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ORIGINAL RESEARCH

Comparative evaluation of efficacy of Three-Port Versus Standard Four-Port Laparoscopic Cholecystectomy

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Abstract

Background: To assess the efficacy of three-Port Versus Standard Four-Port Laparoscopic Cholecystectomy.

Materials & methods: 60 patients who were scheduled to undergo elective laparoscopic cholecystectomy were randomized to undergo either the 3-port or the 4-port technique. Complete demographic and clinical details of all the patients was obtained. All the procedures were carried out under ideal septic conditions. Follow-up was done. Assessment of postoperative pain was done using a 10-cm unscaled visual analogue scale (VAS). Clinical outcome was recorded and compared. All the results were recorded and analysed using SPSS software.

Results: Mean operative time among the patients of three-port group and four-port group was 53.6 minutes and 66.7 minutes respectively; on comparing the results were found to be statistically significant. Mean days of postoperative analgesic requirement was significantly higher among patients of four-port group in comparison to three-port group. Mean VAS among patients of three-port and four-port group was 2.6 and 2.9 respectively. Among the patients of three-port and four-port group was 93.33 percent and 90 percent respectively.

Conclusion: Three-port laparoscopic cholecystectomy was associated with lesser pain and similar clinical outcomes in comparison to four-port technique.

Key words: Laparoscopic cholecystectomy, Three-port, Four-port

Introduction

The first laparoscopic cholecystectomy (LC) was performed in 1987 by Phillip Mouret and later established by Dubois and Perissat in 1990. Since then, it has met with wide-spread acceptance as a standard procedure. 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.[1-4]

Some authors even advised for procedures as needle scope cholecystectomy to be practiced routinely. The value of the lateral (fourth) trocar in the American technique used to hold the gall bladder fundus was challenged. Recently published data showed that three-port technique didn't compromise the procedure's safety. Reduction in analgesia requirement and cosmetic benefits were a common conclusion.[5-7] Hence; the present study was conducted for

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evaluating the efficacy of three-Port Versus Standard four-Port Laparoscopic Cholecystectomy.

Materials & methods

The present study was conducted for evaluating the efficacy of three-Port Versus Standard Four-Port Laparoscopic Cholecystectomy. 60 patients who were scheduled to undergo elective laparoscopic cholecystectomy were randomized to undergo either the 3-port or the 4-port technique. Complete demographic and clinical details of all the patients was obtained. All the procedures were carried out under ideal septic conditions. Follow-up was done. Assessment of postoperative pain was done using a 10-cm unscaled visual analogue scale (VAS). Clinical outcome was recorded and compared. All the results were recorded and analysed using SPSS software.

Results

Mean age of the patients of three-port group and four-port group was 41.2 years and 43.2 years respectively. Majority proportion of patients of both the study groups were males. Mean operative time among the patients of three-port group and four-port group was 53.6 minutes and 66.7 minutes respectively; on comparing the results were found to be statistically significant. Mean days of postoperative analgesic requirement was significantly higher among patients of four-port group in comparison to three-port group. Mean VAS among patients of three-port and four-port group was 2.6 and 2.9 respectively. Among the patients of three-port and four-port group was 93.33 percent and 90 percent respectively.

Graph 1: Comparison of operative time

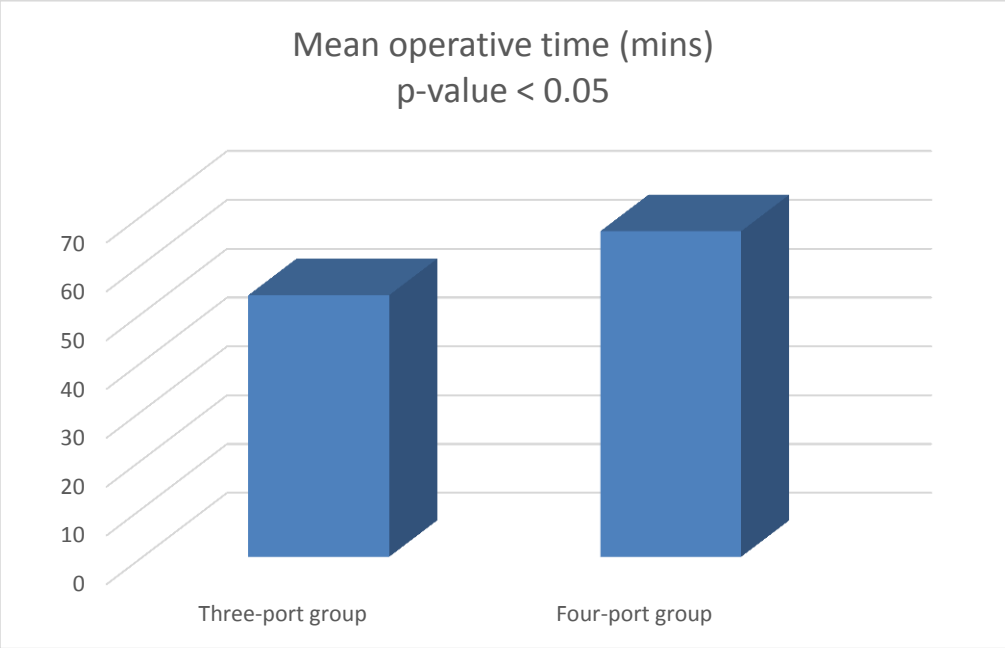

Table 1: Days of analgesic requirement postoperatively

Days of analgesic requirement postoperatively	Three-port group	Four-port group
Mean	3.9	4.9
SD	1.5	1.8
p- value	0.001 (Significant)	

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Table 2: VAS Score

VAS score	Three-port group	Four-port group
Mean	2.6	2.9
SD	1.1	1.4
p- value	0.712	

Table 3: Success rate

Success rate	Three-port group	Four-port group
Number	28	27
Percentage	93.33	90
p- value	0.284	

Discussion

Since the first report of a successful laparoscopic cholecystectomy (LC) in humans by Dubois et al. in 1990, some modifications to the method have been made—specifically, by applying the French or American technique. Both of them depend the use of four trocars. The fourth trocar is used to retract the liver for better exposure of Calot's triangle (French technique) or to grasp the fundus of the gallbladder, pulling upward and outward to expose the Calot's triangle (American technique). However, a review of the literature on the three-trocar technique revealed that most reports considered only one side, and none made comparisons to the standard four-port technique.[8- 10]

Mean age of the patients of three-port group and four-port group was 41.2 years and 43.2 years respectively. Majority proportion of patients of both the study groups were males. Mean operative time among the patients of three-port group and four-port group was 53.6 minutes and 66.7 minutes respectively; on comparing the results were found to be statistically significant. Sun Set al compared the three-port technique to the four-port technique. They searched the Cochrane Library, MEDLINE, EMBASE, and Chinese Biomedical Literature Database. 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, success rate, or postoperative hospital stay. Their evidence showed that the two groups had similar operating times, success rates, analgesia requirements, and postoperative hospital stays.[10]

In the present study, mean days of postoperative analgesic requirement was significantly higher among patients of four-port group in comparison to three-port group. Mean VAS among patients of three-port and four-port group was 2.6 and 2.9 respectively. Among the patients of three-port and four-port group was 93.33 percent and 90 percent respectively. Shah MY et al reported the experience of three-port LC compared to four-port LC technique, its safety, feasibility and outcomes. A prospective randomized study was conducted between two groups which included 165 cases - 93 patients were included in three-port LC (Group A) and 72 patients in four-port LC (Group B). Operative time, intraoperative complications, postoperative pain, length of hospital stay, analgesics requirement, conversion to open and return to normal activities were parameters of evaluation. Results Demographic data was comparable in both the groups. Three-port LC Group A had lesser post-operative pain and analgesics requirements. The mean postoperative pain visual analogue scale (VAS) score on day 1 was (4.16 and 6.24), on day 7 was (1.26 and 1.81) in three-port group and in four-port LC group, respectively. The mean days of analgesics requirement were 2.56 days and 4.21 days among three-port group and four-port group, respectively Length of hospital stay was less and returning to work was early in three-port group. There was no statistical difference in

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operative time. The mean operative time among three-port LC group A and four-port LC group B was 36+/-8.6 minutes (30-68) and 39+/-7 minutes (30-90), respectively. The overall outcomes were comparable to four-port LC.[11]Hajong R et al compared three-port against two-port LC techniques and to see whether there is any advantage in using one technique over the other. An odd number of patients were operated on by using the three-port technique (Group A), whereas an even number of patients were operated on by the two-port technique (Group B).Sixty patients with symptomatic gallstone disease were included in the study after obtaining informed consent from each of the patients. All patients were operated on under general anaesthesia. There were 51 female patients and 9 male patients. The mean patient age was 38.67 years. There was less operative time in group A but less postoperative pain in group B. Cosmetic appearance and patient satisfaction for the scar were better in group B. The two-port method appeared to have better acceptability among patients due to lower pain score and better cosmesis.[12]

Conclusion

Three-port laparoscopic cholecystectomy was associated with lesser pain and similar clinical outcomes in comparison to four-port technique.

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