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# STUDY FOR INDICATIONS AND ADVANTAGES OF DRAIN INSERTION IN CASES OF STANDARD LAPAROSCOPIC CHOLECYSTECTOMY IN A TERTIARY CARE HOSPITAL

General Surgery

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## ABSTRACT

**Introduction:** Laparoscopic cholecystectomy involves removal of Gall Bladder via laparoscopy.Ambiguity continues even with regards to the possible and appropriate scientific indications regarding use of sub hepatic drainage.This study was conducted to study the indications for the insertion of sub hepatic drainage and its effects of sub hepatic drainage in a case of standard lap cholecystectomy, in terms of post-operative parameters.

**Material and methods**: It was a 2 year study conducted at the Department of General Surgery, T.N. Medical college and B.Y.L. Nair hospital, Mumbai. We included patients who underwent standard laparoscopic cholecystectomy at our hospital from Jan 2017 to December 2018-retrospective prospective. Informed consent was taken before enrolment in the study followed by collection of data. For retrospective arm, operated cases of laparoscopic cholecystectomy performed in the hospital from January 2017 to the date of approval of the study, were studied. SPSS was used for statistical analysis

**Results:**The highest incidence of lap cholecystectomy was in 5th decade (46%). There was increased incidence in women (84%).There was an increased incidence of drain insertion in diabetic patients.The incidence of post-operative pain in abdomen was greater in the group of patients with drain in situ while that of nausea and vomiting was higher in patients without drain in situ, though this was statistically insignificant.The mean hospital stay was greater in patients with drain (3.9 days), the difference was statistically insignificant.There were no significant advantages or obvious disadvantages of drain insertion in cases of laparoscopic cholecystectomy in this study.

**Conclusion:** Although some cases of drain insertion were due to biliary spillage or adhesiolysis, most of cases were due to a protocol followed by the surgeons.There was no significant difference in the post-operative pain or nausea or hospital stay in both groups.

## KEYWORDS

Laparoscopic cholecystectomy, drain, cholelithiasis

## INTRODUCTION

It was in mid 1980's that laparoscopic cholecystectomy(LC) was introduced for symptomatic cholelithiasis.[1]Laparoscopic cholecystectomy involves removal of Gall Bladder via laparoscopy instead of traditional open method of laparotomy. It has become the gold standard for managing cases of cholelithiasis.The major advantages of LC include less postoperative pain, less time required for hospitalization and recovery, and better cosmetic results.[2] Patients are able to return to preoperative functional status rapidly with minimal postoperative morbidity and pain.

Arguments of drainage from open era continue into the laparoscopic era. Pneumoperitoneum is considered the causative factor for postoperative nausea/vomiting, and postoperative pain, especially shoulder tip pain, following LC.

Ambiguity continues even with regards to the possible and appropriate scientific indications regarding use of sub hepatic drainage, instead of a blanket use of the same. Most surgeons are at either extremes of the spectrum while some prefer an individual case based approach would be best suited.

This study was conducted to study the effects of sub hepatic drainage in a case of standard lap cholecystectomy, in terms of post-operative parameters like post op pain, nausea, vomiting, number of days of hospital stay and other complications if any. The study also attempted to purview the indications for the insertion of sub hepatic drainage.

## MATERIALS AND METHODS

This was a 2 year study of cases of operated standard laparoscopic cholecystectomy done at our hospital from Jan 2017 to December 2018-retrospective prospective, conducted at the Department of General Surgery, T.N. Medical college and B.Y.L. Nair hospital, Mumbai.

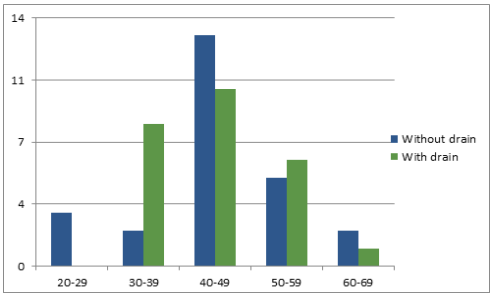
Sample size was carefully selected as 50 cases after going through the records of past years in our hospital. Informed consent was taken before enrolment in the study followed by collection of data. For retrospective arm, operated cases of laparoscopic cholecystectomy performed in the hospital from January 2017 to the date of approval of the study, were studied. Patients who were diagnosed with cholelithiasis either clinically or radiologically and underwent standard laparoscopic cholecystectomy, after being cleared for laparoscopic surgery were included in the study. Patients who had difficult laparoscopic surgeries requiring deviation from standard operative steps and at extremes of ages (<18 and >80 years) were excluded.They were compared on the basis of comorbidities, intra operative findings, reasons for drain insertion and post op complications.

For statistical analysis, continuous variables were expressed as the mean +/-standard deviation. Nominal and ordinal were tabulated and non- parametric tests applied wherever appropriate. Statistical Package for Social Sciences (SPSS 20 for windows) was used for statistical analysis.

## RESULTS

The sample size of 50 was divided into two study groups according to the presence or absence of drain, of 25 patients each. The data was meticulously collected and analysed.

**Graph 1: Age distribution**



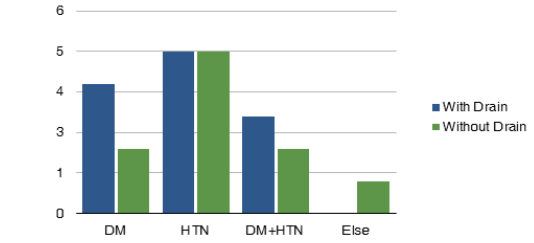

Graph 1 shows the age distribution of the cohort, with maximum number of patients belonging to the age of 40-49 years in both the groups.

**Table 1: Sex distribution**

| Sex | With Drain | Without Drain |
|---|---|---|
| Male | 5(20%) | 3(12%) |
| Female | 20(80%) | 22(88%) |

Table 1 shows the sex distribution of the cohort, with gall stones being more common amongst women. However, insertion of drain in the surgery showed no preponderance to sex of the patient.

**Graph 2: Co-morbidities**



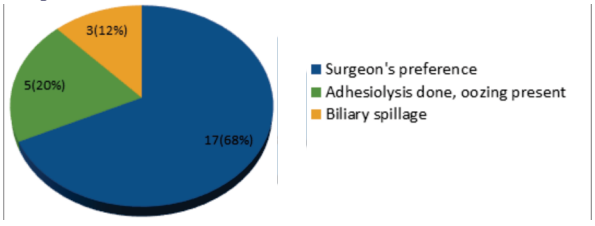

Graph 2 represents the presence of comorbidities in the patients of the study. Amongst patients with Diabetes (11), 7 patients had a drain placed whilst 4 had no drain placed for them. However as per Chi square test ($\chi^2$ value of 0.46) the difference is statistically insignificant.

All patients were operated under general anaesthesia and Table 2 shows the intra-op findings.

**Table 2: Intra op findings**

| Intra-op findings | Drain Placed | No Drain placed |
|---|---|---|
| Normal Anatomy | 16 | 19 |
| Adhesions to transverse colon | 3 | 1 |
| Omental adhesions | 4 | 6 |
| Adhesions to duodenum | 2 | 1 |
| Short cystic duct | 1 | 0 |
| Moynihan's hump | 1 | 0 |
| Intra hepatic GB | 1 | 0 |

**Graph 3: Reasons for drain insertion**




Graph 3 depicts the reasons for insertion of drains with The most common cause for insertion of drain has been the preference of the surgeon (68%).

**Table 3: Post op complications**

| Complains | With Drain | Without Drain | X2 (Chi square) |
|---|---|---|---|
| Pain in abdomen | 4(16) | 3(12) | 0.1661 (Not significant) |
| Nausea and vomiting | 2(8) | 5(20) | 0.6645(Not significant) |
| Pain in right shoulder | 0 | 2(8) | |

Table 3 compares the post op complications between the two groups, noted in the wards and until the first follow up visit, which were statistically insignificant.

**Table 4: Duration of hospital stay**

| | With Drain | | Without Drain | | | |
|---|---|---|---|---|---|---|
| Hospital stay(Days) | Mean | SD | Mean | SD | Mean Difference | z* Value, sig |
| Hospital stay(Days) | 3.9 | 0.78 | 3.4 | 1.35 | 0.5 | **1.603 p>0.05** |

Table 4 compares the duration of hospital stay between the two groups. The difference is statistically insignificant.

## DISCUSSION

In present study the most commonly affected age group is 41- 49 years, with 23 cases (46%). In studies conducted by Aman Nagpal et al[3], Mandeep Singh et al[4], the maximum incidence is found to be in the fourth decade while Bawahab et al[5] concurs with the present study. We found that 16% cases were males while 84% were females. Similar sex preponderance in the favour of women were noted by Dumlu et al[6] (5:1 F: M ratio), Mandeep Singh et al [4] (55 out of 60 were females), Aman Nagpal et al (1:3 M: F) [3].We did not find enough literature co-relating medical co-morbidities with increased or decreased incidence of drain placement by surgeons. Out of 11 Diabetic patients in the study, 7 were put drain. Although this was not found to be statistically significant, the plausibility in terms of increased subclinical attacks of cholecystitis increased adhesions cannot be denied. A dedicated study for this should be undertaken. Hypertension as a co-morbidity was not found to have any significant impact.

The most common intra-op finding in both groups was normal anatomy with surgeon preference being the most common reason for insertion of drain. The other common reason for drain insertion was adhesiolysis done by the surgeon, oozing from raw surface and intra op biliary spillage. Amongst deviation from the normal (undiseased) anatomy, most common were omental adhesions which were managed both with and without drains. Adhesions to transverse colon and duodenum were also noted and were managed both with and without drains. Most commonly drains were inserted as a surgeon's or unit's protocol.

The common post-operative complains included pain in abdomen (14%) and nausea vomiting(14%). 16% patients with drain had post-operative complain of pain as enquired over the hospital stay which was more than the 12% complain of pain in the no drain group, the difference however was statistically insignificant. This is in contrast to the Meta analysis by Picchio M et al[7]. The incidence of nausea and vomiting was greater in the no drainage series (20%) as compared to patients with drain (8%); however this too was found to be statistically insignificant at 95%confidence interval. This is in concurrence with Mandeep Singh et al series[4] , meta-analysis by Picchio et al[7] and systematic review and meta-analysis by C.S.Wong et al [8]. The incidence of shoulder tip pain (8%) was present only in no drainage series and was absent in patients with drain.

The post-operative hospitalization in both the groups was found to be statistically insignificant. This was in contrast to other study groups. However meta-analysis by Picchio et al[7], systematic review and meta-analysis by C.S.Wong et al[8], and Cochrane review by Gurusamy KS[9], concur with the present study findings of no significant difference.A single outlier case of a female patient with DM developing post op complication due to biliary spillage and wound infection (post-operative stay of 8 days) justifies drain insertion but rarely and strictly on a case to case individual basis.

## CONCLUSION

From this study we conclude that the incidence of laparoscopic cholecystectomy is highest in 5th decade and is more common in women. There was no significant difference regarding the post-operative pain or nausea or hospital stay in both groups. Though some cases of drain insertion were due to biliary spillage or adhesiolysis, a considerable number of cases were due to a protocol followed by the surgeons. A practice that should be weighed in terms of the advantages if any and against the possible disadvantages of the same.

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