

## Case Series

# Single incision multiport laparoscopic appendectomy using a 2 mm alligator forceps: our experience of 60 cases

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## ABSTRACT

Single incision laparoscopic surgery is an emerging branch of minimally access surgery to reduce scar and post-operative pain. Appendicitis is a common general surgical problem encountered in day to day practice. Different methods of appendectomy have been described by different surgeons from open to laparoscopic and now single incision laparoscopic surgery has been practised. This is a prospective study carried out in our Department of General Surgery SCB Medical College, Cuttack from February 2019 to March 2020; 60 patients had undergone the procedure and the results are published noted under headings of post-operative pain at (6 hours, 12 hours, 24 hours and 48 hours), post-operative requirement of analgesia (diclofenac) at (6 hours, 12 hours, 24 hours and 48 hours), operative time, days to resume bowel activity, days of hospital stay, post-operative complication in accordance to Clavien-Dindo classification.

**Keywords:** Laparoscopic appendectomy, Minimal access surgery, Single incision laparoscopic surgery

## INTRODUCTION

Appendicitis is one of the most common surgical problem. Appendectomy is one of the common procedure in day to day surgery.<sup>1</sup> Normal laparoscopic appendectomy is the standard operative procedure for appendicitis.<sup>2</sup> Single incision laparoscopic surgery is an emerging branch in minimally access surgery which is gaining its popularity nowadays.<sup>3</sup> Single incision laparoscopic appendectomy although has its own technical challenges however it is associated with lesser pain, early post-operative recovery and better cosmeses.<sup>4</sup>

### *Objective of our study*

The objective of our study is to evaluate different outcomes of single incision multiport laparoscopic

appendectomy in terms of post-operative pain at (6 hours, 12 hours, 24 hours and 48 hours), post-operative requirement of analgesia (diclofenac) at (6 hours, 12 hours, 24 hours and 48 hours), operative time, days to resume bowel activity, days of hospital stay, post-operative complication in accordance to Clavien-Dindo classification.<sup>5</sup>

## CASE SERIES

### *Methodology*

This is a prospective observation study carried out in our Department of General Surgery SCB Medical College, Cuttack from February 2019 to March 2020. Both male and female patients suffering from appendicitis (acute or interval) were included in the study after obtaining an

informed written consent. All cases were operated by a single surgeon.

### **Inclusion criteria**

Inclusion criteria were all patients of appendicitis from age 15 to 55 years both male and female who gave the consent to take part in the study.

### **Exclusion criteria**

Exclusion criteria were patients below 15 years and above 55 years, patients with BMI >30 and patients with debilitating comorbidities and ASA III or more.<sup>6</sup> Patient not giving consent to take part in the study. Patients with bleeding disorder and coagulopathy.

### **Pre-operative evaluation**

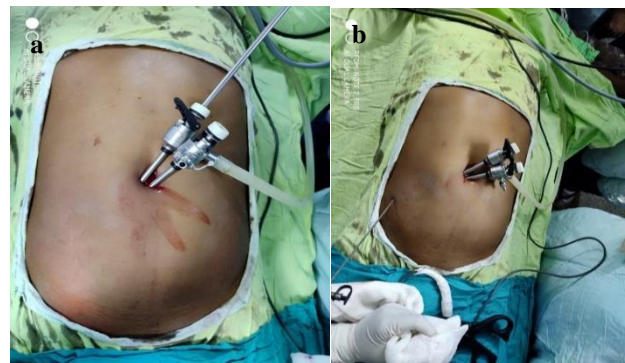
All the patients were evaluated using ultrasound, routine blood investigation preoperatively. Patients underwent cardiology and pulmonary clearance.

### **Operative procedure**

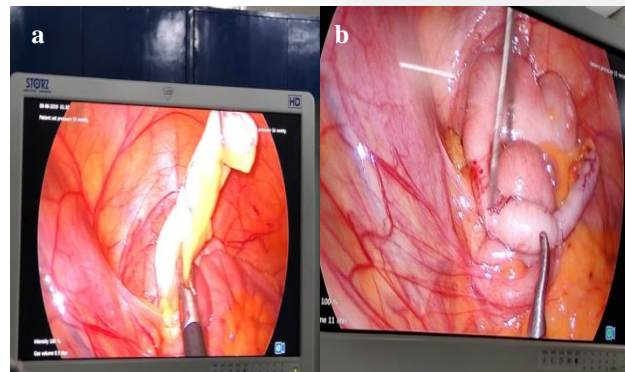
After preoperative evaluation all patients underwent single incision multiport appendectomy in supine position under GA. After induction of anaesthesia, pneumoperitoneum was done with Veress needle and then infra-umbilical area was infiltrated with 0.25% bupivacaine and then 12 mm infra-umbilical incision is given and two 5 mm ports were introduced. In one port, a 45-degree 5 mm telescope was introduced. In the other port, atraumatic bowel grasper was introduced, the position of the appendix was assessed. Then a 2 mm alligator puncture forceps was introduced in the right iliac fossa to hold the tip of appendix. A bipolar dissector was introduced through the port and the mesoappendix was coagulated upto base. Then the base of appendix was ligated by chromic 1 loop, the appendix was cut and delivered in an endobag through the umbilical port outside the abdomen. No drain was given. The umbilical port was then closed in two layers.



**Figure 2: Alligator forceps (open).**



**Figure 4 (a and b): Port position.**



**Figure 5 (a and b): Intra-operative images.**



**Figure 1: Alligator forceps (closed).**



**Figure 6: Post-operative image.**

### Post-operative care

ERAS standard protocol was followed for post-operative care of all patients.<sup>6</sup> Post-operative analgesia was achieved with round the clock paracetamol infusion. NSAIDS (diclofenac) were added in patients with inadequate pain relief and opioids were reserved for those who had no pain relief even after adding NSAIDS. Pain was assessed using visual analogue scale. Patients were discharged once they tolerated oral food and had bowel movement. Follow-up was done till 30 days post-operatively and any post-operative complications were recorded according to Clavien-Dindo classification.

### Results

We operated 60 cases in our study period out of which 36 were males and 24 were females with a mean age of 24.06 years, mean BMI of 21.95 kg/m.<sup>2</sup> 44 cases were admitted for interval appendectomy and 16 were admitted for acute appendicitis. The mean operative time measured from skin to skin was 44.8 minutes with a range of 24 to 95 minutes. The operative time was longer in cases of acute appendicitis. Mean time to resume bowel activity was 1.4 days. All patients were started orally 6 hours after surgery.

**Table 1: Results.**

Variables	Mean (range)
<b>Total cases</b>	60
<b>Age (years)</b>	24.06 (16-36)
<b>Gender</b>	Male - 36, Female - 24
<b>BMI (kg/m<sup>2</sup>)</b>	21.95 (18.9-26.3)
<b>Diagnosis</b>	Recurrent appendicitis - 44, Acute appendicitis - 16
<b>Operation time (minutes)</b>	44.8 (24 - 95)
<b>Days to resume bowel activity</b>	1.4 (1 - 3)
<b>Days to start oral feeding</b>	1
<b>Length of hospital stay (days)</b>	1.67 (1 - 3)
<b>Post-operative complications</b>	8 (13.33%)
<b>Prolonged ileus</b>	2 (3.33%)
<b>Wound infection</b>	1 (1.67%)
<b>Post-operative pain (VAS)</b>	
At 12 <sup>th</sup> hour	3.33 (2-6)
At 24 <sup>th</sup> hour	1.33 (0-3)
<b>Analgesia requirement at 24 hours</b>	
NSAIDS	24 (40%)
Opioids	Nil

Mean length of hospital stay was 1.67 days with only 2 patients being discharged beyond day 2 since they had developed prolonged ileus. Post-operative pain was

measured according to visual analogue scale at 12<sup>th</sup> hour and at 24<sup>th</sup> hour post-operatively. The mean score was 3.33 at 12<sup>th</sup> hour and 1.33 at 24<sup>th</sup> hour. 24 out of 60 patients required NSAIDS at 24 hours post-operatively and none required opioids. Only 3 patients developed post-operative complications, 2 prolonged ileus (Clavien-Dindo class-I) and 1 surgical site infection (Clavien-Dindo class-II). Both of them were managed conservatively.

### DISCUSSION

Laparoscopic appendectomy is the gold standard management for patients suffering from appendicitis. It has lower rates of complications, lower post-operative pain and better patient satisfaction.<sup>7,8</sup> Single incision multiport laparoscopic appendectomy is a new minimal access technique which results in lesser post-operative pain, better cosmesis and better patient satisfaction. It is longer time taking and technically challenging for the surgeons.<sup>9,10</sup> Further extensive trials are to be undertaken to establish the long-term outcomes of single incision laparoscopic surgery.

### CONCLUSION

Laparoscopic appendectomy is the treatment of choice for patients of appendicitis which has early recovery and less post-operative hospital stay. Single incision laparoscopic appendectomy is a new minimal access technique which has less post-operative pain, post-operative complications, post-operative cosmesis and better patient satisfaction. Although operative time is a bit lengthy and is challenging to perform. A large-scale study with more follow-up time should be done to assess the long-term outcome in single incision laparoscopic appendectomy.

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