

Compare the Outcomes of Laparoscopic Appendectomy Versus Conventional Open Appendectomy

Laparoscopic
Appendectomy
VS Conventional
Open
Appendectomy

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ABSTRACT

Objective: To examine the outcomes of laparoscopic appendectomy and compare with conventional appendectomy.

Study design: Retrospective study

Place and Duration of Study: This study was conducted at the Department of Surgery, Muhammad Teaching Hospital Peshawar from October 2019 to May 2020.

Materials and Methods: One hundred and sixty patients of both genders with ages 15 to 50 years presented with acute appendicitis were enrolled. Patient's detailed demographics were recorded after written consent. All the patients categorized in to two equal groups. Group 1 consist of 80 patients and received laparoscopic procedure, group 2 with 80 patients received open procedure. Outcomes such as time duration of surgery, hospital stay, need for analgesic, wound infection, return to routine activities and patients satisfaction were compare between both groups.

Results: No significant difference was observed regarding age, sex and BMI between both groups (p-value>0.05). Open appendectomy had significantly shorter operative time than laparoscopic appendectomy 32.51±8.45 minutes Vs 46.35±8.22 minutes (p-value <0.05). Laparoscopic appendectomy had significantly shorter hospital stay, less need for analgesic doses/day, less wound infection rate, and shorter time to return to routine activities as compared to open appendectomy with p-value <0.05. No significant difference was observed regarding patients satisfaction between both groups.

Conclusion: Laparoscopic appendectomy is safe and effective procedure for acute appendicitis as compared to open appendectomy

Key Words: Outcome, Laparoscopic appendectomy, Conventional open appendectomy

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INTRODUCTION

The most common cause of surgical abdomen in all age groups is appendicitis.^{1,2} The average prevalence of acute appendicitis in the latter and third decades of life is about 7–10% of the total populations.³ Open appendectomy has been the standard for the diagnosis of patients suffering from acute appendicitis for a 100-year period, but today there is a lot of debate on the consequences and superiority of laparoscopy in comparison to open procedure.⁴ It has been demonstrated that limited surgical damage by laparoscopy resulted in a significant reduction of hospital residency, reduced postoperative discomfort,

and an increased return to daily activity in several gastrointestinal surgery settings.⁵ Many observational trials, however, have provided contrasting findings, including randomized experiments and meta-analyses⁶⁻⁸ comparing laparoscopic and open appendectomy. Many of the trials indicated improved laparoscopic results, whereas other tests have shown minimal or non-clinical benefit and increased running cost.⁹⁻¹¹ With this research aimed to assess every potential benefit of this laparoscopic technique, in the light of the fact that laparoscopic appendectomy has not been considered superior of open surgery for acute appendicitis.¹² The present study was conducted aimed to examine the outcomes laparoscopic appendectomy and compare with open appendectomy.

MATERIALS AND METHODS

This retrospective/observational study was conducted at Muhammad Teaching Hospital Peshawar from 1st October 2019 to 31st May 2020. A total of 160 patients of both genders with ages 15 to 50 years presented with acute appendicitis were included. Patients demographic including age, sex and BMI were recorded after written consent. Complete blood picture was examined. Pregnant women, patients with history of abdominal surgery, patients with recurrence and those with no

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consent were excluded. All the patients categorized in to two equal groups. Group 1 consist of 80 patients and received laparoscopic procedure, group 2 with 80 patients received open procedure. Postoperative outcomes such as time duration of surgery, hospital stay, need for analgesic, wound infection, return to routine activities and patients satisfaction were compare between both groups. All the data was analyzed SPSS 24. Chi-square test was applied to compare the outcomes between both groups with p-value <0.05 was taken as significant.

RESULTS

In group 1, 48 (60%) were male and 32 (40%) were females with mean age 26.36 ± 6.48 years and in group 2, 43 (53.75%) were male and 37 (46.25%) were females with mean age 25.93 ± 6.23 years. Mean BMI in group 1 and 2 were 23.02 ± 2.45 kg/m² and 22.86 ± 2.64 kg/m². No significant difference was observed regarding age, gender and BMI between both groups with p-value >0.05 (Table 1). According to the operative finding, 135 (84.38%) patients (70 in group 1, 65 in group 2) had inflammative appendicitis, 15 (9.38%) patients (7 in group 1 and 8 in group 2) had perforated and 10 (6.25%) patients (5 in group 1 and 5 in group 2) had gangrenous appendicitis (Table 2). According to the postoperative outcomes, open appendectomy had significantly shorter operative time than laparoscopic appendectomy 32.51 ± 8.45 minutes vs 46.35 ± 8.22 minutes (p-value <0.05). However, Laparoscopic appendectomy had significantly shorter hospital stay, less need for analgesic doses/day, less wound infection rate, and shorter time to return to routine activities as compared to open appendectomy with p-value <0.05 (Table 3). No significant difference was observed regarding patients satisfaction between both groups. All the patients of both groups were satisfied with the procedure. None of the patient in both groups reported non-satisfaction.

Table No.1: Demographics of all the patients

Variable	Group 1	Group 2	P-value
Age (yrs)	226.36 ± 6.48	25.93 ± 6.23	N/S
Gender			
Male	48 (60%)	43 (53.75%)	N/S
Female	32 (40%)	37 (46.25%)	N/S
BMI (kg/m ²)	23.02 ± 2.45	22.86 ± 2.64	N/S

Table No.2: Operative findings of appendicitis

Variable	Group 1	Group 2	Total
Inflammation	70	65	135 (84.38)
Perforated	7	8	15 (9.38)
Gangrenous	5	5	10 (6.25)

Table No.3: Comparison of outcomes

Variable	Group 1	Group 2	P-value
Operative time	46.35 ± 8.2 2	32.51 ± 8.4 5	<0.001
Need for analgesic doses/day	1.26 ± 0.86	2.84 ± 0.75	0.002
Hospital stay	1.74 ± 0.34	2.64 ± 1.56	0.032
Wound infection	4 (5%)	13 (16.25%)	0.038
Return to routine activities (days)	11.44 ± 3.2 8	15.64 ± 4.7 1	<0.001

DISCUSSION

The two common surgical complications that involve immediate surgery are acute appendicitis. In the last two decades, laparoscopic surgery became a significant surgical development. Meta analyzes have confirmed a successful laparoscopic appendectomy and that there is an improved return to daily life at the cost of longer operating time and less wound complications.^{13,14} In present study majority of patients 56.88% were males and females accounted 43.12% with mean age 25.46 ± 5.47 years. These results were comparable to many of previous studies in which male patients population was high 55% to 65% as compared to females and average age of patients was 24 years.^{15,16}

We divided all the patients equally in to two groups, 80 patients in each group. One group received laparoscopic appendectomy and other received open procedure. We found no significant difference regarding age, gender and BMI between both groups. According to the operative findings, 135 (84.38%) patients (70 in group 1, 65 in group 2) had inflammative appendicitis, 15 (9.38%) patients (7 in group 1 and 8 in group 2) had perforated and 10 (6.25%) patients (5 in group 1 and 5 in group 2) had gangrenous appendicitis. A study conducted by Biondi et al¹⁷ reported that 85.2% in laparoscopic group and 69% in open group had uncomplicated appendicitis, 7.7% and 4.2% in open and laparoscopic groups had gangrenous appendicitis.

In present study we found that open appendectomy had significantly shorter operative time than laparoscopic appendectomy 32.51 ± 8.45 minutes vs 46.35 ± 8.22 minutes (p-value <0.05). These results showed similarity to some previous studies in which conventional appendectomy had significantly shorter operative time as compared to laparoscopic appendectomy.^{18,19}

We found that laparoscopic appendectomy had significantly shorter hospital stay, less need for analgesic doses/day, less wound infection rate, and shorter time to return to routine activities as compared to open appendectomy 1.74 ± 0.34 vs 2.64 ± 1.56 ,

(1.26±0.86 Vs 2.84±0.75), (5% vs 16.25%), and (11.44±3.28 Vs 15.64±4.71) with p-value <0.05. Many of previous studies showed similarity to our findings in which patients treated with laparoscopic procedure had significantly shorter hospital stay, fewer postoperative complications and shorter time to return to daily activities as compared to open procedure.^{20,21} A study by Shimoda et al²² reported that laparoscopic appendectomy groups had significantly less blood loss, less rate of surgical site infection as compared to open appendectomy group with p-value <0.05.

Kolhar et al²³ reported in their study that patients who underwent laparoscopic appendectomy less discomfort following surgery, less analgesic use, fewer postoperative complications such as diarrhea, ileus, wound infection, reduced hospitalization and an quicker return to daily work.

CONCLUSION

Laparoscopic appendectomy safe and effective treatment modality due to shorter hospital stay, less rate of wound infection, shorter time duration to return to normal activities and less need for oral analgesic need.

Author's Contribution:

Concept & Design of Study: Barka Sajjad
 Drafting: Shoaib Muhammad
 Data Analysis: Tahirullah, Imran-ud-Din Khan
 Revisiting Critically: Barka Sajjad, Shoaib Muhammad
 Final Approval of version: Barka Sajjad

Conflict of Interest: The study has no conflict of interest to declare by any author.

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