

EFFECTIVENESS OF THE USE OF DRAINS IN POST LAPAROSCOPIC CHOLECYSTECTOMIES

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ABSTRACT

Objective: To determine the efficacy of the drain in reducing post-operative sub hepatic collection of bile or blood in routine laparoscopic cholecystectomy.

Material and Methods: This study was conducted in Surgical Department of Khyber Teaching Hospital, Peshawar from November 2013 to May 2014. A total of 150 patients were included using the Consecutive (Non-Probability) Sampling method. All patients both male and female with diagnosed and symptomatic Gallstones were subjected to Laparoscopic cholecystectomy, drain was placed and patients were followed up to 2 weeks.

Results: Gallstones are more common in females (65% vs 35%). It is also more common in the 40s age group. Drainage was found to be ineffective in (138/150) 92% of the patients. The visual analog scale (VAS) on 1st post op day was 3-9 (mean=6), length of hospital stay was 3-5 days (mean=4 days), total drainage volume was 30-150ml (mean= 90ml). 10/150(6.6%) developed wound site infection.

Conclusion: Routine use of drains is not recommended since they do not offer any benefit over non drainage. Proper guidelines are needed for drain insertion when they are inevitable.

Key Words: Cholelithiasis, Drainage, Laparoscopic Cholecystectomy.

INTRODUCTION

Laparoscopic Cholecystectomy (LC) is the most common laparoscopic surgeries in medical world. In 1985, Dr. Muhe, a German Surgeon; performed the first laparoscopic cholecystectomy using a modified rectoscope, the galloscope. In 1987, Dr. Mouret accomplished laparoscopic cholecystectomy with an approach that would become the standard technique in future. As in other surgeries; drains are routinely used as a part of LC to prevent post-operative collections like bile or blood. However, the role of routine drainage to decrease postoperative morbidity is still an issue of debate and several researches have been conducted to measure its efficacy. There are those who believe that every intraperitoneal surgery should be drained and others who feel that drains are useless. The increased number of drains available in market bears witness to the fact that none is ideal and suitable for universal use.

As it is obvious that drains act as a portal of infection, they not only cause clinically detectable wound site infections but can also lead to subclinical sepsis that manifests as post-operative pyrexia. They may

also increase the probability of causing infection in an intra-abdominal fluid collection converting it into an abscess. Traditionally, drains were used for the early detection of bile leaks and any unsuspected hemorrhage and to evacuate abdominal fluid collections without the need for more invasive procedures. At present, the rate of biliary complications after LC is 0.4% (range, 0.1-0.9%). Postoperative hemorrhagic complications are very rare.

While laparoscopy has just begun to strengthen its roots in our country but there is a scarcity of research especially on the drainage aspect. The aim of this study was to review the post-operative outcome of all patients undergoing LC with drainage under local circumstances and local expertise. To assess the efficacy of the drain in reducing post-operative sub hepatic collection of bile or blood. Thus establish the utility of routine drainage at the local level and provide an evidence based platform for drainage guidelines as most surgeons in our setup are advocates of routine drainage in laparoscopy. This study would help to advance post-operative care of patients undergoing laparoscopic cholecystectomy, making it an attractive day care surgery, with minimum morbidity and early return to normal life.

MATERIAL AND METHODS

This was a case series type of cross sectional study conducted at the Department Surgery, Khyber

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Teaching Hospital, Peshawar. The total duration of study was 6 months from November 2013 to May 2014. A total number of 150 patients undergoing laparoscopic cholecystectomy for symptomatic Gall stones were included in the study using the Consecutive (Non-Probability) Sampling method. Patients of both genders aged between 18-80 years having signs and symptoms of Cholelithiasis which was subsequently diagnosed by ultrasonography. Patients presenting with acute cholecystitis and cholangitis, with common bile duct stones or with concomitant severe cardiopulmonary disease, diabetes and coagulopathy were excluded from the study. The study was conducted after getting approval from hospitals ethical and research committee. The purpose, risks and benefits of the study was explained to all included patients and a written informed consent was obtained from all included patients.

All patients underwent routine three ports Cholecystectomy under standard protocol and a single 22-28 size flatus tube used as a drain placed in the sub hepatic fossa. Post operatively all patients were kept under observations for 24 hours in ward for collection and VAS score was recorded, wound infection if any was noted, effectiveness of drainage was determined in terms of patient not developing sub-hepatic collection as diagnosed by ultrasound as a hypo-echoic collection in case of bile and hyper-echoic collection in case of blood on 5th-7th post op day.

All the data was entered and analyzed in SPSS (version 16). Frequencies and percentages were calculated for categorical variables like Gender, abdominal collection. Mean+SD was calculated for numerical variables like age. Effectiveness in both groups was stratified among the age and gender to see the effect modifiers. All the data was calculated on 95% confidence interval. A p value < 0.05 was considered as statistically significant level for all comparisons.

RESULTS

A total of 150 patients were included in the study consisting of 53 (35%) males and 97 (65%) females. Mean age was 40 years with SD $\pm$ 11.34. Age stratification is given in Table 1. It was found that in 138/150 (92%) of the patients the drain was not able to effectively drain sub-hepatic collection as detected by post-oper-

ative ultrasound. Chi Square test was applied in which P value was 0.57.

The visual analog scale (VAS) on 1st post op day was 3-9 (mean=6), length of hospital stay was 3-5 days (mean=4 days), total drainage volume was 30-150ml (mean= 90ml). In 12 patients, there was no post-operative intra-abdominal collection on ultrasound and thus the drain was effective in preventing collections. All patients in our study were followed for 2 weeks' time while drains were removed when they drained <30ml/24 hours. It was found that 10/150 (6.6%) developed wound site infection mostly at the umbilical port (8/10) while two patients developed cellulitis at the drain site with fever.

DISCUSSION

According to the results of our study, we found that in 92% of the patients undergoing LC with drainage did not benefit from the drain itself because it was ineffective in preventing or draining sub hepatic collections; instead they further add to increasing hospital stay, pain and discomfort. Gurusamy KS et al systemic review found no significant difference between the drain group and the 'no drain' group in short-term morbidity. A national study by Rathi PK pointed towards an observation that the drain itself is associated with significant pain and discomfort at insertion site and even more pain during its removal, which actually contradicts the foundational advantage of minimally invasive surgery; i.e. less post-operative pain and early recovery.

We found that the average VAS score on 1st post-operative day was as high as 6. This finding is quite similar to a study by Tzovaras which states

Table 1: Age distribution

Age (years)	Frequency and %age
21-30	19(13%)
31-40	45(30%)
41-50	38(25%)
51-60	30(20%)
61-70	15(10%)
71-80	3(2%)
Total	150(100%)

Table 2: Stratification of efficacy with age distribution

Drain efficacy	Age group in years						Total
	21-30	31-40	41-50	51-60	61-70	71-80	
Effective	1	2	5	3	1		12
Not Effective	18	43	33	27	14	3	138
Total	19	45	38	30	15	3	150

that postoperative pain was increased in patients with a drain; median VAS score was 5 vs 3, in the non-drained group ($P < .0001$). Another interesting finding by Nagpal et al. is that patients having a drain experience shoulder tip pain in the first 48 hours due to irritation of the diaphragm and Phrenic Nerve, this pain is not found in patients without drain. A high VAS score reflects higher patient anxiety, psychological stress, demand for analgesia, late mobility and over all dissatisfaction from a minimally invasive surgery.³ Picchio M found that abdominal pain 24 hours after surgery was less severe in the no drain group. No significant difference was present with respect to the presence and quantity of sub-hepatic collection, shoulder tip pain, i/v analgesia consumption, nausea, vomiting and hospital stay.

The length of hospital stay (LOHS) in our study is an average of 6 days; this is quite high for LC which is increasingly being popularized as a day care surgery. The reason is preoperative preparation being done after admission, reluctance of patients to be discharged with drain since many comes from far flung areas where local paramedics are not available for drain removal, reliance of patients upon injectable antibiotics and analgesics instead of oral medications.

Rathi found that the LOHS without drain was 2.1 days, in contrast to 3.58 days for the patients in whom the drain was placed.⁶ Georgiou C et al. also found in their study that the proportion of patients staying in hospital for >2 days was higher in the drainage group: 28.6 vs 13.2%. Hospital stay was longer in the drain group and patients discharged at the day of operation was significantly reduced in the no drain group. Thus eliminating the use of routine drainage may decrease the LOHS significantly.

SSI is another variable that can be conveniently linked to presence of drains, in our study the frequency of SSI was 6.6%. Gouda El-labban et al also found that the only post-operative complication was wound infection. Fifteen patients = 8.75% of drain group had wound infection compared with 5% of no drain group. According to the meta-analysis by Picchio M the wound infection was lower in the no drain.⁷ However there are still other studies and meta-analysis that do not show any correlation between SSI and presence of a drain.^{9,11}

In the present study, significant postoperative complications were rare. In particular, no postoperative bile leak was documented. Two postoperative hemorrhagic complications occurred. In one patient, the drain evidenced a significant hemorrhage. The absence of sub-hepatic fluid collections after cholecystectomy is strongly associated with an uncomplicated postop-

erative recovery. The efficacy of drains to evacuate sub-hepatic collections may justify their use to prevent postoperative complications. However, experimental studies¹⁴ showed that, when a drain is inserted in the peritoneal cavity that contains no fluids, it is surrounded by omentum and completely occluded within 48 hours. Georgiou C et al pointed out towards an ironic association of increased sub-hepatic collections in the drain group as compared to the non-drain group (47% versus 34%).⁹ A similar observation was made by Bugiantella W et al that sub-hepatic collection showed an increased trend in patients who underwent LC with drainage.¹⁰

The present study was unable to prove that the drain has any influence on the presence and severity of sub-hepatic fluid collection after LC. Drains are supposed to be much more efficient in draining bile than other types of intra-abdominal collections. However, large series from the era of open cholecystectomy showed that most patients undergoing laparotomy for post cholecystectomy bile peritonitis, had drains placed, suggesting that drain placement does not detect this complication effectively. Finally; there are still some studies which report no complications due to the lack of drain placement.

CONCLUSION

The use of a drain in elective routine LC is not effective in preventing sub hepatic collections and its associated morbidity thus they may not be advocated in every case.

Recommendations

In certain special circumstances such as biliary leak/tract injury or hepatic bed ooze, drain placement maybe recommended.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

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Orakzai MA: Idea and overall supervision.
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Muqim RU: Statistics

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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