

A Comparative Study of Open Cholecystectomy with And without Drain

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Abstract:

Objectives:

1) To compare post operative abdominal complications like wound infection, chest infection, incidence of pyrexia associated with open cholecystectomy with and without drain.

2) To compare post operative pain and hospital stay in open cholecystectomy with and without drain.

Materials and Methods: prospective study carried out at K.R. hospital attached to mysore medical college and research institute and included patients admitted with diagnosis of chronic calculous cholecystitis and underwent elective open cholecystectomy over a period of one year.

Results: Patients in drain group had more post operative pain, wound infection, fever episodes and longer hospital stay.

Conclusion: Surgical drainage after open cholecystectomy is unnecessary and is associated with an increased incidence of postoperative morbidity, wound infection, post operative pain, chest complications, pyrexia and prolonged hospital stay .

Keywords: post operative, cholecystectomy, drain.

Date of Submission: 23 -08-2017

Date of acceptance: 09-09-2017

I. Introduction

Gallstone disease is one of the most common problem affecting the digestive tracts and affects about 10-15% of the adult population .Increased risk of developing gallstones in obesity, pregnancy, crohn's disease, terminal ileal resection, gastric surgery, hereditary spherocytosis, sickle cell disease and thalassaemia. Women are three times more likely to develop gallstones than men⁽¹⁾. An abdominal ultrasound is the diagnostic test for gallstones. Cholecystectomy offers excellent results for patients with symptomatic gallstones. About 90% of patients with typical biliary symptoms and stones get symptom free after cholecystectomy . Cholecystectomy is the most common elective abdominal operations⁽²⁾ . Open cholecystectomy was first performed in 1882 by Carl Langebuch, he appropriately stated, "The gall bladder needs to be removed not because it contains stones, but because it forms them" . Although laparoscopic cholecystectomy is now the gold standard, but in developing countries due to economical constraints open cholecystectomy is good alternative and is the standard operation for the gallstone disease.

Without clear evidence, prophylactic drainage after elective cholecystectomy was a routine practice since a long time, which allows monitoring for any postoperative bleeding as well as biliary leakage. However, recent reports show there is no benefit of drainage after elective cholecystectomy. Surgically placed drains are associated with increased rates of intraabdominal and wound infections, increased abdominal pain, decreased pulmonary functions, drain fever, drain site hernia and prolonged hospital stay. The recent Cochrane database shows that there is no evidence to support the use of drain after open cholecystectomy. However, the data related to effectiveness of drain use is still limited. This serves as a basis to undertake present study to compare the effect of drain use on outcome of open cholecystectomy.

II. Materials And Methods

It is a prospective study carried out at K.R. hospital attached to Mysore medical college and research institute and included patients admitted with primary diagnosis of chronic calculous cholecystitis and who underwent elective open cholecystectomy from May 2016 to April 2017 for a period of 1 year. A total of 62 patients were studied out of which 37 patients were with drain and 25 patients were without drain . The drain placed in our study was close wound drainage device under negative pressure and was inserted through a separate stab incision.

Diagnosis of chronic calculous cholecystitis was based on detailed history , thorough clinical examination and ultrasound abdomen . All the required preoperative investigations were done and after ensuring patients fitness for surgery, elective open cholecystectomy was performed . Cases were allotted to either groups of elective open cholecystectomy with or without drain. Intraoperative adhesions ,excessive bleeding and other difficulties were noted. Each case was analysed with respect to post operative abdominal complications like wound infection, fever, biliary peritonitis, postoperative pain, hospital stay and convalescence. Each patient was followed up in the outpatient department after 15 days, 1month and 2 months with regard to chronic abdominal pain and wound infection . Patients diagnosed with acalculouscholecystitis, acute cholecystitis, gallbladder carcinoma, calculous cholecystitis with complications like empyema, obstructive jaundice were excluded.Data was analysed using statistical software SPSS version 11.1 . Mean and standard deviation was calculated for continuous variables like post operative pain vas score and length of hospital stay. Student unpaired t test and chi square test was used as test of clinical significance.

III. Results

The study included 62 patients of chronic calculous cholecystitiswho underwent elective open cholecystectomy. Of them, 37 patients had closed suction tube drain kept in the sub hepatic space and remaining 25 patients were without a drain.

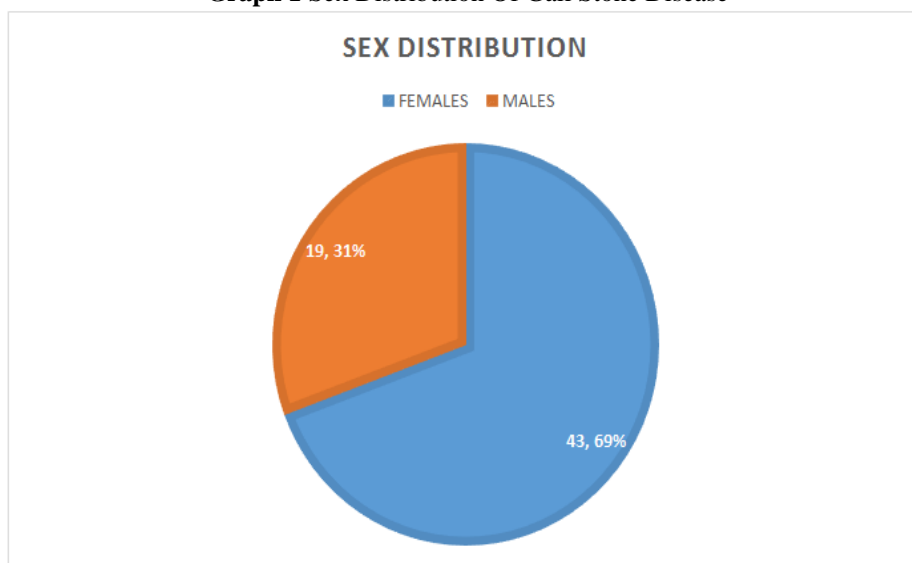
The most commonly affected **age group** was 30-40 yrs with 15 cases(24.2%) followed by 50-60 yrs with 14 cases(22.5%). The youngest patient was 20 yrs old female and the oldest patient was 82 yrs old female. 43 patients were female and 19 were male. The overall female to male ratio was 2.3:1 confirming the female preponderance of gall stone disease. There was no significant difference in operative time in the two groups.

Post operative pain with the increased analgesic requirements was noted in patients with drain group as compared to non drain group. Post operative pain was evaluated by Visual Analogue scale and was graded from score 0 to score 10 . The mean pain score for patients with drain on POD 1 and POD 3 was 4.19 and 2.89 respectively and for patients without drain was 2.00 and 1.4 respectively showing the significant pain free post operative period in patients without drain.

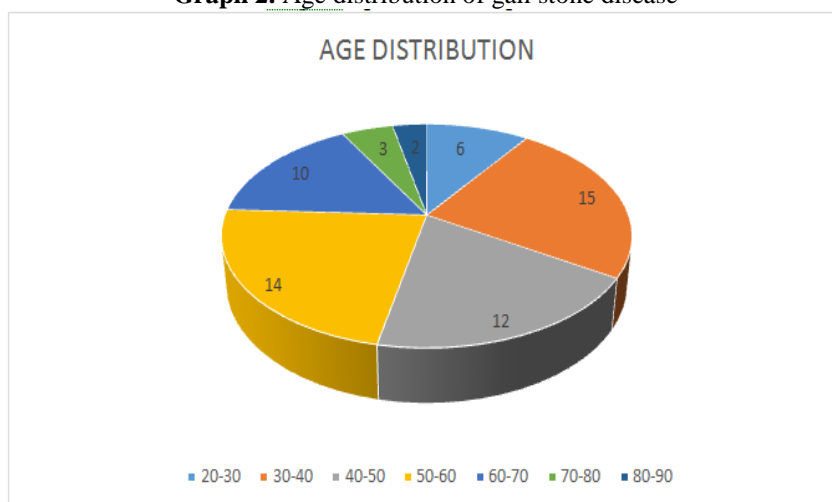
Increased rate of post operative**chest infection** with pyrexia were observed in drain group . 6 patients developed chest infection out of which 5(13%) were from drain group and 1(4%) were from non drainedgroup . In the present study **wound infection** was noted in 4(10%) patients in the drain group and 1(4%) patient in non drain group. Rise of temperature within 24 hrs. of operation was considered as reactionary and was not taken into account. A persistent rise of temperature of 100^oF or more was considered as significant. In this study, 18 patients (48.64%) had a postoperative pyrexia in drain group compared to only 3 cases of pyrexia(12%) in non drained group . We have seen that there is a statistically significant association of pyrexia with presence of postoperative drain.

The average length of **hospital stay** for patients with drain was about 5.16 days and 3.32 days for patients without drain leading to early recovery and faster healing and return to work. There was no biliary peritonitis or deaths in either group. The overall morbidity was found to be more in patients with drain.

Graph 1 Sex Distribution Of Gall Stone Disease



Graph 2. Age distribution of gall stone disease



Visual Analogue Scale

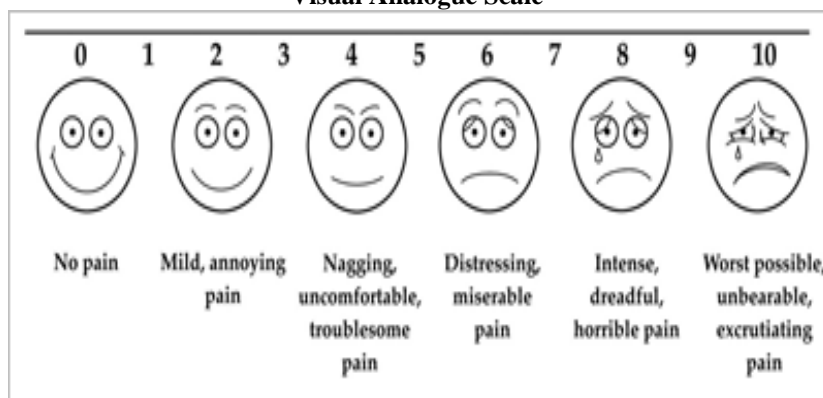


Table 1. Average pain score

	POD 1	POD 3	POD 7
DRAIN	4.19	2.89	1.83
WITHOUT DRAIN	2.00	1.4	0.56

P Value <0.005

Table 2. Average length of hospital stay(in days)

	DRAIN	WITHOUT DRAIN
MEAN	5.16	3.32
STANDARD DEVIATION	1.07	0.80
TOTAL NUMBER	37	25

P Value<0.0001

Table 3. Post operative complications

	DRAIN(N=37)	WITHOUT DRAIN(N=25)
WOUND INFECTION	4(10.8%)	1(4%)
CHEST COMPLICATIONS	5(13%)	1(4%)
FEVER	18(48.64%)	3(12%)

IV. Discussion

Since the first successful elective cholecystectomy in 1882 by Langebuch, the issue of the use of routine drainage is still unresolved, needing a clear answer. **Spivak et al** in 1913 reported first cholecystectomy without drainage⁽³⁾. In 1915, **Yachet et al** described that there is no need to drain the peritoneal cavity and nothing extra is to be gained by leaving drains in the fossa after cholecystectomy.

Any leakage of blood and bile from the gall bladder bed is effectively absorbed by the peritoneum^(4,5,6). Postcholecystectomy 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. The holes of the drain get plugged with fibrinous exudates and clotted blood⁽⁷⁾. The practice of using drain after cholecystectomy is based

on tradition rather than any scientific fact. It is associated with increased morbidity, slow convalescence, significant post operative nausea and pain and delay in return to the job^(7,8). The present study also revealed that putting a drain after cholecystectomy is associated with increased morbidity. The other logic for drainage of sub-hepatic space after cholecystectomy is fear of bile leakage from the gallbladder bed that may lead to bile peritonitis. However, many cases have been reported where indwelling drains failed to drain the bile or pericholecystic abscess. Therefore, the lack of bile leakage from a drain cannot be interpreted as the absence of bile leakage⁽⁹⁾. According to Frederich Coller "Bile is not educated to climb up the drains". Drains become surrounded by omentum or blocked by some clot or exudates soon after the insertion into the peritoneal cavity and thereby isolated^(9,10). Drain provokes leakage from superficial biliary ductules damaged by dissection and contend that without drainage it would rapidly wall off. The drain may prove dangerous after simple cholecystectomy as infection introduced along a drain may render an otherwise harmless collection of bile a cause of peritonitis. Gurusamy et al.⁽¹¹⁾ reported lower wound infection rate in the no drain group than in the drain group, maybe because of the presence of a foreign body. It would seem that the presence of the drain and the extra pain resulting cause a splintage of the lower right chest and predispose to atelectasis and chest infection

Bose et al⁽¹²⁾ found pain in 81.25% cases of drain group compared to a very low incidence of postoperative pain in the patients without a postoperative drain. As most patients relate success or failure of an operation to the degree of postoperative pain, the psychological advantage offered due to decreased pain in undrained group cannot be underestimated. Williams et al⁽¹³⁾ found a higher incidence of wound infection (7.8%) in drained group compared to 1.4% in undrained group. Higher incidence of wound infection in drained group were also found by Goldberg.⁽¹⁴⁾ (8.1%), Frederick P. Ross.⁽¹⁵⁾ (6.6%), Umberto Baraldi.⁽¹⁶⁾ (4.2%) The higher incidence of pyrexia in drained group compared to undrained group also found in studies conducted by Mayers M.B⁽¹⁷⁾, Goldberg et al (48.5%).⁽¹⁴⁾ Lal et al⁽¹⁸⁾ (40.0%) Average postoperative hospital stay was prolonged in drained group in studies conducted by Williams et al (12 days), Goldberg et al (5.0 days), and Gordon et al (10.3 days), P.E. Trowbridge (7.3 days).^(13,14,19,20) Farha et al stated that open drainage resulted in increased morbidity and a prolonged hospital stay.⁽²⁰⁾ we have found similar results in our study.

V. Conclusion

Surgical drainage after open cholecystectomy is unnecessary and is associated with an increased incidence of postoperative morbidity, wound infection, post operative pain, chest complications, pyrexia and prolonged hospital stay.

References

- [1]. F.Charles Brunnicardi, Schwartz Principles Of Surgery, 10th Edition
- [2]. Erichsen HG. Cholecystitis And Cholelithiasis. Experience With 760 Cases. Reported
- [3]. Bynaseem Aslam Channa May 2, 2007
- [4]. Spivak JL. The Surgical Techniques Of Abdominal Operations 5th Ed.Springfield, Illusions, Thomas, 1995 Page 618
- [5]. Bareldi V, Mecellary G, David P. Cholecystectomy Without drainage; A Dilemma? Am J Surg 1998;140:658-93
- [6]. Mesherry CK. Open Cholecystectomy. Am J Surg 1993;165:435-39
- [7]. Bartoli E, Capron JP. Epidemiology And Natural History Of cholelithiasis. Rev Prat. 2000;50:2112-2116.
- [8]. Bateson MC. Gallstones And Cholecystectomy In Modern Britain. Postgrad. Med. J. 2000;76:700-3.
- [9]. Chaudhery A, Khanna R, Salunkhe S. Tubeless, Drainless, Short-Stay Cholecystectomy. Indian J Gastroentrol 1999;11:9-10
- [10]. Siddiqui FG, Soraya NS. An Audit Of Cholecystectomy Specimens. Jsurg Pakistan 2002;7(2):18-21.
- [11]. Hall RC. Short Surgical Stay: Two Hospital Days For cholecystectomy. Am J Surg 1987;154:510-5
- [12]. Gurusamy KS, Samraj K, Mullerat P, Davidson BR (2009) Routine Abdominal Drainage For Uncomplicated Laparoscopic Cholecystectomy (Review). Cochrane Review, Published In The Cochrane Library By Johnwiley& Sons, Ltd, Vol. 1, Pp 1-11
- [13]. Debabrata Bose, Pronob K Mandol, Tarun K Chattopadhyay, Et Al. Cholecystectomy And Drainage: A Prospective Randomized Study. Indian Journal Of Surgery 1998;60(4):242-246.
- [14]. Williams CB, Halpin DS, Knox JS. Drainage Following Cholecystectomy. Br J Surg 1972;59(4):293-296
- [15]. Goldberg IM, Goldberg JP, Liechty RD, Et Al. Cholecystectomy With And Without Surgical Drainage. Am J Surg 1975;130(1):29-32.
- [16]. Frederick P Ross, Robert M Quinlan. Eight Hundred Cholecystectomy. A Plea For Many Fewer Drains. Arch Surg 1975;110(6):721-724.
- [17]. Umberto Baraldi, Giorgio Macellari, Piero David. Cholecystectomy Without Drainage: A Dilemma? Am J Surgery 1980;140(5):658-659
- [18]. Myers MB. Drain Fever: A Complication Of Drainage After Cholecystectomy. Surgery 1962;52(2):314-318.
- [19]. Lal MM, Mishra DS, Sarma VK, Et Al. A Case For No Drainage After Elective Cholecystectomy. Indian Journal Of Surgery 1993;55(9):433-437.
- [20]. Gordon AB, Bates T, Fiddian RV. A Controlled Trial Of Drainage After Cholecystectomy. Br J Surg 1976;63(4):278-282.
- [21]. Farha GJ, Chang FC, Matthews EH. Drainage In Elective Cholecystectomy. Am J Surg 1981;142(6):678-680.

*Anandaravi. B.N. "A Comparative Study of Open Cholecystectomy with And without Drain."
IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.9 (2017): 25-28