

A Retrospective Study on Non-Traumatic Acute Abdominal Conditions in a Tertiary Care Center in Bihar

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Abstract:

Background: Acute abdomen is the acute presentation of severe abdominal pain necessitating emergent evaluation and frequent surgical treatment. Non-traumatic acute abdomens overall present extremely challenging diagnostic and therapeutic problems, particularly in the developing world. Knowledge of their clinical spectrum and outcome would help in the development of better emergency surgical care.

Objective: Retrospective analysis of the clinical profile, diagnosis, and surgical outcome of non-traumatic acute abdomen patients in a tertiary care center.

Methodology: This retrospective observational study was conducted in the Department of General Surgery, Patna Medical College and Hospital, from December 2016 to January 2018. A total of 94 patients who underwent surgical intervention for non-traumatic acute abdominal conditions were included. Data were collected from hospital records, covering demographics, clinical presentation, diagnostic findings, surgical procedures, and postoperative outcomes. Descriptive statistics were used for analysis.

Results: The most common diagnosis was appendicitis (28 cases), followed by duodenal ulcer (24), ileal perforation (14), gastric perforation (11), acute intestinal obstruction (17), and ruptured liver abscess (10). Most cases occurred in the age group 21–30 years with most common being males (51 males and 43 females). In cases of appendicitis, the most common was inflamed appendix (35.10%), followed by appendicular mass, abscess, and gangrene.

Conclusion: Appendicitis is the most frequent reason for non-traumatic acute abdomen, which presents in young men. Early diagnosis and early surgical management are needed in the prevention of morbidity and complications of acute abdominal emergencies.

Keywords: Appendicitis, Emergency Surgery, Intestinal Obstruction, Non-Traumatic Acute Abdomen, Perforation, Retrospective Study.

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Introduction

The term "acute abdomen" refers to an acute presentation of severe abdominal pain and tenderness that commonly requires urgent medical assessment and, in certain instances, surgery. It is a clinical syndrome that requires immediate attention due to its potential to mask disparate occult and potentially fatal pathologies [1,2]. The term encompasses a wide variety of etiologies from nearly benign to fatal surgical emergencies. In the majority of instances, acute abdomen may be the only and initial presentation of an underlying deeper pathosis, such as obstruction, perforation, appendicitis, or ischemia, that needs urgent diagnosis and definitive treatment.

Not only is acute abdomen the most frequent surgical emergency one encounters in clinical practice but also one of the most frequent reasons for

emergency admission to the general surgery wards worldwide [3]. Its diagnosis is also typically difficult because of superimposing symptoms and signs, particularly in elderly or immunocompromised patients where classical presentations are lacking. Moreover, the inclusion of the term "non-traumatic" in the definition of acute abdomen clearly excludes causation by blunt or penetrating trauma, hence narrowing the clinical consideration to spontaneous or pathological intrinsic processes causing abdominal pain.

Patients typically present with acute abdominal pain, which may be accompanied by guarding, rigidity, rebound tenderness, and evidence of systemic infection or inflammation such as fever, tachycardia, or hypotension [4]. These, particularly in the setting of

generalized peritonitis, are evidence of severe intra-abdominal pathology. Pain that has persisted for longer than six hours, most typically, and particularly if progressive or with concomitant systemic disturbances, is a red flag for a potentially surgical abdomen. This has resulted in the historical blurring of clinical terminologies between "acute abdomen" and "surgical abdomen," even though not all acute abdomen ends up being treated operatively.

The basis of management of a patient with an acute abdomen lies in early clinical assessment, ie, proper history and physical examination supported by pertinent diagnostic modalities. Knowledge of abdominal anatomy and pathways of visceral pain and clinical judgment are crucial in localizing the noxious cause and deciding surgical or conservative management [5]. Laboratory investigations and imaging modalities such as ultrasonography, X-ray, and contrast-enhanced computed tomography (CECT) are usually employed to arrive at a definitive diagnosis. Clinical judgment of the attending physician is still the most critical determinant in instituting early intervention.

Dysregulation of normal basic vital signs among patients with acute abdomen—i.e., alteration in temperature, blood pressure, respiratory rate, pulse, and consciousness—typically reflects an evolving intra-abdominal catastrophe and should never be taken lightly [6]. In this instance, early referral to surgery and potential exploratory laparotomy might be warranted even before confirmatory diagnostic imaging. Other patients might also present with atypical symptoms, e.g., chest pain, back pain, or dyspnea, that demand broader differential diagnosis that includes extra-abdominal pathology. These signs should prompt multidisciplinary evaluation to exclude cardiopulmonary, vascular, or gynecologic emergencies [7].

In such a context, the distinction between traumatic and non-traumatic causes is clinically significant. Traumatic causes (such as road traffic accidents, fall, or penetrating trauma) have a clear-cut precipitating event and external findings, while non-traumatic causes are largely based on careful clinical judgment and investigative findings. Perforated peptic ulcers, acute appendicitis, acute cholecystitis, intestinal obstruction, mesenteric ischemia, pancreatitis, diverticulitis, and ectopic pregnancy are some of the common non-traumatic causes, among a few others. Early distinction between medical and surgical causes, and between intra- and extra-abdominal causes of pain, is critical in deciding appropriate management and maximizing patient outcomes.

In the resource-constrained environments, such as most of India's tertiary care centers, the prevalence of non-traumatic acute abdominal emergencies is significant. These patients constitute a significant majority of general surgical caseloads and lead to

hospital mortality and morbidity. Retrospective review of such cases is informative about the clinical profiles, trends in diagnosis, management, and outcomes of various non-traumatic acute abdominal illnesses. It also helps in the identification of common pitfalls, delays in diagnosis, and protocol-recommended areas of improvement in emergency management.

Thus, the objective and purpose of the current study was to retrospectively review the diagnostic patterns and therapeutic outcomes of patients presenting with non-traumatic acute abdomen to a tertiary care centre. Through evaluation of the pattern of presentation, diagnostic efficacy, treatment methods, and overall prognosis, the present study aims to contribute to the improvement of emergency surgical procedures and morbidity and mortality rates of such life-threatening conditions.

Materials and Methods

Study Design: This study was designed as a retrospective observational study, focusing on the clinical presentation, diagnosis, and surgical management of non-traumatic acute abdominal conditions.

Study Area: The study was conducted in the Department of General Surgery, Patna Medical College and Hospital, Patna, Bihar, India.

Study Duration: The study was conducted over a period from December 2016 to January 2018.

Sample Size: A total of 94 consecutive cases of non-traumatic acute abdomen that required surgical intervention were included in the study. These cases were selected retrospectively from the hospital medical records.

Inclusion Criteria

- Patients of all age groups and genders present with acute abdominal symptoms of non-traumatic origin.
- Patients who underwent surgical intervention for their abdominal condition during the study period.
- Only patients for whom a definitive diagnosis could be established post-operatively were included.

Exclusion Criteria

- Patients with acute abdomen due to trauma (blunt or penetrating).
- Patients managed conservatively without surgical intervention.
- Incomplete or missing medical records.
- Pregnant women with obstetric causes of acute abdomen.

Data Collection: Data were retrospectively collected from patient case records maintained by the hospital. Data collected encompassed demographic

details like age and gender, presenting complaints, examination findings, investigations performed (laboratory and imaging such as X-ray, ultrasound, CT scan wherever applicable), findings on intraoperative procedures, nature of surgical procedure performed, final diagnosis (with histopathological examination wherever performed), and postoperative history. All the data were checked for accuracy and completeness before analysis.

Procedure: All selected patients had a standard diagnostic workup for acute abdomen, including physical examination, laboratory tests, imaging (i.e. X-ray, ultrasound, or CT), and surgical exploration. The operative findings and final histopathological diagnosis were recorded. The epidemiological pattern of disease, surgical procedure applied, and patient outcomes were examined.

Statistical Analysis: Data were entered into Microsoft Excel and descriptively analyzed. Categorical variables were summarized as frequencies and

percentages with continuous variables summarized as means along with standard deviations where appropriate. Given the descriptive nature of the study, no inferential statistical tests were performed.

Result

Table 1 shows the distribution of the different non-traumatic acute abdominal conditions in 94 patients. The most common non-traumatic acute abdominal problem was appendicitis, which was documented in 28 patients (29.79%), followed by duodenal ulcer in 24 patients (25.53%). Acute intestinal obstruction was noted in 17 cases (18.09%), while perforation ileal was documented in 14 cases (14.89%). There were 11 cases (11.70%) of gastric perforation, and ruptured liver abscess was the most uncommon condition, albeit reported in 10 cases (10.64%). The results that inflammatory and perforation-related conditions represented the majority of acute abdominal conditions present in this patient group.

Table 1: Acute abdominal conditions of patients

Reason	Cases
Liver Abscess (Ruptured)	10
Acute Intestinal Obstruction	17
Gastric perforation	11
Perforation Ileal	14
Duodenal ulcer	24
Appendicitis	28
Total	94

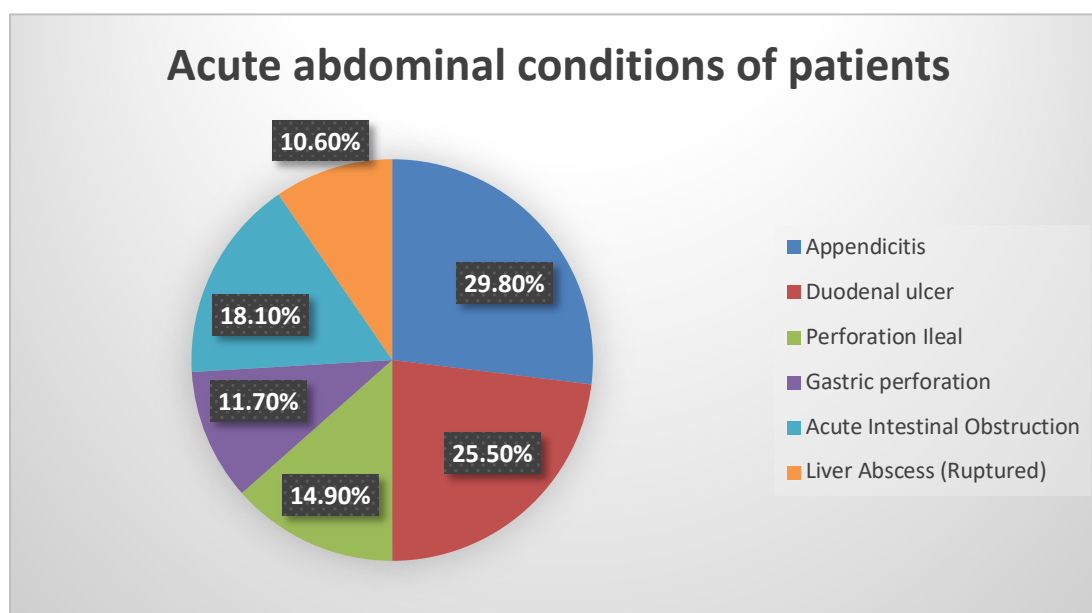


Table 2 presents the age-wise distribution of 94 patients with non-traumatic acute abdominal conditions. The highest number of cases was observed in the 21–30 years age group, contributing 28 patients (29.79%), including 19 cases of acute appendicitis, 3 of intestinal obstruction, and 6 perforations. The 31–40 age group followed with 19 patients

(20.21%), while the 14–20 age group accounted for 16 cases (17.02%), showing a notable prevalence among younger individuals. In contrast, older age groups such as 81–90 and 91–100 years had fewer cases, with 5 (5.32%) and 1 (1.06%) patient, respectively. Appendicitis was predominantly seen in the younger population, particularly between 14–30

years, while intestinal obstruction and perforation showed a more dispersed pattern across different age groups. The data indicates a trend where acute appendicitis is more common in younger age groups,

whereas other conditions like obstruction and perforation are more evenly distributed among middle-aged and elderly patients.

Table 2: Age wise distribution

Age (Yrs)	Ac. App	Intestinal Obstruction	Perforation	Others	Total
91–100	1	-	-	-	1
81–90	5	-	-	-	5
71–80	1	3	-	2	6
61–70	2	2	2	-	6
51–60	2	2	2	-	6
41–50	3	3	4	1	11
31–40	7	4	7	1	19
21–30	19	3	6	-	28
14–20	9	4	2	1	16
Total	49	21	23	5	94

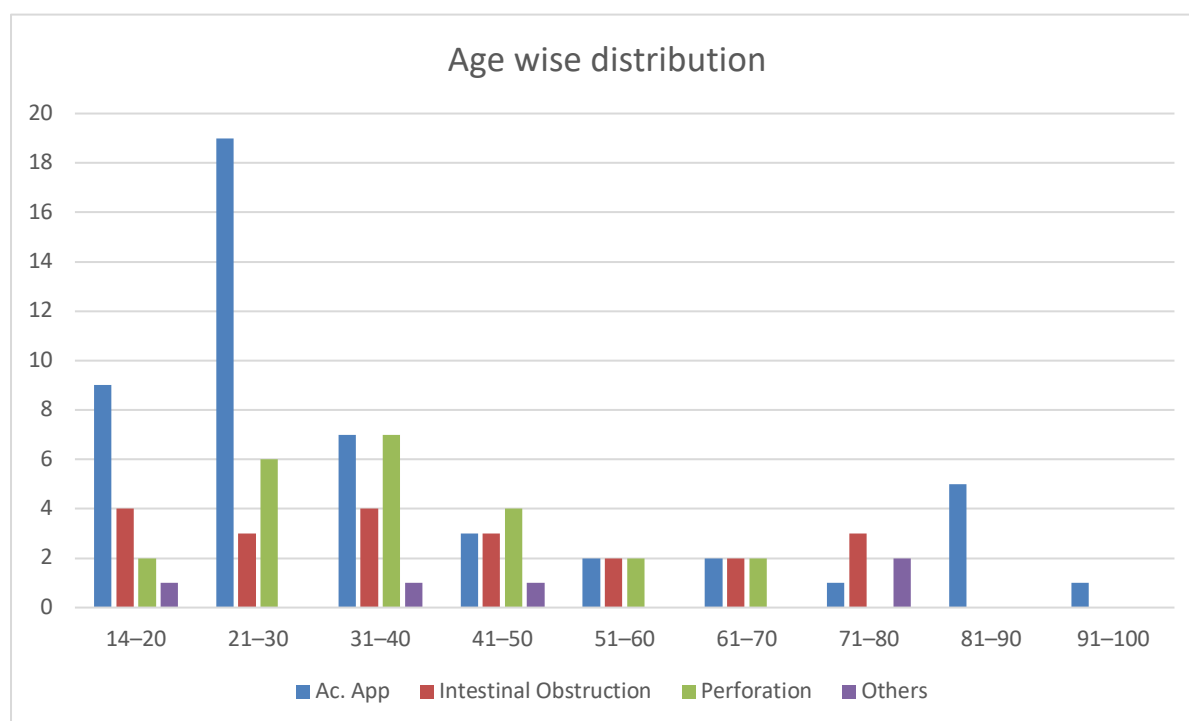


Table 3 shows the sex-wise distribution of acute abdominal conditions among 94 patients, with a higher prevalence in males (51 cases, 54.26%) compared to females (37 cases, 45.74%). Appendicitis was the most common condition, particularly among males, with 24 male and 14 female cases out of a total of 38 (40.43%). Hollow viscus perforation was observed

in 23 patients—13 males and 10 females—while intestinal obstruction affected 17 individuals, comprising 9 males and 8 females. Miscellaneous conditions were equally distributed between sexes, with 5 cases each. This distribution highlights a male predominance in most acute abdominal conditions, especially appendicitis and perforation.

Table 3: Sex wise distribution of acute abdominal conditions

Sr. No.	Disease	Male	Female	Total
1	Miscellaneous	5	5	10
2	Intestinal obstruction	9	8	17
3	Hollow viscus perforation	13	10	23
4	Appendicitis	24	14	38
Total		51	37	94

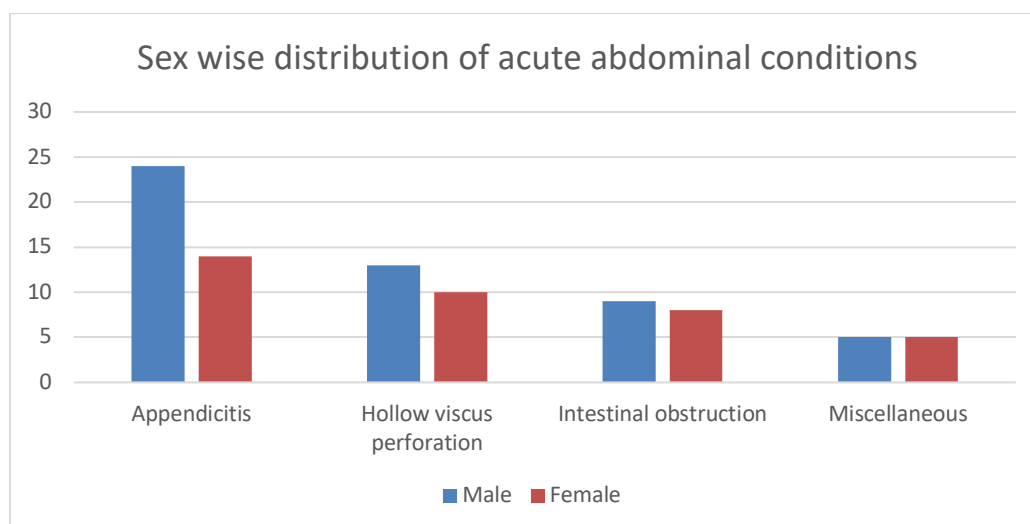
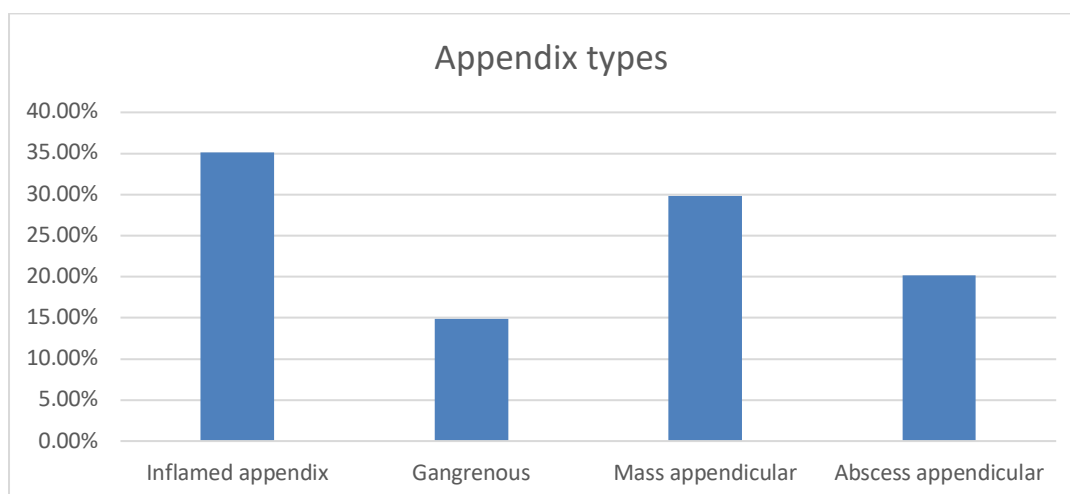


Table 4 presents the pathological types of appendicitis observed among 94 cases. The most common finding was an inflamed appendix, reported in 33 cases (35.10%), indicating a significant number of patients presenting in the early or uncomplicated stage of appendicitis. Appendicular mass was the second most frequent, seen in 28 cases (29.80%),

followed by abscess formation in 19 cases (20.20%), suggesting delayed presentation or progression of the condition. Gangrenous appendicitis, the most severe form, was documented in 14 cases (14.90%). These findings reflect a wide pathological spectrum of appendicitis, from simple inflammation to advanced complications.

Table 4: Appendix types

Sr. No.	Pathological Type	Cases	Percentage (%)
1	Abscess appendicular	19	20.20%
2	Mass appendicular	28	29.80%
3	Gangrenous	14	14.90%
4	Inflamed appendix	33	35.10%
Total		94	100%



Discussion

In this study, among the 94 patients with non-traumatic acute abdominal conditions, the most prevalent condition was appendicitis, which occurred in 28 cases. It was trailed by duodenal ulcer in 24, ileal perforation in 14, gastric perforation in 11, acute intestinal obstruction in 17, and ruptured liver abscess in 10 cases. The dominance of appendicitis

demonstrates its significant role in acute abdominal emergencies in the study population.

This finding concurs with the one by Haddad et al. (2015), who documented appendicitis as the leading etiology in 32.6% of acute abdomen in a Saudi tertiary center [8]. Similarly, MacKersie et al., 2005 found acute appendicitis as 31% of non-traumatic acute abdominal surgeries in their North Indian tertiary center retrospective cohort [9]. These

concurrences are reflective of the universality of appendicitis in geographic and clinical settings, particularly in the youth population.

Duodenal perforation ulcer was the second most common condition in our series (25.5%), as reported by Jhobta et al. (2006), where perforated peptic ulcers were responsible for 21.3% of non-traumatic emergency laparotomies in Himachal Pradesh, India [10]. On the other hand, a Nigerian study by Ugochukwu et al. (2013) showed much lower duodenal ulcer perforation frequency (11.2%), possibly due to regional variation in prevalence of *Helicobacter pylori* and NSAID consumption [11].

Age group distribution indicated the majority of appendicitis cases were in the age group of 21–30 years (19 cases), followed by 14–20 years (9 cases), indicating a higher incidence in the younger age group. Intestinal obstruction was seen frequently in the age group of 31–40 years (4 cases), and other cases were scattered in the higher age groups, e.g., 3 in the age group of 71–80 years and 2 in the age groups of 51–60 years and 61–70 years. Perforation cases were highest in the age group of 31–40 years (7 cases), followed by 6 in the age group of 21–30 years and 4 in the age group of 41–50 years, and they indicated middle-aged adults to be more susceptible to gastrointestinal perforation. Few and scattered cases were in the category of "others" (liver abscess and miscellaneous) with a concentration in the higher age groups (71–80 years).

This finding is in accordance with Bhangu et al. (2015) study's, who noted that acute appendicitis occurs most frequently in the second and third decades of life and particularly in males aged 10–30 years [12]. Similarly, a study by Marudanayagam et al. (2006) found that the majority of the cases of appendicitis were between 20–30 years of age, where lymphoid hyperplasia is the most significant factor [13]. Miller et al. (2000) noted that the most frequent etiology of bowel obstruction is adhesions, hernias, malignancy, and motility disorders, and these are age-dependent, particularly in the patients aged >60 years [14]. But young adults' dominance in our study can be explained as a consequence of variation in etiology, e.g., tuberculosis or hernias, more prevalent in lower-income or tropical nations.

This age trend agrees with Langell & Mulvihill (2008), who reported that the age group of the third to fifth decades is the most common for gastrointestinal perforation in India, most commonly related to peptic ulcer disease, typhoid fever, or NSAID use [15]. Western literature such as Søreide et al. (2015) reports rising incidence of peptic ulcer perforations with increasing age, primarily due to chronic NSAID use and comorbidities [16]. "Others" group cases, that is, ruptured liver abscess, presented in the older age groups (i.e., 71–80 years), which agrees with Ghosh et al. (2014), who reported that pyogenic

liver abscess is more prevalent in older ages due to immunosenescence, diabetes, and biliary pathology [17].

Gender breakdown showed male predominance in nearly all conditions. Of 94 cases, 51 were men, and 37 were women. Appendicitis comprised 24 men and 14 women; hollow viscus perforation comprised 13 men and 10 women; intestinal obstruction was evenly divided with 9 men and 8 women; and miscellaneous conditions like liver abscess were evenly divided between women and men (5 each). This suggests moderate male excess in most acute abdominal conditions as per overall trends of epidemiology.

Bhangu et al. (2015), who reported a greater worldwide incidence of appendicitis in men, possibly because of anatomical and hormonal reasons [12]. Perforation of the tubular viscus was also seen with a mild male predominance (13 males and 10 females), similarly in Søreide et al. (2009), where gender as a risk factor was male, frequently because of greater NSAID consumption and prevalence of smoking in men [14].

In the pathological forms of appendicitis, the most frequent finding was inflamed appendix, which was observed in 33 cases (35.10%). Appendicular mass was the next most frequent, observed in 28 cases (29.80%), followed by abscess formation in 19 cases (20.20%). Gangrenous appendicitis was observed in 14 patients (14.90%), showing a high percentage of complicated cases. This finding shows that a large number of patients came late, as most of them were presented at late stages. The findings are consistent with those of Marudanayagam et al. (2006), who had noted that in their series, nearly 30–40% of appendicitis was presenting with complicated pathology on account of delay in presentation and misdiagnosis at the first level [13]. Similarly, Bickell et al. (2006) had noted that delayed treatment of appendicitis, sometimes more than 48 hours, enormously increases the risk of perforation and gangrenous change, mainly in health care systems with limited early access to diagnostics [18].

Overall, the study presents the prevalence of non-traumatic acute abdominal conditions as surgical emergencies and the prevalence of appendicitis as the leading etiology, particularly in young adults. Perforation and intestinal obstruction were more prevalent in middle-aged patients. Male predominance was observed in the majority of conditions. The multiplicity of the pathological presentations of appendicitis ranging from uncomplicated inflammation to gangrene and abscess formation emphasizes the need for early diagnosis and timely intervention. These findings emphasize the rich clinical variety of acute abdominal conditions and the significant role of early surgical assessment in optimizing patient outcome in tertiary centers.

Conclusion

The current retrospective study on nontraumatic acute abdomen in a tertiary care's context showed that in acute abdomen cases of both sexes, the majority of acute abdomen presentations were attributable to appendicitis. Common examples of acute abdomen cases included duodenal ulcer, ileal and gastric perforations, and acute intestinal obstruction. In many cases, a younger adult population is presented, with the age group of 21-30 being most common. The incidence presented with increasing age decreased. In general, though the report showed that males are usually affected more than females across most conditions. The report explains that in cases of appendicitis, the inflamed appendix accounted for most of the pathology, then in descending order appendicular mass, abscess, and gangrene. In summary, the study is important in reinforcing the significance of rapid identification and performance on acute abdominal emergencies and that there can be significant demographic influences on the presentation and type of acute abdominal conditions.

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