

DRAINS: DO WE NEED THEM ROUTINELY AFTER LAPAROSCOPIC CHOLECYSTECTOMY?

Shehzad Akbar Khan , Farrukh Ozair Shah, Amjad Naeem

ABSTRACT

Objective: The aim of this study was to assess the effect of routine drainage after laparoscopic cholecystectomy on post operative recovery.

Methods: From Dec 2010 to Dec 2012 patients undergoing elective cholecystectomy in Hayatabad Medical Complex were randomized into 2 groups; Group A constituting patients who did not have any drainage procedure and Group B with institution of a size 20 sub hepatic drain. Both groups were analyzed and compared for post operative abdominal and shoulder tip pain recorded on a visual analogue score (0-10), sub hepatic collection detected by abdominal ultrasonography 24 to 36 hours after the procedure, complications such as wound infection and length of hospital stay.

Results: A total of 156 patients uniformly balanced in terms of their co-morbid status and gender, were equally divided into two groups. Twenty four hours after surgery, patients in group B had a median abdominal pain score of 4 (2-7) as compared to 3 (2-6) in group A ($p=0.04$). Abdominal scan revealed a significant (50ml) sub-hepatic collection in 3 patients in Gp A and 4 in group B while only one patient (GpA) had a drainage of more than 100ml. Mean hospital stay was 1 day (1-6) in Gp A, as against a mean stay of 2 days (range 1-7) in Gp B ($p=0.03$)

Conclusion: Drains offer no benefit in terms of post operative recovery in patients undergoing laparoscopic cholecystectomy with this study demonstrating an increase in the severity of post operative abdominal pain and length of hospital stay in patients with this adjunct.

Key Words: Laparoscopic cholecystectomy, drain, abdominal pain, shoulder tip pain.

INTRODUCTION

Gallstone disease is one of the most common medical problems necessitating surgical intervention. Cholecystectomy is now the recommended treatment preferably carried out at the time of first admission to the hospital with cholecystitis.¹ While the role of laparoscopic cholecystectomy, as the preferred approach for treatment of gall-stones in light of better compliance and less chances of infection is now well established,² there continues to be a certain debate on routine use of drains in this procedure. Traditionally surgeons have instituted drains regularly after open cholecystectomy and for a significant proportion of surgeons the trend has continued for laparoscopic approach as well. A recent survey of the current practice of surgeons in Queensland, Australia showed that 1/3rd of them routinely leave drains during laparoscopic cholecystectomy.³ This approach is based on tradition rather than any scientific supportive data.⁴ In recent times, this view has been challenged by the new breed of laparoscopic surgeons with a recent meta-analysis⁵ and Cochrane data base review⁶ showing no advantage to routine use of drains.

Department of Surgery Hayatabad Medical Complex, Peshawar.

Address all correspondence to:

Shehzad Akbar Khan

Associate Professor of Surgery Hayatabad Medical Complex Phase IV, Hayatabad, Peshawar

E-mail: shehzadakbar@aol.com

This study was designed to assess the impact of drain on overall outcome after laparoscopic intervention for removal of gall bladder especially in the context of post operative sub hepatic collection, post-operative abdominal and shoulder tip pain and time to discharge.

MATERIALS AND METHODS

This prospective study was carried out in the Surgical Unit of Hayatabad Medical Complex over a period of 2 years from December 2010 to Dec 2012. Adult patients undergoing elective laparoscopic cholecystectomy for symptomatic gallstones were included. Patients with cholangitis, pancreatitis, empyema, malignancy of gall bladder and those having difficult cholecystectomy with significant bleeding or biliary leak as well as those converted to open surgery were excluded. Patients were randomly divided by systematic sampling into 2 groups. Group A consisted of patients without any drainage procedure and Gp B had patients who had a drain instituted during laparoscopic cholecystectomy. Patients were operated under general anesthesia by the same group of surgeons. At the end of all operations suction was carried out in the right sub-diaphragmatic space. Standard antibiotic prophylaxis and analgesia (Ketorolac) was given to all patients and a size 20 drain was placed in the sub hepatic space for patients in Gp B, with removal planned after 24 hours. Postoperative pain (abdominal or shoulder tip) was evaluated on an analogue scale with a range from 0(no pain) to 10(worst pain) recorded by a member of the surgical team. All patients were assessed for any sub hepatic collection

by abdominal ultrasonography 24 to 36 hours after the procedure. Duration of hospital stay was noted. Patient's discharge was delayed if there was > 50 ml intra abdominal fluid collection on USS or >100ml bile or blood in the drain. The former group was followed with serial scans as out patients, to exclude any expansion in size of the collection, while the later were discharged once the drainage had ceased or decreased to < 50 ml. Patient's age, sex and American Association of Anesthesiologists (ASA) risk were also recorded. Data was entered and analyzed using Statistical Package for Social Sciences SPSS software version. Mann Whitney U test and t test were used for comparison with a p value of less than 0.05 considered significant.

RESULTS

A total of 156 patients entered the study equally divided into 2 groups. There was no significant gender or age preponderance between the 2 groups and they were uniformly balanced in relation to their co-morbid status as judged by ASA grading (Table 1).

Significant difference was observed in relation to the pain complaint with the patients who had a drain instituted following laparoscopic cholecystectomy ex-

Table 1: Patient characteristics

	Gp A	Gp B	Significance (p value)
No of pts	78	78	-
Gender			
M	21	25	0.83
F	57	53	
Mean Age	49	47	1.2
ASA			
I	37	39	0.99
II	25	28	0.76
III	16	11	0.15

Table 2: Post operative complications and hospital stay

	Gp A	Gp B	Significance (p value)
Intra abd fluid collect			
> 50ml on US	3	4	0.35
>100ml in drain	1	-	
Wound infection	3	4	0.19
Median Hosp stay	1(1-6)	2(2-6)	0.03

periencing more pain as compared to those who did not. Median abdominal pain scores 24 h after operation was 4 (2-7) in group B and 3 (2-6) in group A ($p=0.04$; Mann-Whitney U test). Median shoulder pain scores 24 hrs after operation was 0 (0-2) in group B and 0 (0-0) in group A ($p=0.32$; Mann-Whitney U test).

Any post operative complications especially in terms of fluid collection detected on US or significant drainage are presented in table 2. The table also shows that the mean stay of patients in group A was 1 day (range 1-6) as against mean stay of 2 days (range 1-7) and this difference was statistically significant ($p=0.03$; Mann-Whitney U test).

DISCUSSION

In this era of minimal access surgery, no procedure has generated more interest than laparoscopic cholecystectomy. A vast number of studies and trials can be found in literature addressing different aspects of this surgery. One of the topics of much interest to the surgeons which has been evaluated in this study as well is whether there is any benefit to the routine placement of drains after laparoscopic cholecystectomy. Drains were used traditionally for early detection of bile leaks and any unsuspected hemorrhage and to evacuate abdominal fluid collections without the need for more invasive procedures. However, studies from the days of open choecystectomies showed that the efficacy of drains in detecting early significant biliary leak is indeed limited.^{7,8,9}

The safety of laparoscopic cholecystectomy is now well established with the rate of any serious complications falling below 1%.¹⁰ Studies have suggested a higher wound infection rate in patients with post operative drains^{11,12,13}. In our study, however, there was no significant morbidity with the rate of wound infection (umbilical port in all cases) affecting both groups i.e. those with and those without drains, almost uniformly. In all cases it responded to wound wash and 5 – 7 days of oral antibiotics. These findings are in keeping with more recent trials by Hawasli and Brown¹⁴ and Playforth et al¹⁵ who reported that no significant differences were present regarding wound infection in the two groups.

In our study, intra abdominal fluid collection (>50 ml) was detected on USS in only 4 patients without drains and 3 with post laparoscopic cholecystectomy drains. In all these cases this was in the form of sub hepatic collection which cleared spontaneously as evidenced by repeat USS in one week's time. The absence of sub hepatic fluid collection is associated with an uncomplicated post operative recovery¹⁶. Experimental studies have shown that drains are covered by omentum and quickly occluded in the absence of any noteworthy intraperitoneal collection¹⁷. Significant post operative hemorrhage as evidenced by > 100 ml blood stained fluid in the drain was recorded in only 1 patient (GpA) in our study. The patient was later found to have

a bleeding diathesis missed at the time of pre-operative work up. Generally in elective cholecystectomies hemorrhagic complications are rare and as such it is difficult to power any trials looking at this particular complication. There was no case of biliary leakage which incidentally is the main indication for instituting drains. The difference for both these complication was not statistically significant, as is the case in studies conducted elsewhere¹³. Some studies have even suggested an increase in the amount of sub hepatic fluid collection, related to placement of drains, possibly due to its irritant effect, creation of dead space and vacuum effect and loss of tissue tamponade¹⁸. Other studies have shown that even if there is a slight collection following cholecystectomy, it remains asymptomatic and is absorbed in due course by the peritoneum^{19,20}. The need for drainage and any benefits from the said adjunct is not substantiated from this study.

As for post operative pain, this was evaluated in this study in context of abdominal and shoulder tip pain. While there was no difference between the two groups in terms of the later complication significantly more patients with drains after laparoscopic cholecystectomy complained of abdominal pain than those without this adjunct. This is in keeping with studies by Uchiyama K et al²¹ and Tzovara G et al²². Other clinical trials, however have failed to demonstrate any significant difference in this regard^{13,14}.

The other significant finding of this study was early discharge of patients undergoing laparoscopic cholecystectomy without drain; their mean stay being a day less than those having a drain in place. This may be influenced by the practice of delaying drain removal till the patient is fully mobile and the drainage bag completely dry. Similar findings were observed in a study conducted for open cholecystectomies in Rawalpindi, Pakistan²³. Other trials on the subject have failed to show any significant difference in this respect²².

In light of these findings the need for regular drain placement for drainage of suspected intra abdominal fluid collection after laparoscopic cholecystectomy does not seem warranted. Infact this study has concluded that patients without a sub hepatic drain fare better in terms of post operative pain and hospital stay, thereby discouraging the routine use of this adjunct.

REFERENCES

1. Goldman, Lee (2011). Goldman's Cecil Medicine (24th Ed.). Philadelphia: Elsevier Saunders. p. 1017.
2. Soper NJ, Stockmann PT, Dunnegan DL, Ashley SW (August 1992). "Laparoscopic cholecystectomy. The new 'gold standard'?" Arch Surg 127 (8): 917-21
3. Askew J (2005) A survey of the current surgical treatment of gallstones in Queensland. ANZ J Surg 75:1086-1089
4. Launay-Savary MV, Slim K. Evidence-based analysis of prophylactic abdominal drainage. Ann Chir 2006; 131:302-5.
5. Marcello Picchio, Francesco De Angelis, Settimio Zazza. Drain after elective laparoscopic cholecystectomy. A randomized multicentre controlled trial. Surg Endosc (2012) 26:2817-2822
6. Gurusamy KS, Samraj K, Mullerat P, Davidson BR (2007) Routine abdominal drainage for uncomplicated laparoscopic cholecystectomy. Cochrane Database Syst Rev 3:CD006004
7. Monson RTJ, Keane BVF, Brenman GT (1991) Cholecystectomy is safer without drainage: the results of a prospective, randomized clinical trial. Surgery 109:740-746
8. Farha JG, Chang CF, Mathews HE (1981) Drainage in elective cholecystectomy. Am J Surg 142:678-680
9. Budd CD, Cochran CR, Fouty JW (1982) Cholecystectomy with and without drainage. Am J Surg 143:307-309
10. Chiche L, Letoublon C . Traitement des complications de la chole´cystctomie. In: EMC, Techniques chirurgicales—Appareil digestif,2010; pp. 40-960. Elsevier Masson SAS, Paris
11. Thiebe U, Eggert A. Drainage after laparoscopic cholecystectomy. Minim Invasive Chir. 1994;3:90-2
12. Gurusamy KS, Samraj K. Routine abdominal drainage for uncomplicated open cholecystectomy. Cochrane Database Syst Rev. 2007 Apr 18; (2):CD006003.
13. Gouda El-labban, Emad Hokkam, Mohamed El-labban. Laparoscopic elective cholecystectomy with and without drain : A controlled randomised trial. J Minim Access Surg. 2012 Jul-Sep; 8(3): 90-92
14. Hawasli A, Brown E. The effect of drains in laparoscopic cholecystectomy. J Laparoendo Surg.1994;4:393-8.
15. Playforth MJ, Sauven P, Evan M, Pallock AV. Suction drainage of the gallbladder bed does not prevent complications after cholecystectomy: A random control clinical trial. Br J Surg. 1985;72:269-71.
16. Ha°kansson K, Leander P, Ekberg O, Ha°kansson HO (2001) MRImaging of upper abdomen following cholecystectomy. Normal and abnormal findings. Acta Radiol 42:181-186.