

**Original research article**

## **A study of clinical presentation of appendicitis in the pediatric age group**

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### **Abstract**

Misdiagnosis and consequences arise from the atypical clinical manifestation of acute appendicitis in school-age children. The objective of this study was to examine the impact of age on the clinical presentation, intraoperative findings, and post-operative complications in paediatric patients with acute appendicitis. This retrospective research study included 60 children under the age of 16 years. Appendicitis is a frequently occurring surgical emergency among children. Early diagnosis and surgery are crucial elements in the management of paediatric appendicitis. The younger individuals have a more pronounced overall condition alteration and a higher degree of tachycardia, suggesting that the sickness has caused more widespread effects on their body. Therefore, when providing medical care to a small child experiencing severe stomach pain and carefully considering the possibility of acute appendicitis, it is crucial to exercise great caution.

**Keywords:** Appendicitis, children, under 16 years, post-operative complications

### **Introduction**

Acute appendicitis is a rare condition in children below the age of six, and it is frequently detected with a delay in this age group<sup>[1]</sup>. Undoubtedly, among children aged 12 and under, there has been a documented initial diagnostic mistake rate ranging from 28 to 57 percent, with rates as high as 100 percent in those aged two years or under<sup>[2]</sup>. Approximately 66% of these young individuals have uncertain medical histories and unusual clinical symptoms, which partially contribute to the delay in diagnosis<sup>[3]</sup>. Acute gastroenteritis is a prevalent illness in young children, typically presenting with abdominal pain, vomiting, and diarrhoea. In certain cases, these symptoms may lead to a diagnosis of acute appendicitis<sup>[4]</sup>.

The misdiagnosis occurs due to the lack of test evidence and typical clinical indications in younger children, while they are more prevalent in teens and older children<sup>[5]</sup>. The common occurrence of severe gastroenteritis and the delay in providing reassurance to carers can hinder the effectiveness of surgical intervention, which explains why younger children are at a greater risk of complications<sup>[6]</sup>. However, in addition to the delay in diagnosing and treating appendicitis, this condition occurs in children on a special terrain characterised by the fragility of the appendicular wall and the relative immaturity of the big momentum. Therefore, this exacerbates the severity of the illness and increases the susceptibility to complications in young patients<sup>[7]</sup>.

Appendix perforation is the primary source of complex intra-abdominal infections in children and is a significant contributor to morbidity<sup>[8, 9]</sup>. Therefore, 66% of cases of appendicitis in children under the age of six are complex, with the rate of perforation ranging from 57% to 100% in children aged four to five years and one year, respectively. This retrospective research study sought to assess the occurrence and consequences of acute appendicitis in children. The objective of the study was to examine the impact of clinical presentation and age on the outcome factors.

### **Materials and Methods**

This study was done in the Department of general Surgery, Kanachur Institute of Medical Sciences, Mangalore from May 2021 to Nov 2021.

The study included cases of appendicitis, along with complications such as infected appendix, ruptured appendix, gangrenous appendix with abscess, and appendicular tumour. Intestinal blockage, Meckel's diverticulum, mesenteric adenitis, and salpingitis are all examples that can occur. Children who did not match the study's inclusion criteria or whose subject files were incomplete were excluded. The participants underwent evaluation and surgical intervention by a paediatric surgeon. Ultrasound performed during surgery identified problems such as appendix perforation, peritonitis (inflammation of

the peritoneum with or without purulent peritoneal fluids), and abscess formation. These findings were confirmed by histological investigation. Pre-operative intravenous fluids and antibiotics were administered to all patients to provide coverage against both aerobic and anaerobic microorganisms. McBurney's incision was performed in all cases, followed by open appendectomy. A drain was retained in complex instances. Children were released from the hospital if they were in a satisfactory overall condition, without fever, pain, and able to feed themselves independently. The primary end variables assessed in this study were the occurrence of intraoperative findings, while the secondary outcome variables focused on post-operative problems.

## Results

**Table 1:** Gender wise Distribution of cases

Gender	No. of cases	Percentage (%)
Male(n)	30	50
Female(n)	30	50
Total	60	100

**Table 2:** Intra-operative findings among the cases

Findings	No. of cases
Acute inflamed appendix	42
Perforated appendix	9
Appendicular mass	3
Gangrenous mass	4
Meckel's diverticulitis	2
Total	160

**Table 3:** Postoperative complications

Complications	No. of cases	Percentage (%)
Wound gaping	3	5
Post-operative ileus	3	5

## Discussion

The clinical presentation of the paediatric age group differs from that of adults, since their symptoms are primarily described by their family rather than by the patients themselves. The typical clinical presentation, characterised by initial loss of appetite, pain around the navel that moves to the lower right abdomen, fever, and vomiting, is not commonly observed in adolescents and school-aged children, especially younger children <sup>[1]</sup>. Delayed diagnosis, particularly in paediatric patients, can lead to increased morbidity and even fatality. Diagnosing appendicitis in preschool children is challenging. Indeed, the significant misdiagnosis incidence in this age range is attributed to clinical signs that are atypical and the trivialization of abdominal discomfort <sup>[12]</sup>. Various subjects, including acute appendicitis, which is the most prevalent cause of abdominal emergencies, have demonstrated distinct clinical courses, aetiology and outcomes <sup>[13]</sup>. Complications in appendicitis arise from a delay in diagnosing and treating the condition, the patient's difficulty in understanding their symptoms and misdiagnosis <sup>[14]</sup>. In 2010, Chang *et al.* found that on the initial visit to the emergency room, 12 to 15 percent of paediatric appendicitis cases were not detected, resulting in a perforation rate of 73.1 percent. In contrast, those who were diagnosed on the first visit had a perforation rate of 49 percent <sup>[15]</sup>.

The number of male cases in our study is higher than the number of female cases, which aligns with the findings of Lee JA in 1962 <sup>[16]</sup>. The results of our study reveal that the most common intra-operative finding was an acute inflamed appendix, accounting for 86% of cases. Prior research indicates that complications of appendicitis are more prevalent and severe in children compared to adults. In children under the age of five, the non-specific clinical presentation of acute appendicitis is known to cause delays in diagnosis and result in a greater prevalence of complications in this age group <sup>[12]</sup>.

## Conclusion

Appendicitis is a frequently occurring surgical emergency in children, and its diagnosis primarily relies on clinical evaluation. This study demonstrates that acute appendicitis is prevalent in children under the age of 16, perhaps leading to a higher risk of morbidity due to delayed detection.

## References

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