

Original Research

Comparative evaluation of efficacy of three port and four port technique of Laparoscopic Cholecystectomy

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ABSTRACT

Background: It was in the year 1987 that the first laparoscopic cholecystectomy (LC) was performed. Since then, there have been many changes and improvements in the technique. Hence; under the light of above mentioned data, the present study was planned to compare the efficacy of three port and four port technique of LC. **Materials & methods:** A total of 80 patient scheduled to undergo LC were included in the present study and were broadly divided into two study groups with 40 patients in each group; Group A included patients undergoing three port LC; and Group B included patients undergoing four port LC. A self-framed questionnaire was made collecting all the pre-operative details the subjects enrolled in the study. Blood samples were taken preoperatively from all the patients and complete hematological and biochemical profile was assessed. All the patients underwent LC according to their respective groups. All the postoperative parameters were recorded on follow-up for comparing the efficacy of the two techniques. **Results:** Non-significant results were obtained while comparing the intraoperative findings among subjects of group A and group B. Mean operative time among subjects of group A was 49.25 minutes and was significantly lesser than that of subjects of group B (65.22 minutes). Mean patient satisfaction score of subjects of group A was 7.5 and mean patient satisfaction score of subjects of group B was 7. **Conclusion:** The three port and four port technique of LC can be used with equal efficacy in gallstone patients.

Key words: Laparoscopic cholecystectomy, Port technique.

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INTRODUCTION

It was in the year 1987 that the first laparoscopic cholecystectomy (LC) was performed. Since then, there have been many changes and improvements in the technique. Traditional LC is performed using 4 - port technique. The fourth (lateral) trocar is used to grasp the fundus of the gall bladder so as to expose the Calot's triangle.¹⁻³ Cooperative manipulation of the surgical instruments is very important for this procedure, for exposing Calot's triangle and dissecting the gallbladder from the gallbladder bed when using the 3-port technique.⁴⁻⁶ In recent years, many investigators have attempted to improve the established technique of LC. The goal has been to minimize the invasiveness of this procedure by reducing the number and size of-ports, arguing that the fourth trocar may not be necessary and LC can be performed safely without it. Fortunately,

several studies have reported three-port LC was technically possible.⁷

Hence; under the light of above mentioned data, the present study was planned to compare the efficacy of three port and four port technique of LC.

MATERIALS & METHODS

The present research was planned and conducted in the Department of General Surgery, Government Medical College Badaun, Uttar Pradesh, India with aim to assess efficacy of three port and four port technique of LC. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 80 patient scheduled to undergo LC were included in the present study and were broadly divided into two study groups with 40 patients in each group; Group A included patients undergoing three port

LC; and Group B included patients undergoing four port LC. A self-framed questionnaire was made collecting all the pre-operative details the subjects enrolled in the study. Blood samples were taken preoperatively from all the patients and complete hematological and biochemical profile was assessed. All the patients underwent LC according their respective groups. All the postoperative parameters were recorded on follow-up for comparing the efficacy of the two techniques. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Chi- square test was used for assessment of level of significance.

RESULTS

Graph 1 shows the comparison of demographic data in between the two study groups. Mean age of the subjects of group 1 and group 2 was 45.8 years and 42.4 years

respectively. Majority of the patients of both the study groups belonged to the age group of 30 to 50 years. There were 11 males and 29 females in the group 1, while there were 32 females and 8 males in the group 2.

In the present study, Gallbladder perforation was seen in 5 patients of group A and was seen in 3 patients of group B. stone spillage was seen in 3 patients of group A and 1 patient of group B. bleeding from liver bed was seen in 4 and 5 patients of group A and group B respectively. Non-significant results were obtained while comparing the intraoperative findings among subjects of group A and group B. In the present study, mean operative time among subjects of group A was 49.25 minutes and was significantly lesser than that of subjects of group B (65.22 minutes). Mean patient satisfaction score of subjects of group A was 7.5 and mean patient satisfaction score of subjects of group B was 7.

Graph 1: Comparison of demographic data

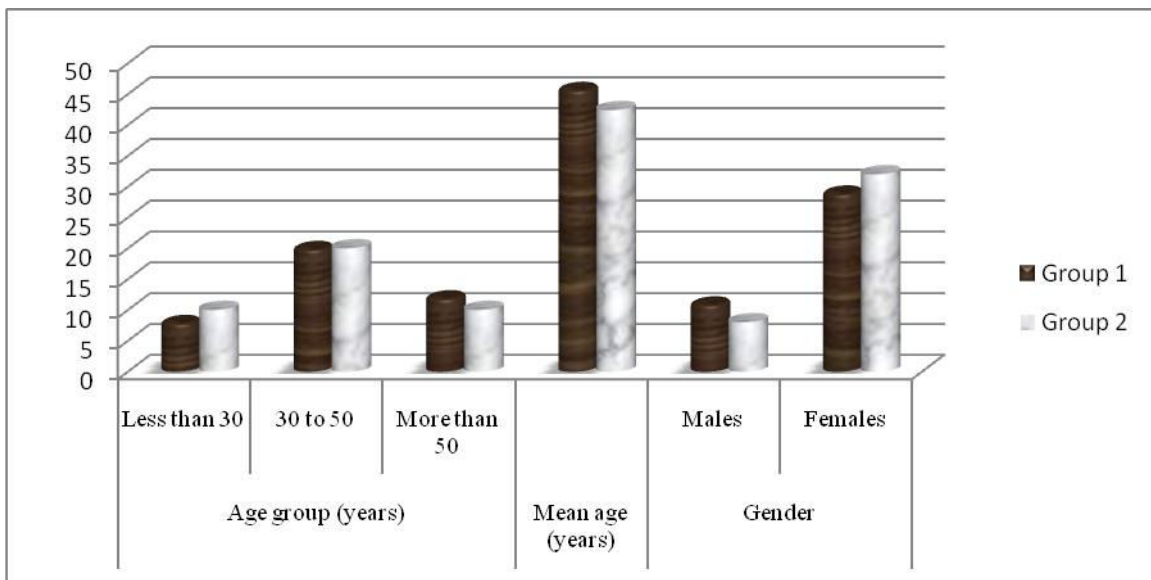


Table 1: Comparison of intraoperative findings between three port and four port

Parameter	Group A (n=40)	Group B(n=40)	p- value
Gallbladder perforation	5	3	0.54
Stone spillage	3	1	0.44
Bleeding from liver bed	4	5	0.29

Table 2: Comparison of intraoperative time and outcome between three port and four port

Parameter	Group A	Group B	p- value
Operating time (minutes)	49.25	65.22	0.01 (Significant)
Postoperative stay (days)	1.8	1.5	0.11
Patient satisfaction score (out of 10)	7.5	7	0.48

DISCUSSION

Traditional LC is performed using four-port technique. Reducing the size or number of ports did not affect the safety of the procedure and further enhanced the advantages of laparoscopic over open cholecystectomy. These modifications actually reduced the pain and analgesia requirement. Three trocars and even two trocars were used to perform LC, as has using mini-instruments, authors of these new techniques claimed that these techniques took a similar time to perform and caused less postoperative pain than the standard laparoscopic cholecystectomy. Some authors even advised for procedures as needlescope cholecystectomy to be practiced routinely.⁸⁻¹¹

Mean age of the subjects of group 1 and group 2 was 45.8 years and 42.4 years respectively. Majority of the patients of both the study groups belonged to the age group of 30 to 50 years. There were 11 males and 29 females in the group 1, while there were 32 females and 8 males in the group 2. Kumar M et al compared the clinical outcomes of 3-port laparoscopic cholecystectomy versus conventional 4-port laparoscopic cholecystectomy. Patients in the 3-port group had shorter mean operative time (47.3 ± 29.8 min vs 60.8 ± 32.3 min) 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 (mean score using 10-cm unscaled VAS: 8.2 ± 1.7 vs 7.8 ± 1.7 , $P=0.24$) 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.¹¹

In the present study, Gallbladder preformation was seen in 5 patients of group A and was seen in 3 patients of group B. stone spillage was seen in 3 patients of group A and 1 patient of group B. bleeding from liver bed was seen in 4 and 5 patients of group A and group B respectively. Non-significant results were obtained while comparing the intraoperative findings among subjects of group A and group B. In the present study, mean operative time among subjects of group A was 49.25 minutes and was significantly lesser than that of subjects of group B (65.22 minutes). Mean patient satisfaction score of subjects of group A was 7.5 and mean patient satisfaction score of subjects of group B was 7. Harsha HS et al investigated the technical feasibility, safety and benefit of three-port laparoscopic cholecystectomy (LC) over the conventional standard four-port LC as routine setup. The first group, three-port LC group consisted of 25 cases and the second group, the standard four-port LC group consisted of 25 cases were analyzed. The mean operating time was comparable in both groups. Post-operative pain was significantly less in three-port group

($P < 0.008$) and analgesic requirement ($P < 0.001$) when compared with the four-port group. Hospital stay was significantly less in three-port group compared with the four-port group ($P < 0.004$) owing to post-operative pain score. There was no statistical difference in the complications rate in both groups; gallbladder perforation ($P = 0.691$), bile leakage ($P = 1.00$) and bleeding from liver bed ($P = 0.691$). Three-port LC is technically safe and feasible with less post-operative pain score, less analgesic requirement, less hospital stay with comparable operating time and complications when compared to four-port LC.¹²

CONCLUSION

Under the light of above mentioned data, the authors conclude that both the three port and four port technique of LC can be used with equal efficacy in gallstone patients. However; further studies are recommended.

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