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TWO PORT MINI LAPAROSCOPIC CHOLECYSTECTOMY COMPARED WITH STANDARD FOUR-PORT LAPAROSCOPIC CHOLECYSTECTOMY

Hepatobiliary Surgery

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ABSTRACT

Background: Laparoscopic cholecystectomy is the gold standard for the treatment of symptomatic gallbladder disease. Laparoscopic cholecystectomy decreases postoperative pain, allows earlier oral intake, shortens hospital stay, and improves cosmesis over open cholecystectomy.

Objectives: To evaluate difference between two port laparoscopic cholecystectomy versus four port laparoscopic cholecystectomy regarding intraoperative and post operative complications and morbidity due to sugery (if any).

Methods: Patients were diagnosed Gallbladder stones who were posted for surgery were included in our study after taking consent in which around 66 patients were selected.

Results: In two port LC, mean age was 35.81 + 16.1 years and in four port LC, mean age was 36.84 + 26.14 years,mean time of surgery of 2 port LC is 62.09+10.6 min and of 4 port LC 57.15+8.2 min,with minimal conversion rate in 2 port LC(1 case) and none in 4LC group,.The mean postoperative pain (vas) at 48 hours, in 2 port LC is 3.75 + 2.0 and in 4 port LC is 4.82 +0.78.Postoperative analgesia (mean) in 2 port LC 169.69+145.64 and in 4 port LC 236.36+97.7. All patients of 2 port LC were mobilized on day 1, whereas 23 patients of 4 port LC were mobilized on day 1 and remaining 10 patients on day 2.

Conclusions: 2 port LC resulted in less post operative pain, less post operative requirement of analgesia, with comparable operative time, intra operative complications, when compared to 4 port LC.

KEYWORDS

INTRODUCTION

Cholecystectomy is the most common operation of the biliary tract and the second most common operative procedure performed today. The first laparoscopic cholecystectomy was performed in 1987 by Phillip Mouret and later established by Dubois and Perissat in 1990[1,2,3]. Newer modifications include: Reduced port cholecystectomy (2 port) as well as SILS (single incision laparoscopic surgery) / SSMP (single site multiport) using a single umbilical port system are being routinely performed nowadays.

Today due to further advances in technology, laparoscopic cholecystectomy is possible with robotic assistance.[4]

The era of scar-less surgery has started in 2004 with development of natural orifice trans-luminal endoscopic surgery (NOTES) [5-8]. Cholecystectomy can be done by using this novel route through trans-gastric or trans-vaginal route. However, this is still in early development era.Laparoscopic cholecystectomy is the gold standard care for the treatment of symptomatic gallbladder disease [9,10]. Laparoscopic cholecystectomy decreases postoperative pain, allows earlier oral intake, shortens hospital stay, enhances earlier return to normal activity, and improves cosmesis over open cholecystectomy. We studied advantage and disadvantage of 2 port versus 4 port laparoscopic cholecystectomy in our setup in regard to intra operative complication, operative time, conversion rate, post operative complication, post operative requirement of analgesia, hospital stay and improved cosmetics.

AIM AND OBJECTIVES:

To evaluate difference between two port laparoscopic cholecystectomy versus four port laparoscopic cholecystectomy regarding:

- Intra operative complications,
- Conversion rate, a) 2 port to 3 port / 4 port / open cholecystectomy, b)4 port to open cholecystectomy
- Postoperative pain,
- Postoperative need for analgesia
- Postoperative complication
- Hospital stay
- Return to work

METHODOLOGY:

It is a prospective randomized study conducted in Department of General Surgery,SMIMER Hospital, Surat for duration from the date of October 2017 to November 2018 till sample size is achieved. Patients were diagnosed Gallbladder stones who were posted for surgery were included in our study after taking consent,with random distribution into two groups:two port LC and four port LC.After pre-anesthesia fitness, all patients were subjected to laparoscopic cholecystectomy (either two port or four port). Preoperative all patients were catheterized using Foley's catheter and a nasogastric tube was inserted. All patients were operated under general anesthesia.

ENROLLMENT CRITERIA:

Inclusion criteria:

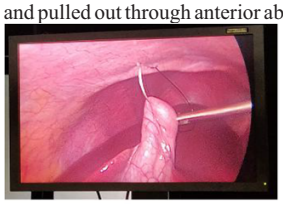
- patients age between18 to 70yrs
- Preoperative diagnosis of gall bladder stones
- Patients willing for laparoscopic surgery
- Patients suitable for elective laparoscopic surgery

Exclusion criteria:

- Age <18 years.
- Acute cholecystitis.
- High anesthetic risk.
- Patient with suspected Mirizzi syndrome.
- Common bile duct stone
- Empyema of gall bladder
- Portal hypertension.
- Malignancy of biliary tree.
- Any medical contraindication for surgery.
- Post ERCP patient
- Patients having diabetes mellitus and other metabolic disorder.

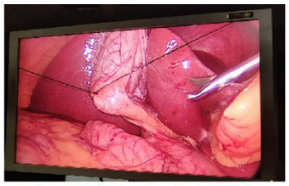
Two-Port Mini LC

Placement of one 10mm umbilical port and , a 10-mm epigastric port was done. Straight/curve needle of polyamide no-1 is introduced through anterior abdominal wall at just below costal margin/last inter costal space in anterior axillary line (in accordance to intra peritoneal findings of GB and liver) and passed through the fundus of gall bladder and pulled out through anterior abdominal wall just near entry point.



EXIT OF FUNDUS SUTURE JUST NEAR ITS ENTRY POINT

Fig 1



APPROPRIATE EXPOSURE FOR ANTERIOR DISSECTION

Fig 2

Extra corporeal knot is being applied externally to retract the gall bladder (as done by lateral most grasping forceps in four port technique). After that straight/curve needle of polyamide no1 is introduced through anterior abdominal wall 5cm above and lateral of epigastric port and passed through Hartman pouch and knot is applied over there and the needle is passed through abdominal wall in mid clavicular line 10 to 12 cm below costal margin. By applying varying traction on both ends of infundibular threads appropriate exposer of Calot triangle is achieved. Using the standard bipolar Maryland laparoscopic instrument, the cystic duct and artery were dissected as in the four-port technique.

Fig 3

RESULTS:

Table 1

PARAMETER	2 PORT LC	4 PORT LC	P value
AGE	35.81 + 16.1 years	36.84 + 26.14 years	P =0.84 (t test). (NS)
SEX	96.97 % FEMALE	90.91 %FEMALE	P value = 0.3 (Fisher exact) (NS)
DURATION OF SURGERY	62.09+10.6 minutes	57.15+8.2 minutes	P value = 0.00007 (S)
POST OPERATIVE PAIN AT 24 HOURS(VAS)	5.06+1.5	6.15+0.72	P value < 0.0000001(t-test) (S)
POST OPERATIVE NEED FOR ANALGESIA	169.69MG CONTRAMOL	236.36 MG CONTRAMOL	p value= 0.000046 (S)
HOSPITAL STAY	3.52+1.0 days.	4.12+1.4 days.	P value = 0.00016 (t-test) (S)
RETURN TO WORK	4.58 + 1.0 days	6.27 + 3.12 days	p value = 0.00000012 (t-test) (S)

USG findings: In 2 port LC,39.40 % patients had single calculus and 60.60 % patients had multiple calculus,while 57.57 % patients had normal GB wall thickness and 42.42 % patients had edematous GB wall thickness.In 4 port LC,39.40 % patients had single calculus and 60.60 % patients had multiple calculus,while 42.42 % patients had normal GB wall thickness and 45.45% patients had edematous GB wall thickness.Conversion rate: single case of 2 port LC was converted to 4 port LC, no other cases of 2 port or 4 port LC were converted to open cholecystectomy.Intraoperative complications: single case of intraoperative hemorrhage was documented in 2 port LC,no other complication was documented in any other case of 2 port LC or 4 port LC group.Drain insertion: drain insertion was done in 3 cases of 4 port LC.

All patients of both group were mobilized postoperatively on day 1.Postoperative oral feed in both groups was started on day 1.No Postoperative complications were developed in any group.

DISCUSSION:

Laparoscopic cholecystectomy has become the standard of care for patients requiring removal of the gallbladder. In 1992, an NIH consensus development conference concluded that 'laparoscopic cholecystectomy provides a safe and effective treatment for most patients with symptomatic gallstones and has become the treatment of choice for many patients.

Elwan[11] in 2013 conducted a study comparing 2 port LC(group A) with 4 port LC(group B) in which The mean follow-up time was 13.18 months (range 6–23 months). The mean operative time was 36.285 min for group A and 39.142 min for group B. There was no statistically significant difference between the two study groups as regards the resumption of oral feeding. The mean hospital stay was 2 days for group A and 1.714 days for group B.Conversion to open surgery was not done for any group.

Srinivas[12] in 2014 conducted a study in which out of 116 patients, the ratio of M:F was 11:92, with mean age 40.79 ± 12.6 years. The mean operative time were similar (P = 0.727). The length of hospital stay (P = 0.760) and complications (P = 0.247) were similar between the two groups.

Wani[13] in 2016 conducted a similar study in which The age distribution in both the groups was comparable with no statistically significant difference observed. The mean age in two-port group was 39.55 ± 14.117 years and in four-port group was 38.89 ± 11.394 years.(P value = 0.9268). Out of 200 cases, 39 were males and 161 were females with male to female ratio of 1:4.2. The difference in the mean operative time in the two groups was statistically insignificant (P value = 0.1297). The mean time for resumption of diet in two-port and four port groups was 6.04 ± 0.7236 hours and 7.55 ± 0.9431 hours, respectively, and this difference was statistically significant (P value < 0.0001) .The hospital stay was shorter in the two-port group (1.68 ± 0.7769 days) as compared to four-port group (2.09 ± 0.2876 days), and the results were statistically significant (P value < 0.0001).

In our study, the mean operative time required in the two-port group was 62.09 ± 10.6 minutes and in four-port group was 57.15 ± 8.2 minutes which was statistically significant (P value = 0.00007). In initial period, some cases required more operative time (70 min in one case) due to extensive adhesion and learning curve and in later period with more experience the operative time was reduced to 35 min in one case. One patient in two port group was converted to four port LC whereas no case was converted to open cholecystectomy. The mean postoperative analgesia in 2 port LC 169.69 ± 145.64 mg and in 4 port LC 236.36 ± 97.7 mg of injection contramol with statistically significant difference. (p = 0.000046).

CONCLUSION:

Hence, 2 port LC resulted in less post operative pain, less post operative requirement of analgesia, early post-operative ambulation, less hospital stay, early return to work with no added postoperative complications with comparable operative time, intra operative complications, when compared to 4 port LC. Thus, 2 port LC can be recommended as a safe alternative procedure in elective LC.

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