

Original Research Article

Appendicular perforation and its contributing factors

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ABSTRACT

Background: The objective was to study of different risk factors contributing in appendicular perforation and effective management of patients by knowing risk factors.

Methods: This study was conducted in the department of general surgery K. R. Hospital Mysore medical college and research institute, Mysore, Karnataka, India from January 2015 to June 2016. Patients of age above 18 years and both sexes operated for acute appendicitis were included in present study. The clinical history, clinical features, investigations, intraoperative findings, were noted and surgical procedure done and all perforated appendicitis cases were operated lower midline incision, through wash given with normal saline drain in situ. Post operatively antibiotics were given and all patients follow up done for one month.

Results: Present study duration is one and half year we operated total 100 patients for acute appendicitis. In this study 55 patients were male (55%) and 45 patients were females (45%). According to our study acute appendicitis is more common in males. Appendicular perforation has noticed in 23 female patients. The incidence of perforated appendicitis is low in males 12 out of 35 as compared to females 23 out of 35. The incidence of appendicular perforation is higher in the extreme of ages. In the elderly patients it is 58.33%. Thus, according to present study findings age above (>40 years) is strongly associated with the perforated appendicitis ($p < 0.001$ chi squared test). Delayed presentation shows 77.41% appendicular perforation and faecolith associated with 64.51%.

Conclusions: The morbidity and mortality rates are higher in elderly patients, diabetics, steroid dependent and immunocompromised patients. We should be aggressive in the treatment of acute appendicitis associated with high risk factors. So once acute appendicitis is diagnosed, the expedient surgery and appropriate use of perioperative antibiotics can help in reducing the morbidity and mortality.

Keywords: Appendicular perforation, Contributing factors, Delayed presentation

INTRODUCTION

Acute appendicitis is one of the most common disease presenting in emergency department. The acute appendicitis is the most common surgical disease. The peak incidence of the appendicitis is more in the younger age group.¹ Then it decreases with the age. The male to female ratio is 1.3:1. The incidence of perforated appendix is higher in males and also at the extremes of ages.² The obstruction of the lumen of the appendix is the

main causative factor in the perforation of appendix. The main culprit for the obstruction of the lumen of appendix is considered the fecolith.³ Fecoliths are responsible for the perforation of appendix in about 90% of cases of perforated appendix. Although there are certain other causes of luminal obstruction such as seeds of fruits and vegetables, lymphoid hyperplasia, intestinal worms especially *Ascaris*, malignancy and foreign body etc.⁴ The mortality and morbidity is increased in cases of perforated appendix.⁵ There are many contributing factors in the

perforation of appendix. The most important factor is the late presentation of the patients, since the onset of symptoms.⁶ As the more time lapses between the symptoms and the treatment, there are far more chances of complications. The age is also considered as a significant risk factor in the perforation of the appendix. Age less than 10 years and more than 40 years is associated with significant mortality and morbidity. Children under the age of 10 years have 20% incidence of perforated appendix. The incidence of acute appendicitis is lower in the elderly as compared with younger age group. Diabetes a metabolic disorder, when accompany the acute appendicitis increases the mortality and morbidity significantly.

Pregnancy with acute appendicitis also increases the morbidity and mortality.⁷ As the pregnancy progresses, uterus enlarges and appendix is pushed upwards. Thus, the pain and tenderness shift to upper abdomen creating confusion with pyelitis and cholecystitis.⁸ In this prospective study we will evaluate the role of different risk factors (extremes of age, delayed presentation, obstructive appendicitis, diabetes and pregnancy) and their importance in the management of acute appendicitis so that we may be able to suggest any helpful change in the management for example approach, pelvic generous toilet, antibiotic regimen etc.

METHODS

The total 100 patients were enrolled in the study duration between January 2015 to June 2016 and operated for acute appendicitis in the Surgical Department, K. R. Hospital, Mysuru, Karnataka, India. It was a simple descriptive study.

Inclusion criteria

Age above 18 years and both sexes

Exclusion criteria

Patients treated conservatively are excluded in this study. All the patients admitted were assessed preoperatively by thorough history, physical examination, laboratory and radiological investigations.

Following investigations were performed:

- Hb, TLC, DLC, ESR
- Urine complete examination
- Blood sugar
- Blood urea
- Serum creatinine
- LFTs
- Anti HCV antibody, anti HbsAg
- X-Ray chest
- X-Ray abdomen in patients presenting with generalized abdominal pain

- ECG
- Ultrasonography.

Preoperative antibiotics given to all patients. All the patients were operated under spinal anesthesia and operative findings were noted. The clinical and intra operative findings were recorded on a standard proforma.

RESULTS

Present study duration was one and half year. We operated total 100 patients for acute appendicitis. In this study 55 patients were male (55%) and 45 patients were females (45%). According to present study acute appendicitis is more common in males. Perforated appendix has been noticed in 23 patients. The incidence of perforated appendicitis was low in males 12 out of 35 as compared to females 23 out of 35. The incidence of appendicular perforation was higher in the extreme of ages. In the elderly, it was 58.33%.

Table 1: Age distribution of appendicular perforation.

Age group	Total cases	Perforated appendicitis	Percentage	Male	Female
18-30	46	18	39.13%	6	12
31-40	24	4	16.66%	1	3
41-50	18	6	33.33%	2	4
>50	12	7	58.33%	3	4

Thus, according to present study as shown in Table 1 age above (>40 years) was strongly associated with the perforated appendicitis ($p < 0.001$ chi squared test). Delayed presentation shows 77.41% appendicular perforation and faecolith associated with 64.51% as shown in Table 2.

Table 2: Incidence of contributing factors for perforated appendicitis.

Risk factors	No. of cases	Percentage
Age >40	13	41.93
Delayed presentation >72 hours	24	77.41
Faecolith	20	64.51
Diabetics	6	19.35
Immunocompromised	00	00
Previous pelvic surgery	2	6.45
Steroid dependency	1	3.22

DISCUSSION

Acute appendicitis, the most common cause of abdominal surgical emergency, shows a different pathogenesis, clinical causes, course and outcome in different patients.⁹ When acute appendicitis progress to perforation, the consequences often lead to prolonged and difficult convalescence or even to death. The result of present study showed that perforation of the appendix is strongly

influenced by the patient factors, the time lapse between the symptoms and the treatment, phase of illness, age, presence of the fecolith, pre-existing clinical condition such as diabetes, steroid dependency and immune status of patients. Perforated appendicitis may occur when appropriate treatment for acute appendicitis is delayed for a number of reasons, including problems with access to health care, failure by the patient to interpret symptoms as important, misdiagnosis and other delays in treatment.¹⁰

Appendicitis is a more serious situation in elderly patients than in young one. The higher morbidity and mortality rates among the elderly undoubtedly reflect an increased prevalence of pre-existing cardiovascular and other diseases as well as a predictable decline in many physiological functions. Diabetes a metabolic disorder, when accompany the acute appendicitis increases the morbidity and mortality because it impairs immunity. The progression of disease from acute appendicitis to perforated appendicitis is more rapid in diabetic patients as compared to non-diabetics. According to our study the uncontrolled diabetes patients are strongly associated with perforated appendicitis and wound infection is much more common in such patients. Faecolith is one of the most common cause of appendicitis and appendicular perforation.

CONCLUSION

Morbidity and mortality rates are higher in elders, diabetics, steroid dependent and immunocompromised patients. We should be aggressive in the treatment of acute appendicitis associated with high risk factors. So once acute appendicitis is diagnosed, the expedient surgery and appropriate use of perioperative antibiotics can help in reducing the morbidity and mortality.

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