International Journal of Research in Health and Allied Sciences
Journal home page: www.ijrhas.com
Official Publication of "Society for Scientific Research and Studies" [Regd.]
ISSN: 2455-7803

Original Research

Assessment of efficacy of three port and four port laparoscopic cholecystectomy: A comparative study

Mukesh Kumar Jamwal[1], Suneet Katoch[2], Sanjay Kumar[2]

[1]MBBS, MS (General surgery), Medical Officer, Civil hospital Thural, District Kangra, Himachal Pradesh
[2]MBBS, MS (General surgery), Medical Officer, MGMSC, Khaneri, Rampur, Himachal Pradesh

ABSTRACT:
Background: 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. Hence; under the light of above obtained data, we compared the efficacy of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy. **Materials & methods:** A total of 50 patients scheduled to undergo laparoscopic cholecystectomy were enrolled. Complete demographic and clinical details of all the subjects were recorded. A Performa was made and biochemical findings preoperatively of all the patients were noted. All the patients were randomly divided into two study groups; Group A- patients undergoing 3-port laparoscopic cholecystectomy, and Group B- patients undergoing standard 4-port laparoscopic cholecystectomy. Postoperative biochemical findings were recorded. Follow-up was done and findings were compared. **Results:** The time taken for four port group was significantly less than the time taken for three port group which came out to be statistically significant (P- value < 0.05). Mean VAS was significantly higher among subjects of group B in comparison to group A. **Conclusion:** The three port technique is as safe as the standard four port for laparoscopic cholecystectomy.
Key word: Laparoscopic cholecystectomy, Port

Received: 15 May, 2021 Accepted: 25 May, 2021

Corresponding author: Dr. Suneet Katoch, MBBS, MS (General surgery), Medical Officer, MGMSC, Khaneri, Rampur, Himachal Pradesh

This article may be cited as: Jamwal MK, Katoch S, Kumar S. Assessment of efficacy of three port and four port laparoscopic cholecystectomy: A comparative study. Int J Res Health Allied Sci 2021; 7(3): 60-62.

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. In the new era of minimal access surgery, the preferred outcomes under consideration are not only safety, but also quality, which is often defined by pain and cosmetic results. Scarless surgery is the ultimate goal for both surgeons and patients.[1]

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.[2]

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 appliers, 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. Natural orifice transluminal endoscopic surgery (NOTES) has been shown to offer further improvements in advantages of laparoscopic cholecystectomy, i.e., decreased pain, early ambulation, and better cosmesis.[3, 4]

Reducing the number of ports can reduce the port site complications including pain, port site leakage, port site herniations, port site bleeding, bowel injury, superior epigastric vessel injury, subcutaneous emphysema and pneumothorax.[5, 6] Hence; under the light of above obtained data, we compared the efficacy of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study was undertaken for comparing the efficacy of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy. A total of 50 patients scheduled to undergo laparoscopic cholecystectomy were enrolled. Complete demographic and clinical details of all the subjects were recorded. A Performa was made and biochemical findings preoperatively of all the patients were noted. All the patients were randomly divided into two study groups; Group A- patients undergoing 3-port laparoscopic cholecystectomy, and Group B- patients undergoing standard 4-port laparoscopic cholecystectomy. Postoperative biochemical findings were recorded. Follow-up was done and findings were compared. All the results were recorded and were analysed by SPSS software.

RESULTS

Mean age of the patients of group A and group B was 44.6 years and 46.2 years respectively. There were 14 males and 11 females in group A while there were 13 males and 12 females in group B. Mean operative time among patients of group A and group B was 63.2 minutes and 45.7 minutes respectively. Hence the time taken for four port group was significantly less than the time taken for three port group which came out to be statistically significant (P- value < 0.05). Conversion rate in both the groups was observed. In the three port group, after placement of the three ports, the conversion into four port and open procedure was observed. In 4 percent of the patients (1 patient), the procedure got converted into four port and in 8 percent of the patients (2 patients) it got converted to open cholecystectomy. Also in 1 patient of the four port group too (4 percent), the procedure was converted to open one. Mean VAS was significantly higher among subjects of group B in comparison to group A.

Table 1: Comparison of demographic data

Variable	Group A	Group B
Mean age (years)	44.6	46.2
Males (n)	14	13
Females (n)	11	12

Table 2: Comparison of mean operative time

Operative time (minutes)	Group A	Group B
Mean	63.2	45.7
SD	12.9	13.2
p-value	0.00 (Significant)	

Table 3: Number of cases of converted into four port/open cholecystectomy

Number of conversions	Group A		Group B	
	n	%	n	%
To four port	1	4	-	-
To open cholecystectomy	2	8	1	4
No conversion	22	88	24	96
Total	25	100	25	100

Table 4: Mean Post-op pain score on VAS

Postoperative pain score on VAS	Group A	Group B	P- value
One day of surgery at 6 hours	5.95	7.36	0.00 (Significant)
At discharge	2.36	4.29	0.00 (Significant)
At one week follow-up	1.93	3.11	0.00 (Significant)

DISCUSSION

The advantages of laparoscopy over conventional or classic surgery include decreased pain, improved cosmetic results, and a decreased duration of hospital stay. For this reason, LC is nowadays performed through fewer and smaller ports. In recent years, multiple studies of single-incision laparoscopic surgery (SILS) have been published. The only reported advantage of SILS over standard LC is an improved cosmetic result. Four-port LC is most commonly used, as this method provides better anatomic views and is easier to learn.[6- 8] Hence; under the light of above obtained data, we compared the efficacy of 3-port laparoscopic cholecystectomy versus standard 4-port laparoscopic cholecystectomy.

Mean age of the patients of group A and group B was 44.6 years and 46.2 years respectively. There were 14 males and 11 females in group A while there were 13 males and 12 females in group B. Mean operative time among patients of group A and group B was 63.2 minutes and 45.7 minutes respectively. Hence the time taken for four port group was significantly less than the time taken for three port group which came

out to be statistically significant (P- value < 0.05). Conversion rate in both the groups was observed. Marks J et al presented preliminary data from a prospective randomized multicenter, single-blinded trial of single-incision laparoscopic cholecystectomy (SILC) versus standard laparoscopic cholecystectomy (4PLC). Patients with symptomatic gallstones, polyps, or biliary dyskinesia (ejection fraction <30%) were randomized to SILC or 4PLC. Data included operative time, estimated blood loss, length of skin and fascial incisions, complications, pain, satisfaction and cosmetic scoring, and conversion. Operating room time was longer with SILC (n = 50) versus 4PLC (n = 33). No differences were seen in blood loss, complications, or pain scores. Body image scores and cosmetic scores at 1, 2, 4, and 12 weeks were significantly higher for SILC. Satisfaction scores, however, were similar. Preliminary results from this prospective trial showed SILC to be safe compared with 4PLC although operative times were longer. Cosmetic scores were higher for SILS compared with 4PLC.[9] Mujahid MD et al compared the outcome of three vs four port laparoscopic cholecystectomy and detect safety of three port laparoscopic cholecystectomy (LC) as routine procedure. All patients were divided into two groups. Group A: three port laparoscopic cholecystectomy was done. Group B: Conventional four port laparoscopic cholecystectomy was done. No patient in both groups suffered bile duct injury. The three-port technique is as safe as the standard four-port for LC. The main advantages of the three-port technique was that it is less painful, safe, less chances of wound infection and leaves fewer scars.[10]

In the present study, un the three port group, after placement of the three ports, the conversion into four port and open procedure was observed. In 4 percent of the patients (1 patient), the procedure got converted into four port and in 8 percent of the patients (2 patients) it got converted to open cholecystectomy. Also in 1 patient of the four port group too (4 percent), the procedure was converted to open one. Mean VAS was significantly higher among subjects of group B in comparison to group A. Solomon D et al described the first prospective cohort study comparing transvaginal cholecystectomies (TVC) with single incision laparoscopic cholecystectomies (SILC) and four-port laparoscopic cholecystectomies (4PLC). They compared with patients who underwent SILC (22 patients) or 4PLC (11 patients) in a concurrent, randomized, controlled trial. Demographic data, operative time, numerical pain scales, complications, and return to work were recorded. Mean age and mean BMIwere not statistically significant. Transvaginal cholecystectomy is a safe and well-tolerated procedure with statistically significantly less pain at 1 and 3 days after surgery, with a faster return to work but longer operative times compared with single incision and four-port laparoscopic cholecystectomy.[11]

CONCLUSION

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

REFERENCES

1. Bisgaard T1, Klarskov B, Trap R, Kehlet H, Rosenberg J. Microlaparoscopic vs conventional laparoscopic cholecystectomy: a prospective randomized double-blind trial. Surg Endosc. 2002 Mar;16(3):458-64. Epub 2001 Nov 16.
2. Gollan J, Kalser S, Pitt H. National Institutes of Health (NIH) consensus development conference on gallstones and laparoscopic cholecystectomy. Am J Surg 1993; 165: 90-396.
3. Tagaya N1, Kita J, Takagi K, Imada T, Ishikawa K, Kogure H, Ohyama O. Experience with three-port laparoscopic cholecystectomy. J Hepatobiliary Pancreat Surg. 1998;5(3):309-11.
4. Huang MT1, Wang W, Wei PL, Chen RJ, Lee WJ. Minilaparoscopic and laparoscopic cholecystectomy: a comparative study. Arch Surg. 2003 Sep;138(9):1017-23.
5. Cala Z1, Perko Z, Velnić D. Comparison of the results of laparoscopic cholecystectomy preformed in the usual way and with a lesser number of trocars. Lijec Vjesn. 2000 Jan-Feb;122(1-2):1-5.
6. Leggett PL1, Bissell CD, Churchman-Winn R, Ahn C. Three-port microlaparoscopic cholecystectomy in 159 patients. Surg Endosc. 2001 Mar;15(3):293-6. Epub 2000 Dec 12.
7. Trichak S1. Three-port vs standard four-port laparoscopic cholecystectomy. Surg Endosc. 2003 Sep;17(9):1434-6. Epub 2003 Jun 13
8. Cerci C1, Tarhan OR, Barut I, Bülbül M. Three-port versus four-port laparoscopic cholecystectomy. Hepatogastroenterology. 2007 Jan-Feb;54(73):15-6.
9. Marks J1, Tacchino R, Roberts K, Onders R, Denoto G, Paraskeva P, Rivas H, Soper N, Rosemurgy A, Shah S. Prospective randomized controlled trial of traditional laparoscopic cholecystectomy versus single-incision laparoscopic cholecystectomy: report of preliminary data. Am J Surg. 2011 Mar;201(3):369-72.
10. Mujahid MD, Hameed F, Riaz O, Saleem M, Hussain R. Three Port Versus Four Port Laparoscopic Cholecystectomy. A.P.M.C. 2011; 5(2): 80- 84.
11. Solomon D1, Shariff AH, Silasi DA, Duffy AJ, Bell RL, Roberts KE. Transvaginal cholecystectomy versus single-incision laparoscopic cholecystectomy versus four-port laparoscopic cholecystectomy: a prospective cohort study. Surg Endosc. 2012 Oct;26(10):2823-7. Epub 2012 May 2.