

Comparative Evaluation of Efficacy of Three Port Versus Standard Four Port Laparoscopic Cholecystectomy

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Abstract

Background: Laparoscopic cholecystectomy has established itself firmly as the “gold standard” for the treatment of gallstone disease. The present study was conducted to compare three port versus standard four port laparoscopic cholecystectomy.

Materials and Method: The present study was conducted on 120 gall stones patients of both genders. All patients were divided into two groups viz. group I who were subjected to the three port technique and group II patients who were subjected to the conventional four port technique. Intra- operative findings, pain score etc. was compared.

Results: The mean VAS was 2.14 in group I and 4.30 in group II and mean operative time was 51.2 minutes in group I and 62.1 minutes in group II. Intra- operative complications were perforation seen 6 patients in group I and 4 in group II, stone spillage 4 in group I and 3 in group II, bleeding from liver 5 in group I and 4 in group II, cystic artery bleeding 2 in group I and 1 in group II. Post- operative complications were fever seen 4 patients in group I and 7 in group II, vomiting 5 in group I and 6 in group II, Basal pneumonitis 3 in group I and 5 in group II, seroma 1 in group I and 2 in group II.

Conclusion: Authors found that three port laparoscopic cholecystectomy found to be better than standard four port laparoscopic cholecystectomy.

Keywords: Basal pneumonitis, Laparoscopic cholecystectomy.

Introduction

The first laparoscopic cholecystectomy (LC) was performed in 1987 by Philip Mouret and later established by Dubois, Perissat, Reddick and others in 1990's. Since then, there have been many changes and improvements in the technique.¹ 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. With increasing surgeon experience, LC has undergone many refinements including reduction in port size and number. It has been argued that the fourth trocar may not be necessary and laparoscopic cholecystectomy can be performed safely without using it.²

LC is now the gold standard treatment of symptomatic gallstone disease. Standard LC is performed by using four trocars.³ The fourth trocar is used to retract the liver for better exposure of Calot's triangle or to grasp the fundus of the gall bladder, pulling upward and outward to expose Calot's triangle (American technique). In recent years, many investigators have attempted to improve the established technique of LC.⁴ The goal has been to minimize the invasiveness of this procedure by reducing the number and size of ports, arguing that

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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.⁵ The present study was conducted to compare three port versus standard four port laparoscopic cholecystectomy.

Materials and Method

The present study was conducted in the department of General surgery. It comprised of 120 gall stones patients of both genders. All patients were informed regarding the study and written consent was obtained. Ethical clearance was obtained from institutional ethical committee.

Data such as name, age etc. was reported. All patients were divided into two groups viz. group I who were subjected to the three port technique and group II patients who were subjected to the conventional four port technique. Intra- operative findings, pain score etc. was compared. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I: Distribution of patients

Groups	Group I	Group II
Technique	Three port technique	Four port technique
Number	60	60

Table I shows that in group I patients three port technique and in group II patients conventional four port technique. Each group had 60 patients.

Table II Assessment of parameters

Parameters	Group I	Group II	P value
VAS	2.14	4.30	0.01
Operative time (mins)	51.2	62.1	0.05

Table II shows that mean VAS was 2.14 in group I and 4.30 in group II and mean operative time was 51.2 minutes in group I and 62.1 minutes in group II. The difference was significant ($P < 0.05$).

Table III: Intra- operative complications in both groups

Complications	Group I	Group II	P value
Perforation	6	4	0.12

Complications	Group I	Group II	P value
Stone spillage	4	3	0.31
Bleeding from liver	5	4	0.91
Cystic artery bleeding	2	1	0.14

Table III shows that intra- operative complications were perforation seen 6 patients in group I and 4 in group II, stone spillage 4 in group I and 3 in group II, bleeding from liver 5 in group I and 4 in group II, cystic artery bleeding 2 in group I and 1 in group II. The difference was non- significant ($P > 0.05$).

Table IV: Post- operative complications in both groups

Complications	Group I	Group II	P value
Fever	4	7	0.26
Vomiting	5	6	0.84
Basal pneumonitis	3	5	0.15
Seroma	1	2	0.20

Table IV, shows that post- operative complications were fever seen 4 patients in group I and 7 in group II, vomiting 5 in group I and 6 in group II, Basal pneumonitis 3 in group I and 5 in group II, seroma 1 in group I and 2 in group II. The difference was non- significant ($P > 0.05$).

Discussion

LC is now the gold standard treatment of symptomatic gallstone disease. LC has now replaced open cholecystectomy as the first-choice of treatment for cholelithiasis and inflammation of the gallbladder unless there are contraindications to the laparoscopic approach. This is because open surgery leaves the patient more prone to infection. Sometimes, a laparoscopic cholecystectomy will be converted to an open cholecystectomy for technical reasons or safety.⁶

Laparoscopic cholecystectomy has established itself firmly as the "gold standard" for the treatment of gallstone disease. Existing literature has focused most exclusively on the biliary complications of this procedure, but other complications such as significant hemorrhage during laparoscopic cholecystectomy have not been documented.⁷ The present study was conducted to compare three port versus standard four port laparoscopic cholecystectomy.

In present study, in group I patients three port technique and in group II patients conventional four port technique. Each group had 60 patients. The mean VAS was 2.14 in group I and 4.30 in group II and mean operative time was 51.2 minutes in group I and 62.1 minutes in group II. Sharma et al⁸ found that the mean operative time was compared and found to be less in group A. Intraoperative and postoperative complications was similar in both groups. The postoperative pain was less in group A. The mean hospital stay was less in group A (1.27 days) than group B (1.95 days). Better cosmetic results and patient satisfaction was observed in group A. 5 patients of group A required fourth port and 3 patients of group B required conversion to open cholecystectomy.

We found that intra-operative complications were perforation seen 6 patients in group I and 4 in group II, stone spillage 4 in group I and 3 in group II, bleeding from liver 5 in group I and 4 in group II, cystic artery bleeding 2 in group I and 1 in group II. Post-operative complications were fever seen 4 patients in group I and 7 in group II, vomiting 5 in group I and 6 in group II, Basal pneumonitis 3 in group I and 5 in group II, seroma 1 in group I and 2 in group II.

Kumar et al⁹ found that patients in the 3-port group had shorter meanoperative time for the 4-port group and less pain at port sites. Overall pain score, analgesia requirements, hospital stay and patient satisfaction score on surgery and scars were similar between the 2 groups. Harsha et al¹⁰ found that 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 for the following outcome measures namely conversion rates, operating time, intra-operative complications, post-operative pain score, analgesic requirement and hospital stay. Demographic data was comparable in both groups. Conversion rate was nil in both groups. The mean operating time was comparable in both groups. Post-operative pain was significantly less in three-port group and analgesic requirement when compared with the four-port group. Hospital stay was significantly less in three port group compared with the four-port group owing to post-operative pain score. There was no statistical difference in the complications rate in both groups; gallbladder perforation, bile leakage and bleeding from liver bed.

Conclusion

Authors found that three port laparoscopic cholecystectomy found to be better than standard four port laparoscopic cholecystectomy.

Conflicts of Interest: The author declare that there is no conflict of interest regarding the publication of this paper.

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Ethical Clearance: Ethical clearance has been taken from Institutional Ethical Committee.

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