



ORIGINAL ARTICLE

Laparoscopic vs mini-incision open appendectomy in patients presenting with acute appendicitis.

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ABSTRACT... Objective: To compare the outcome of laparoscopic vs mini incision open appendectomy for acute appendicitis. **Study Design:** Randomized Control study. **Setting:** Pakistan Institute of Medical Sciences, Hospital, Phase V, Hayatabad, Peshawar. **Period:** March 2022 to November 2022. **Material & Methods:** A total of 96 patients were enrolled in the study, the patients were divided into two groups using randomization using non probability consecutive sampling and 48 patients were allocated to each group. Group A patients underwent laparoscopic while group B patients underwent mini incision appendectomy. In both groups operative time, need for analgesics, postoperative pain score, hospital stay and postoperative wound infection was compared. Chi square test and Independent sample T test was used, a P value ≤ 0.05 was taken as significant. **Results:** The mean age of the patients in group A was 30.58 ± 8.35 years and 28.52 ± 5.79 years in group B. In group A 14.6% patients needed analgesics while in group B 31.2% patients. Regarding the hospital stay group A patients had a mean hospital stay of 25.85 ± 1.53 hours and in group B the mean hospital stay was 29.58 ± 3.76 hours. In group A the mean postoperative pain score was 2.17 ± 0.97 and in group B the mean postoperative pain score was 2.88 ± 0.81 . **Conclusion:** Laparoscopic appendectomy has a lower average postoperative pain score, need for analgesics and shorter hospital length as compared to mini incision operative appendectomy.

Key words: Appendectomy, Mini Incision, Laparoscopy, Acute Appendicitis.

INTRODUCTION

One of the most prominent medical emergencies observed around the globe among adults and children is acute appendicitis. Acute abdomen is an acute emergency of abdominal pathological conditions that, in the vast majority of cases, demands prompt surgical intervention. Both advanced and emerging economies frequently experience acute abdomen.^{1,2} Untreated mortality from acute appendicitis is considerable, mainly attributable to rupture causing peritonitis and shock. Acute appendicitis is a condition that frequently presents as an acute abdomen and is marked by inflammation of the vermiform appendix.³ It is labelled as a surgical emergency and many cases require removal of the inflamed appendix either by laparoscopy or laparotomy.⁴

Since it was first spotted and treated around 350

B.C., intestinal obstruction, which is described as an obstruction of the intestine's route for its contents, has remained a significant issue for individuals. When the regular transit of intestinal contents is disrupted, it emerges. One of the most prominent causes of acute abdomen globally is intestinal blockage.^{5,6}

The most frequent cause of surgical acute abdomen is acute appendicitis. Even the most competent clinicians have trouble making a diagnosis since there are a multitude of clinical disorders that imitate acute appendicitis.⁷

The conventional treatment for acute appendicitis is open appendectomy, which has low morbidity and mortality rates.⁸ Laparoscopic appendectomy, nevertheless, has recently achieved popularity.⁹

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Significant benefits of laparoscopic appendectomy have been established, such as a shorter hospital stay, speedier recovery, earlier return to normal activities, less postoperative pain, and fewer postoperative infections.^{10,11}

Regarding these benefits, there is controversy over the most effective appendectomy procedure model in the research. It is difficult to establish any additional potential advantages from the laparoscopic procedure because open appendectomy incorporates the benefits of minimally invasive surgery, which included a small incision, a speedier return to normal activities, and shortened hospitalization.¹⁰⁻¹²

Laparoscopic appendectomy has serious downsides as well, including a prolonged recovery period, a higher risk of intra-abdominal abscess, and a significant failure probability in circumstances with complicated appendicitis. As a result, there is no agreement in the literature concerning whether laparoscopic appendectomy should be used as a standard technique for all acute appendicitis cases or merely in specified circumstances.

MATERIAL & METHODS

This controlled study was conducted at the Pakistan Institute of Medical Sciences, Hospital, Phase V, Hayatabad, Peshawar from March 2022 to November 2022. A total of 96 patients were enrolled in the study, the patients were divided in to two groups using blocked randomization using non probability consecutive sampling and 48 patients were allocated to each group. The study was started after taking ethical approval from the hospital (06/DMR/PIMC). Patients were diagnosed by clinical and radiological examination. Exclusion criteria for this study was patients with ASA (American Society of Anesthesiologists) grades III and IV, BMI more than 25 kg/m², complicated appendicitis, pregnant women, patients with a history of prior abdominal surgery, and patients who needed an extension of the incision during surgery. The sample size was calculated using OpenEpi calculator, using operative time¹³ 38 ± 13 mins in LA group and 32 ± 7 mins in MOA group keeping power of test at 80% and confidence

interval 95%.

In group A laparoscopic appendectomy was performed using three ports; a 10 mm supra umbilical port for the scope and two 5 mm working ports, one at the supra-pubic area and the other at the left flank area during the laparoscopic appendectomy. For transecting the mesentery of appendix an energy device was used. The appendix was removed through a 10 mm port. In group B a 2.5 cm transverse incision was made on the skin at the lateral border of the right rectus muscle at the midclavicular line to perform an open appendectomy. The outer oblique was then revealed and cut with scissors. The peritoneal cavity was exposed, the internal oblique and transversus abdominus muscles were separated using artery forceps, and the appendix was delivered by going after the tenia coli of the cecum. After binding the base of the meso-appendix, it was transected, ligated, and an appendectomy was performed. Abdominal wall layers were sealed in reverse direction followed by antiseptic dressing on the wound. Surgeries were performed by an experienced consultant having ample experience in laparoscopic procedures. The clinical parameters recorded in this study were operating time, postoperative pain score on VAS scale after 24 hours, need for analgesics postoperatively, hospital stay and postoperative wound infection between both groups.

Data was analyzed using IBM SPSS 20. Categorical variables were presented as frequencies and percentages and numerical variables were presented as Mean and SD. For comparison of categorical variables between both groups Chi Square test was applied keeping P value ≤ 0.05 as statistically significant. For comparison of numerical variables Independent samples T test was applied keeping P value ≤ 0.05 as statistically significant.

RESULTS

The mean age of the patients in group A was 30.58 ± 8.35 years and 28.52 ± 5.79 years in group B. In group A there were 28 (58.3%) male and 20 (41.7%) female patients and in group B there were 27 (56.2%) male and 21 (43.8%) female

patients (Table-I). Statistical difference was seen in postoperative analgesics, hospital stay and postoperative pain score among the two groups. In group A 14.6% patients needed analgesics and in group B 31.2% patients needed analgesics ($P = 0.05$). Group A patients had a mean hospital stay of 25.85 ± 1.53 hours whereas group B had a stay of 29.58 ± 3.76 hours ($P = < 0.05$). In group A the mean postoperative pain score was 2.17 ± 0.97 and in group B the mean postoperative pain score was 2.88 ± 0.81 ($P = < 0.05$) (Table-II)

Variables	Group A (LA) (n = 48)	Group B (MOA) (n = 48)
Age (Years)	30.58±8.35	28.52±5.79
Gender	Male	27 (56.2%)
	Female	21 (43.8%)

Table-I. Basic demographics

Variables	Group A (LA) (n = 48)	Group B (MOA) (n = 48)	P- Value
No of patients requiring analgesics	7 (14.6%)	15 (31.2%)	0.05
No of patients who developed postoperative wound infection	2 (4.2%)	7 (14.6%)	0.08
Operative time (Mins)	45.46±3.91	43.79±5.01	0.07
Hospital stay (Hours)	25.85±1.53	29.58±3.76	0.0001
Average postoperative pain score VAS	2.17±0.97	2.88±0.81	0.0001

Table-II. Comparison of clinical paramters

DISCUSSION

Regarding the superiority of LA over OA as a minimally invasive procedure, debate has lingered for a while. OA is viewed as the preferable alternative because to cheaper cost and there are no variations in surgical results between the two groups. However, LA has been deemed preferable to OA due to decreased postoperative pain, superior esthetic outcomes, and accurate diagnostics, particularly in women and the elderly.¹⁴ Previous research used diverse methodologies, which led to a range of outcomes that have been documented in the

literature. When comparing the two groups, the lengthier LA operating time is a factor, and it is longer in laparoscopic surgeries performed by inexperienced general surgeons.¹⁵ A study has reported that an experience surgeon can perform LA procedure in shorter time as they have more exposure.¹² In our study we observed that the LA group had a lengthier operative time than the MOA group but the difference was not significant, our results are in line with a study¹³ conducted in Pakistan which reported lower operative time in the MOA group as compared to the LA group.

A shorter hospital stay in LA has been demonstrated in prior studies; this result was supported by meta-analysis studies.¹⁶ Due to the disparate practices of various medical institutions, the 48 h discharge strategy advised for both OA and LA by earlier studies has given rise to uncertainty.¹⁰ To account for variations between the two groups in this study, hospital stay times were defined in terms of hours. In our study the hospital stay was significantly shorter in the LA group as compared to the MOA group (25.85 ± 1.53 vs 29.58 ± 3.76 hours). Our results are in agreement with a study¹⁷ which reported a shorter hospital stay in the LA group versus the MOA group.

A meta-analysis reported one of the advantages of LA is to return to normal activities in minimum time after the procedure. The primary factor for quicker recovery and less pain for LA is thought to be less abdominal wall trauma. Another benefit of LA is early mobilization following the surgery, which is made possible by less manipulation of the ileum and cecum.¹⁶

In our study we assessed the postoperative pain by VAS scale after 24 hours. We observed that in LA group the postoperative pain on VAS scale was significantly lower than the MOA group. Our findings are comparable to a study¹⁸ which reported significantly lower postoperative pain score on VAS in LA group as compared to MOA group.

Regarding the need for analgesics, it was observed in our study that postoperative analgesic requirement was significantly higher in the MOA

group as compared to the LA group and the difference was statistically significant. Akinci O et al in their study¹⁸ reported less use of analgesics in their study in the LA group.

In general, the frequency and severity of postoperative complications are regarded as safety markers for any procedure. Ileus, intra-abdominal abscess, and wound infections are the three most typical post appendectomy sequelae. Postoperative problems have been shown to be less common in LA than OA. In our study we considered postoperative wound infection as a variable in both groups. We observed that postoperative wound infection was more prevalent in the MOA group as compared to the LA group.¹⁷ Comparing with our results a study¹³ showed that 5% cases developed postoperative wound infection in LA group and 6.6% patients developed wound infection in MOA group. Another study reported that only one patient in LA group developed wound infection and 5 patients in MOA group developed wound infection and the difference was significant.¹⁷

CONCLUSION

From our study we conclude that LA had similar operative time and postoperative wound infection rate as MOA yet it was observed that requirement for analgesics, hospital stay and average postoperative score were significantly decreased in LA group.





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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Fazal Hussain	Abstract, Data collection.	
3	Gulfam	Data collection, References.	
4	Rab Nawaz	Methods & material, Results.	
5	Mumtaz Khan	Results, References.	