



A Comparative Study of Three Ports Vs. Four Ports Laparoscopic Cholecystectomy

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ABSTRACT

Introduction: Four ports laparoscopic cholecystectomy is the standard technique and is being advanced to reduce the number of ports. With ever increasing experience the laparoscopic cholecystectomy can be performed using three ports and even two ports. With the availability of new instruments single incision laparoscopic cholecystectomy and needle scopic cholecystectomy with micro instruments is being done. These newer techniques have also resulted in very high incidence of complications particularly bile duct injuries. The use of less number of ports to reduce postoperative pain and early ambulation is being frequently used.

Material and Methods: This study was carried out on a total of fifty patients suffering from gall stone disease. In twenty five patients three ports laparoscopic cholecystectomy and in rest of twenty five patients four ports laparoscopic cholecystectomy was done. Observations were made in both groups regarding the condition of gall bladder, bleeding, perforation of gall bladder, bile spillage, stone spillage and bile duct injuries.

Results: Both groups A and B were similar in age and sex. There was no difference in mean operative time between the two groups. Statistically there was no significant difference in two groups in regards to bile and stone spillage, gall bladder rupture and haemorrhage. No bile duct injury was recorded in this study. Two patients in each group A and B were converted to open cholecystectomy because of difficulty in dissection. The overall results were told as satisfactory in both the groups.

Conclusion: From this study it is concluded that three ports laparoscopic cholecystectomy is a safe technique and is feasible technique for routine use. Routine use of three port laparoscopic cholecystectomy is recommended instead of four port cholecystectomy with good patient's satisfaction.

KEYWORDS : Laparoscopic Cholecystectomy, Three ports, Four ports

Introduction:

Four ports laparoscopic cholecystectomy is the standard technique since its inception. This minimum invasive surgery technique is being advanced to reduce the number of ports.¹ With ever increasing experience the laparoscopic cholecystectomy can be performed using three ports and even two ports. With the availability of new instruments single incision laparoscopic cholecystectomy and needle scopic cholecystectomy with micro instruments is being done. High cost of equipment and less adaptation to this type of resolution has resulted in difficulty in operating by surgeons. These newer techniques have also resulted in very high incidence of complications particularly bile duct injuries. The use of less number of ports to reduce postoperative pain and early ambulation is being frequently used.² The utilization of reduced number of ports helps in reducing port site infections and scarring.³ This results in better cosmetic acceptability. Three ports laparoscopic cholecystectomy appears to be a better solution for laparoscopic cholecystectomy as ambulatory surgery procedure. This prospective study was planned to compare the safety and feasibility of three ports laparoscopic cholecystectomy with standard four ports laparoscopic cholecystectomy.

Material and methods:

This study was carried out on a total of fifty patients suffering from gall stone disease. In twenty five patients three ports laparoscopic cholecystectomy and in rest of twenty five patients four ports laparoscopic cholecystectomy was done. The assignment of a patient to three ports group A and four ports group B was random. Informed consent was obtained from all the patients in both the groups. The patients suffering from carcinoma gall bladder, gall bladder polyp, patients with morbid obesity and having concomitant common bile duct stones are excluded from this study.

In four ports technique, first port was 10 mm at umbilicus and was used for camera. The second 10 mm port was made at epigastrium just right lateral to falciform ligament. This port was used for dissection instrument and for delivery of gall bladder. Third port was 5 mm port made below right costal margin in midclavicular line. Another 5 mm fourth port was made under costal margin in anterior axillary line for fundal retraction. The fourth port was not made in three port group A. In both groups A and B the laparoscopic cholecystectomy was completed in standard manner.

Observations were made in both groups regarding the condition of gall bladder, bleeding, perforation of gall bladder, bile spillage, stone

spillage and bile duct injuries. The ease of dissection in calot's triangle was graded as mild, moderate and difficult. The operative time was recorded in both groups from creation of pneumoperitoneum to delivery of gall bladder. Pain was graded as mild, moderate and severe. Postoperative vomiting, time interval for oral feeding and hospital stay were also observed. Follow up was done on 7th postoperative day. The observations in both groups were compared each other.

Results:

Both groups A and B were similar in age and sex. There was no difference in mean operative time between the two groups. Statistically there was no significant difference in two groups in regards to bile and stone spillage, gall bladder rupture and haemorrhage. No bile duct injury was recorded in this study. Two patients in each group A and B were converted to open cholecystectomy because of difficulty in dissection. The pain at port sites in two groups were compared and were found to have insignificant difference in pain. The vomiting was present in one patient in group A and two patients in group B. The time to start oral feeding was about 6 hours in both groups. The hospital stay in both the groups was less than 23 hours, the patients being discharged as ambulatory surgery patients. On follow up on 7th postoperative day epigastric port site infection was present in one patient only in group B. The overall results were told as satisfactory in both the groups.

Discussion:

In laparoscopic cholecystectomy a minimum invasive surgery four port technique is considered as standard technique. There has been effort to minimize the number of ports producing less pain and good cosmetic results.³ It has been found that two graspers are not necessary to hold the gall bladder during its dissection.⁴ These two or three ports laparoscopic cholecystectomy helps in reducing pain.⁵ In this study it has been found that pain is significantly less in three ports group A as compared to four ports group B. The fourth port site which was absent in group B was the site for less pain. The epigastric port was associated with more pain in both groups as it is subjected to dilatation for delivery of gall bladder. Mid clavicular port site is second in pain. These two port sites are frequent site of pain as these two ports are used for dissection during laparoscopic cholecystectomy.⁶

In the present study the mean operative time used was equal in both groups. The time used suggested that laparoscopic cholecystectomy without retraction of fundus of gall bladder is difficult and may increase risk of bile duct injuries.⁷ In our study there was no difficulty

in dissection of Calot's triangle even in presence of dense adhesions. There were no bile duct injuries in any group in this study.

In previous studies using three ports laparoscopic cholecystectomy the conversion rate to either four ports or to open cholecystectomy was about 6 to 15%.⁸ But in this study two patients in each group A and group B were converted to open cholecystectomy because of dense adhesions. It is recommended that additional ports may be inserted in case of any difficulty during dissection. In case of more difficulty during dissection in Calot's triangle there should be no hesitation in converting to open cholecystectomy.⁹

In this study the operative time, vomiting and hospital stay was equal in both the studies. The epigastric port was site of wound infection in both groups A and B. This epigastric port was the site of infection in both the groups because maximum manipulations and delivery of gall bladder is done through this port. The cosmetic results were equal in both group A and group B patients and patient's satisfaction to laparoscopic cholecystectomy in both the groups was equal. The overall results of three ports laparoscopic cholecystectomy to four ports cholecystectomy are comparable. The three port laparoscopic cholecystectomy appears to be safe equivalent to four ports cholecystectomy. This three ports laparoscopic cholecystectomy can be easily learned and can be accomplished without any special instruments.¹⁰

Conclusion:

From this study it is concluded that three ports laparoscopic cholecystectomy is a safe technique and is feasible technique for routine use. There is less post operative pain with comparable operative time compared to four ports laparoscopic cholecystectomy. Routine use of three port laparoscopic cholecystectomy is recommended instead of four port cholecystectomy with good patient's satisfaction.

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