

Clinical Outcome in Two Incision, Three Port Laparoscopic Cholecystectomy in Gall Stone Disease

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Abstract

Background

Conventional laparoscopic cholecystectomy requires four different incisions to insert the four ports for various instruments. It has been seen that fourth trocar which is used to retract fundus of gall bladder is not required at all and laparoscopic cholecystectomy can be performed without using it. Various modification have been done in this regard. The present study is designed to evaluate the feasibility of two incision three port laparoscopic and its outcome in term of postoperative recovery.

Methods

A prospective study was conducted in a unit in Department of General Surgery, Government Medical College and Hospital, Chandigarh, India. 100 patients of either sex undergoing two incision laparoscopic surgery in gallstone disease from January 2018 to October 2019.

Results

In the study, two incision, three port laparoscopic cholecystectomy is safe and feasible technique with added advantage of significantly less port site pain, good satisfaction score and less operative time with experienced surgeon.

Conclusions

Two incision, three port laparoscopic cholecystectomy is feasible, safe and with good aesthetic results using the same instruments of conventional laparoscopic cholecystectomy, without increasing operative time and compromising safety. It could be recommended for routine laparoscopic cholecystectomy in place of conventional four port or three incision laparoscopic cholecystectomy.

Background

Application of laparoscopic techniques for general surgical procedures have revolutionized the field of surgery [1]. Laparoscopic cholecystectomy (LC) has become the gold standard for gall stone disease. First laparoscopic cholecystectomy was performed in 1987 by Philip Mouret of Germany and later established by Dubois, Reddick, and others in 1990 [2]. In India, first laparoscopic cholecystectomy was performed by T.E. Udwardia in Mumbai in 1991 [3].

Conventional laparoscopic cholecystectomy requires four different incisions to insert the four ports for various instruments. It has

been seen that fourth trocar which is used to retract fundus of gall bladder is not required at all and laparoscopic cholecystectomy can be performed without using it [4, 5, 6]. Another method of performing three port laparoscopic cholecystectomy is by using a suture for fundal traction [5].

A newer modification is single incision laparoscopic surgery (SILS) in which Single Site Laparoscopic cholecystectomy (SSLC) and Trans-umbilical Single Site Surgery (TUSS) are there. SSLC means when all ports are placed at single site; here it is practically in or around umbilicus. SSLC includes single skin and sheath incision or single skin and separate sheath incisions or sep-

arate skin and sheath incisions but at the same site [4,5,7]. Later on Natural orifice transluminal endoscopic surgery (NOTES) cholecystectomy was devised in which various techniques which have been used are transvaginal, transgastric or transcolonic [8, 9].

Traditional two incision laparoscopic cholecystectomy (TILS) is done by suture technique.10 However, having disadvantage of ergonomics, Gall bladder perforation and fear of GB tear, spillage

are there. But in our institution we are doing two incision, three port laparoscopic cholecystectomy by putting two incision (Figure 1), one at the level of umbilicus 10mm (para,supra,infra) depending upon surgeon's ease and patient's obesity through which two trocars are inserted , 5mm camera port and another 5mm traction port through different facial planes (Figure 2) . Second incision is given in epigastrium region 10mm which is the main working port. Here traditional instruments are used without the use of sutures.



Figure 1: Diagrammatic representation of two abdominal incision for port insertion

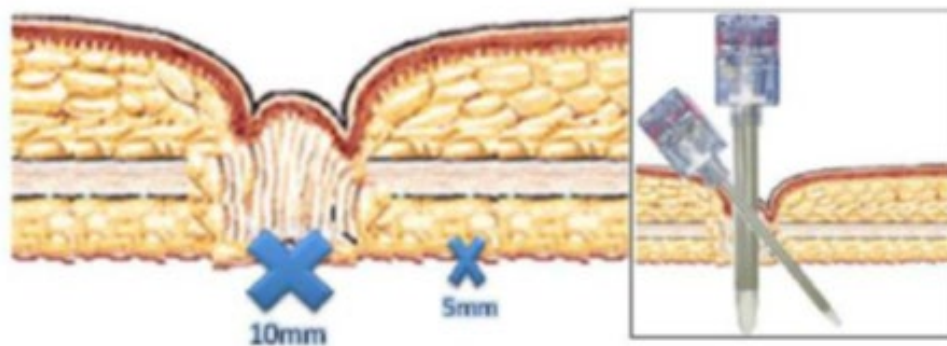


Figure 2: Two 5mm ports through same incision but through different facial plane and 10mm umbilical incision.

Various studies suggest that patients undergoing two incision, three port laparoscopic cholecystectomy is feasible, safe, and with good aesthetic result, using the same instruments of LC, without increasing operative time [11-15].

Methods

The Present study was conducted in the department of Surgery at Govt. medical college & hospital, Chandigarh. After approval from institutional ethics committee written informed consent were taken. The study included prospective data of 100 patients of either sex undergoing laparoscopic surgery in surgery department from January 2018 to October 2019. 100 consecutive Cases were taken for two incision laparoscopic surgery in gallstone disease. Patients with ASA grade \geq III, suspected of uncorrectable coagulopathy, suspected common bile duct stone on ultrasonography (USG) / magnetic resonance cholangiopancreatography (MRCP),

increased alkaline phosphatase (ALP) >147 IU/L were excluded from the study.

Technique

All patients were explained about the procedure and was placed in a supine position.

A 10 mm umbilical incision was made, and a 5 mm trocar was inserted through direct method. This was followed by carbon dioxide insufflations to achieve an intra-abdominal pressure of 14 mmHg at a flow rate of 1.5-3.5 liters per minute. Zero-degree camera was inserted through this. The patient was then placed in the reverse Trendelenburg position and tilted towards the operating surgeon to expose the gallbladder and its surrounding structures. A second incision was made at the epigastrium, approximately two finger breath below the xiphoid process to allow insertion of a second 10 mm port. (Figure 3,4,5)

The surgeon used his left hand to insert a non-traumatic grasper under vision through the epigastric port to hold and manipulate the gallbladder. The second 5 mm trocar was inserted through the umbilicus through different facial plane. This was used for the traction

of gall bladder at Hartman's pouch, to maintain the ergonomics. With the help of working port inserted through epigastric incision, it was used to delineate the Calot's anatomy and differentiation of cystic artery, cystic duct, and common bile duct.

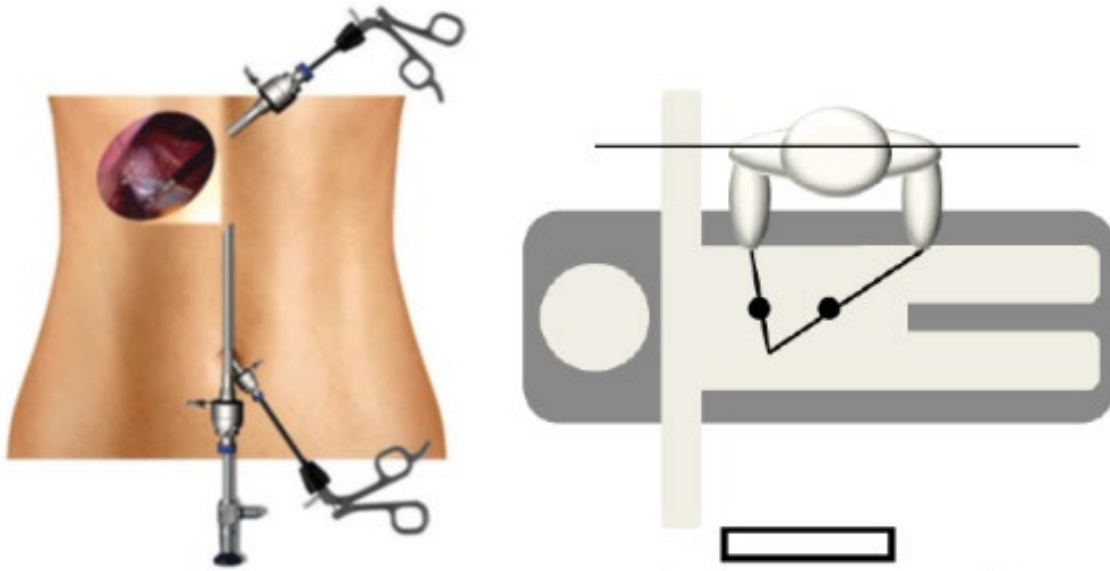


Figure 3,4



Figure 5

Both cystic artery and duct were identified. The cystic duct and artery are double clip ligated and cut. (Figure 6) Gall bladder was dissected from gall bladder fossa and after achieving haemostasis, the gall bladder was removed from the epigastric incision. The gallbladder fossa, cystic duct stump, and dissection sites then were checked for any bleeding and bile leakage. The skin clip was applied to approximate the skin incision. The findings were noted as per Performa attached.

In all patients Diclofenac sodium 75ml I/M 8hrly for Ist 24hrs was given during the hospital stay and on discharge oral analgesics was used on need basis (Tab Diclofenac sodium 75 mg/dose) Pain score were measured using visual analogue score (VAS) every 12 to 24 hourlies. A VAS smiley score 1-3 is called as low pain score (mild) and 4-10 as high pain score (Severe). Patient were followed up for pain score on 6 hours, 24 hours and at discharge. Patient satisfaction score were measured on verbal rating scale from 0-10. 0- no satisfaction and 10 indicates full satisfaction. Post-operative scar. (Figure 7)



Figure 6,7

Results and Discussion

Majority of patients were around 41 years of age and females were more than males. All cases were operated by consultants of our unit only. Mean operative time was 24.39 +/-11.910 minutes. There was minimal bleeding from gall bladder fossa in majority of cases. In majority of cases 71%, out of which in 46%, irrigation was required with normal during dissection and in 25%, after dissection with 259.86 +/- 324.475 ml of saline. 17% of cases had gall bladder rupture, 9% stone and 17% bile spillage during dissection. No major or minor bile duct injury, billiary fistula or bile leak and gut injury in the study. In 80% of cases, dissection at calot's triangle was easy. None of patients required drain placement. Gall bladder was distended in 84% of cases, in 8% cases gall bladder was

contracted, in 6% cases it was mucocele gall bladder, 1% case had inflamed gall bladder and 1% had gall bladder embedded in liver. There were no conversions to open cholecystectomy required. Study on 486 patients without addition of new port or conversion to open cholecystectomy [16].

By reducing the number of ports, post-operative pain has been reduced. It was found that there is significant difference at umbilical and epigastric port site at at 6 hrs, 24 hrs, at discharge and at 7 days/follow up after operation. (Figure 8,9) Post-operative pain, shorten recovery time and early return to work is significantly reduced in cases of two incision three port laparoscopic cholecystectomy [17-20].

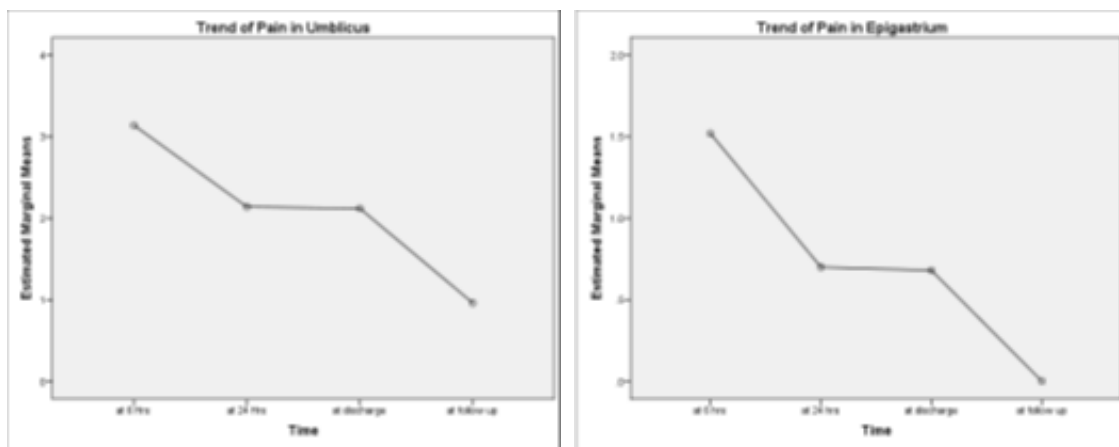


Figure 8,9

All patients required analgesics, post operatively. Time taken by patients to resume feeding was 6.12 +/- 0.844 hours. Only two patients had post-operative vomiting. None of the patient had wound infections, intra-abdominal collections or hematoma at incision site. In majority of the cases, post-operative stay was one day only. Patients were well satisfied from surgery with mean satisfaction score on surgery was 9.93 +/- 0.293 and on abdominal scar with mean satisfaction score of 9.98 +/- 0.141. several studies concluded that higher satisfaction score and better cosmesis is seen

amongst patients of two incision three port laparoscopic cholecystectomy [11, 12, 21, 22]. None of the patients had persistent of symptoms.

Conclusion

Two incision, three port laparoscopic cholecystectomy is feasible, safe and with good aesthetic results using the same instruments of conventional laparoscopic cholecystectomy, without increasing operative time and compromising safety. It could be recommended

for routine laparoscopic cholecystectomy in place of conventional four port or three incision laparoscopic cholecystectomy. Surgeon should not hesitate to put extra port or conversion into open to ensure safe completion of surgery. The conversion should not be taken as failure of method but as a method for safe completion of the procedure.

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