

ORIGINAL RESEARCH

ASSESSMENT OF THREE- PORT VERSUS STANDARD FOUR PORT IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Background: Laparoscopic cholecystectomy (LC) has replaced open cholecystectomy as the standard procedure for gallbladder removal whenever possible. The present study was conducted to compare three- port versus standard four port in patients undergoing laparoscopic cholecystectomy.

Materials & Methods: 70 patients of cholelithiasis of both genders were divided into 2 groups of 35 each. Group I patients were subjected to the three- port technique and group II patients to conventional four port technique. Parameters such as intra- operative findings, pain score etc. was compared.

Results: The mean VAS was 2.13 minutes in group I and 4.35 minutes in group II. The mean mean operative time was 50.6 in group I and 61.8 in group II. The difference was significant ($P < 0.05$). Intra- operative complications were perforation seen in 5 patients in group I and 3 in group II, stone spillage 3 in group I and 3 in group II, bleeding from liver 4 in group I and 3 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. The difference was significant ($P < 0.05$).

Conclusion: Three port cholecystectomy is a safe and feasible option with fewer surgical scars and less post operative pain in selected patients.

Key words: laparoscopic cholecystectomy, cystic artery bleeding, perforation

INTRODUCTION

Laparoscopic cholecystectomy (LC) has replaced open cholecystectomy as the standard procedure for gallbladder removal whenever possible. Recent developments regarding LC have been directed toward reducing the size or number of ports to achieve the goal of minimal invasive surgery.¹ The utilization of laparoscopes with operating channels made two-port LC technically feasible. Although several case series have reported the advantages of two-port LC in terms of better patient satisfaction and less postoperative pain, none have compared two-port LC with the conventional four-port LC in a randomized manner.² Standard laparoscopic cholecystectomy is done by using 4 trocars. The fourth (lateral) trocar is used to grasp the fundus of the gallbladder so as to expose Calot's triangle. With increasing surgeon experience, laparoscopic cholecystectomy has undergone many refinements including reduction in port size.³

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 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 in patients undergoing laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study comprised of 70 patients of cholelithiasis of both genders. The consent was obtained from all enrolled patients.

Data such as name, age, gender etc. was recorded. All patients were divided into 2 groups of 35 each. Group I patients were subjected to the three- port technique and group II patients to conventional four port technique. All surgical s procedure were performed by same surgeon following standardized aseptic techniques. Parameters such as intra- operative findings, pain score etc. was compared. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Technique	Three port technique	Four port technique
M:F	15:20	22:13

Table I shows that in group I patients three port technique and in group II patients conventional four port technique was used. Group I had 15 males and 20 females and group II had 22 males and 13 females.

Table II Assessment of parameters

Parameters	Group I	Group II	P value
VAS	2.13	4.35	0.02
Operative time (mins)	50.6	61.8	0.04

Table II, shows that mean VAS was 2.13 minutes in group I and 4.35 minutes in group II. The mean operative time was 50.6 in group I and 61.8 in group II. The difference was significant ($P < 0.05$).

Table III Intra- operative complications in both groups

Parameters	Variables	Group I	Group II	P value
Intra-operative complications	Perforation	2	1	0.12
	Stone spillage	3	2	
	Bleeding from liver	4	3	
	Cystic artery bleeding	2	1	
Post-operative complications	Fever	3	6	0.05
	Vomiting	4	5	
	Basal pneumonitis	2	4	

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

DISCUSSION

Laparoscopic cholecystectomy has established itself firmly as the “gold standard” for the treatment of gallstone disease.^{6,7} 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.^{8,9} The present study was conducted to compare three port versus standard four port laparoscopic cholecystectomy.

We found that in group I patients three port technique and in group II patients conventional four port technique was used. Group I had 15 males and 20 females and group II had 22 males and 13 females. Legget et al¹⁰ studied 141 patients in two sequential studies: the first a prospective randomized trial with 41 patients, and the second an examination of the more minimal procedure in 100 patients. In the randomized trial, patients underwent laparoscopic cholecystectomy with three ports: three 5-mm ports or two 10-mm ports and one 5-mm port. The 100 patients underwent the three 5-mm port procedure. In the randomized trial, differences were not statistically significant. However, on the average, the group with three 5-mm ports required less medication over less time, had less postoperative pain, and took less time to return to activity than the second group with larger ports. A statistically significant difference was found in incisional pain between the smaller group (21 patients) with two 10-mm ports and one 5-mm port and the larger group (100 patients) with three 5-mm ports, whether the measure was overall incisional pain ($p = 0.014$) or a comparison based on

specific ports ($p = 0.001$). The percentage of cases requiring port enlargement to remove the gallbladder was not significantly different between the groups. There were no conversions to an open procedure, no fourth trocars added, and no complications. No patient required overnight hospitalization.

We observed that mean VAS was 2.13 minutes in group I and 4.35 minutes in group II. The mean mean operative time was 50.6 in group I and 61.8 in group II. Poon et al¹¹ compared the clinical outcomes of two-port laparoscopic cholecystectomy versus conventional four-port laparoscopic cholecystectomy. One hundred and twenty consecutive patients who underwent elective laparoscopic cholecystectomy were randomized to receive either the two-port or the four-port technique. Postoperative pain at the four sites was assessed on the first day after surgery using a 10-cm unscaled visual analog scale (VAS). Other outcome measures included analgesia requirements, length and difficulty of the operation, postoperative stay, and patient satisfaction score on surgery and scars. Patients in the two-port group had shorter mean operative time (54.6 +/- 24.7 min vs 66.9 +/- 33.1 min for the four-post group; $p = 0.03$) and less pain at individual subcostal port sites [mean score using 10-cm unscaled VAS: 1.5 vs 2.8 at the midsubcostal port site and 1.3 vs 2.3 ($p = 0.02$) at the lateral subcostal port site]. Overall pain score, analgesia requirements, hospital stay, and patient satisfaction score on surgery and scars were similar between the two groups.

We found that intra- operative complications were perforation seen in 5 patients in group I and 3 in group II, stone spillage 3 in group I and 3 in group II, bleeding from liver 4 in group I and 3 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. Harsha et al¹² 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 assessed 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

Three port cholecystectomy is a safe and feasible option with fewer surgical scars and less post operative pain in selected patients.

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