



## A STUDY OF FEASIBILITY OF SINGLE INCISION LAPAROSCOPIC CHOLECYSTECTOMY (SILC) USING CONVENTIONAL INSTRUMENTS

### Surgery

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### ABSTRACT

Today, Laparoscopic Cholecystectomy has become the gold standard treatment of gall stone disease. In the present era, where patient is more concerned about cosmesis (specially females), lesser morbidity and early postoperative recovery, many newer techniques like single incision laparoscopic cholecystectomy (SILC), natural orifice transluminal endoscopic surgery (NOTES) has been developed with minimum scar to no scar on abdomen. The study was conducted on patients (n= 25) with calculous cholecystitis that underwent single incision laparoscopic cholecystectomy using conventional instruments during 2011-12 at S.P. Medical College, Bikaner. Maximum number of cases (n=24) had very satisfactory cosmetic outcome. It was concluded that single incision laparoscopic cholecystectomy (SILC) with conventional instruments and port is feasible, safe, cost effective with excellent cosmetic results.

### KEYWORDS

single incision laparoscopic cholecystectomy, SILC, cholecystectomy, convention instruments.

### INTRODUCTION

Gall stone disease constitutes a significant health problem in world affecting 10-15% of adult population, with female to male ratio (2:1). Surgery is the mainstay of treatment of gall stone disease. In the era of minimal invasive surgery, many surgeons have attempted to reduce the number and size of ports in laparoscopic. cholecystectomy to decrease parietal trauma, post operative pain and improve cosmetic results. The focus has been on the development of single incision laparoscopic cholecystectomy (SILC) to further minimize the invasiveness of standard four port laparoscopic surgery by reducing the number of incisions, and hidden infraumbilical port specially in females.

Various modifications in the equipments has been made for Single Incision Laparoscopic Cholecystectomy (SILC). Different access ports, deflectable tip laparoscope and instruments with wrist like flexibility are used to target the tissue from single access point but the cost of these instruments are high and not within the reach of every practicing laparoscopic surgeon:

Cantore et al<sup>1</sup> described that single incision laparoscopic cholecystectomy with conventional surgical instruments is a feasible and safe procedure, but additional studies in larger series are needed to confirm the results.

It is challenging task for the surgeon to place all the conventional instruments through a single incision because of instruments colliding with each other and create a laparoscopic view that is parallel to the instruments, further impeding the surgeon's depth perception, but through a learning curve, problems settles down with experience and this field needs more work.

### MATERIAL AND METHOD-

25 cases of cholelithiasis were enrolled for study. Patients with cholelithiasis proven by ultrasonography with at least one attack of upper abdominal pain and considered fit for elective laparoscopic cholecystectomy aged between 16-70 years were included in the study. Patients with common bile duct stones or cystic duct stone, history of previous upper abdominal surgery, or acute attack of cholecystitis, pancreatitis within 6 weeks and Upper abdominal scarring due to previous surgery were excluded.

Single incision laparoscopic cholecystectomy performed during 2011-12 at S.P. Medical College and Associated Group of Hospital, Bikaner. After all aseptic precautions, an approximate 3cm infraumbilical curvilinear skin incision was made in skin and subcutaneous tissue.

One 11mm port is placed and carbon-dioxide pneumo-peritoneum created. Two 5 mm ports are placed by side of initial port with some sheath fibers in between adjacent ports. Fundal stitch was used in every case. Gall bladder dissection carried out by working ports. While extracting gall bladder ports were communicated by dividing tissue between them to facilitate the process. Operative time and conversion to conventional laparoscopic cholecystectomy was noted. (Figure 1)

Post operatively patients were assessed for cosmetic outcome, pain and infectious complications.

### RESULTS-

Mean age was in present study was 40.56±12.70 years and it ranged from 28-62 years, Mean BMI was 24.78±2.63 kg/m<sup>2</sup> and it ranged 19.80-29.04kg/m<sup>2</sup>, mean duration was 50.88 ± 9.00 minutes and range in between 37-68 minutes. Mean VAS at 6 hours was 4.36±0.86 while mean VAS at 24 hours 2.72±0.94. Mean hospital stay in present study was 2.32±0.78 days while mean suture removal time was 7.08±0.40 days and mean return to normal work was 7.52±0.82 days. (Table 1)

**Table 1-Mean values of different parameters in study**

Parameters	Mean	SD	SE	Range	
				Minimum	Maximum
Age (years)	40.56	12.70	2.41	18	62
BMI (kg/m <sup>2</sup> )	24.78	2.63	0.53	19.80	29.04
Duration (minutes)	50.88	9.00	1.80	37.00	68.00
VAS 6 hour	4.36	0.86	0.17	3.00	6.00
VAS 24 hour	2.72	0.94	0.19	1.00	4.00
Hospital Stay (days)	2.32	0.78	0.15	1	4
Suture Removal (days)	7.08	0.40	0.08	7.00	9.00
Return to Normal Work (days)	7.52	0.82	0.1	7.00	10.00

The conversion rate of various studies was as follows: Roy and De<sup>2</sup> in year 2010 (4.25%), Cantore et al<sup>1</sup> in 2011 (0%), Colon et al in year 2011 (31%), Hasen et al<sup>3</sup> in 2011(0%), Sinha et al<sup>4</sup> in 2011 (2.08%), Chaudhary et al<sup>5</sup> in year 2012 (15.71%),

In our study, out of 25 cases, 6 cases (24%) needed conversion (3 cases needed one additional port and 3 cases converted to conventional four port are due to dense adhesion with omentum and fibrosis at callot's triangle, one for short cystic duct, one for bleeding from liver bed and one for bleeding from cystic artery (Although sonography findings were shown to be normal). (Table 2) Our study group is comparable

with colon et al, Choudhary et al<sup>5</sup> in respect to conversion, rest study shows either no conversion or low rate of conversion.

From above comparison, it is concluded that high rate of conversion is due to mismatch in ultrasonographic finding with the intraoperative finding. During intra operative finding dense adhesions are found which were not mentioned in ultrasonographic finding (which is second person observation dependent).

It further concludes that in all uncomplicated symptomatic gall stone diseases decision to proceed for SILC should be taken after putting the scope and once it is visualized that the gall bladder wall is normal and there is no significant adhesion of omentum over the gall bladder. If there is any of above abnormality found, then it is better to go directly for conventional four port laparoscopic cholecystectomy.

**Table 2-. Distribution of cases according to conversion and their causes**

Conversion	No. of Patients	%
No	19	76.0
Two Port	3	12.0
Four Port	3	12.0
Total	25	100
<b>Cause of conversion</b>		
Adhesion with perforation	1	16.7
Adhesion	2	33.2
Cystic Bleeding	1	16.7
Liver Bed Bleeding	1	16.7
Short Cystic Duct	1	16.7
Total	6	100

Patients satisfaction regarding the cosmetic results of various studies are as follows Hasan et al<sup>3</sup> in 2011 (9.32/10) Abdelaziz et al<sup>6</sup> in year 2012 (9.32/10), Cui et al<sup>7</sup> in year 2012 (Barely visible scar) Kehagias et al<sup>8</sup> in 2012 (Excellent). in our study, 24 (96%) patients had highly satisfactory results and 1 (4%) patient has unsatisfactory cosmetic result (figure 1c).

Our results are almost comparable to above studies except for one patient which developed stitch line infection. The reason for poor cosmetic result was that patient lost the follow up for 2 months and came discharging sinus which was treated by the excision of granulation tissue and healing with open method.

From above fact, it is concluded that our study SILC with conventional instruments have highly satisfactory results provided, the patient came for regular follow up and consult to treating surgeon immediately, if any complication occurs.

The mean postoperative pain (by visual analogue scale) of the study conducted by Cantore et al<sup>1</sup> in year 2011 was 3. In our study, the mean postoperative pain at 24 hours is  $2.72 \pm 0.94$  with the range from 1 to 4. Mean postoperative time of above study and our study is comparable which shows the satisfaction of patient in relation to postoperative pain.

#### Figure Legends



**Figure 1 A: Fundal Stitch Taken During Silc**



**Figure 1b: Infraumbilical Position Of Conventional Ports And Instruments**



**Figure 1 C: Infraumbilical Scar (barely Visible) After Removal Of Stitch In Silc**

#### CONCLUSION-

From our study, it is concluded that single incision laparoscopic cholecystectomy (SILC) with conventional instruments and ports is feasible, safe, cost effective with excellent cosmetic results.

In future, the above procedure could be ideal in lean and thin patients, especially young females who are more concerned about cosmetic results and have uncomplicated symptomatic gall stone disease and having favorable intraoperative finding after putting the scope. Umbilical hernia can also be repaired at the same time.

Although the above procedure is feasible and safe, it needs further research to come on a firm conclusion and formation of preoperative guide line for appropriate selection of patients for above procedure.

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