DOI: https://doi.org/10.53350/pjmhs211551148

ORIGINAL ARTICLE

Delay in Appendicectomy due to Pre-operative Imaging Results in Increased Complication Rate

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ABSTRACT

Objectives: To determine the frequency of delay in case of suspected acute appendicitis and to determine the frequency of complications in patients of acute appendicitis having delay secondary to pre-operative imaging.
Study Design: Descriptive study
Place and Duration of Study: Department of General Surgery Unit-2, University of Lahore Teaching Hospital, Lahore 1st January 2020 to 31st March 2021.
Methodology: Three hundred and eighty five patients, between 18-40 years of age of both genders presenting with clinically appendicitis were included. All the patients were operated under general anesthesia by a consultant surgeon having minimum of 5 years of experience.
Results: The mean age was 28.746±5.25 years. Majority of the patients were between 26-30 years (42.6%). Body mass index of the patients were >25kg/m^2 in 57.7%. Delay was seen in 155 (40.03%) cases, peri-appendiceal abscess was seen in 10 (2.6%) and peritonitis was seen in 13. Complications due to delay was pri-appendiceal abscess 8 and peritonitis 13 with p value <0.05.
Conclusion: Delay in the appendectomy due to pre operative imaging has shown significant impact on complications rate and therefore suggests that delaying appendectomy is unsafe.
Keywords: Appendectomy, Peri-appendiceal abscess, Peritonitis

INTRODUCTION

Appendicitis is also the second most common surgical cause of acute abdomen and can lead to significant morbidity and mortality of peritonitis.[1] Immediate appendectomy has long been recommended treatment of acute appendicitis because of fear of rupture. The overall rate of perforated appendicitis is 25.8%.[2] It has been suggested that delay in presentation and diagnosis are responsible for majority of perforated appendices. There is no accurate way of determining when and if an appendix will rupture prior to resolution of the inflammatory process. The treatment of choice in the vast majority of patients is appendectomy i.e. surgical removal of inflamed appendix, although conservative treatment with antibiotics has been used in adults.[3] However, appendicitis can mimic several other diseases and is a possible different diagnosis in almost all patients with acute abdominal symptoms. In the youngest and in the oldest age groups, it is more likely that appendicitis will present with atypical history and clinical findings, and hence the diagnosis is often difficult and may be delayed. Therefore, the complication rates are highest in the populations.[4]

In children, perforation has been reported in 23-73%. The difficulties in differentiating the patients with appendicitis needing surgical intervention from the patients with non surgical or spontaneously resolving abdominal pain, together with the aim to prevent complications i.e. perforation of the appendix and peritonitis, has lead to the traditional acceptance of a relatively high frequency of unnecessary surgery and removal of a healthy appendix (hereafter, negative appendectomy). In children, a negative appendectomy rate of 15-25% has been reported. A more restrictive surgical approach is supported by the development of modern imaging techniques, in particular USG and computed tomography. Diagnosis accuracy achieved by history and physical examination has remained at about 80% in men and women (men are diagnosed accurately 78 to 92% of the time, and women 58 to 85% of the time).[5]

Recently, imaging techniques such as USG, CT and MRI were evaluated as diagnostic modalities in acute appendicitis and were shown to improve diagnostic accuracy and patient outcomes. X-ray is also frequently used for evaluation of patients with acute abdominal pain but is rarely helpful in diagnosing appendicitis. It may be helpful in ruling out other pathology.[6] During the past decade, CT has become the study of choice in the setting of suspected acute appendicitis in adult, with rates of preoperative use increasing year by year. But the use of pre-operative imaging is significant contributing factors for delays in appendectomy, and this delay may cause to increase the morbidity in term of complications.

MATERIAL AND METHODS

This descriptive study was conducted at Department of General Surgery Unit-2, University of Lahore Teaching Hospital Lahore 1st January 2020 to 31st March 2021. Three hundred and eighty five patients, between 18-40 years of age of both genders presenting with clinically appendicitis were included. Pregnant females, gangrenous appendicitis and combined generalized peritonitis were excluded. All the patients were operated under general anesthesia by a consultant surgeon having minimum of 5 years of experience. After appendectomy patients were observed in ward and routine antibiotics were given, final outcome were concluded at the end of 48 hours.

RESULTS

Age range in this study was from 18-40 years with mean age of 28.746±5.25 years. Majority of the patients were between 26-30 years (42.6%). There were 240 males and 145 females (Table 1).

Table 1: Demographic information of the patients

Variable	No.	%
Age (years)		
18-25	100	26.0
26-30	164	42.6
31-40	79	20.5
36-40	42	10.9
Gender		
Male	240	62.3
Female	145	37.7
Peritonitis		
Yes	13	3.4
No	372	96.6

Table 2: Frequency of peri-appendiceal abscess due to delay

Delay	Peri-appendiceal abscess		P value
	Yes	No	
Yes	8 (5.2%)	147 (94.8%)	0.009
No	2 (0.87%)	228 (99.13%)	

Table 3: Comparison of peritonitis according to age

Age (years)	Peritonitis		P value
	Yes	No	
18-25	3 (3%)	97 (97%)	0.542
26-30	6 (3.7%)	158 (96.3%)	
31-35	4 (5%)	75 (95%)	
36-40	-	42 (100%)	
Total	13 (3.4%)	372 (96.6%)	

DISCUSSION

Appendectomy has still been the most common non-elective surgical procedure performed by general surgeons.[7] It is usually prepared at the time of diagnosis as appendicitis and done within hours to prevent the progression of inflammation. However, the quality of antibiotics is improved in the last few decades and interval appendectomy is shown better outcomes than early operation. Recent studies suggested that peri-appendiceal abscess in selected cases could be managed by nonsurgical treatment without interval appendectomy.[8,9] In our study, delay in the appendectomy due to pre-operative imaging has shown significant impact on complications rate (p value <0.05) which is comparable with some studies that supported that the outcomes of immediate or prompt appendectomy were better than the outcomes of immediate or prompt appendectomy were better than those of delayed appendectomy produced more postoperative complication. On the other hand ,some studies suggested that there was no significant difference of outcomes between early and delayed appendectomy.[10,11] The present study demonstrates that the severity of pathology and complication rate in patients with acute appendicitis are time dependent and therefore suggests that delaying appendectomy is unsafe. This observation contrasts overnight without an increase in perforation rate, morbidity, and duration of hospitalization.[12,13] The reasons for these diverse observations remain speculative. Potential explanations include differences in the immune status and etiologies of acute appendicitis in adult compared with pediatric patients. The data presented herein suggest the both patient and hospital factors affect the severity of acute appendicitis at the time of operation. However the positive relationship of increasing patient to hospital interval ratio with pathology grade indicates that patient delay in presenting to emergency room was more profoundly related to worsening pathology compared with in hospital delays. A similar observation was previously reported in two series, which included a much smaller number of patients (114 and 95 respectively). As the ability to minimize patient delay is limited, it is imperative that every effort is made by the hospital and physicians to expedite the evaluation and operation of patients with acute appendicitis. It should be noted that a previous study in 486 patients aged 5-85 years with acute appendicitis demonstrated the severity of disease. Abdominal CT scan has become the main diagnostic tool for patients with acute appendicitis with a high sensitivity and specificity. Scanning of patients with suspected acute appendicitis has been shown to shorten the admission to operating fluid, blurred pericecal fat, mesenteric fat stranding, and free air with final pathology results.[14,15]

CONCLUSION

According to results of our study, delay in the appendectomy due to pre-operative imaging has shown significant impact on complication rate and therefore suggests that delaying appendicectomy is unsafe.

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