

Single Incision Laparoscopic Assisted Appendectomy (SILAA): A Retrospective Analysis of 50 Consecutive Cases

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Abstract

Background: Single incision laparoscopic assisted appendectomy (SILAA) is a minimally invasive surgical technique that offers potential benefits over traditional open and laparoscopic appendectomies. Laparoscopic appendectomy (LA) has advantage to diagnose and to also treat appendicitis at the same time also it has a less postoperative pain and a faster return to work and normal activity. In a classic LA, three to four incisions are required for trocars placement. Technique of Single Incision Laparoscopic Appendectomy (SILA) has been developed to reduce abdominal trauma, improve cosmesis, reductions in postoperative pain and hospital stay. Aim of this prospective study was to test the feasibility, safety, and potential advantages of SILA.

Material and Methods: Patients over the age of 18 with a diagnosis of acute abdomen, later on confirmed to acute appendicitis based on clinical findings, imaging and laboratory tests were included in the study. Outcome of the patient was assessed in the form of operative time; length of hospital stays and postoperative complications. Prophylactic antibiotics were given pre-operatively to all the patients included in the study. Technique was evaluated for operative time, postoperative pain, post-operative length of stay and complication rate. Post-operative pain was evaluated at 12 hrs, day 1 and day 2 post-operatively by using a visual analogue scale (VAS) which ranged from 0 to 10. Patients were evaluated on the 7th and 14th postoperative day for analysis of recovery, any surgical site infection, abscess formation, abdominal tenderness, and aesthetic satisfaction.

Conclusion: Single incision appendectomy operative time is less, pain is less, and hospital stay is reduced thereby increasing the patient satisfaction and this technique is effective in terms of pain and hospital stay.

Keywords: LA, SILA, VAS.

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Introduction

Surgery is one of the most feared treatment options hence surgeon should provide the patients with the best possible surgical treatment options with minimal invasive procedure, lesser complications, less stay and less pain. Acute appendicitis is one of the most common causes of acute abdomen. It may be caused by luminal obstruction and dietary and familial factors, but the exact cause of acute appendicitis is still unknown [1]. In 1735 Claudius Amyand performed first appendectomy for a perforated appendicitis. Kurt Semm, in 1983 a gynaecologist, performed the first laparoscopic appendectomy, 2 years before the first laparoscopic cholecystectomy was done [2]. After that laparoscopic appendectomy has become popular in uncomplicated appendectomies in most of the minimally invasive institution and private hospitals [3]. A concept of “scar-less” abdomen was first described in 1998 by Esposito by Single Incision Laparoscopic Surgery [4]. While first Single Incision Laparoscopic Surgery for acute appendicitis was per-

formed by the Pelosi in 1992 [5]. Laparoscopic appendectomy (LA) has advantage to diagnose and to also treat appendicitis at the same time also it has a less postoperative pain and a faster return to work and normal activity [6]. In a classic LA, three to four incisions are required for trocars placement. Technique of Single Incision Laparoscopic Appendectomy (SILA) has been developed to reduce abdominal trauma, improve cosmesis, reductions in postoperative pain and hospital stay. Aim of this prospective study was to test the feasibility, safety, and potential advantages of SILA.

Material and Methods

This prospective observational study was carried out in a tertiary care hospital of Jannayak Karpoori Thakur Medical College and Hospital Madhepura, Bihar. Study duration is Two years. Patients over the age of 18 with a diagnosis of acute abdomen, later on confirmed to acute appendicitis based on clinical findings, imaging and laboratory tests were

included in the study.

Patients were excluded with shock on admission, suspected perforated appendicitis, peritonitis, peri-appendiceal abscess, cirrhosis, coagulation disorders, pregnancy, and suffering from major diseases. Obese patients (BMI ≥ 35 kg/m²) and patients with suspected appendicular perforations or appendicular lumps were also excluded from the study. Outcome of the patient was assessed in the form of operative time, length of hospital stays and postoperative complications. Prophylactic antibiotics were given pre-operatively to all the patients included in the study. It was also explained the possibility of conversion to open surgery from laparoscopic in case of emergency. Technique was evaluated for operative time, post-operative pain, post-operative length of stay and complication rate. Post-operative pain was evaluated at 12 hrs, day 1 and day 2 post-

operatively by using a visual analogue scale (VAS) which ranged from 0 to 10. Patients were evaluated on the 7th and 14th postoperative day for analysis of recovery, any surgical site infection, abscess formation, abdominal tenderness, and aesthetic satisfaction.

The data from the study was collected, compiled, and statistically analysed. Data was expressed as a mean and standard deviation, number, and percentages. Continuous variables were compared using independent sample and two-tailed Student t test. Discrete variables were analysed with chi-square test. P value of <0.05 was considered as statistically significant.

Results

In this prospective study a total of 50 patients were operated for acute appendectomy by SILA.

Table 1: Demographic characteristics

Characteristics	N=50
Mean age in years	27 \pm 10.48
Male	22(44%)
Female	28(56%)

Mean age in years was 27 \pm 10.48 years. There were 22 (44%) male and 28(56%) female.

Table 2: Duration of procedure, Hospital stay and return to work

Variable	SILA (mean \pm SD)
Duration of procedure in minutes	38 \pm 3.8
Hospital stays in days	1.8 \pm 1.1
Back to work	9 \pm 2.4

SD: Standard deviation

Mean duration of SILA procedure was 38 \pm 3.8

minutes. Hospital stay in days was 1.8 \pm 1.1. Patient returned back to work in 9 \pm 2.4 days.

Table 3: Mean post-operative pain (VAS) score

After 12 hrs.	6.5
Day 1	4.0
Day 2	1.5

Post-operative pain was evaluated at 12 hrs, day 1 and day 2 post-operatively by using a visual analogue scale (VAS) which ranged from 0 to 10. After 12 hours score was 6.5, at day 1 4.0 and at day 2 it was 1.5. Surgical site infections at 7th day with purulent discharges were noted in 4 (8%) patients and were treated with antibiotics and all of them recovered at 14th day of revisit.

Discussion

Laparoscopic appendectomy is a widely performed operative procedure and is widely accepted by the patients due to its advantages in less postsurgical pain and decreasing operative trauma with quicker recovery, shorter hospital stays, and improved cosmesis. Single-incision laparoscopic surgery (SILS) can bring out more advantages of the laparoscopic surgery⁷. Earlier Laparoscopic appendec-

tomy was not been accepted by surgeons as quickly, because of the longer operating time and greater cost of the laparoscopic technique as compared to the open technique [8].

Single Incision Laparoscopic Surgery is a new technique that is utilized by surgeons for doing appendectomies. Disadvantage with this technique is the sacrifice that has to be made in terms of comfort and ergonomics. Because all the instruments and camera are inserted through the same incision and the ability to triangulate the instruments around the target is lost. Reticulator instruments can be used to rectify these problems. Surgeon's right hand will control the left-sided instrument on the screen and his/her left hand will control the right-sided instrument on screen. These technical difficulties do make SILS a more demanding procedure on the operating surgeon than normal laparoscopic techniques. However, with

increasing exposure to this technique, operating time has been reduced significantly, and it is now very similar to the average time which is taken for a standard laparoscopic appendectomy [9]. Kurt Semm has introduced the laparoscopic surgery for appendectomy and has shown significant aesthetic benefits and almost performed with three incisions, which were visible on the exposed abdomen [10]. Chow A et al. compared conventional laparoscopic appendectomy versus the single incision laparoscopic technique and found that in the single incision laparoscopic technique surgical time was shorter and the hospital stay was 1.36 days [11]. Roberts KE observed that an intracorporeal sling based single-port laparoscopic appendectomy (puppeteer technique) shown good clinical results [12]. Post-operative pain was less than that seen in open or conventional laparoscopic appendectomies. This may be due to a single small incision and muscle spitting technique which were used for trocar placement. Post-operative hospital stay was 1.8 ± 1.1 days, which was lower than that seen with conventional appendectomy or open appendectomy, as has been shown in other studies [13, 14].

No intra operative and post-operative complications were seen in this study. Similar results were shown by Lee SM et al [15]. Trend towards single incision laparoscopic surgery is increasing in recent days and can be easily converted to conventional laparoscopy in case of emergency by adding a few trocars, this conversion to conventional laparoscopy being called port rescue [16].

Conclusion

In this study it was observed that in single incision appendectomy operative time is less, pain is less, and hospital stay is reduced thereby increasing the patient satisfaction and this technique is effective in terms of pain and hospital stay.

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