

Prevalence of Complicated Appendectomy in Patients with Acute Appendicitis: Comparison the Outcomes between Laparoscopic and Open Approach

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ABSTRACT

Aim: To determine the frequency of complicated appendectomy in patients presented with acute appendicitis also compare the outcomes between laparoscopic and open procedure.

Study design: Retrospective/observational study

Place and duration of study: Department of Surgery, Akhtar Saeed Medical & Dental College, Lahore from 1st March 2020 to 30th September 2020.

Methodology: Total sixty patients of both genders with ages 20 to 60 years whom were undergoing surgical treatment for acute appendicitis were included. All the patients were divided into two groups; Group A (laparoscopic), Group B (Open method). Patient's detailed medical history including age, sex, residence were examined after taking informed consent from the patients guardians/parents. Frequency and causes of complicated appendectomy were recorded. Outcomes such as hospital stay, operative time, return to normal activity etc were examined.

Results: Twenty two (73.33%) patients were male while 8 (26.67%) were females in Group A and 24 (80%) male and 20% females in Group B. Mean age of patients in group A was 36.28±10.74 years and in group B it was 37.011±9.26 years. 40 patients had complicated appendectomy in which 18 (60%) in Group B and 22 (73.33%) patients in Group A. Clinically misdiagnosed was the most common cause found in 21 patients out of 40 complicated cases. The overall complication rate was high in open method as compared to laparoscopic method p-value <0.05.

Conclusion: The laparoscopic procedure is the safe and reliable treatment modality with lesser complications as compared to open method for complicated appendectomy in children with first decade of life.

Keywords: Acute appendicitis, Complicated appendectomy, Laparoscopic, Open method, Complications

INTRODUCTION

Inflammation of the vermiform appendix is an appendicitis.¹ The most frequent abdominal emergency worldwide is acute appendicitis, which is the leading cause of abdominal surgery in all age groups². The average probability over a lifespan is 8.6% in men and 6.7% in women^{2,3}. 13-20% of all patients with acute appendicitis have a perforated appendix⁴. Males are at greater risk of appendix perforation (18%) than women (13%).⁵ While the risk is eminent 24 hours after the onset of appendicitis symptoms, the time period ranges from case to case. There is a 20% chance that the appendix will be perforated within 24 hours of symptom⁶.

Open appendectomy has been the choice treatment for acute appendicitis since its McBurney definition.^{7,8} Since the introduction of laparoscopy, the world of surgery has changed dramatically⁹. Semm was first applied to laparoscopic appendectomy². The use of minimally invasive procedures has gained substantial acceptance among surgeons, but some remain cautious about its use rather than an open appendectomy⁸. Many who oppose laparoscopic appendectomy quote the raised operational costs involved with using disposable equipment. Other

criticisms of laparoscopic appendectomy aim at increasing time of operation and the occurrence of intra-abdominal abscesses, especially in the case of an appendix perforated.^{10,11} Laparoscopic appendectomy advocates say the treatment results in better wound recovery, decreased postoperative discomfort and earlier hospital release with earlier return to normal activities⁸.

Moreover, the benefits of laparoscopy include reduced incision, improved vision of the peritoneal cavity, and secure scanning¹². Although the efficacy and validity of the laparoscopic method remains controversial in complex (i.e., perforated) appendix cases, correlations are correlated with improved intra-abdominal collection occurrence, several other studies have demonstrated statistical correlation with less post-operative problems in the laparoscopic approach.¹³ Since there are no randomised prospective trials, there is a literature void in the management of the perforated appendix regarding the contrast of laparoscopy and laparotomy. Laparoscopic management is now a preferred management mode since the appendix can be detected and eliminated simultaneously¹⁴.

PATIENTS AND METHODS

The study was conducted at Department of Surgery Department of Surgery, Pak Red Crescent Medical &

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Dental College Dina Nath from 1st March 2020 to 30th September 2020. A total of 60 patients of both genders with ages 20 to 60 years whom were undergoing surgical treatment for acute appendicitis were included. Patient's detailed medical history including age, sex, residency were examined after taking informed consent from the patients. Patients with other abdominal infections, diabetes mellitus, pregnant women and those whom were not interested to give consent were excluded. All the patients were equally divided into two groups, Group A (laparoscopic) consist of 30 patients and received laparoscopic procedure, Group B (Open method) consist of 30 patients and received open appendectomy. Frequency and causes of complicated appendectomy were recorded. Outcomes such as hospital stay, operative time, return to normal activity, post-operative abscess and ileus was recorded and compare the outcomes between both groups.

Data was analyzed by SPSS 21. P-value <0.05 was considered as significant.

RESULTS

Twenty two (73.33%) patients were male while 8 (26.67%) were females in Group A and 24 (80%) male and 20% females in Group B. Mean age of patients in group A was 36.28±10.74 years and in group B it was 37.011±9.26 years. 40 patients had complicated appendectomy in which 18 (60%) in Group B and 22 (73.33%) patients in Group A (Table 1).

Table 1: Demographic information of the patients (n=60)

Variable	Open appendectomy	Laparoscopic
Gender		
Male	24 (80%)	22 (73.33%)
Female	6 (20%)	8 (26.67%)
Mean age (years)	36.28±10.74	37.011±9.26
Symptoms		
Pain in right iliac fossa	18 (60%)	20 (66.67%)
Tenderness	3 (10%)	2 (6.67%)
Elevated temperature	5 (16.67%)	5 (16.67%)
Vomiting/Nausea	4 (13.33%)	3 (10%)
Complicated appendectomy	18 (60%)	22 (73.33%)

P-value >0.05

Table 2: Post-operative comparison of outcomes between both groups

Variable	Open appendectomy	Laparoscopic
Mean operative time (min)	55.65±12.32	65.46±12.35
Complicated/non-complicated	18/12	22/8
Postoperative		
Wound Infection	5 (16.67%)	1 (3.33%)
Post-operative abscess	4 (13.33%)	1 (3.33%)
Post-operative ileus	2 (6.67%)	0 (0%)
Persistent post fever	6 (20%)	3 (10%)
Mean hospital stay (days)	7.20±3.45	4.85±1.52
Mean time to routine activity (days)	10.42±2.3	7.35±2.45

P-value <0.05

Table 3: Causes of complicated appendectomy (n=40)

Causes	No.	%
Misdiagnosed	21	52.5
Afraid of operation	8	20.0
Delay in reaching hospital	4	10.0
Home-base treatment	7	17.5

Symptoms were recorded such as pain in right iliac fossa, tenderness, elevated temperature, vomiting and nausea in 38 (66.67%), 5(8.33%), 10(16.67%) and 7 (11.67%) patients respectively. Post-operative outcomes were examined in Group B and Group A such as mean operative time, hospital stay in days and return to normal activities as 55.65±12.32 min and 65.46±12.35 min, 7.20±3.45 days and 4.85±1.52 days, 10.42±2.3 days, 7.35±2.45 days respectively. We found post-operative wound infection in 6 patients in which 1 belongs to laparoscopic group while 5 in open appendectomy group. Post-operative abscess found in 4 patients in Group B and 1 in Group A. 2 patients had post-operative ileus in Group B. Persistent post-operative fever found in 9 patients in which 3 in Group A and 6 in Group B. Causes of complicated appendectomy were noted as misdiagnosed, afraid of operation, delay in reaching hospital and home base treatment by himself as 21 (52.5%), 8 (20%), Four (10%) and 7 (17.5%) patients respectively (Tables 2-3).

DISCUSSION

Acute appendicitis is the most common intra-abdominal disease requiring emergency operational care.¹¹ Several scholars recently suggested that the benefits of laparoscopy for the treatment of cholelithiasis may also be used in appendicitis treatment.¹⁵ In addition, the efficacy of the laparoscopic treatment to complicated appendicitis was thoroughly reviewed^{16,17}. Misdiagnosis can be frequent and gastroenteritis is the most common. Many times, the initial diagnosis is postponed, thus increasing the severity of the disease, leading to difficult appendicitis. The laboratory measurement of C-reactive and White blood cell count (CCRP) and the use of radiological techniques such as ultrasound or computed tomography will help correct and prompt diagnosis¹⁸. There were 22(73.33%) male patients while 8(26.67%) were females in Group A and 24(80%) male and 20% females in Group B the overall male patients rate was 76.67% and females were 23.33%. Many of previous studies conducted regarding acute appendicitis reported male patients rate was high as compared to females 60-75%^{19,20}. We found that the mean age of overall patients was 36.86±11.96 years. A study conducted by Takamiet al¹⁹ reported that the mean ages of patients in the open appendectomy and laparoscopic groups were 50.17 ± 22.77 and 50.13 ± 25.84 years.

In the present study, 38 (66.67%) patients had pain in right iliac fossa and this symptom was the most common finding in some other studies with 60 to 80%²¹. This study showed that 40 patients had complicated appendectomy in which 18(60%) in group B and 22(73.33%) patients in group A. The overall prevalence of complicated appendectomy was 66.67%. These results were comparable to some other studies conducted regarding acute appendicitis which they reported the prevalence of complicated appendectomy was lies between 45-70%^{22,23}.

We found that misdiagnosed clinically by first attempt was the most common cause of complicated appendectomy and found in 52.5% cases, afraid of surgical treatment from the parents and home base first aid were the important causes found in our study. In Pakistan, home base first aid is usually performing treatment and it is due to the unawareness and less treatment facilities. Financial status was also the major reason to delay in reaching hospital.²⁴⁻²⁶ In the current study, open appendectomy had high rate of complications as compared to laparoscopic appendectomy and the overall rate between both groups was 56.67% open appendectomy and 16.67% in laparoscopic appendectomy. These results shows similarity to some other studies in which laparoscopic technique shows lesser complications as compared to open method.^{26,27} In this study we found post-operative outcomes were examined in Group B and Group A such as mean operative time, hospital stay in days and return to normal activities as 55.65±12.32 minutes and 65.46±12.35 minutes, 7.20±3.45 days and 4.85±1.52 days, 10.42±2.3 days, 7.35±2.45 days respectively. These results shows that laparoscopic appendectomy group shows better results according to hospital stay and back to normal activities.

CONCLUSION

The misdiagnosed initially was the major cause of complicated appendectomy and laparoscopic appendectomy shows better outcomes with lesser complication rate as compared to open appendectomy.

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