



Three Port Versus Four Port- A Comparative Study

KEYWORDS

Laparoscopic Cholecystectomy, Three Port, Four Port, cholelithiasis

Dr. Kumar Ratnesh

Assistant Professor, Department of surgery,
Jawaharlal Nehru, Medical College and Hospital,
Bhagalpur, Bihar- 812001

Dr. Chandramauli Upadhyay

Associate Professor, Department of surgery,
Jawaharlal Nehru Medical College and Hospital
Bhagalpur, Bihar-812001

ABSTRACT *This is a prospective study done to see the safety, efficacy, cost-effectiveness and complications in both three versus four port laparoscopic cholecystectomy.*

In this study 100 patients of cholelithiasis were taken and divided into two groups. Study was done from January 2015 to march 2016. Group A (50 patients) for three port technique and group B (50 patients) for standard four port technique. The outcomes were assessed based on duration of surgery, complication rates, postoperative pain, hospital stay and conversion rates. 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 (2 days) than group B (2.5 days). Better cosmetic results and patient satisfaction was observed in group A. The three port technique is a safe and feasible method in hands of an experienced laparoscopic surgeon. Thus it can be recommended as a safe alternative to conventional four ports 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. 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. In India, first case was performed by T.E.Udwadia in Mumbai in 1991. Laparoscopic Cholecystectomy has become the gold standard for treatment of gallbladder stone disease.

This is a prospective study over a period of one year of 100 patients, comparing the safety and efficacy in reducing the number of ports from four to three in Laparoscopic Cholecystectomy.

Material and Methods

This study was conducted in the Surgery Department of Jawaharlal Nehru medical college, Bhagalpur. 100 patients with symptomatic gallstone disease were admitted for elective surgery and randomized into two groups. Group A (50 pts) subjected to the three port technique and group B (50pts) subjected to the conventional four port technique.

The patients were initially evaluated and worked up in the out-patient department including ultrasound abdomen and then admitted for surgery after taking an informed consent. The patients of both groups were given the same kind of anesthesia with a standard protocol.

Prophylactic dose of antibiotic was given just prior to induction. Urinary bladder was emptied before shifting to operation room. Primary placement of 10mm umbilical

(camera) port by blind method. Second 10mm (main working port) is inserted in epigastrium; another 5mm (accessory working) port placed in the mid-clavicular line just below the right costal margin and fourth 5mm port is inserted in group B patients in the anterior axillary line at the level of umbilicus. In group A the technique of cholecystectomy was same except the use of fundal retraction port in group B. A negative suction drain was inserted through mid-clavicular port (group A) and mid-axillary port (group B) in cases of bile/stone spillage. The outcomes were measured in terms of operating time, conversion rate, intra-operative complications, immediate post-operative complications, pain score, analgesic requirement and hospital stay.

Results

In this study, a total of 100 patients, 50 patients in group (three port) A and 50 patients in group (standard four port) B were included. Both the groups were similar with regard to demographic characteristics. In our present study, mean operative times were: Group A 50 min.; Group B 60 min. The mean operative time in Group A (3port) was less. The incidence of conversions in our study groups and reasons for conversion were: Group A (3 port) had 2 conversions to 4 port method; reasons were difficult anatomy of Calot's Triangle; distended Hartmann's pouch obscuring the anatomy. No conversions of 3port to open. Group B (4port) had 1 conversions to open method; due to thick vascular adhesions of inflamed gallbladder. The intra-operative complications in our present study were nil. There was no case of CBD injury and no intra/postoperative mortality. The postoperative complications in our present study groups were- 6 port site infections in group A and 5 in group B ($p>0.05$). The postoperative hospital stay in our present study was a mean stay of 2 days in group A versus 2.5 days in group B ($p<0.05$). The cosmetic effect of surgery was evaluated after one week of surgery by asking the patient to assess aesthesia. All patients in both groups were satisfied with the cosmesis except in patients who underwent conversions to open method. The cost benefit ratio of reducing the number of ports lies in the fact that second assistant surgeon is not required, requires lesser num-

ber of ports, less instrumentation in form of fundus grasper which reduces the cost of surgery. In our study instruments were reusable and this also would further reduce the cost of surgery in 3 port group.

Discussion

In the era of laparoscopic surgery, less postoperative pain and early recovery are major goals to achieve better patient care and cost effectiveness. Several studies demonstrated that less post operative pain was associated with reduction in either size or number of ports. The use of fourth trocar is considered unnecessary by some surgeons while few of them used futures to retract gallbladder fundus. In our present study we have experienced the almost same demographic profile as in other studies. The results of three port technique were more favorable in that it reduced pain, so that fewer analgesic injections were needed for pain control. In present study postoperative analgesia requirement were almost similar in both the groups. The overall intraoperative complications in our study occurred with almost equal rate with both the techniques ($p>0.05$). The results show that the three port technique yields the same success rate as the four port one. The postoperative nausea and vomiting were comparable in both groups.

We believe that with defined protocols, both techniques can be safely performed. It was also interesting that mean operative time was shorter for three ports LC, which does not correlate with previous studies. One explanation for the shorter operative time in the three -port group is that less time was spent on the establishment and subsequent closure of the additional port. One finding consistently noted in our study was that three port LC was slight difficult to perform with long gallbladder with a long peritoneal fold. This was because the fundus of gall bladder repeatedly fell toward the area of the dissection in calot's triangle. Gorini P mentioned advantage of 3 port method as an apparent reduction in cost (1,340,000 in 3 port versus. 1,636,000 Italian lira in 4 port); reduction of expenses for surgical ports and related instruments assessed at about 18% and calculated that for every 5.5 operations, instruments for one additional cholecystectomy are entirely funded. However all the results suggest that the three port LC technique was not difficult to master and could be safely performed by trained personnel. Conversion to standard four port laparoscopic procedure should be undertaken wherever necessary. The most important aspect of any surgical procedure is its safety and complications.

Conclusion

It is recommended that three port method of laparoscopic cholecystectomy is a safe procedure withno extra complications in the hands of an experienced surgeon. Secondly it is recommended that the surgeon should not hesitate to put fourth port to ensure safe completion of Surgery. The conversion should not be taken as failure of the method but as a method for safe completion of the procedure.

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