

Original article:

Evaluation of Efficacy of Two versus Three Ports Technique in Patients Undergoing Laparoscopic Cholecystectomy: A Comparative Analysis

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Abstract:

Background: Laparoscopic cholecystectomy (LC) has proven to be a safe procedure with multiple benefits to the patients. Various modifications of LC have been developed with time, including three-port, two-port and, more recently, one-port or single incision LC. Hence; we planned the present study to assess and compare the efficacy of Three-Port and Standard Four-Port LC.

Materials & Methods: The present study included evaluation and comparison of efficacy of Two versus Three Ports Technique in patients undergoing LC. A total of 40 patients scheduled to undergo LC were included in the present study and were broadly divided into two study groups with 20 patients in each group: Group 1: included patients that underwent two Port Technique for LC, Group 2: included patients that underwent three Port Technique for LC. All the patients underwent LC according to their respective groups. Postoperative follow-up was done in all the patients. All the results were compiled and analyzed by SPSS software.

Results: A total of 40 patients were included in the present study and were broadly divided into two study groups with 20 patients in each group. Postoperative wound infection occurred in one subject each in both the study groups. We didn't observe any significant difference while comparing the postoperative outcome among subjects of group 1 and group 2.

Conclusion: In terms of efficacy and postoperative complications, both the two port and three port technique of LC are equalant.

Keywords: Cholecystectomy, Laparoscopic, Technique.

INTRODUCTION

Laparoscopic cholecystectomy (LC) has proven to be a safe procedure with multiple benefits to the patients, including reduced postoperative pain, smaller scars, shorter hospital stay, shorter convalescence period, and decreased risk of selected complications compared with open cholecystectomy.^{1,2} Currently, the majority of patients undergoing elective LC are observed in the surgical ward or in a short-stay unit overnight. Although several authors have documented the feasibility of outpatient management of patients undergoing LC, wide acceptance of an actual same-day outpatient management requires a proof that there is no added risk to the

patient from early discharge.^{3,4} Since the first LC was reported in 1987, various modifications of LC have been developed, including three-port, two-port and, more recently, one-port or single incision LC. In most of the modifications, the instrument that holds the gallbladder fundus was omitted. In order to get better exposure without a holding instrument, a method of fundus retraction by thread through the abdominal wall has been reported.⁵⁻⁸ Hence; we planned the present study to assess and compare the efficacy of Three-Port and Standard Four-Port LC.

MATERIALS & METHODS

The present study was planned in the Department of Surgery, Santosh Medical College & Hospital, Ghaziabad, Uttar Pradesh (India) and it included evaluation and comparison of efficacy of Two versus Three Ports Technique in patients undergoing LC. We obtained written consent from all the patients after explaining in detail the entire research protocol. Inclusion criteria for the present study included:

- Patients scheduled to undergo laparoscopic cholecystectomy,
- Patients with negative history of any systemic illness,
- Patients between age group of 25 to 50 years

A total of 40 patients scheduled to undergo LC where included in the present study and were broadly divided into two study groups with 20 patients in each group as follows:

- Group 1: included patients that underwent two Port Technique for LC
- Group 2: included patients that underwent three Port Technique for LC

Complete demographic details of all the patients were obtained. All the patients underwent LC according to their respective groups. Postoperative follow-up was done in all the patients. Visual analog pain scale (VAS) (on a scale of 0-10) was used for evaluation of postoperative pain. All the results were compiled and analyzed by SPSS software. Student t test and chi-square test was used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

Table 1: Demographic and clinical details of the patients

Parameter	Group 1	Group 2
Mean age (years)	48.2	47.1
Males	8	10
Females	12	10
Mean BMI (Kg/m²)	26.2	25.1
Mean operating time (minutes)	64.1	68.2

Graph 1: Description of details of patients of both the study groups

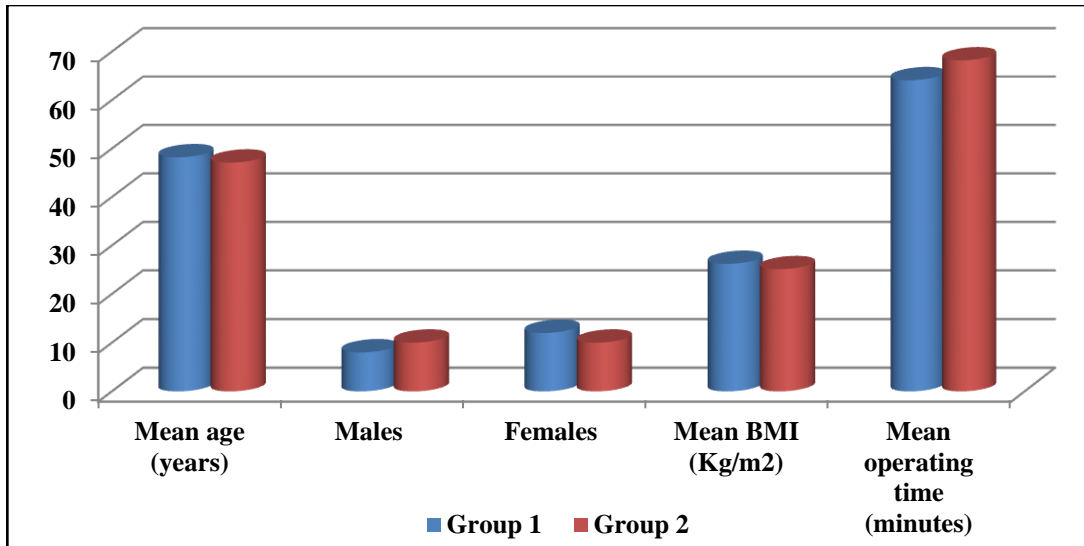
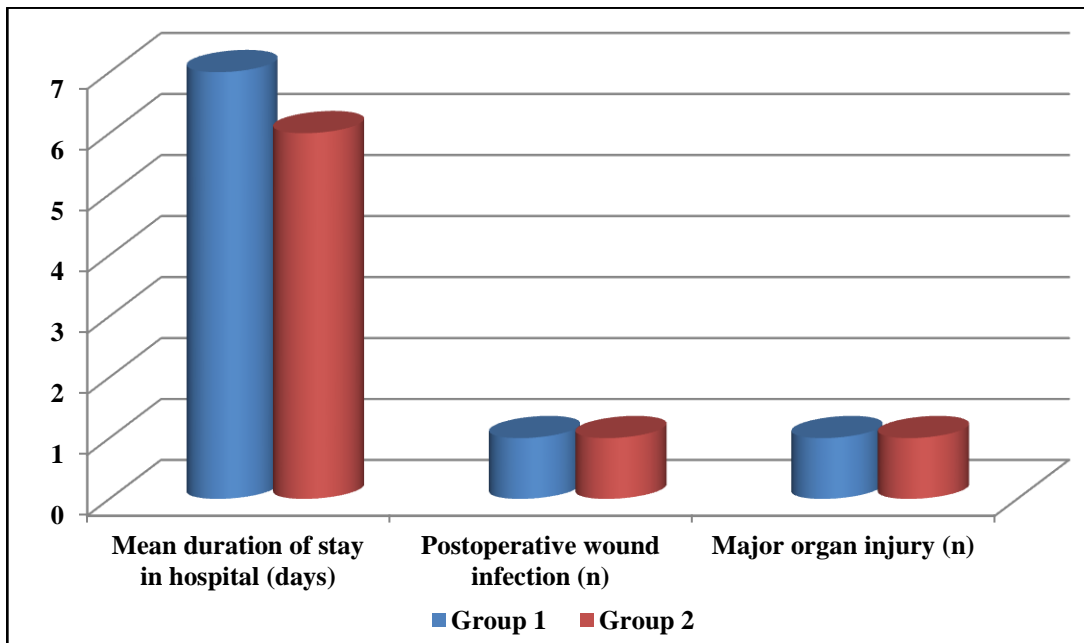


Table 2: Comparison of postoperative outcome in patients of both the study groups

Parameter	Group 1	Group 2	P- value
Mean duration of stay in hospital (days)	7	6	0.88
Postoperative wound infection (n)	1	1	0.50
Major organ injury (n)	1	1	0.50

Graph 2: Postoperative outcome in patients of both the study groups



RESULTS

A total of 40 patients were included in the present study and were broadly divided into two study groups with 20 patients in each group. Mean age of the patients of group 1 and group 2 were 48.2 and 47.1 years respectively. In group 1 and group 2, there were 8 and 10 males respectively. Mean BMI of subjects of group 1 and group 2 was 26.2 and 25.1 Kg/m² respectively. Mean operating time of subjects of group 1 and group 2 was 64.1 and 68.2 minutes respectively. Postoperative wound infection occurred in one subject each in both the study groups. We didn't observe any significant difference while comparing the postoperative outcome among subjects of group 1 and group 2.

DISCUSSION

In the present study, we didn't observe any significant difference while comparing the postoperative outcome among subjects of group 1 and group 2. Poon et al, performed a randomized study on 120 patients for comparison of four-port and two-port LC. They found that two-port LC gave less operative time, less port-site pain, similar clinical outcomes, and fewer surgical scars.⁹

Some surgeons have expressed concerns about the safety of the 3-port technique, arguing that it may lead to a higher percentage of the bile duct injuries. However, bile duct injury can be avoided if the gallbladder is gripped at the infundibulum, retracted laterally, and dissected at the infundibulum-cystic duct junction rather than cystic duct-common bile duct junction.^{10, 11} Kumar M et al compared the clinical outcomes of 3-port laparoscopic cholecystectomy versus conventional 4-port laparoscopic cholecystectomy. Seventy-five consecutive patients who underwent elective laparoscopic cholecystectomy were randomized to undergo either the 3-port or the 4-port technique. Four surgical tapes were applied to standard 4-port sites in both groups at the end of the operation. All dressings were kept intact until the first follow-up 1 week after surgery. Postoperative pain at the 4 sites was assessed on the first day after surgery by using a 10-cm unscaled visual analog scale (VAS). Other outcome measures included analgesia requirements, length of the operation, postoperative stay, and patient satisfaction score on surgery and scars. Demographic data were comparable for both groups. Patients in the 3-port group had shorter mean operative time for the 4-port group (P=0.04) and less pain at port sites (mean score using 10-cm unscaled VAS: 2.19±1.06 vs 2.91±1.20 (P=0.02)). Overall pain score, analgesia requirements, hospital stay, and patient satisfaction score on surgery and scars were similar between the 2 groups. Three-port laparoscopic cholecystectomy resulted in less individual port-site pain and similar clinical outcomes with fewer surgical scars and without any increased risk of bile duct injury compared with 4-port laparoscopic cholecystectomy.¹²

Sun S et al meta-analysis compared the three-port technique to the four-port technique. They searched the Cochrane Library, MEDLINE, EMBASE, and Chinese Biomedical Literature Database. Quality assessment and data extraction were done by two reviewers independently. The statistical analysis was performed by RevMan4.2.10 software. A total of five publications comprising 591 patients met the inclusion criteria. The result showed that three-port technique could not reduce the analgesia requirements: the sample mean difference (SMD) and 95% confidence interval (CI) were -0.28 (-0.66, 0.10). There were no significant differences between the two groups in terms of operating time [weighted mean difference (WMD) = 2.08, 95% CI (-3.63, 7.79)], success rate, or postoperative hospital stay. The current evidence showed that the two groups had similar operating times, success rates, analgesia requirements, and postoperative hospital stays. The

methodological qualities of studies are not high, so more high-quality studies are needed for further analysis.¹³ Cerci C et al compared the clinical outcomes of three- and four-port techniques prospectively. Between 1998 and 2003, one hundred and forty-six consecutive patients who underwent elective laparoscopic cholecystectomy for cholelithiasis in the Medical Faculty of Suleyman Demirel University were randomized to receive either the three-port or the four-port technique. Operative time, (time from the beginning of the insufflation up to the closure of the skin), success rate, visual analogue pain score, analgesia requirements, postoperative hospital stay were compared. Three-port technique is safe, effective, and economic but does not reduce the overall pain score and analgesia requirement.¹⁴

CONCLUSION

From the above results, the authors conclude that in terms of efficacy and postoperative complications, both the two port and three port technique of LC are equalant. However; future long term follow-up studies are recommended.

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