0 [1.75, 3.0] vs. 1.0 [1.0, 1.0]; P<0.0001).

Discussion

Gallstone disease is often thought to be a major affliction in modern society. However, gallstones must have been known to humans for many years, since they have been found in the GBs of Egyptian mummies dating back to 1000 BC[7]. This disease is; however, a worldwide medical problem, even though there are geographical variations in gallstone prevalence. Prevalence of gallstones in India was found to be 6-9% in the adult population. Gallstones are hardened deposits of the digestive fluid bile, that can form within the gallbladder (GB)[8]. They vary in size and shape from as small as a grain of sand to as large as a golf ball[9]. Gallstones occur when there is an imbalance in the chemical constituents of bile that result in precipitation of one or more of the components.

Laparoscopic cholecystectomy (LC) represents a significant change in the management of gallbladder disease and it is the most commonly performed operation of the digestive tract. It is considered as the gold standard treatment for cholelithiasis. It replaced open cholecystectomy as the first choice of treatment for gallstones[10]. It was performed for the first time in 1985 by Professor Erich Mühe of Boblingen, Germany. Despite many modified methods such as natural orifice transluminal endoscopic surgery (NOTES), single-incision laparoscopic surgery (SILS), LC is still the gold standard for symptomatic gall stone disease[11]. The advantages of the laparoscopic approach are less postoperative pain, shorter hospital stay, faster recovery, improved cosmetic results, early return to work, fewer complications such as infection, adhesions, short operating time and it is superior to other developed techniques because of economic advantage[12]. The present study was a prospective study to evaluate the outcome of uncomplicated cholecystectomy with and without drain. In present study, mean age in drain group was comparable to the no drain group (50.00 ± 12.46 vs. 44.23 ± 13.88 ; $P=0.96$). 90% of the patients were females. We also observed that there was no sex-based difference between the groups ($P=0.389$). 16% of the patients were in ASA grade I. There was no ASA grade-based difference between the groups ($P=0.488$). The mean SGOT in drain group was significantly higher to the no drain group. Huang et al[13] conducted a meta-analysis to assess the effectiveness of drains in reducing complications after LC for acute cholecystitis. Three RCTs, which included 382 patients, were identified for analysis in our study. There was no statistically significant difference in the rate of morbidities. Abdominal pain 24 h after surgery was more severe in the drain group. No significant difference was present with respect to wound infection rate and hospital stay. Placement of drain is not beneficial for the prevention or reduction of postoperative morbidities after emergent LC and can even increase postoperative pain. We found that shoulder pain was significantly higher in drain group in comparison to no drain at post-operative day 1 to day 4. The mean duration of post-operative hospital stay was significantly higher in group A in comparison to group B ($2.0 [1.75, 3.0]$ vs. $1.0 [1.0, 1.0]$; $P<0.0001$). Qiu and Li[14] conducted a comparative study to assess the need for drainage. The overall complication rate was 12.5% with no significant difference between those with or without drainage ($P=0.16$). Normal activity resumption was significantly faster and the postoperative hospital stay was slightly shorter in the nondrainage group ($P=0.03$ and $P=0.04$, respectively). The early VAS score in the drainage group was significantly higher ($p<0.05$). There were no significant differences between the two groups in postoperative haematology test, late VAS score, and patient satisfaction of cosmetic outcome. Routine drainage for patients with acute calculus cholecystitis after LC may not be justified with similar drain-related complications compared with nondrainage group.

Conflict of Interest: Nil

Source of support:Nil

Conclusion

Authors found that in the patients undergoing uncomplicated laparoscopic cholecystectomy, use of subhepatic drain is not associated with any benefits, as regard to bile leak, to the patients. Rather, use of drain is associated with increased shoulder pain and pain abdomen. In addition, post-operative hospital stay is also prolonged in these patients in whom we have used the drain.

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