Original Research Article

# Single port laparoscopic cholecystectomy versus multiple port laparoscopic cholecystectomy

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## Abstract

**Background:** Laparoscopic cholecystectomy is the gold standard in the management of symptomatic gallbladder stones. The present study was conducted to compare single port laparoscopic cholecystectomy (SPLC) versus multiple port laparoscopic cholecystectomy (MPLC). **Materials & Methods:** 60 patients of chronic cholecystitis of both genders were divided into 2 groups of 30 each. Group I underwent single port laparoscopic cholecystectomy (SPLC) and group II patients underwent multiple port laparoscopic cholecystectomy (MPLC). Parameters such as pain, duration of surgery, cosmesis score, patient satisfaction score and complications were recorded and compared. **Results:** There were 10 males and 20 females in group I and 12 males and 18 females in group II. Duration of surgery was 60.2 minutes in group I and 30.4 minutes in group II. Cosmesis score was 8.12 in group I and 7.51 in group II. Patient satisfaction score was 8.72 in group I and 8.01 in group II. Pain score at day 0 was 3.42 in group I and 2.81 in group II and at day 1 was 1.87 in group I and 1.70 in group II. Common complications were prolonged bile drainage in 2 in group I and 1 in group II, shoulder pain 3 in group I and 6 in group II and post- op biliary colic 1 in group I and 3 in group II. The difference was significant (P< 0.05). **Conclusion:** Cosmesis score and patient satisfaction score was better with single port LC as compared to MPLC.

**Key words:** Cosmesis score, Patient satisfaction score, Laparoscopic cholecystectomy



## Introduction

Laparoscopic cholecystectomy is the gold standard in the management of symptomatic gallbladder stones. The benefits conferred by minimal access surgery (MAS) include reduced postoperative pain, decreased hospital stay, less scarring, and fewer incisions. In the quest for making MAS more-patient friendly in terms of fewer complications and better cosmesis, single-port laparoscopic cholecystectomy (SPLC) has emerged as a novel technique[1,2].

Single incision laparoscopic surgery techniques were introduced in the 1990s. When performing this particular type of laparoscopic surgery only one incision is made, usually through the umbilicus. Single-incision laparoscopic cholecystectomy was first described in 1995 by Navarra and colleagues in a report of 30 patients with favourable outcomes. This approach has also been used for appendectomy, sleeve gastrectomy, splenectomy, and colectomy[3].

In general, smaller and fewer incisions result in less pain, accelerate postoperative recovery and improve cosmetic result. After its introduction, standard multiport cholecystectomy was for a long time under debate and frequently contradicted, a situation in which nowadays single-port cholecystectomy finds it-self in[4]. Some studies report higher percentages of bile duct injuries, more blood loss and longer operating time when performing single-port cholecystectomy.

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Retrospective reports of laparoscopic cholecystectomy through a single access show this approach to be feasible and associated with outcomes similar to standard 4-port laparoscopic cholecystectomy (4PLC).

The proposed benefits of decreased pain, improved cosmesis, and increased satisfaction have been found[5]. The present study was conducted to compare single port laparoscopic cholecystectomy (SPLC) versus multiple port laparoscopic cholecystectomy (MPLC).

## Materials & Methods

The present study comprised of 60 patients of chronic cholecystitis of both genders selected for laparoscopic cholecystectomy. All were selected after they agreed to participate in the study.

Demographic profile was recorded in each subject. Patients were divided into 2 groups of 30 each. Group I underwent single port laparoscopic cholecystectomy (SPLC) and group II patients underwent multiple port laparoscopic cholecystectomy (MPLC). Parameters such as pain, duration of surgery, cosmesis score, patient satisfaction score and complications were recorded and compared. Results thus obtained were subjected to statistical analysis. P value lea than 0.05 was considered significant.

## Results

**Table 1: Distribution of patients**

| Groups | Group I | Group II |
|---|---|---|
| Method | SPLC | MPLC |
| M:F | 10:20 | 12:18 |

Table I shows that there were 10 males and 20 females in group I and 12 males and 18 females in group II.

**Table 2:Comparison of parameters**

| Parameters | Variables | Group I | Group II | P value |
|---|---|---|---|---|
| Duration of surgery (min) | | 60.2 | 30.4 | 0.01 |
| Cosmesis score | | 8.12 | 7.51 | 0.02 |
| Patient satisfaction score | | 8.72 | 8.01 | 0.05 |
| Pain score | Day 0 | 3.42 | 2.81 | 0.04 |
| | Day 1 | 1.87 | 1.70 | 0.05 |

Table II, graph I shows that duration of surgery was 60.2 minutes in group I and 30.4 minutes in group II. Cosmesis score was 8.12 in group I and 7.51 in group II. Patient satisfaction score was 8.72 in group I and 8.01 in group II. Pain score at day 0 was 3.42 in group I and 2.81 in group II and at day 1 was 1.87 in group I and 1.70 in group II. The difference was significant (P< 0.05).

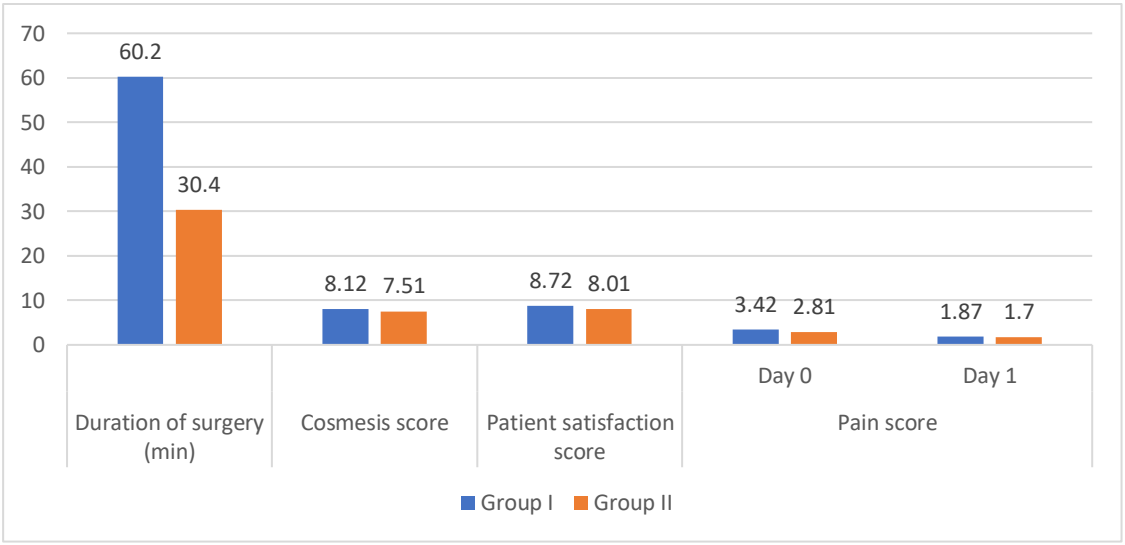


**Fig 1: Comparison of parameters**

**Table 3: Post-operative complications**

| Complications | Group I | Group II | P value |
|---|---|---|---|
| Prolonged bile drainage | 2 | 1 | 0.05 |
| Shoulder pain | 3 | 6 | 0.04 |
| Post- op biliary colic | 1 | 3 | 0.01 |

Table III shows that common complications were prolonged bile drainage in 2 in group I and 1 in group II, shoulder pain 3 in group I and 6 in group II and post- op biliary colic 1 in group I and 3 in group II. The difference was significant (P< 0.05).

**Discussion**

SPLC can be hazardous in patients with acute cholecystitis (AC) because of the increased risk of bleeding and biliary lesions. This pathological condition is considered a contraindication in most the current experiences described in literature. SPLC technique, for its less invasive nature, should theoretically produce less postoperative pain and less analgesics requirement compared to the traditional 4PLC technique. Postoperative pain assessment is consistently included as a primary or secondary outcome in recent studies[6,7]. However, the outcome remains uncertain as there are reports showing equivalent, higher, and lower pain perception in single-port technique compared to the traditional 4PLC. Nowadays, multiport laparoscopic cholecystectomy is worldwide the standard operative procedure for symptomatic cholelithiasis and chronic cholecystitis[8]. The present study was conducted to compare single port laparoscopic cholecystectomy (SPLC) versus multiple port laparoscopic cholecystectomy (MPLC).

In present study, there were 10 males and 20 females in group I and 12 males and 18 females in group II. Sharma et al[9] in their study two groups of patients (104 each) were selected for SPLC and multiport laparoscopic cholecystectomy (MPLC). The primary end points were postoperative pain and surgical complications. Secondary end points were patient assessed cosmesis and satisfaction scores and operating time. The mean VAS scores for pain in SPLC group were higher on day 0 (SPLC 3.37 versus MPLC 2.72, p<00.03) and equivalent to MPLC group on day 1(SPLC 1.90 versus MPLC 1.79, p<00.06). Number of patients requiring analgesia for breakthrough pain (SPLC 21.1 % versus MPLC 26.9 %, p<00.31) was similar. Number and nature of surgical complications was similar (SPLC 17.3 % versus MPLC 21.2 %, p<00.59). Mean patient assessed cosmesis scores (SPLC 7.96 versus MPLC 7.16, p<00.003) and mean patient satisfaction scores (SPLC 8.66 versus MPLC 8.16, p<00.004) were higher in SPLC group indicating better cosmesis and greater patient satisfaction.

We found that duration of surgery was 60.2 minutes in group I and 30.4 minutes in group II. Cosmesis score was 8.12 in group I and 7.51 in group II. Patient satisfaction score was 8.72 in group I and 8.01 in group II. Pain score at day 0 was 3.42 in group I and 2.81 in group II and at day 1 was 1.87 in group I and 1.70 in group II. Van der et al[10] included 100 consecutive patients who received a single-port cholecystectomy. Patient baseline characteristics of all 100 single-port cholecystectomies were collected were compared with 100 age-matched patients who underwent a conventional laparoscopic cholecystectomy in the same period. No differences were found between both groups regarding baseline characteristics. Operating time was significantly shorter in the total single-port group (42 min vs

62 min, P < 0.05); in procedures performed by surgeons the same trend was seen (45 min vs 59 min, P < 0.05). Pre-operative complications between both groups were equal (3 in the single-port group vs 5 in the multiport group; P = 0.42). Although not significant less postoperative complications were seen in the single-port group compared with the multiport group (3 vs 9; P = 0.07). No statistically significant differences were found between both groups with regard to length of hospital stay, readmissions and mortality.

We found that common complications were prolonged bile drainage in 2 in group I and 1 in group II, shoulder pain 3 in group I and 6 in group II and post- op biliary colic 1 in group I and 3 in group II. Culp et al[11] performed a retrospective study and found slightly longer operating times in the SPL group but also a shorter length of stay in the SPL group with comparable complication rates. Trastulli et al[12] found a significant higher procedural failure for the SPL technique compared with the SLC technique, ranging from 0% to 67%. It was also mentioned that the SPL technique led to a significantly higher blood loss. This was possibly due to loss of triangulation that makes the use of instruments for suction and diathermy difficult, resulting in less accurate haemostasis.

**Conclusion**

Authors found that cosmesis score and patient satisfaction score was better with single port LC as compared to MPLC.

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