

Is it Essential to Put a Drain in Patients with Cholecystectomy?

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Abstract

The gallbladder is an important organ, but is not essential for life. Therefore, the standard treatment for symptomatic patients who suffer from gallstones has been to surgically remove the gallbladder and gallstones, Cholecystectomy, which is one of the most commonly, performed surgical procedures. Fifty patients undergoing cholecystectomy had either no drain and another fifty had a narrow bore suction drain or an open corrugated drain. More complications were seen in the group with drain compared to the other group without drain. This study was performed in the Shorsh General Hospital in Sulaimaniyah from October 2010 to October 2011. The aim of this study was to determine whether drains influenced the Patient comfortably, discharge of the patient from hospital, appearing of hernia after operation, intestinal obstruction, and the risk of drain site infection following cholecystectomy, and if these had any affect on complications. According to our data there was a statistical significance between two methods of surgical operation of gall bladder in the criteria (patient comfortably, discharge of patient from hospital, appearing hernia after operation and risk of drain site infection (p value < 0.05), but there was no any statistical significance for intestinal obstruction (p value > 0.05). We suggest that drainage in cholecystectomy is unnecessary and, if an open drain is used, it may be potentially dangerous.

Keywords: cholecystectomy, Intraperitoneal drain, postoperative complications, Wound-Infection, Hospital-Stay.

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الخلاصة

المرارة هو جهاز مهم، ولكن ليست ضرورية للحياة. ولذلك، فإن العلاج القياسي بالنسبة للمرضى الذين يعانون من أعراض حصى في المرارة هو استئصال المرارة وحصى المرارة جراحياً، والتي تعد واحدة من العمليات الجراحية الأكثر شيوعاً.

خمسون من المرضى الذين خضعوا لجراحة استئصال المرارة بدون تصريف، وخمسون آخرين عمل لهم تصريف أما عن طريق أنبوب ضيق مثقوب أو عن طريق تصريف مفتوح مموج. وشهد مزيد من الأعتلالات في المجموعة الثانية مقارنة مع المجموعة الأولى. وقد أجريت هذه الدراسة في مستشفى شورش العام في السليمانية من أكتوبر ٢٠١٠ إلى أكتوبر ٢٠١١. وكان الهدف من هذه الدراسة لتحديد ما إذا أثرت التصريف الجراحي في المريض من الجوانب الآتية: راحة المريض، وإخراج المريض من المستشفى، وظهور الفتق ما بعد العملية، والانسداد المعوي، وخطر خراج موقع التصريف بعد استئصال المرارة، وإذا كان لهؤلاء أي تأثير على المضاعفات. وفقاً لمعلوماتنا كان هناك دلالة إحصائية بين الطريقتين للعملية استئصال المرارة في كل من المعايير الآتية: (راحة المريض، وإخراج المريض من المستشفى، وظهور الفتق بعد العملية وخطر خراج موقع التصريف (p - value < 0.05))، لكن لم يكن هناك أي دلالة إحصائية لانسداد في الأمعاء من المعايير (p value > 0.05). ونقترح أن التصريف من استئصال المرارة غير ضرورية، وإذا تم استخدام التصريف المفتوح، يحتمل أن تكون خطيرة.

Introduction

The gallbladder is an important organ, but is not essential for life. Therefore, the standard treatment for symptomatic patients who suffer from gallstones has been to surgically remove the gallbladder and gallstones [2]. Open cholecystectomy requires a 4 to 6 inch (6 to 15 cm) incision in the abdomen, one to three nights stay in the hospital [3]. Laparoscopic cholecystectomy is now the standard operation for removing the gallbladder, performed in over 90 percent of patients who undergo cholecystectomy. It is safe and well tolerated, and the risk of major complications is similar to that of open cholecystectomy [4]. In 5 to 10 percent of patients, a laparoscopic operation must be converted to an open cholecystectomy during the surgery [5]. Without clear scientific evidence, prophylactic drainage after elective cholecystectomy was a routine practice since long time, which allows monitoring for any postoperative bleeding as well as biliary leakage. However recent reports have shown there is no benefit of drainage after elective cholecystectomy. Surgically placed drains have been associated with increased rates of intraabdominal and wound infections, increased abdominal pain, decreased pulmonary functions and prolonged hospital stay [20]. Numerous Randomized Controlled trials were performed on prophylactic drainage after open cholecystectomy. All trials failed to demonstrate a reduction of postoperative complications [21, 22, 23, and 24]. Routine drainage was also adopted in laparoscopic cholecystectomy due to fear of complications that might require an open operation [25]. As compared to Open Cholecystectomy, the usefulness of drains in laparoscopic cholecystectomy is not clear, and in many instances prophylactic drains are useless or may even add to the morbidity or cost of the procedure [26]. There are scanty local publications on this aspect, and no

consensus has been established thus in this prospective study we set out to compare the effects of draining or not draining the gall bladder bed after cholecystectomy using measurements of patient comfortably, discharge of the patient from hospital, appearing hernia after operation, intestinal obstruction, and the risk of drain site infection as criteria.

Materials and Methods

Patients and Surgical Procedure

This prospective study has been done in Shorsh Hospital in Sulaimaniyah from October 2010 to October 2011. The median age for the patients was (35 yrs.) and among our study population (15%) were males and (85%) were females. The operation started by doing an open Cholecystectomy for all our diagnosed patients. The 50 patients (without drain group) which we not used a drain during the surgical operation of removing gallbladder and comparing with other 50 patients (with drain group) using drain during the surgical operation of removing gallbladder. In the present study we compared the effects of draining or not draining the gall bladder bed after cholecystectomy using measurements of patient comfortably, discharge of patient from the hospital, appearing hernia after operation, intestinal obstruction, and risk of drain site infection as criteria. This project will be conducted with ethical recommendation according to Helsinki Declaration and we will apply for approval to the ethic community at our college.

Statistical Analysis

Data was analyzed by using statistical software SPSS version 10.0 and P value was calculated for all variables and criteria. All the results were presented in the form of tables. We used different statistical model for our data and the significant outcome was considered at p value less than 0.05.

Results

50 cholecystectomized patients with drain, compared with another 50 patients without drain.

Table (1): Comparison of patients with drain and patients without drain regarding to the patient comfortability.

Patient Comfortability			
Method	Yes	No	Total
Without drain	50	0	50
With Drain	11	39	50
Total	61	39	100

This table shows that there is a statistical significance between two methods of surgical operation of Gall bladder, (p value < 0.05).

Table (2): Comparison of patients with drain and patients without drain regarding to the discharge of the patient from hospital.

Discharge from Hospital			
Methods	First day	2day or more	Total
Without drain	50	0	50
With Drain	0	50	50
Total	50	50	100

This table shows that there is a statistical significance between two methods of surgical operation of Gall bladder, (p value < 0.05).

Table (3): Shows the appearance of drain site hernia in the drained group.

	No. of patients	% of patients
Hernia appearance	4	8
No hernia appearance	46	92
Total	50	100

Table (4): Comparison of patients with drain and patients without drain regarding to the acute and temporary intestinal obstruction.

Intestinal obstruction			
Method outcome	Without drain	With drain	Total
Yes	0	3	3
No	50	47	97
Total	50	50	100

This table shows that there is no significance between two methods of surgical operation of Gall bladder, p value > 0.05.

Table (5): Comparison of patients with drain and patients without drain regarding to the risk of postoperative drain site infection.

Risk of Infection			
Methods outcome	Without drain	With drain	Total
Yes	0	18	18
No	50	32	82
Total	50	50	100

This table shows that there is a statistical significance between two methods of surgical operation of Gall bladder, (p value < 0.05).

Discussion

This paper set out to determine the safety of not draining cholecystectomies but the results obtained lead us to question the safety of using a drain. We have shown by means of ultrasound that the collections in the subhepatic space are on the whole small, rapidly reabsorbed and essentially similar in size and number whether a drain is used or not. Both

Maull et al [6] and Monson et al. [7] showed there was less morbidity when no drain was used, although more collections were detected in the former study, while fewer were detected in the latter. Also it has been shown, particularly by van der Linden et al [8] that suction drains are a very effective way of removing bile from the gallbladder bed after cholecystectomy. This has also been our experience, in that copious quantities of almost pure bile were obtained via the suction drain in the cases. We suggest that the suction drain provokes leakage from superficial biliary ductules damaged by dissection and contend that without drainage they would rapidly wall off. There is some experimental support for this contention. Fraenkel and Krause [9] showed that cutting the gall bladder in dogs had no untoward effect, and that when they were killed between 2 and 5 weeks later either the gall bladder had healed or was sealed with omentum or loops of small bowel. The one potentially fatal complication in this series is, biliary peritonitis, occurred in a patient in

whom a large, open drain had been correctly placed and had drained copiously. This accord with the experience of Williams et al. [10] in a much larger series. They reported 4 biliary leaks leading to peritonitis. In all 4 cases an open drain had been used but the diagnosis, which prompted further laparotomy, was made on clinical grounds about 48 hrs. postoperatively with no diagnostic contribution resulting from the use of a drain. MacVicar et al. [11] (1967) suggested that a drain acted as a safety valve or warned of biliary leakage. They based this on a study of 42 patients out of a retrospective series of 2043 patients who had died of biliary leakage following cholecystectomy. The only deaths which occurred in the absence of a drain were in cases where the biliary tree had been explored. None occurred following simple cholecystectomy without drainage. Our obtained results taken alongside those reported by us lend support to our contention that rather than acting as a 'safety valve' the use of a drain may be in itself dangerous after simple cholecystectomy (see table 1 and table 2). Our results indicate that drainage causes more postoperative discomfortability and prolongs the time of hospital stay (table 1, table 2). Georgiou et al have also been obtained the same result which supports our outcome [27]. The greater incidence of infective complications after drained cholecystectomies is due to the drain, probably it allows bacteria to gain access to

the gallbladder bed or the abdominal wall that predisposes to contamination and infection [33,34].

In our result there was statistical significant P-value between both used surgical methods (see table 5), but more recent work suggests the corollary, that infection renders mucosal barriers more sensitive to bile [13]. It is well known that patients who sustain closed intraperitoneal rupture of the biliary tree may remain relatively well for long periods. This is in stark contrast to those patients who develop biliary peritonitis after cholecystectomy where the clinical course is rapidly fatal if not effectively treated. Even we could find a significant P-value between both used surgical methods, but we suggest that infection introduced along a drain may render an otherwise harmless collection of bile, a cause of peritonitis (see table 5). We also contend that an open drain rapidly becomes walled off, as Yates' [14] showed more than 80 years ago and then merely provokes exudates in response to its own presence. If this is correct then it explains why in most cases the drain warns neither of haemorrhage nor of biliary leak, and it is safer to rely on clinical signs to diagnose these catastrophes. In the many series reviewed by some researchers [15, 16, 17, 18] several hundred cholecystectomies have been reported without drainage with any cases of biliary peritonitis, and we can now add to this experience. Abscess developing from a subhepatic collection has been described by Gordon' [15] in a patient where a drain had been used. The following authors [15, 16, 17, 18, 19] agree that drains, both of the open and suction type are associated with increased complications. In our study (18%) of the drained patients were at risk of drain site infection, so this result support that post drained cholecystectomy infection must be warranted in those patients undergo gallbladder operation [10, 11, 13]. Moreover hernia is a rare but potentially serious

complication of laparoscopic cholecystectomy Most of the reported cases concern drains with an external diameter of more than 10 mm. Small bowel loops and appendix are the most common herniated abdominal viscera through drain sites with subsequent obstruction or strangulation. In the present study the hernia was appeared in (8%) of our study population which is supported by many studies in the literature [28, 29]. In the recent studies hernia following laparoscopic cholecystectomy was observed [28, 29] which is in accordance with our findings because our data concluded that using no drain for surgical operation of gallbladder is not related to appearance of drain site hernia after the operation while the ordinal operation of gallbladder is related to appearance of hernia after the operation (see table 3). Furthermore in our study [3] of drained patients were developed acute intestinal obstruction which were treated conservatively, and in the recent studies digestive complication and intestinal obstruction were also observed [31,32]. Although several complications related to drain usage such as drain site infection, hemorrhage and intestinal perforation may occur; intestinal incarceration through drain site is rarely reported.

Large meta-analysis revealed that the indications of prophylactic drains should be minimized in cases of non complicated operations such as laparoscopic or open cholecystectomy, gastric and gynecologic surgery [35, 36].

Conclusion

We suggest that not using drain in cholecystectomy is much better than the ordinal operation with using drain, because using drain affect the patient comfortably, the earlier patient's discharge from hospital, appearance of drain site hernia after the operation and critical risk of drain site infection. The outcome of the present study



permits us to say that drainage of cholecystectomy is unnecessary and, if an open drain is used, it is potentially dangerous. Drains must be used with caution and only if indicated. Careful insertion, regular post-operative or post-removal inspection is strongly recommended. or post-removal inspection is strongly recommended.

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