

**Original article:**

## **OPEN VERSUS LAPAROSCOPIC APPENDICECTOMY -A COMPARATIVE STUDY AT PRAVARA RURAL HOSPITAL, LONI**

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### **ABSTRACT:**

**Background:** Laparoscopic appendicectomy has rapidly become established as the popular alternative to open appendicectomy, it has a safety profile better than open procedure.

**Methods:** Prospective study from January 2018 to December 2019, involved 50 patients with diagnosis of acute or recurrent appendicitis was entered into a study randomizing the choice of operation to either the open or the laparoscopic technique. Statistical comparisons were performed using the chi-square test and students 't' test.

**Results:** 25 patients were assigned to the laparoscopic appendicectomy group and 25 patients were assigned to the open appendicectomy group. There were statistically significant difference noted in respect to postoperative pain (LA,  $1.21 \pm 0.63$  Vs. OA,  $2.72 \pm 0.87$ ;  $P < 0.001$ ) duration of analgesic used (LA,  $2.2 \pm 1.08$  Vs. OA,  $6.44 \pm 1.84$ ;  $P < 0.001$ ) postoperative complications like vomiting [LA, 2 (8%) Vs. O.A, 7 (28%), fever [LA, 1 (4%) Vs. OA, 4 (16%), wound infection [LA, 1 (4%) Vs. OA, 5 (20%), ileus (LA,  $17.3 \pm 7.1$  Vs. OA,  $30.8 \pm 8.9$ ;  $P < 0.001$ ) postoperative length of hospital stay (LA,  $2.8 \pm 1.23$  Vs. OA,  $7.7 \pm 1.95$ ;  $P < 0.001$ ) and return to normal work (LA,  $13.5 \pm 2.86$  Vs. OA,  $20.8 \pm 3.21$ ;  $P < 0.01$ ). Although above mentioned advantage were at the cost of slightly increased duration of surgery (LA,  $71.2 \pm 19.23$  Vs. OA,  $53.8 \pm 20.04$ ;  $P < 0.01$ ).

**Conclusions:** The patients who underwent laparoscopic appendicectomy had less postoperative pain and shorter duration of analgesic use, less postoperative complications like vomiting, fever ileus and wound infection with shorter postoperative duration of hospital stay and return to normal work when compared with patients who underwent open appendicectomy. Laparoscopic appendicectomy is better than open appendicectomy in selected patients with acute or recurrent appendicitis.

**Key words:** Appendicectomy, Laparoscopic appendicectomy, Open appendicectomy, Acute appendicitis.

### **INTRODUCTION**

It is a well-known adage that abdomen is a temple of surprises and a magic box as well. Since the abdomen accommodates innumerable viscera and other anatomical compliments, diseases of the abdomen constitute a topic full of clinical curiosity. A meticulous examination of abdomen is one of the most rewarding diagnostic procedures available to the doctor, especially the surgeon and plans an ideal treatment. As had been said by Bailey "A correct diagnosis is the hand maiden of successful operation". Despite the advancements in the fields of diagnosis the surprises never cease.<sup>1</sup>

Acute appendicitis is one of the commonest causes of acute abdomen encountered in surgical practice, requiring emergency surgery.<sup>2</sup> The life time rate of appendicectomy is 12% for men and 25% in women, with approximately 7% of all people undergoing appendicectomy for acute appendicitis during their lifetime. It has been observed that males had higher rates of appendicitis than females for all age groups with an overall ratio of 1.2 to 1.3:1.<sup>3</sup>

Even though modern diagnostic facilities, surgical skills, antibiotic therapy have brought down the mortality from 50% (before 1925) to less than 1/1,00,000 persons, still the morbidity is around 5-8% mainly due to delayed diagnosis & treatment, with the resultant complications.<sup>4</sup>In acute appendicitis however, a treatment delay of even a few hours may result in stormy complication. It has been said that nothing can be so simple nor yet so difficult as the diagnosis of acute appendicitis.

#### **METHODOLOGY:**

Prospective study from January 2018 to December 2019, involved 50 patients with diagnosis of acute or recurrent appendicitis was entered into a study randomizing the choice of operation to either the open or the laparoscopic technique. Statistical comparisons were performed using the chi-square test and students 't' test.

With the introduction of the laparoscopic technique it provided an opportunity to explore new method of therapy in the management of the suspected cases of the acute appendicitis.<sup>5</sup>Laparoscopic appendicectomy combines the advantages of diagnosis and treatment in one procedure with the least morbidity<sup>6</sup>. Patients are likely to have less post operative pain and to be discharged from hospital and return to activities of daily living sooner than those who have undergone an open appendicectomy.<sup>7</sup>

#### **RESULTS:**

In present study 13 (52%) patients of open appendicectomy and 8 (32%) patients of laparoscopic appendicectomy were males. 12 (48%) patients of open and 17 (68%) of laparoscopic appendicectomy were females. The mean age of the patients in open and laparoscopic appendicectomy was and 25.5 years respectively

In present study 25 (100%) in open group and 25 (100%) in laparoscopic group complained of abdominal pain. History of vomiting was present in 16 of open and 20 of laparoscopic group. The other complaint was fever in 7 (28%) of open and 5 (20%) of laparoscopic group.

In present study 10 (40%) and 8 (32%) of the patient of open and laparoscopic group respectively had the history of episodes of abdominal pain in the past.

**Table-1 Postoperative Complications**

Complications	Appendicectomy				*Significance	
	open		Laparoscopy		t value	p value
	N	%	N	%		
Vomiting	7	28	2	8	12.12	0.01
Fever	4	16	1	4		
Wound Infection	5	20	1	4		
Ileus in hrs	30.8±8.9		17.3±7.1			

In present study post operative complications were analyzed in detail: vomiting, fever, wound infection and ileus. The incidence of vomiting 7 (28%) was higher following open appendicectomy than laparoscopic group 2(8%). Average post operative ileus was (30.8 ± 8.9)hours for open and (17.3 ± 7.1) hours for laparoscopic group was noted .Wound infection was more common after open 5(20%) than laparoscopic group 1(4%). Fever4(16%)developed more in the open group than the laparoscopic group1(4%).

**Table -2 Post operative Recovery**

Details	Appendicectomy		Significance	
	Open Mean /SD	Laparoscopy Mean /SD	t value	P value
Duration of hospital stay after surgery (days)	7.7±1.95	2.8±1.23	4.9	0.001
Time taken for return to normal work (days)	20.8±3.21	13.5±2.86	7.3	0.001

Mean Duration of post operative hospital stay for open group(7.7±1.95) and (2.8±1.23) days for laparoscopic group. Which shows that laparoscopic appendectomy significantly reduced the hospital stay ( $P < 0.001$ ). Patients who had laparoscopic appendectomy return to full activities was (13.5±2.86) versus (20.8±3.21) days for patients who underwent open appendectomy. Again this difference was significant ( $P < 0.001$ ).

#### **DISCUSSION:**

The pendulum of the surgical opinion continuous to swing with gradual decreasing sweep as the appropriate application of the laparoscopy for the suspected case of the acute and recurrent appendicitis is popularizing. Critics of laparoscopic appendectomy often point to the increase cost of the surgical equipments as a major disadvantages of the laparoscopic procedure despite these concerns, it has become safe popular procedure. However the cost effectiveness for laparoscopic appendectomy is easily realized once the decreased hospital stay and entire patient convalescence period are accounted for laparoscopy as a major surgical advantage has enable the general surgeon to stretch his hands in the Superspeciality area. The controversy that currently exists over the potential benefit of laparoscopic appendectomy motivated us to analyze our experience with this procedure.

The relative advantage and disadvantages of the laparoscopic and open appendectomy are measured primarily in terms of duration of surgery, post operative pain score and duration of analgesic used in days, Post operative complication like ileus, fever, vomiting, wound infection post operative recovery in the terms of post operative duration of hospital stay, returns to normal were assessed. In this study the mean age group is 27.2yrs and 25.5yrs in the open and laparoscopic group respectively. In our study there was significant increases in the mean time taken for the procedure during laparoscopic appendectomy compared to the open method (LA 71.2 ± 19.2 Vs. OA 53.8 ± 20.04) respectively. This was statistically significant ( $P < 0.01$ ) Similar Studies were observed in some of the studies<sup>21,27,38,42</sup>. This was because of learning curve level of surgical experience and patient selection accounted for increased operative time.

In our study there was significant difference in the mean post operative pain score between open and laparoscopic appendectomy at the end of 24hrs (OA, 2.72 ± 0.87 Vs LA, 1.21 ± 0.63) respectively;  $p < 0.001$ ). Similar observation has been reported by others<sup>27,30</sup>. This difference is because of a longer incision and stretch of the muscles. In our study mean duration post operative analgesic parenteral and oral doses required in days was more in the open group than the laparoscopic group (OA, 6.44±1.84 Vs. LA, 2.2 ± 1.08) respectively:  $p < 0.001$ . Similar observation has been reported by others.<sup>27,40,42</sup>

In our study mean duration of hospital stay was significantly lower for the Laparoscopic group (2.8±1.73) days as compared to the open group (7.7±1.95) with ( $P < 0.001$ ). Similar studies has been reported by others<sup>19,38,39,42</sup>.

Post operative complication like, vomiting was lower in laparoscopic groups 2(8%) as compared with 7(28%) in open group and fever was lower in laparoscopic group 4(16%) as compared with 1 (4%) in open group.

In our study mean post operative wound infection rate was lesser in laparoscopic group with 1(4%), as compared with 5(20%) in open method. The similar observation has been observed.<sup>27,42</sup> All these parameters were significant with  $P < 0.01$ . In our studies return to normal work was earlier for the laparoscopic group (13.5 ± 2.86

days) as compared to the open appendicectomy (20.8 + 3.21 days). This difference being Significant ( $P < 0.001$ ). Other studies has also shown similar result.<sup>27,29,39,42</sup>. In addition to a therapeutic modality laparoscopic has distinctive advantage of being a diagnostic tool. There was no case of conversion from laparoscopic appendicectomy to open appendicectomy in our study.

#### **CONCLUSION:**

On analyzing the data, we found a definite difference in outcome between open and laparoscopic appendicectomy in a properly selected patient.

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