

# Single Incision Laparoscopic Cholecystectomy (SILC): A Step to Reduce the Wound

KARIM SHAH FAIZI

## ABSTRACT

**Aims:** To compare the success rate of initial versus remaining patients undergoing single incision laparoscopic cholecystectomy.

**Study design:** It was a cross sectional comparative study.

**Duration:** From 2010 to 2011.

**Material and method:** A total of 100 patients with symptomatic gallstones and gallbladder polyps from Surgical Operation theatres of Surgical Unit of Ali Shirazi Hospital Sahiwal selected for Laparoscopic Cholecystectomy were included in this study. Two Groups (A&B) were created, Group-A was allotted to the initial 50 patients and Group-B was allocated to subsequent 50 patients.

**Results:** During the study period, majority of the patients in both groups were between 41-50 years of age, mean and sd was calculated as  $48.54 \pm 4.57$  and  $49.21 \pm 3.88$  respectively, females being majority in both groups were 62%(n=31) in Group-A and 66%(n=33) in Group-B, mean operative time was calculated as  $94.54 \pm 28.45$  in Group-A and  $76.32 \pm 26.51$  in Group-B, p value was calculated as 0.03 showing significant lower time in Group-B while success rate was 76%(n=38) in Group-A and 98%(n=49) in Group-B was recorded, p value was 0.0005 which shows a significant higher success rate in Group-B.

**Conclusion:** Single incision laparoscopic surgery is a feasible and a promising method for cholecystectomy, it shows higher significant successful results when compared initial patients with subsequent patients.

**Keywords:** Gallstones, gallbladder polyps, laparoscopic cholecystectomy, single-incision.

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## INTRODUCTION

Cholecystectomy is one of the most commonly performed abdominal surgical procedures, and in developed countries many are performed laparoscopically. As an example, 90 percent of cholecystectomies in the United States are performed laparoscopically<sup>1</sup>.

---- Laparoscopic cholecystectomy is considered the "gold standard" for the surgical treatment of gallstone disease. This procedure results in less postoperative pain, better cosmesis, shorter hospital stays and disability from work than open cholecystectomy.<sup>2</sup> Recent research has focused on whether further reduction of skin incisions could result in better postoperative outcomes. Against this background, single-incision laparoscopic surgery (SILS) has recently emerged as another approach for cholecystectomy. The feasibility of single-incision laparoscopic cholecystectomy (SILC) has been reported widely in the literature<sup>3-5</sup>. With a reduced number of skin incisions, theoretically there may be less postoperative pain, a better cosmetic outcome, and higher patient satisfaction than conventional

laparoscopic cholecystectomy<sup>6</sup>.

---- Previous studies reveal insignificant difference regarding postoperative pain and infection in single laparoscopic cholecystectomy versus conventional laparoscopic cholecystectomy<sup>7-8</sup>.

---- Single incision laparoscopic surgery utilizes three ports through the single skin incision at umbilicus.<sup>9</sup> It is being considered as no scar surgery, because the incision is placed within the umbilical scar that is not visible.<sup>10-11</sup> Many special instruments<sup>9</sup> and ports<sup>12-13</sup> are available now for SILS. Technical modifications like puppetering of the gall bladder with a suture have been done<sup>14</sup>.

---- This study was planned to compare the success rate of initial versus remaining patients undergoing single incision laparoscopic cholecystectomy to increase in success rate with accumulation of experience of junior doctors. The additional benefit of the study was assumed to support the idea that "**The primary goal of the surgery is invisible scar**"<sup>9</sup> by performing single incision laparoscopic cholecystectomy, as the gallbladder disease is most common in female patients, and invisible scar after surgery may an additional benefit for them.

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*Department of Surgery, Sahiwal Medical College,  
Sahiwal Pakistan*

*Correspondence to Dr. Karim Shah Faizi*

## MATERIAL AND METHODS

A total of 100 patients between 30-55 years of both gender selected for single-incision laparoscopic cholecystectomy due to suffering with symptomatic gallstones and gallbladder polyps from Surgical Operation theatre of Ali Shirazi Hospital, Sahiwal, were included while a previous history of cholecystitis, cholangitis or pancreatitis; or radiological finding of chronic cholecystitis or suspected gallbladder carcinoma were excluded from the study. An informed consent was taken from the patients to include their data in the study. Patients were enrolled in two equal groups (50 in each group), Group-A was allotted to the first 50% of study population and Group-B was for remaining 50% of the study population. Single incision laparoscopic cholecystectomy was used to perform laparoscopic cholecystectomy. A 2-cm transverse incision at the level of the umbilicus with upper skin flap raised for a distance of 1 cm after initial insufflation, a 10-mm port insertion at the incision line and the a single 5-mm ports placement 0.5 cm inferiorly and laterally on either side through the same skin incision was done.

-----The success rate (no need of additional working ports to obtain better exposure and dissection around Calot's triangle in single incision laparoscopic cholecystectomy) was evaluated, the patients not treating successfully, additional working ports to obtain better exposure and dissection around Calot's triangle in conventional laparoscopic cholecystectomy was done.

-----The collected data was entered in computer software SPSS software (version 13.0). Mean  $\pm$  standard deviation was calculated for age and operative time. The frequency and percentages were calculated for the presence/absence of success rate of single-incision laparoscopic cholecystectomy and presented in tabulated form, chi square test was applied to compare any significant difference in both groups. P value  $\leq$ 0.05 was considered as significant.

## RESULTS

During the study period, we enrolled 100 patients out of them majority of the patients in both groups were between 41-50 years of age, 12%(n=6) in Group-A and 18%(n=9) in Group-B were between 30-40 years of age, 46%(n=23) in Group-A and 48%(n=24) in Group-B were between 41-50 years, while 42%(n=21) in Group-A and 34%(n=17) in Group-B were between 51-55 years of age, mean and sd was calculated as 48.54 $\pm$ 4.57 and 49.21 $\pm$ 3.88 respectively, females being majority in both groups were 62%(n=31) in Group-A and 66%(n=33) in Group-B, mean operative time was calculated as

94.54 $\pm$ 28.45 in Group-A and 76.32 $\pm$ 26.51 in Group-B, p value was calculated as 0.03 showing significant lower time in Group-B while success rate was 76%(n=38) in Group-A and 98%(n=49) in Group-B was recorded, p value was 0.0005 which shows a significant higher success rate in Group-B.

Table 1: Age Distribution of the Subjects

Age (years)	Group-A (n=50)	Group-B (n=50)
30-40	6(12%)	9(18%)
41-50	23(46%)	24(48%)
51-55	21(42%)	17(34%)
Mean and sd	48.54 $\pm$ 4.57	49.21 $\pm$ 3.88

Table 2: Gender of the Subjects

Gender	Group-A (n=50)	Group-B (n=50)
Male	19(38%)	17(34%)
Female	31(62%)	33(66%)

Table 3: Mean Operative Time

Mean operative time(in mins)	Group-A (n=50)	Group-B (n=50)
	94.54 $\pm$ 28.45	76.32 $\pm$ 26.51

P value = 0.03

Table 4: Comparison of Success Rate In Both Groups

Success	Group-A (n=50)	Group-B (n=50)
Yes	38(76%)	49(98%)
No	12(24%)	01(2%)

0.0005

## DISCUSSION

This preliminary analysis of SILS was planned to establish the safety of SILS as an operative approach to gallbladder disease. As for primary endpoints, SILC proved to be feasible although operative times compared with 4PLC were significantly longer. In a nonrandomized trial comparing SILC and standard laparoscopic techniques, Phillip and co-workers<sup>15</sup> proved an increased mean operative times for SILC. This is most likely explained on the basis of an inherent learning curve with any new technology such as SILC. No bile duct injuries occurred in either group. In addition, 1 SILC case required conversion to 4PLC. No cases required conversion to laparotomy in Group-B which reduced its success to 98% and it was found that significantly lower rate of conversion to use other ports/open laparotomy was required.

----A recent study regarding SILC showed that the overall success and complication rates were 91% and 6%, respectively, which is in accordance with the results of our study. In our study, there were only five complications; two of the patients developed postoperative urinary retention (in association with underlying prostatic enlargement) that settled after temporary urinary catheterization. While two patients developed wound haematoma after surgery, which was subsided spontaneously within a month visit. An

incisional hernia was observed in one patient during the 6-month follow-up visit, and it transpired that this patient had the umbilical wound extended to extract the 2 cm-sized gallstone specimen.

---- Another recent study by Jeff SW and colleagues<sup>6</sup> reviewed the initial results and surgical outcomes of single incision laparoscopic cholecystectomy and found that the initial cases to the subsequent cases, in the latter group the operating time was significantly shorter (86 vs 71 minutes;  $P=0.02$ ), and the success rate was higher (80% vs 100%;  $P=0.05$ ). During the median follow-up period of 6.8 months, four patients had complications i.e. postoperative urinary retention, haematoma and an incisional hernia, these findings are in agreement with the findings of our study, the only difference with the above study was that they included 25 patients in initial group and 25 in subsequent group, but in our study the initial group consists of 50 cases which further extends the confidence and reliability of the procedure. However, we are agreed with the recommendations of the above study that “in case of unclear anatomy or difficult dissection, additional working ports should be added without hesitation”.

---- The findings of the study reveal that success rate of initial versus remaining patients undergoing single incision laparoscopic cholecystectomy increases in subsequently managed group. The additional benefit of the study was to support the idea that “**The primary goal of the surgery is invisible scar**”<sup>9</sup> by performing single incision laparoscopic cholecystectomy, as the gallbladder disease is most common in female patients, and invisible scar after surgery may an additional benefit for them, which is found justified.

## REFERENCE

1. Csikesz NG, Singla A, Murphy MM. Surgeon volume metrics in laparoscopic cholecystectomy. *Dig Dis Sci* 2010;55:2398.
2. Yamashita Y, Takada T, Kawarada Y. Surgical treatment of patients with acute cholecystitis: Tokyo Guidelines. *J Hepatobiliary Pancreat Surg* 2007;14:91.
3. Carr A, Bhavaraju A, Goza J, Wilson R. Initial experience with single-incision laparoscopic cholecystectomy. *Am Surg* 2010;76:703-7.
4. Curcillo PG 2nd, Wu AS, Podolsky ER. Single-portaccess (SPA) cholecystectomy: a multi-institutional report of the first 297 cases. *Surg Endosc* 2010;24:1854-60.
5. Erbella J Jr, Bunch GM. Single-incision laparoscopic cholecystectomy: the first 100 outpatients. *Surg Endosc* 2010;24:1958-61.
6. Wong J, Cheung YS, Chan KW. Single-incision laparoscopic cholecystectomy: from four wounds to one. *Hong Kong Med J* 2011;17:465-8.
7. Lai EC, Yang GP, Tang CN, Yih PC, Chan OC, Li MK. Prospective randomized comparative study of single incision laparoscopic cholecystectomy versus conventional four-port laparoscopic cholecystectomy. *Am J Surg* 2011;202(3):254-8.
8. Mehmood Z, Subhan A, Ali N, Rasu S. Four port versus single incision laparoscopic cholecystectomy. *J Surg Pak (Int)* 2010;15:122-5.
9. Tacchino R, Greco F, Matera D. Single-incision laparoscopic cholecystectomy: surgery without a visible scar. *Surg Endosc* 2009; 23: 896-899.
10. Cuesta MA, Berends F, Veenhof AA. The “invisible chole cystectomy”: A transumbilical laparoscopic operation without a scar. *Surg Endosc* 2008; 22: 1211-1213.
11. Hong TH, You YK, Lee KH. Transumbilical single-port laparoscopic cholecystectomy: scarless cholecystectomy. *Surg Endosc* 2009; 23: 1393-1397.
12. Romanelli JR, Mark L, Omotosho PA. Single port laparoscopic cholecystectomy with the TriPort system: a case report. *Surg Innov* 2008; 15: 223-228.
13. Merchant AM, Cook MW, White BC, Davis SS, Sweeney JF, Lin E. Transumbilical Gelport access technique for performing single incision laparoscopic surgery (SILS). *J Gastrointest Surg* 2009; 13: 159-162.
14. Chow A, Purkayastha S, Aziz O, Paraskeva P. Single-incision laparoscopic surgery for cholecystectomy: an evolving technique. *Surg Endosc*. 2010; 24:709-714.
15. Phillip S, Miedema B, Thaler K. Single incision laparoscopic cholecystectomy using conventional instruments: early experience in comparison with the gold standard. *J Am Coll Surg* 2009;209:632–7.