

“Comparative Study Between Two Incisions Two Ports Laparoscopic Cholecystectomy And Four Incisions Four Ports Laparoscopic Cholecystectomy”

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Abstract: At times Laparoscopic Cholecystectomy becomes difficult. Laparoscopic Cholecystectomy may be rendered difficult by various problems encountered during surgery.

Aims And Objective: To calculate the male to female ratio in case of gall stones, age distribution along with the operative difficulties and techniques in two incisions two ports and four incisions four ports laparoscopic cholecystectomy and compare the outcome of two ports and four ports laparoscopic cholecystectomy in terms of operation time, hospital stay, complication rate, cosmesis, conversion rate to open Cholecystectomy.

Material And Methods: The present study will be conducted in three years on patients of gall bladder disease admitted for cholecystectomy throughout patient department / Emergency in Subharti medical college in whom laparoscopic cholecystectomy will be attempted. Number of patient will be 100.

50 patients will be planned for two incisions(10mm,5mm) two ports laparoscopic cholecystectomy and 50 patients will be planned for four incisions(10mm,10mm,5mm,5mm) four ports (Standard) laparoscopic cholecystectomy. Sampling Technique: Patients were selected alternatively for Two Incisions Two Ports Laparoscopic Cholecystectomy and Four Incisions Four Ports Laparoscopic Cholecystectomy

Observation And Results: So we conclude from the study that Two incisions two ports laparoscopic cholecystectomy has lesser hospital stay, lesser post operative pain, lesser post operative analgesia requirement, far superior cosmesis and similar complication, operative time and conversion rate compared to four incisions four ports laparoscopic cholecystectomy. We believe that two incisions two ports laparoscopic cholecystectomy is better than Single incision laparoscopic cholecystectomy (SILS) because SILS require different orientation during surgery. It also require special instrument such as reticulating instruments and multi channel ports during surgery and incision at umbilicus is greater than two port technique(15 mm in SILS v/s 10 mm in two port technique). There are higher chances of occurrence of umbilical hernia in SILS as compared to two port techniques.

Keywords: Gallstone Pancreatitis, Acute cholecystitis, Difficult Laparoscopic Cholecystectomy, Cosmesis.

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I. Introduction

Gallstones are a major cause of morbidity and mortality throughout the world^[1]. At least one-fourth women and 10% to 15% men over age of 50 years have gallstones^{[2], [3]}. Gall stones are remarkably common and are a major and expensive health problem. Its prevalence has become more apparent since the introduction of ultrasound. The estimated prevalence of gallstone disease in India has been reported as 2% to 29%^{[4], [5]}. In India, this disease is seven times more common in the North (stone belt) than in South India^[6]. Laparoscopic Cholecystectomy may be rendered difficult by various problems encountered during surgery such as difficulties in accessing the peritoneal cavity & creating a pneumo-peritoneum, bleeding, dissection of gallbladder wall, spillage of bile, spillage of stone, and difficulty of gallbladder extraction which may require conversion to open cholecystectomy. These may be due to acute inflammation, aberrant anatomy, adhesions, unexpected operative abnormal findings, iatrogenic injuries, obesity etc. Several factors have been found to be associated with a difficult case, but no reliable criteria are available yet to identify patients with a difficult laparoscopic cholecystectomy from pre-operative variables in viral marker positive population. Such prediction may allow a surgeon to be better prepared, to take extra precautions to reduce intra-operative complications, and to convert

from Laparoscopic Cholecystectomy to Open Cholecystectomy at an earlier stage if Laparoscopic Subtotal Cholecystectomy Type I or Type II is not feasible.

II. Aim And Objective

To calculate the male to female ratio in case of gall stones, age distribution along with the operative difficulties and techniques in two incisions two ports and four incisions four ports laparoscopic cholecystectomy and compare the outcome of two ports and four ports laparoscopic cholecystectomy. In terms of operation time hospital stay, complication rate, cosmesis, conversion rate to open Cholecystectomy.

III. Materia And Methods

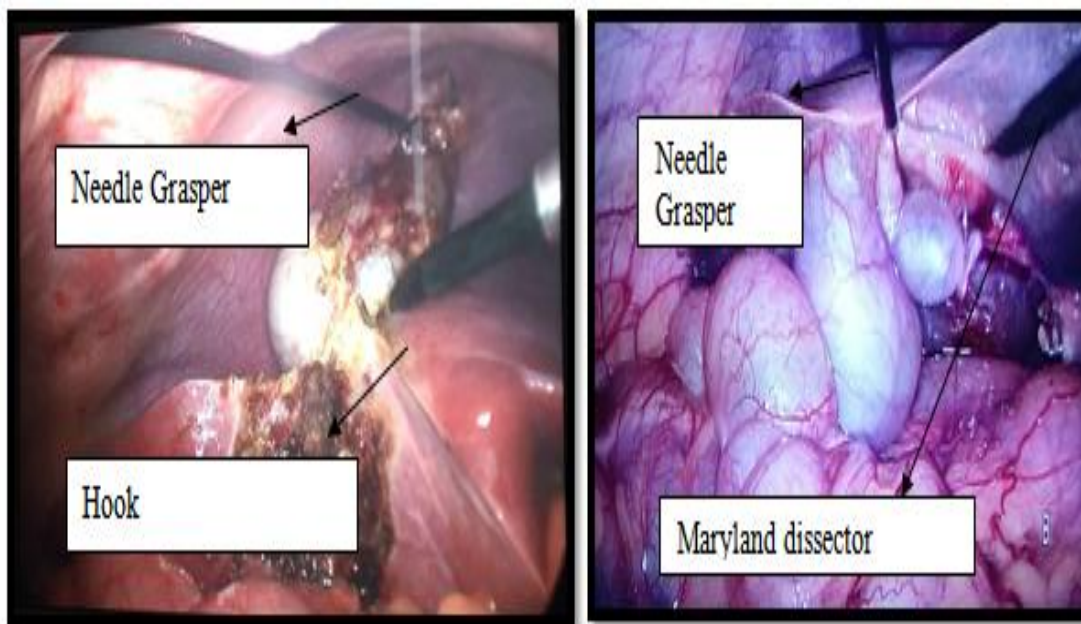
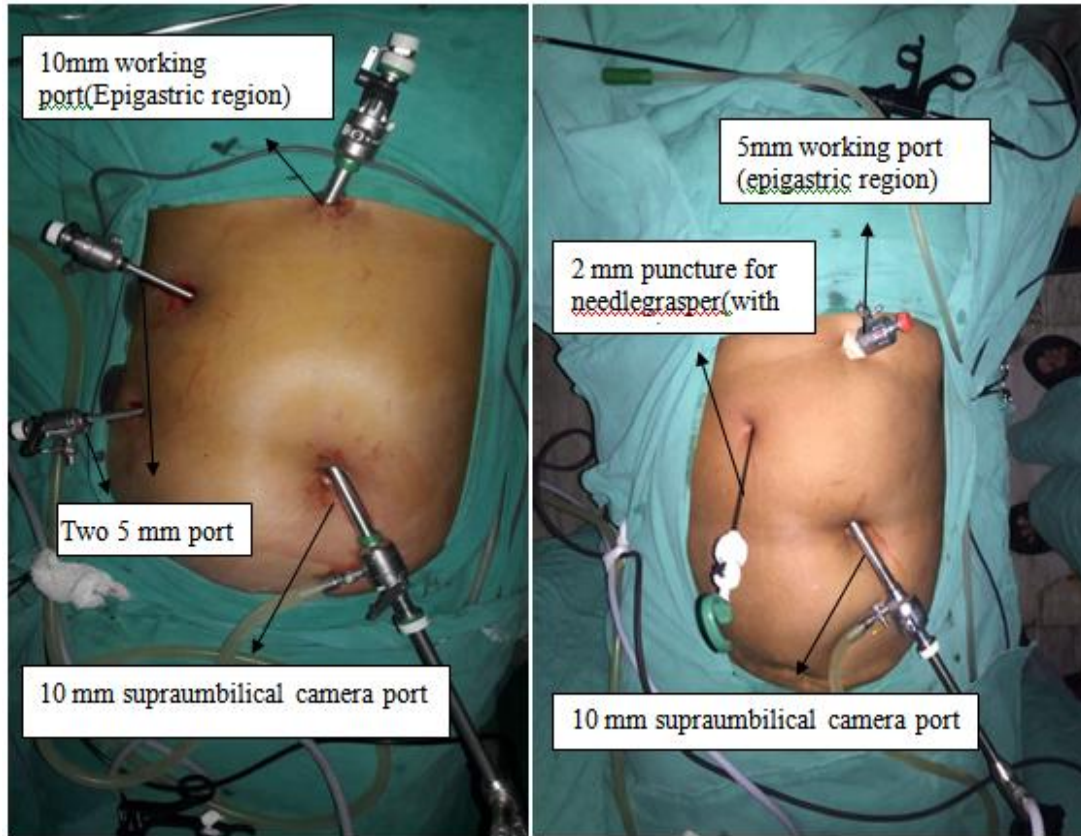
This prospective study was conducted in Department of General Surgery, Subharti Medical College, Meerut. Patient with Acute (within 72hours operated) & Chronic Cholecystitis with Cholelithiasis underwent laparoscopic cholecystectomy were included (total 100 no. of patient) in the study between 2015 to 2018

3.1 Inclusion Criteria: Case Of Acute Or Chronic Cholecystitis With Cholelithiasis.

3.2 Exclusion Criteria: The patient with suspected CBD stones or dilated CBD on USG, patient having clinical or USG suspected diagnosis of Ca gall bladder, Age below 10 years, Pregnancy, Acute pancreatitis, patients not fit for general anesthesia due to various medical illnesses, Peritonitis cases, patient with supra umbilical abdominal scar (n=26 patients).

3.3 Definition Of Variable

Age was evaluated as both a continuous variable and a dichotomous variable (<65 years versus >65 years). Body mass index was used as a dichotomous variable (obese [body mass index >30 Kg/m²] versus non-obese). Previous abdominal surgery was categorized as none versus any intra-abdominal surgery. The Gallbladder (GB) was defined as contracted or distended depending on the shape and transverse diameter. It will be defined as distended if the transverse diameter is greater than five (5) centimeters. GB wall thickness was estimated by using the maximal obtainable measurement on USG. The calculus size was evaluated as a dichotomous variable for the purpose of analysis (<1 cm versus >1 cm). The number of calculi was classified as a dichotomous variable (solitary versus multiple). The dependent variables (outcomes) included the following operative parameters: duration of surgery (in minutes), bleeding during surgery, access to peritoneal cavity, GB bed dissection, rupture of gall bladder, difficult extraction, extension of incision for extraction, and conversion to Open Cholecystectomy. Operative time: Duration of surgery (in minutes) [Duration of surgery included the time from insertion of the Veress's needle to closure of the trocar insertion site, and was evaluated as a dichotomous variable, <45 or >45 minutes]. Access to peritoneal cavity: The operating surgeon described the access to peritoneal cavity as 'easy' or 'difficult'. Injury to CBD/ Duodenum/small intestine/large intestine/omentum/ liver, Bleeding during surgery [Bleeding during surgery was graded as minimal, moderate or severe. Moderate bleeding was defined as bleeding leading to tachycardia of greater than 100/min without drop in blood pressure. Severe bleeding was defined as bleeding leading to tachycardia of greater than 100/min with a greater than 10 mmHg drop in blood pressure] GB dissection: easy or difficult depending upon difficulty in grasping GB, difficulty in retracting GB, difficulty due to obliterated anatomy of Calot's triangle, difficulty due to adhesions, difficulty due to embedded GB in liver, difficulty due to anatomical variation. Rupture of GB with spillage of stone /bile, Difficult extraction of GB, Extension of incision for extraction of gall bladder, Conversion to open cholecystectomy. The data collected was tabulated and the same was subjected to statistical analysis as per Performa attached.



- 1.Removing Gallbladder from Gallbladder fossa
2. Image taken after cutting cystic duct and cystic artery

3.4 Post Operative Care

Abdominal complications were assessed on the basis of postoperative abdominal pain, vomiting, distension, fever, raised TLC, DLC, ultrasonography abdomen if required. Oral fluids were allowed after 6-10 hours, if there was no nausea or vomiting. Patients were made ambulatory in the 8-12hours after surgery. Normal light breakfast was allowed from the next morning. Drain was removed, if the nature of discharge was

serous and the amount is less than 30 ml. Band aid was applied on the port site sutures on next morning all specimen of gall bladder were sent for histo-pathological examination in pathology department.

3.5 Discharge

The patients were discharged after assessment, if they had adequate pain control, were self-ambulatory, had postoperative voiding of urine and oral intake without vomiting. Patients not meeting the criteria were kept admitted and discharged when found suitable. Still our policy was to keep patients admitted for 2-3 days postoperatively just to prevent any postoperative un-eventuality which could be missed.

IV. Statistical Analysis

Univariate analysis was performed using Chi-Square test to determine the factors that are associated with difficult laparoscopic cholecystectomy was calculated using SPSS software. Next, a correlation matrix was developed to evaluate correlation between individual parameters. Conclusion regarding role of various factors in predicting difficult laparoscopic cholecystectomy was drawn.

V. Results And Discussion

Age: In the present study the mean age of patients who underwent Laparoscopic Cholecystectomy was 40.87 years showing that Cholelithiasis is more common in the middle age group.

Series and year	Mean age
Present study	40.87 ± 15.04 years
Gurkan yetkin et al(2009) ^[21]	75.02 ± 4.0 years
S Sreenivas et al(2014) ^[28]	40.79±12.6years

Sex: In present study majority of patients were female (73%) and male were only 27% showing that females have more prevalence of Gall stone disease than males.

Series and year	Female: male
Present Study	73:27
S Sreenivas et al(2014) ^[28]	92:11
Hajong R et al(2016) ^[31]	51:9
Ramachandran CS et al(1998) ^[26]	41:9

Operative time: It was calculated from skin incision for veress needle insertion to closure of wound. The mean operative time was 35 min and 45 min in Group A and Group B respectively.

STUDY	OPERATING TIME MEAN(in minutes)
Present Study	Group A (4P-LC): 35 minutes Group B(2P-LC):45 minutes
Aswini K Misroet al (2014) ^[30]	50 minutes

Operative pain: In present study we apply VAS (Visual Analogue Score)over two different duration(1st 24 hours and after 24 hours) which shows Group A patients took longer duration to get relived from post operative pain while in Group B patient got early relief from post operative pain.

STUDY	POST OPERATIVE PAIN
Present Study	Group B(2P-LC) <Group A(4P-LC), p-Value:0.022(S) VAS in first 24 hours p-Value:0.017(S) VAS after 24 hours
S Sreenivas et al(2014) ^[28]	Group B(2P-LC) <Group A(4P-LC), p-Value: 0.023
Hajong R et al(2016) ^[31]	Group B(2P-LC) <Group A(4P-LC)

Conversion rate

STUDY	CONVERSION RATE
Present study	6%
Lee SC et al(2014) ^[29]	22.19%
Aswini K Misro et al (2014) ^[30]	0%

In present study conversion rate is comparable with most of other series reported.

Cosmesis

STUDY	COSMESIS
Present study	Group B(2P-LC) cosmetically superior than Group A(4P-LC) p- Value: 0.001(S)
S Sreenivas et al(2014) ^[28]	2 port group cosmetically superior than 4 port group. p- Value: 0.00)(S)
Aswini K Misro et al (2014) ^[30]	Good

In our study 30 patients(60%) of four incisions four ports laparoscopic cholecystectomy(group A) are categorized as satisfied while 45 patients(90%) of two incisions two ports laparoscopic cholecystectomy are categorized as satisfied .In our study patients were accessed as satisfied or not satisfied on the basis of post operative scar at port sites.

Hospital stay

STUDY	HOSPITAL STAY(MEAN)
Present Study	Group A(2P-LC) 1.2 days Group B(4P-LC) 3.1days
Ramachandran CS et al(1998) ^[26]	1.31 days
Sharaf MF et al(2012) ^[27]	1 day
Aswini K Misro et al (2014) ^[30]	2 days

In our study 70% patients of four incisions four ports laparoscopic cholecystectomy (group A) had hospital stay < 3 days while 94% patients of two incisions two port laparoscopic cholecystectomy (Group B) had hospital stay < 3 days which shows that hospital stay is less in Group B compared to Group A which is significant .So, we conclude from this study that hospital stay in two incisions two ports is lesser than four incisions four ports laparoscopic cholecystectomy

VI. Conclusion And Summary

The present study was conducted in the post graduate Department of General Surgery of Subharti medical college. 100 patients who satisfied the selection and exclusion criteria were included in the study. Of these alternatively 50 patients underwent two incisions two ports laparoscopic cholecystectomy (10mm,5mm) and 50 patients underwent four incisions four ports laparoscopic cholecystectomy (10mm,10mm,5mm,5mm) . All included patients were evaluated in terms of age distribution, male to female ratio ,operative time, postoperative pain, hospital stay, complication rate, cosmesis, conversion rate to open Cholecystectomy and to compare the operative difficulties and techniques in two incisions two port laparoscopic cholecystectomy (10mm,5mm) and four incision four ports laparoscopic cholecystectomy (10mm,10mm,5mm,5mm) .In our study majority of patients were female (73%) compared to male (27%). Most of the female and male patients were in age group 36-45.The youngest patient in this study was 17 years female and the oldest was 78 years male.From this study, we conclude that two incisions two ports laparoscopic cholecystectomy is equally effective and safer as compared to four incisions four ports laparoscopic cholecystectomy as the complication rate, operative time and conversion rate are similar in both techniques.The learning curve in two incisions two ports laparoscopic cholecystectomy is similar and not very long as compared to four incisions four ports laparoscopic cholecystectomy because the orientation and ergonomics are similar to four incisions four ports laparoscopic cholecystectomy.Two incisions two ports laparoscopic cholecystectomy is cosmetically far superior to four incisions four ports laparoscopic cholecystectomy.Postoperative pain was lesser in two incisions two ports laparoscopic cholecystectomy as compared to four incisions four ports laparoscopic cholecystectomy and so post operative analgesia requirement was also less in two port technique.The operative time was almost equal to four incisions four ports laparoscopic cholecystectomy so anesthetic complications are not different. Hospital stay is lesser in two incisions two ports laparoscopic cholecystectomy compared to four incisions four ports laparoscopic cholecystectomy

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