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Original Research Article

Stitch less, clip less, three ports laparoscopic cholecystectomy: experience of 300 cases

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ABSTRACT

Background: 300 cases of cholelithiasis were operated by stitch less, clip less, three ports laparoscopic cholecystectomy at Maxx lyfe Hospital, near Bathindi morh, Sunjwan road, Jammu with effect from August 2017 to May 2019. The outcome measures in the form of safety of the technique, postoperative pain, need of postoperative analgesia, number of OT assistants needed, duration of hospital stay, recovery and return to routine work, cosmetic satisfaction of the patient were taken into consideration and were found to be better than in conventional four ports technique of laparoscopic cholecystectomy.
Methods: In three port laparoscopic cholecystectomy, first 10 mm umbilical, second 5 mm subxyphoid and third 5 mm subcostal ports are used and telescope is passed into the peritoneal cavity through the umbilical port. Retraction of the gallbladder is done by the long grasping forceps through the 5 mm subcostal port, whereas dissection is accomplished through the subxyphoid port. The gallbladder is retrieved through the subxyphoid port.
Results: Mean operative time was 40 minutes and mean duration of postoperative stay in the hospital was 18 hours. Days to return to normal activity was 4 days at an average.
Conclusions: The 3-port laparoscopic cholecystectomy technique is safe and has better outcomes in the form of less postoperative pain, less duration of hospital stay, early return to routine work and more cosmetic satisfaction as compared to the conventional 4-port technique, with no obvious increase in bile duct injuries and it can be a viable alternative in the field of minimally invasive surgery.

Keywords: Cholecystectomy, Cholelithiasis, Laparoscopic, Ports, Stitch less, Trocar

INTRODUCTION

The first laparoscopic cholecystectomy was performed in 1987 by Phillip Mouret and later established by Dubois and Perissat in 1990.[1,2] Since then, it has met with wide-spread acceptance and presently, laparoscopic cholecystectomy has been established as a gold standard procedure for Gall bladder surgery. 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 surgeons experience, laparoscopic cholecystectomy has undergone many refinements including reduction in port size and number of ports.[3-7] It has been argued that the fourth trocar may not be necessary and laparoscopic cholecystectomy can be performed safely without using it. Experience of the operating surgeon is very important for performing 3 port laparoscopic cholecystectomy and for exposing Calot's triangle and dissecting the gallbladder when using the three port techniques. Several studies have reported that 3-port laparoscopic cholecystectomy is technically

possible.[3,8,9] Further, in the era of laparoscopic surgery, less postoperative pain, early recovery and more cosmetic satisfaction are major goals. Several studies have demonstrated that less postoperative pain is associated with a reduction in either size or number of ports.[4,8-10]

We did a prospective randomized controlled clinical study to explore the feasibility of reducing port number without compromising the safety in cases of laparoscopic cholecystectomy and evaluated the real benefit associated with it in terms of pain, recovery, cosmetic satisfaction of the patients.

We sought to investigate the technical feasibility, safety, and benefit of 3-port laparoscopic cholecystectomy in our study at our set up. Technical feasibility was defined as performance of the laparoscopic cholecystectomy without much difficulty by using the 3-port technique. The need of a fourth port was considered a failure of the three port technique and the reason behind this is discussed herein.

Safety was defined as performance of the procedure without any major complications like bleeding and injury to the bile duct or any viscera.

Benefits were measured by various parameters like operative time, duration of hospital stay, postoperative recovery time after discharge, days taken to return to work, cosmetic satisfaction, quantitative requirement of analgesia after surgery and assessment of postoperative pain.

METHODS

The study which was carried out at Maxx lyfe Hospital, near Bathindi morh, Jammu (J&K State) included 300 consecutive patients aged 12 to 82 years with an average age of 36 years with male (120 cases) to female (180 cases) ratio of 2:3. Both acute (50 cases) as well as chronic (250 cases) patients of cholelithiasis having indication for laparoscopic cholecystectomy were part of the study. Exclusion criteria included patients who were not fit for laparoscopic surgery on anesthetic and medical grounds. All procedures were performed by the experienced laparoscopic surgeon who had performed more than 1000 conventional 4 port laparoscopic cholecystectomies prior to the study. All patients signed informed consent for the randomization and procedure. In three port laparoscopic cholecystectomy after General anesthesia, first 10 mm umbilical port is made after creating carbon dioxide pneumo-peritoneum by putting veress needle through a puncture into the umbilicus, second 5 mm subxyphoid port and third 5 mm subcostal port are used. We used an operating telescope (Karl Storz zero degree, Tuttlingen, Germany) that was inserted into the umbilical port. Retraction of the gallbladder was done by the long grasping forceps through the 5-mm subcostal port, whereas dissection was accomplished through the subxyphoid port. In three ports technique, Gall bladder is held at Hartmann's pouch or near to its neck with a toothed grasper and cystic duct is dissected and ligated by No. 0 silk or No. 1 vicryl employing extracorporeal Roeder's knot instead of metallic clips and cystic artery is coagulated and cut by using bipolar diathermy. The gallbladder is retrieved through the subxyphoid port. None of the ports required stitches and were simply covered by the pressure gauge dressings. Every patient was given injection of diclofenac 75mg in intravenous drip before surgery and then after 8 hours for postoperative pain control and per operative intravenous injection of ceftriaxone. Several outcome measures were employed like postoperative pain, need of analgesia, length of operation and operative difficulty, number of OT assistants required, cosmetic satisfaction of the patients and days to return to normal activity.

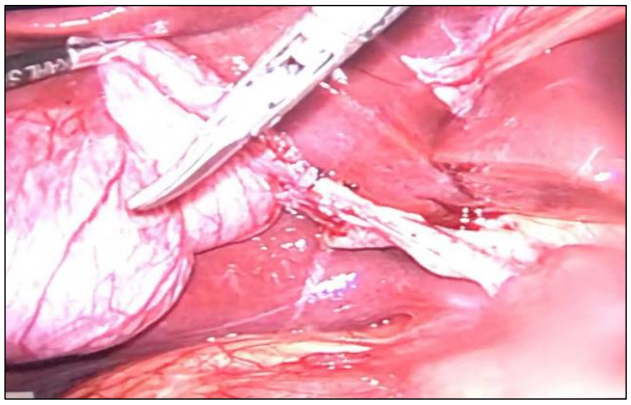

Figure showing gall bladder held with a grasper near its neck and cystic duct being cut by scissors after being ligated in three port cholecystectomy.

RESULTS

From August 2017 to May 2019, 300 consecutive patients were included in this study at Maxx lyfe Hospital, Jammu. The demographic data and indications for cholecystectomy were noted (Table 1).

Table 1: Demographic data.

Characteristics	No. of patients
Number	300
Age (years) (mean)	36
Sex ratio (m:f)	2:3
Acute cholecystitis	50
Chronic cholecystitis	250

Table 2: Patient outcomes.

Characteristics	Outcome
Mean Operative Time	40 min
Days of Oral Analgesia Requirement	5
Post-operative Hospital Stay	12-24 hours
Days to Return to Normal Activity	4
Success Rate	98.3%

DISCUSSION

In the era of laparoscopic surgery, less postoperative pain, early recovery and more cosmsetic satisfaction of the patient are major goals to achieve. Several studies demonstrated that less postoperative pain was associated with reduction in either size or number of ports.[4,8–10] In the current study, all the operations were performed by an experienced surgeon specialist. Authors had only five conversions, 3 cases were converted to 4 port laparoscopic cholecystectomy and 2 cases were converted to open cholecystectomy due to bleeding from the cystic artery and difficulty encountered in thick walled edematous gall bladder in cases of empyema of Gall Bladder and in rest of the 295 cases performed by the three port technique, no conversions were necessary, nor did any patient require the fourth port to complete the surgery. A similar success rate has been described in the other reported studies.[3,4,10,11] Authors did not have any bile duct injury in any of our patients in the study. The mean hospital stay was 18 hours. It was also interesting that the mean operative time was short (40 min) in our study, which does not correlate with previous studies.[3,5,9] One explanation for the shorter operative time in the three port technique is that less time was spent on the establishment and subsequent closure of the additional port. Another notable point is that second assistant is not required to assist in three ports technique of laparoscopic cholecystectomy. One finding that was consistently noted in this series was that 3-port laparoscopic cholecystectomy was slightly difficult to perform in long gallbladders with a long peritoneal fold. This was because the fundus of the long gallbladder repeatedly fell towards the area of dissection in Calot's triangle. We believe that with defined protocols, 3 port technique can be safely performed. However, overall results suggest that the three port technique was not difficult to master and could be safely performed by trained personnel.[12–16]

Some surgeons have expressed concerns about the safety of the three port technique, arguing that it may lead to a higher percentage of the bile duct injuries.[1] However, bile duct injury can be avoided if the gallbladder is gripped at the infundibulum, retracted laterally, and dissected at the infundibulum-cystic duct junction rather than cystic duct-common bile duct junction.[2] This study has shown comparable results to those of other studies done in the past and has confirmed the safety of the procedure.[3,4,17–21] Most of our patients reported high satisfaction with the surgery and the surgical scars. Also, none of our patients required application of liga clips for cystic duct and cystic artery, thus reducing the cost of the procedure and risk of undergoing MRI scan for any disease in future. Only seventeen patients required to extend subxyphoid port extension from 5 to 10 mm or more due to thick walled Gall bladders in Acute cholecystitis and in these 17 cases, port stitching was done, though in rest of the cases, no port stitching was needed. There was been no report of port site hernia till date and only 16 cases reported with mild port site infection which recovered with antiseptic dressings in few days. Very few patients (15 out of 300, i.e.,5%) required intra abdominal drainage in our study. The procedure of 3 ports Laparoscopic cholecystectomy did not require extra instrumentation or any specialized apparatus as needed in SILS (Single Port Laparoscopic Surgery) technique. Only conventional laparoscopic instruments are required for doing 3 port laparoscopic cholecystectomy.

CONCLUSION

It appears that the three port laparoscopic cholecystectomy technique is safe and has better outcomes in the form of less postoperative pain, less duration of hospital stay, early return to routine work and more cosmetic satisfaction as compared to the conventional four port technique, with no obvious increase in bile duct injuries and it can be a viable alternative in the field of minimally invasive laparoscopic cholecystectomy.

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