

Original Research

Comparison of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy

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ABSTRACT:

Background: Cholecystectomy is the treatment of choice for symptomatic gall stone disease. As the technique became a routine procedure, modifications were made in order to make it less invasive and more cosmetic. Initially, a 3-port LC (LC3P) instead of the standard 4-port LC (LC4P) approach was preferred when the anatomy was clearly visualized at the time of the initial laparoscopic evaluation and no technical difficulties were anticipated. Hence; under the light of above obtained data, we compared the outcome of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy. **Materials & methods:** The present study was conducted with the aim of comparing the outcome of 3-port laparoscopic cholecystectomy (LC) versus standard 4-port laparoscopic cholecystectomy. 100 patients undergoing laparoscopic cholecystectomy were enrolled in the present study. All the patients were broadly divided into two study groups with 50 patients in each group as follows: Group A which included patients undergoing 3-port LC and Group B which included patients undergoing 4-port LC. Follow-up was done and outcome was compared. All the results were analysed by SPSS software. **Results:** Mean operative time among patients of group 1 and group 2 was 63.8 minutes and 45.9 minutes respectively. Significant results were obtained while comparing the mean operative time among the two study groups. Mean VAS among the patients of group 1 and group 2 at one day of surgery at 6 hours was 6.35 and 7.85 respectively. Mean VAS among the patients of group 1 and group 2 at discharge was 3.16 and 5.26 respectively. Mean VAS among the patients of group 1 and group 2 at one week of follow-up was 2.11 and 3.95 respectively. While comparing statistically, it was seen that mean VAS was significantly higher among the patients of group 2. **Conclusion:** The three port technique is as safe as the standard four port for laparoscopic cholecystectomy. The main advantages of the three port technique are that it is less painful, safe, and leaves few scars.

Key words: Laparoscopic cholecystectomy, Three port, Four port

Received: 12 November, 2019

Revised: 11 December, 2019

Accepted: 29 December, 2019

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This article may be cited as: Juneja P, Kataria. Comparison of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy. Int J Res Health Allied Sci 2020; 6(1): 127-129.

INTRODUCTION

Cholecystectomy is the treatment of choice for symptomatic gall stone disease. Laparoscopic cholecystectomy requires skill, dexterity, and the ability to perform surgery with a two-dimensional view of the patient's organs. The most important advantage of laparoscopic cholecystectomy (LC) is that it abolishes the trauma of access as well as the transient ileus that follows open abdominal surgery. This operation is

conventionally performed by using four ports into the abdomen: One for the camera, two for manipulation of tissues and another for retraction. Recent developments regarding LC have been directed towards reducing the size or number of ports to achieve the goal of minimal access surgery.¹⁻³

As the technique became a routine procedure, modifications were made in order to make it less invasive and more cosmetic. Initially, a 3-port LC

(LC3P) instead of the standard 4-port LC (LC4P) approach was preferred when the anatomy was clearly visualized at the time of the initial laparoscopic evaluation and no technical difficulties were anticipated. Later, technical advances introduced the 5-mm laparoscope and the 5-mm clip applicators, thus decreasing the port size, and later, the newer 2-mm or 3-mm instruments allowed the surgeons to make smaller incisions. The use of a working channel laparoscope made it possible to use only two ports, along with transdermal sutures and needles, for an easier manipulation of the gallbladder. More recently, the development of devices that made the introduction of the laparoscope and different instruments through the same incision feasible gave rise to 1-port LC (LC1P) also known as SILS. Treatment of gallstones depends partly on whether they are causing symptoms or not. Recurrent episodes of upper abdominal pain related to gallstones are the most common indication for the treatment of gallstones.⁴⁻⁶ Hence; under the light of above obtained data, we compared the outcome of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study was conducted with the aim of comparing the outcome of 3-port laparoscopic cholecystectomy (LC) versus standard 4-port laparoscopic cholecystectomy. 100 patients undergoing laparoscopic cholecystectomy were enrolled in the present study. All the patients were broadly divided into two study groups with 50 patients in each group as follows: Group A which included patients undergoing 3-port LC and Group B which included patients undergoing 4-port LC. Complete demographic and clinical details of all the patients were obtained. All the patients underwent LCs according to their respective study groups. Follow-up was done and outcome was compared. All the results were analysed by SPSS software. Chi-square test and paired t test were used for assessment of level of significance. P- Value of less than 0.05 was taken as significant.

RESULTS

In the present study, mean age of the subjects of the three port group and four port group was 45.85 years and 47.12 years respectively which was comparable in both the groups. Mean operative time among patients of group 1 and group 2 was 63.8 minutes and 45.9 minutes respectively. Significant results were obtained while comparing the mean operative time among the two study groups. Mean VAS among the patients of group 1 and group 2 at one day of surgery at 6 hours was 6.35 and 7.85 respectively. Mean VAS among the patients of group 1 and group 2 at discharge was 3.16 and 5.26 respectively. Mean VAS among the patients of group 1 and group 2 at one week follow-up was 2.11 and 3.95 respectively.

and group 2 at one week of follow-up was 2.11 and 3.95 respectively. While comparing statistically, it was seen that mean VAS was significantly higher among the patients of group 2.

Table 1: Mean operative time of patients of both the subjects of both the study groups

Variable	Group 1	Group 2
Mean operative time (minutes)	63.8	45.9
p-value	0.000 (Significant)	

Table 2: Mean Post-op pain score on VAS

Postoperative pain score on VAS	Group 1	Group 2	P-value
One day of surgery at 6 hours	6.35	7.85	0.01*
At discharge	3.16	5.26	0.00*
At one week follow-up	2.11	3.95	0.00*

*: Significant

DISCUSSION

Majority of patients with gallstone are asymptomatic. Some will have atypical or nonspecific symptoms. Others will manifest with clinically significant symptoms of gallstones. Gallstone disease symptoms may be acute, chronic or totally absent. The differentiation between silent and symptomatic gallstones is important since this affects the management in individual case. The laparoscopic revolution in general surgery can thank LC for much of its initial success and popularity. The tremendous public interest enjoyed by the LC forced general surgeons who had neglected operative laparoscopy to take notice. By helping laparoscopy to get its "foot in the door" among general surgeons, LC has served as the igniting spark in the laparoscopic surgery explosion and has paved the way for the more complex laparoscopic procedure which have become commonplace.⁶⁻⁹ Hence; under the light of above obtained data, we compared the outcome of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy.

In the present study, mean age of the subjects of the three port group and four port group was 45.85 years and 47.12 years respectively which was comparable in both the groups. Mean operative time among patients of group 1 and group 2 was 63.8 minutes and 45.9 minutes respectively. Significant results were obtained while comparing the mean operative time among the two study groups. Mean VAS among the patients of group 1 and group 2 at one day of surgery at 6 hours was 6.35 and 7.85 respectively. Mean VAS among the patients of group 1 and group 2 at discharge was 3.16 and 5.26 respectively. Sheikh IA et al compared the safety, outcome and advantages of three port laparoscopic cholecystectomy vs. four port laparoscopic cholecystectomy. Total 200 patients who had

undergone gall bladder removal laparoscopically were studied. The said procedure had significant benefits over the conventional four-port method with respect to decreased use of pain killers and duration of hospital admission.¹⁰

In the present study, mean VAS among the patients of group 1 and group 2 at one week of follow-up was 2.11 and 3.95 respectively. While comparing statistically, it was seen that mean VAS was significantly higher among the patients of group 2. Tamrakar KK et al assessed the efficacy and safety of the use of only three ports for laparoscopic cholecystectomy. 78 patients with the diagnosis of cholelithiasis were operated. Patients were randomized into 3-ports group and 4-ports group using random number. Operative time taken for the procedure and operative findings were noted. Postoperative pain and complications were noted in both groups. There was no significant difference in the operating time taken for the 3-ports laparoscopic cholecystectomy and 4-ports laparoscopic cholecystectomy. However operating time was significantly higher when the cases that had dense adhesions present were compared with those who did not have. Conversion from 3-ports technique to 4-ports technique was determined mainly by the degree of adhesions and to some degree by the BMI of the patient. Postoperative wound infection rate was similar among the two groups.¹¹ Pandey MC evaluated the outcome of 3 port LC for treatment of cholelithiasis by comparing the result with 4 port LC with respect to safety and efficacy. A total of 150 patients of laparoscopic cholecystectomy for gall stone disease were studied by dividing them into two groups. The results were compared in terms of complications, conversion from 3 port to 4 port and from LC to open procedure, hospital stay, pain score, operative time, need of analgesia and bile duct injury. A total of 150 patients of cholelithiasis were treated by laparoscopic cholecystectomy. Three port LC was performed in 60 (40%) patients and 4 port LC was performed in 90 (60%) patients. In group 1, 44.4% patients complained of mild pain and 55.5% experienced moderate-to-severe pain on VAS post-operatively, while in group 2 70% patients complained of mild pain and 30% patients complained of moderate-to-severe pain post-operatively. There was no bile duct injury reported in either group. However, in group 2 (3 port LC) 3 cases (5%) converted to 4 port LC and there was no conversion (open) reported in group 1 (4 port LC). In this comparative study, they found that use of 3 port LC did not affect the procedure safety, conversion rate, operating time and complication rate.¹²

CONCLUSION

The three port technique is as safe as the standard four port for laparoscopic cholecystectomy. The main

advantages of the three port technique are that it is less painful, safe, and leaves few scars.

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