

# Prevalence of Complicated vs Uncomplicated Appendicitis Based on Duration of Symptoms at Presentation: A Cross-Sectional Study

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## Abstract

**Background:** Acute appendicitis is a common surgical emergency, and delay in presentation is a key factor contributing to disease progression and complications. The duration of symptoms plays an important role in determining whether appendicitis remains uncomplicated or progresses to a complicated form.

**Aim:** To assess the prevalence of complicated and uncomplicated appendicitis based on the duration of symptoms at presentation.

**Materials and Methods:** This hospital-based cross-sectional study was conducted at Meenakshi Medical College Hospital, Kanchipuram, over one year. A total of 50 patients with suspected acute appendicitis who underwent appendectomy were included. Patients were categorized based on duration of symptoms into <24 hours, 24–48 hours, and >48 hours. Intraoperative findings were used to classify appendicitis as uncomplicated or complicated. Statistical analysis was performed using SPSS, and a p value < 0.05 was considered statistically significant.

**Results:** Uncomplicated appendicitis was more common overall (56%), while 44% had complicated appendicitis. Patients presenting within 24 hours predominantly had uncomplicated appendicitis (88.9%), whereas those presenting after 48 hours had a significantly higher proportion of complicated appendicitis (83.3%) (p = 0.001). The mean duration of symptoms was significantly higher in complicated cases (46.8 ± 12.6 hours vs 22.6 ± 8.4 hours; p = 0.001). Postoperative complications were also more frequent in complicated cases (p = 0.03).

**Conclusion:** Delayed presentation is strongly associated with complicated appendicitis. Early diagnosis and timely surgical intervention are essential to reduce complications and improve patient outcomes.

**Keywords:** Acute appendicitis, symptom duration, complicated appendicitis, perforation, cross-sectional study, surgical outcomes.

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## Introduction

Acute appendicitis is one of the most common causes of acute abdomen requiring emergency surgical intervention. It affects individuals across all age groups and remains a significant contributor to surgical workload worldwide. Early diagnosis and timely intervention are crucial to prevent progression to complicated appendicitis, which includes gangrene, perforation, and abscess formation [1].

The natural course of appendicitis typically begins with luminal obstruction followed by inflammation, increased intraluminal pressure, ischemia, and eventual perforation if left untreated. The progression from

uncomplicated to complicated appendicitis is influenced by multiple factors, among which the duration of symptoms plays a critical role [2].

Patients presenting early in the course of the disease are more likely to have uncomplicated appendicitis, whereas delayed presentation is often associated with higher rates of complications. Delay in seeking medical care, misdiagnosis, or atypical clinical presentation may contribute to prolonged symptom duration and disease progression [3].

Complicated appendicitis is associated with increased morbidity, longer hospital stay, higher risk of postoperative complications, and greater healthcare

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costs. Therefore, identifying factors associated with disease severity is essential for improving patient outcomes [4].

Several studies have suggested a strong association between the duration of symptoms and the severity of appendicitis. Patients presenting after 24–48 hours of symptom onset have been reported to have a higher likelihood of perforation and other complications [5–6].

Understanding this relationship is important for clinicians to prioritize early diagnosis and intervention. It also helps in risk stratification and clinical decision-making in emergency settings.

Cross-sectional studies provide valuable insights into the distribution of disease severity in relation to clinical factors such as symptom duration. Evaluating this association in a real-world setting can help in developing strategies to reduce complications.

Therefore, the present study was undertaken to assess the prevalence of complicated and uncomplicated appendicitis based on the duration of symptoms at presentation in a cross-sectional study setting [7].

### Materials and Methods

This hospital-based cross-sectional study was conducted in the Department of General Surgery at Meenakshi Medical College Hospital and Research Institute, Kanchipuram, Tamil Nadu, over a period of one year. The study aimed to assess the prevalence of complicated and uncomplicated appendicitis based on the duration of symptoms at presentation.

A total of **50 patients** presenting with clinical features suggestive of acute appendicitis and undergoing surgical intervention were included in the study. Patients aged between 18 and 60 years were considered eligible. Patients with appendicular mass managed conservatively, those with previous abdominal surgeries, other causes of acute abdomen, or those unwilling to participate were excluded from the study. All patients underwent detailed clinical evaluation including history taking and physical examination. Particular attention was given to the duration of symptoms, which was categorized into three groups: less than 24 hours, 24–48 hours, and more than 48 hours.

Laboratory investigations including total leukocyte count and other routine parameters were performed. Imaging studies such as ultrasonography were used where necessary to support the diagnosis.

All patients underwent appendectomy, either laparoscopic or open, and intraoperative findings were recorded. Based on operative findings, appendicitis

was classified as uncomplicated (inflamed) or complicated (suppurative, gangrenous, or perforated).

The association between duration of symptoms and severity of appendicitis was analyzed.

All data were systematically entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences software. Descriptive statistics such as mean, standard deviation, frequency, and percentage were used to summarize the data. The association between duration of symptoms and type of appendicitis was analyzed using the chi-square test. A p-value of less than 0.05 was considered statistically significant.

### Results

A total of 50 patients with acute appendicitis were included in the study and categorized based on duration of symptoms and intraoperative findings.

**Table 1: Demographic Characteristics of Study Participants (n = 50)**

Variable	Frequency (%)
Mean age (years)	29.8 ± 8.7
Male	30 (60%)
Female	20 (40%)

The majority of patients were young adults with a mean age of 29.8 years. Males constituted a higher proportion, indicating a slightly increased prevalence among male patients.

**Table 2: Distribution Based on Duration of Symptoms**

Duration	Frequency (%)
< 24 hours	18 (36%)
24–48 hours	20 (40%)
> 48 hours	12 (24%)

Most patients presented within 24–48 hours of symptom onset. A smaller proportion presented after 48 hours, indicating delayed presentation in some cases.

**Table 3: Intraoperative Findings**

Type of Appendicitis	Frequency (%)
Uncomplicated	28 (56%)
Complicated	22 (44%)

Uncomplicated appendicitis was more common overall; however, a substantial proportion of patients had complicated appendicitis, indicating disease progression in delayed cases.

**Table 4: Association Between Duration of Symptoms and Type of Appendicitis**

Duration	Uncomplicated	Complicated	p value
< 24 hours	16 (88.9%)	2 (11.1%)	0.001

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Duration	Uncomplicated	Complicated	p value
24–48 hours	10 (50%)	10 (50%)	
> 48 hours	2 (16.7%)	10 (83.3%)	

There was a significant association between duration of symptoms and severity of appendicitis ( $p = 0.001$ ). Patients presenting within 24 hours predominantly had uncomplicated appendicitis, whereas those presenting after 48 hours had a significantly higher proportion of complicated appendicitis.

**Table 5: Mean Duration of Symptoms**

Type	Mean Duration (hours)	p value
Uncomplicated	22.6 ± 8.4	0.001
Complicated	46.8 ± 12.6	

The mean duration of symptoms was significantly higher in patients with complicated appendicitis compared to uncomplicated cases ( $p = 0.001$ ), indicating that delayed presentation is associated with increased severity.

**Table 6: Postoperative Complications**

Complication	Uncomplicated	Complicated	p value
Wound infection	2 (7.1%)	6 (27.3%)	0.03
Intra-abdominal collection	0	3 (13.6%)	
No complications	26 (92.9%)	13 (59.1%)	

Postoperative complications were significantly more common in patients with complicated appendicitis ( $p = 0.03$ ), indicating higher morbidity associated with delayed presentation.

### Discussion

The present cross-sectional study evaluated the prevalence of complicated and uncomplicated appendicitis in relation to the duration of symptoms at presentation. The findings demonstrated a strong and statistically significant association between delayed presentation and increased severity of appendicitis.

In the present study, the majority of patients were young adults with a slight male predominance, which is consistent with the findings of Bhangu A et al [8], who reported that acute appendicitis commonly affects younger individuals and is more frequent in males.

A significant proportion of patients presented within 24–48 hours of symptom onset; however, patients presenting after 48 hours had a markedly higher incidence of complicated appendicitis. This finding aligns with Andersson RE et al [9], who demonstrated

that delayed presentation is a key factor associated with disease progression and perforation.

The present study showed that 88.9% of patients presenting within 24 hours had uncomplicated appendicitis, whereas 83.3% of those presenting after 48 hours had complicated appendicitis ( $p = 0.001$ ). Similar observations were reported by Temple CL et al [10], who emphasized that the risk of perforation increases significantly with increasing duration of symptoms.

The mean duration of symptoms was significantly higher in patients with complicated appendicitis (46.8 ± 12.6 hours) compared to uncomplicated cases (22.6 ± 8.4 hours;  $p = 0.001$ ). This finding is supported by Bickell NA et al [11], who reported that delays in diagnosis and surgical intervention are associated with increased rates of perforation.

Postoperative complications were also significantly higher in patients with complicated appendicitis ( $p = 0.03$ ), including wound infection and intra-abdominal collections. This is consistent with Blomqvist PG et al [12], who reported increased morbidity in patients with perforated or gangrenous appendicitis.

The progression from uncomplicated to complicated appendicitis is influenced by ongoing inflammation, ischemia, and bacterial invasion. Sartelli M et al [13] highlighted that delayed treatment allows disease progression, leading to higher complication rates.

Early diagnosis and timely surgical intervention are crucial in preventing complications. Di Saverio S et al [14] emphasized that prompt management reduces the risk of perforation and improves outcomes.

Several studies have also highlighted the importance of public awareness and early healthcare access in reducing delays. Ferris M et al [15] reported that delayed presentation contributes significantly to increased disease severity.

Clinical decision-making should incorporate the duration of symptoms as an important predictor of disease severity. Kim HY et al [16] demonstrated that combining clinical parameters with symptom duration improves diagnostic accuracy.

Furthermore, Atema JJ et al [17] and Drake FT et al [18] emphasized that early evaluation and appropriate surgical timing are essential to reduce complications and improve patient outcomes.

### Conclusion

The present cross-sectional study demonstrated a significant association between the duration of symptoms and the severity of appendicitis. Patients presenting early, particularly within 24 hours, were more likely to have uncomplicated appendicitis,

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whereas delayed presentation beyond 48 hours was strongly associated with complicated appendicitis ( $p = 0.001$ ). The mean duration of symptoms was significantly higher in complicated cases, and these patients also experienced a higher rate of postoperative complications ( $p = 0.03$ ). These findings highlight that duration of symptoms is an important predictor of disease severity. Early diagnosis and timely surgical intervention are essential to prevent progression to complicated appendicitis, reduce morbidity, and improve patient outcomes..

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