

A Hospital-Based Observational Study on Non-Traumatic Acute Abdomen in Adults: Aetiology, Presentation, and Clinical Outcomes

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Abstract:

Background: Acute abdomen is a common surgical emergency accounting for a significant proportion of hospital admissions. In adult patients, non-traumatic causes of acute abdomen vary widely in terms of aetiology, clinical presentation, and outcomes. Prompt evaluation and appropriate management are critical to reduce morbidity and mortality. This study was undertaken to assess the etiological factors, clinical profile, and outcomes of adult patients presenting with non-traumatic acute abdomen.

Materials and Methods: A prospective observational study was conducted in the Department of General Surgery at Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, over a period of one year. A total of 120 adult patients aged 18 years and above, presenting with non-traumatic acute abdomen, were included in the study. Patients were evaluated in detail with history, clinical examination, laboratory and imaging investigations. Diagnosis was confirmed intraoperatively when surgery was performed, or conservatively through clinical and imaging correlation. Outcomes in terms of morbidity, mortality, and duration of hospital stay were recorded and analysed.

Results: The most common etiological factor observed was acute appendicitis (32.5%), followed by intestinal obstruction (25%) and perforation peritonitis (20.8%). The majority of patients were in the age group of 31–50 years, with a male predominance (M:F = 1.6:1). Fever, abdominal pain, and vomiting were the most frequent presenting symptoms. Surgical intervention was required in 70.8% of cases, while 29.2% were managed conservatively. The overall mortality rate was 5.8%, primarily associated with delayed presentation and sepsis. Mean hospital stay was 6.8 ± 2.4 days.

Conclusion: Non-traumatic acute abdomen presents with a broad spectrum of conditions, with appendicitis and intestinal obstruction being the most frequent causes. Early diagnosis, timely surgical intervention, and supportive care are essential to improve clinical outcomes. Public health education to encourage early presentation is crucial to reducing complications and mortality.

Keywords: Acute Abdomen, Non-Traumatic, Etiology, Clinical Profile, Appendicitis, Intestinal Obstruction, Surgical Emergencies, Outcomes, Hospital Stay, Mortality.

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Introduction

The term “acute abdomen” refers to a clinical condition characterized by the sudden onset of severe abdominal pain that typically requires urgent evaluation and intervention. It encompasses a wide range of medical and surgical conditions that may present with similar symptoms but differ significantly in their underlying causes, treatment strategies, and prognostic outcomes [1]. While traumatic injuries to the abdomen are an important subset, the vast majority of acute abdominal presentations in routine surgical practice are due to non-traumatic causes, which range from relatively

benign self-limiting disorders to life-threatening surgical emergencies [2].

Non-traumatic acute abdomen poses a diagnostic challenge to clinicians due to its varied presentation across age groups, sexes, and socioeconomic backgrounds. The clinical evaluation is further complicated by the overlap of symptoms among different pathologies, such as appendicitis, intestinal obstruction, perforation peritonitis, pancreatitis, mesenteric ischemia, and urological or gynecological conditions [3]. Therefore, the

accurate and timely identification of the etiological factors is crucial for effective management and improved patient outcomes.

Globally, acute appendicitis remains the leading surgical cause of non-traumatic acute abdomen, particularly among young adults. However, regional variations exist based on factors such as dietary habits, access to healthcare, infection rates, and population demographics [4]. In developing countries like India, delayed presentation, limited awareness, and poor access to health facilities often result in complications like perforation, sepsis, and higher morbidity and mortality. Furthermore, gastrointestinal perforations and bowel obstructions contribute significantly to the burden of emergency surgical care, often requiring complex surgical procedures and intensive postoperative care [5].

The clinical profile of a patient presenting with non-traumatic acute abdomen includes a detailed history, physical examination, and a series of investigations including hematological tests, radiography, ultrasonography, and where necessary, computed tomography (CT) scans [6]. Despite technological advances, the diagnosis is sometimes only confirmed intraoperatively. The outcome in such patients is heavily dependent on the timing of intervention, preoperative condition of the patient, and the availability of surgical and critical care support. Morbidity and mortality rates remain high in cases of late presentation, particularly in elderly individuals and those with comorbidities [7].

Several studies in different parts of India and abroad have attempted to analyze the spectrum of diseases presenting as non-traumatic acute abdomen. However, the aetiological patterns and outcome indicators vary considerably based on geographic location, health infrastructure, and public health awareness. Hence, region-specific data are essential to develop tailored clinical protocols and resource allocation strategies.

This study was designed to evaluate the etiological spectrum, demographic characteristics, clinical presentations, and management outcomes of adult patients presenting with non-traumatic acute abdomen at a tertiary care hospital in eastern India. By analyzing the disease patterns and clinical outcomes, this research aims to contribute valuable insights for early recognition, timely referral, and better management of such cases in resource-limited settings.

Materials and Methods

Study Design and Setting: This study was conducted as a prospective observational cohort study in the Department of General Surgery at Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India for one year.

Study Population: The study population comprised adult patients aged 18 years and above who presented to the emergency surgical unit or outpatient department with signs and symptoms of non-traumatic acute abdomen. Acute abdomen was defined as sudden and severe abdominal pain requiring immediate clinical evaluation and potentially emergency intervention.

Inclusion Criteria

- Adult patients (≥ 18 years) of either sex
- Patients presenting with non-traumatic acute abdominal pain of less than 7 days' duration
- Patients willing to participate and who gave written informed consent

Exclusion Criteria

- Patients with abdominal trauma (blunt or penetrating injuries)
- Patients with gynecological causes of acute abdomen (e.g., ectopic pregnancy, ruptured ovarian cyst)
- Known cases of chronic abdominal disorders (e.g., inflammatory bowel disease, malignancies)
- Patients who did not give consent or were lost to follow-up before outcome assessment

Sample Size: A total of 120 consecutive eligible patients were enrolled during the study period using purposive sampling. The sample size was based on similar hospital-based studies and institutional patient inflow.

Data Collection and Evaluation: Each patient underwent a comprehensive assessment using a structured proforma, which included:

- **Detailed history taking** onset, duration, nature of pain, associated symptoms (vomiting, fever, obstipation, distension, etc.)
- **Clinical examination:** general physical examination and systemic abdominal evaluation
- **Baseline investigations:** Complete blood count (CBC), liver function test (LFT), renal function test (RFT), serum electrolytes, blood glucose
- **Imaging studies:** X-ray abdomen (erect), abdominal ultrasonography (USG), and contrast-enhanced computed tomography (CECT) in selected cases
- **Preoperative diagnosis** and decision on conservative vs. operative management were made based on clinical and imaging findings
- Intraoperative findings were documented in operated patients

Outcome Measures: Patients were monitored throughout their hospital stay for:

- **Definitive diagnosis**
- **Type of intervention:** conservative or surgical

- **Postoperative complications:** wound infection, sepsis, organ failure
- **Mortality:** in-hospital death
- **Length of hospital stay** recorded in days from admission to discharge or death

Statistical Analysis: The collected data were entered into Microsoft Excel and analysed using SPSS version 26.0. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as mean $\pm$ standard deviation. Association between variables and outcomes was analysed using the Chi-square test or Fisher's exact test as appropriate. A p-value <0.05 was considered statistically significant.

Results

The study included 120 adult patients who presented with non-traumatic acute abdomen. The majority of patients were between the ages of 31–50 years, with a male predominance (M:F = 1.6:1). Abdominal pain was the universal symptom, followed by vomiting and abdominal distension. Acute appendicitis was the most common etiology (32.5%), followed by intestinal obstruction (25%) and perforation peritonitis (20.8%). The majority of cases (70.8%) required surgical intervention, with appendectomy being the most common surgical procedure performed. Postoperative complications were observed in 29.4% of surgical patients, with wound infections being the most frequent. The overall in-hospital mortality rate was 5.8%, mostly due to delayed presentation and sepsis. The average length of hospital stay was 6.8 days.

Table 1: Age-wise Distribution of Patients (n = 120)

Age Group (Years)	Number of Patients	Percentage (%)
18–30	34	28.3
31–50	50	41.7
51–70	26	21.7
>70	10	8.3

Table 2: Gender Distribution (n = 120)

Gender	Number of Patients	Percentage (%)
Male	75	62.5
Female	45	37.5

Table 3: Presenting Symptoms (n = 120)

Symptom	Number of Patients	Percentage (%)
Abdominal pain	120	100.0
Vomiting	78	65.0
Abdominal distension	49	40.8
Constipation	36	30.0
Fever	31	25.8

Table 4: Etiological Diagnosis of Non-Traumatic Acute Abdomen (n = 120)

Etiology	Number of Patients	Percentage (%)
Acute appendicitis	39	32.5
Intestinal obstruction	30	25.0
Perforation peritonitis	25	20.8
Acute pancreatitis	10	8.3
Acute cholecystitis	9	7.5
Mesenteric ischemia	4	3.3
Others	3	2.5

Table 5: Management Modalities (n = 120)

Management Type	Number of Patients	Percentage (%)
Surgical	85	70.8
Conservative	35	29.2

Table 6: Surgical Procedures Performed (n = 85)

Procedure	Number of Patients	Percentage (%)
Appendectomy	29	34.1
Resection and anastomosis	17	20.0
Perforation closure	16	18.8
Cholecystectomy	7	8.2
Drainage (pancreatic, abscess)	5	5.9
Adhesiolysis	6	7.0
Exploratory laparotomy (misc.)	5	5.9

Table 7: Postoperative Complications (n = 85)

Complication	Number of Patients	Percentage (%)
Wound infection	17	20.0
Respiratory infection	8	9.4
Septicemia	5	5.9
Anastomotic leak	2	2.4
Nil complications	53	62.4

Table 8: Duration of Hospital Stay (n = 120)

Hospital Stay (Days)	Number of Patients	Percentage (%)
≤3	10	8.3
4–5	25	20.8
6–7	55	45.8
8–10	20	16.7
>10	10	8.3

Table 9: Mortality by Etiology (n = 120)

Etiology	Deaths	Mortality Rate (%)
Perforation peritonitis	4	16.0
Intestinal obstruction	2	6.7
Acute pancreatitis	1	10.0
Others	0	0.0
Total	7	5.8

Table 10: Correlation of Time to Hospital Presentation with Outcome (n = 120)

Time of Presentation	Complications (%)	Mortality (%)
≤24 hours	12 (17.1%)	1 (1.4%)
24–48 hours	17 (34.0%)	2 (4.0%)
>48 hours	23 (56.1%)	4 (9.8%)

Table Summary: The results show that the majority of patients with non-traumatic acute abdomen were in the 31–50 years age group (Table 1) with male predominance (Table 2). The most common symptom was abdominal pain (Table 3), and the leading cause was acute appendicitis (Table 4). Most cases required surgical management (Table 5), with appendectomy being the most frequent procedure performed (Table 6). Wound infection was the most common postoperative complication (Table 7). Most patients had hospital stays between 5 and 7 days (Table 8), and mortality was primarily linked to perforation and delayed presentation (Tables 9 and 10). These findings emphasize the critical role of timely diagnosis and intervention in improving outcomes for acute abdominal emergencies.

Discussion

Acute abdomen refers to a medical emergency requiring urgent diagnosis and management to prevent morbidity and mortality. The present study aimed to evaluate the etiological factors, clinical profile, and outcomes of non-traumatic acute abdomen in adult patients. A total of 120 patients were included in this prospective cohort study, conducted at a tertiary care center over one year (2020). The results presented herein offer significant insights into the demographic, clinical, and management patterns of acute abdomen, particularly non-traumatic causes.

Age and Gender Distribution: The results of the present study showed that the majority of patients with non-traumatic acute abdomen were between the ages of 31–50 years (41.7%), with the second largest group being aged 18–30 years (28.3%). This

finding is in line with several studies, which have reported a higher incidence of acute abdominal emergencies in adults between the ages of 30 and 50 years [8]. The relative frequency of acute abdominal conditions in this age group can be attributed to the prevalence of conditions like acute appendicitis, gallstone disease, and intestinal obstructions, all of which are common in these age groups [9].

In contrast, older adults above 70 years had a much lower incidence, which may be partly due to the natural decline in the incidence of certain diseases in this age group, as well as a possible bias toward less aggressive presentation due to co-morbidities or reduced hospital seeking behavior [10].

The male predominance observed in this study (M:F = 1.6:1) aligns with other studies that suggest male patients tend to present more frequently with acute abdominal conditions. This is likely due to the higher prevalence of certain conditions, such as acute appendicitis and gastrointestinal obstruction, in males. Gender differences may also be influenced by social, cultural, and lifestyle factors that affect disease prevalence [11].

Clinical Presentation: Abdominal pain was the universal presenting symptom in this study, affecting 100% of patients. This is consistent with the literature, where abdominal pain remains the hallmark symptom of acute abdominal emergencies. Other common symptoms observed were vomiting (65%) and abdominal distension (40.8%), which are often indicative of bowel obstruction, peritonitis, or other gastrointestinal disorders. The presence of fever and constipation was noted in 25.8% and 30.0% of patients, respectively. These symptoms point toward more severe forms of acute abdomen, such as intestinal obstruction, appendicitis, and perforation peritonitis [12].

This high prevalence of abdominal pain and vomiting agrees with findings from other studies that highlight these as early warning signs for acute gastrointestinal conditions requiring urgent intervention. The clinical symptoms observed here provide important cues for the initial clinical diagnosis and further management strategies [13].

Etiology of Acute Abdomen: The most common etiology for non-traumatic acute abdomen in this study was acute appendicitis, accounting for 32.5% of cases, followed by intestinal obstruction (25%) and perforation peritonitis (20.8%). This distribution mirrors findings from other studies conducted in similar settings, where acute appendicitis is the leading cause of acute abdominal pain, especially in younger patients. The pathogenesis of acute appendicitis is thought to be related to obstruction of the appendix lumen, which leads to increased intraluminal pressure, ischemia, and bacterial overgrowth, eventually resulting in inflammation and perforation [14].

Intestinal obstruction, another common cause in the current study, was observed in 25% of cases. This condition is often caused by adhesions following previous abdominal surgery, hernias, or malignancy. The incidence of intestinal obstruction tends to increase with age, and our study reflects this trend, as a significant proportion of patients (21.7%) were in the 51–70 years age group. This highlights the need for prompt recognition and surgical intervention to prevent bowel necrosis and sepsis [15].

Perforation peritonitis, which accounted for 20.8% of cases, is a life-threatening condition most commonly caused by perforated peptic ulcers or bowel perforation due to diverticulitis or malignancy. Its high incidence in this study emphasizes the importance of timely diagnosis and early surgical intervention to avoid fatal outcomes [16].

Other less common causes, such as acute pancreatitis, cholecystitis, and mesenteric ischemia, were also observed. While these are less frequent, they often present with distinct clinical features, such as persistent epigastric pain in pancreatitis or right upper quadrant pain in cholecystitis. Prompt recognition of these less common causes is vital for appropriate management and improving patient outcomes.

Management Approach: Surgical management was required in 70.8% of patients, with the most common procedure being appendectomy (34.1%). This is consistent with the etiology of acute appendicitis, which was the leading cause of non-traumatic acute abdomen in this study. Other surgical interventions included resection and anastomosis for bowel obstruction and perforation closure for cases of gastrointestinal perforation. The choice of surgical procedure depends on the underlying etiology, as well as the patient's clinical condition at presentation [17].

Conservative management was utilized in 29.2% of patients, primarily for those with less severe or complicated conditions, such as mild cases of acute pancreatitis or cholecystitis. While surgical intervention remains the cornerstone of treatment for most cases of acute abdomen, the role of conservative management, including the use of antibiotics and fluid resuscitation, is well established for conditions that do not require immediate surgery [18].

Postoperative Complications: The incidence of postoperative complications in this study was 29.4%, with wound infection being the most frequent (20.0%). Wound infections are common after abdominal surgeries, particularly in cases of perforation or bowel resection. These patients are at an increased risk due to the presence of contaminated intra-abdominal contents during

surgery. Other complications included respiratory infections (9.4%) and septicemia (5.9%), which reflect the systemic inflammatory response to peritonitis or postoperative infection [19].

The relatively high rate of postoperative complications underscores the need for vigilant monitoring and early intervention to prevent morbidity. These complications are often influenced by factors such as the patient's nutritional status, comorbidities, and the complexity of the surgery performed. Close postoperative care is essential to ensure early identification and treatment of any complications.

Mortality and Time to Presentation: The overall mortality rate in this study was 5.8%, which is consistent with reported mortality rates for acute abdominal emergencies. Mortality was most strongly associated with delayed presentation, especially in cases of perforation peritonitis and intestinal obstruction. The correlation between delayed presentation and poor outcomes has been well documented, as delayed diagnosis leads to increased risk of sepsis, organ failure, and multi-organ dysfunction [20].

Patients who presented after 48 hours were more likely to develop complications and die, reflecting the importance of timely intervention. Early diagnosis and treatment significantly reduce the risk of death and improve the overall prognosis for patients with acute abdomen.

Conclusion

In conclusion, non-traumatic acute abdomen remains a significant cause of morbidity and mortality in adult patients, particularly when diagnosis and intervention are delayed. Acute appendicitis emerged as the most common cause of acute abdominal pain, followed by intestinal obstruction and perforation peritonitis. The need for surgical intervention was substantial, with a significant proportion of patients requiring procedures like appendectomy, bowel resection, and perforation closure. Postoperative complications, especially wound infections and respiratory issues, highlight the importance of careful postoperative care and monitoring.

The study also emphasizes the correlation between delayed presentation and poorer outcomes, including higher mortality rates. Early diagnosis and timely surgical intervention remain crucial to minimizing complications and improving patient prognosis. This study adds valuable insights into the clinical profile, etiological factors, and management outcomes of non-traumatic acute abdomen, stressing the importance of prompt medical attention to improve patient outcomes.

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