

SPECTRUM, MANAGEMENT, AND SHORT-TERM OUTCOMES OF ACUTE ABDOMINAL CONDITIONS IN A TERTIARY CARE SETTING: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: Acute abdominal conditions are among the commonest surgical emergencies worldwide, ranging from uncomplicated inflammatory disease to life-threatening perforation, obstruction, and sepsis. This study evaluated the spectrum, management, and short-term outcomes of acute abdominal conditions presenting to a tertiary care hospital. **Materials and Methods:** A prospective observational study was conducted in the Department of General Surgery, Government Medical College, Amritsar, over 12 months (June 2025–May 2026). One hundred adult patients (18–65 years) with acute abdominal emergencies were enrolled after informed consent. Clinical, laboratory, radiological, operative, and postoperative data, including hospital stay, drain placement, rescue analgesia, surgical site infection, and 30-day outcome, were recorded and analyzed descriptively. **Result:** Mean age was 41.5 ± 14.7 years, with female predominance (66%). Abdominal pain was the presenting complaint in 92%, and tenderness was present in 99%. Ultrasonography was performed in all patients, CT abdomen in 86%. Acute cholecystitis/biliary disease (21%) and acute appendicitis (19%) were commonest, followed by hollow viscus perforation (11%), intestinal obstruction (10%), and gynaecological emergencies (9%). Management was operative in essentially all patients; conversion to open surgery was needed in 19%, and a drain was placed in 51% (removed at 3.1 ± 1.9 days). NRS-11 pain scores fell from 4.1 ± 1.7 at 24 hours to 2.7 ± 1.4 at day 7. The 30-day outcome score averaged 1.31 ± 1.04 (61% uneventful or minor). Rescue analgesia was needed in 7%, surgical site infection in 4%; no 30-day mortality occurred. **Conclusion:** Acute abdominal emergencies encompass a broad spectrum of surgical disease dominated by hepatobiliary and appendicular pathology in this cohort. Timely diagnosis supported by ultrasonography and selective CT, with early operative intervention, was associated with satisfactory short-term outcomes and acceptable postoperative morbidity in a tertiary care setting.

INTRODUCTION

Acute abdominal pain is among the commonest indications for emergency surgical consultation, encompassing a heterogeneous spectrum from inflammatory disorders such as appendicitis and cholecystitis to intestinal obstruction, perforation peritonitis, and intra-abdominal sepsis. Despite advances in imaging and minimally invasive surgery, accurate diagnosis still relies on careful history-taking, examination, and radiological interpretation; delayed diagnosis can result in sepsis, multi-organ dysfunction, and increased morbidity. Modern imaging and advances in perioperative care, antibiotics, laparoscopy, and enhanced recovery protocols have improved outcomes, though disease patterns still vary with patient characteristics,

resources, and institutional practice. Data on the spectrum of acute abdominal conditions in North Indian tertiary care hospitals remain limited, and evaluating diagnoses, management, and early outcomes is essential to optimizing emergency surgical services.

This prospective observational study was undertaken to evaluate the spectrum and frequency of acute abdominal conditions at a tertiary care teaching hospital, and to assess management strategy, duration of surgery, drain placement, rescue analgesia, surgical site infection, hospital stay, and thirty-day postoperative outcome.

MATERIALS AND METHODS

This prospective observational study was conducted over 12 months (June 2025–May 2026) in the Department of General Surgery, Government Medical College, Amritsar; 100 patients meeting eligibility criteria were enrolled.

Inclusion Criteria

- Patients aged 18–65 years.
- Acute abdominal emergency requiring admission under the Department of General Surgery.
- Written informed consent for participation.

Exclusion Criteria

- Age below 18 years or above 65 years.
- Confirmed viable intrauterine pregnancy (ectopic pregnancy presenting as a surgical emergency was not excluded).
- Refusal of informed consent.
- Major uncontrolled or decompensated systemic comorbidity (e.g., decompensated cardiac, renal, or hepatic failure); stable, controlled comorbidities (hypertension, diabetes, hypothyroidism, stable coronary artery disease) were not excluded.

Data Collection: A structured case record form captured demographic, clinical, laboratory, radiological, operative, and postoperative data, including pain scores, drain placement, and 30-day outcome.

Statistical Analysis: Data were analyzed descriptively in Python (pandas, NumPy): continuous variables as mean $\pm$ SD or median (range); categorical variables as frequencies and percentages, with denominators stated for incompletely documented variables.

RESULTS

A total of 100 patients with acute abdominal conditions, managed at this centre between June 2025 and May 2026, were included in the study.

Demographic Characteristics: The age of patients ranged from 18 to 65 years, with a mean of 41.5 ± 14.7 years. Females constituted 66% ($n = 66$) and males 34% ($n = 34$), with similar mean ages between sexes. The 31–45-year age group formed the largest proportion (37%).

Table 1: Demographic characteristics of the study population (N = 100)

Parameter	Value
Total patients	100
Mean age $\pm$ SD (years)	41.5 ± 14.7
Age range (years)	18–65
Female, n (%)	66 (66%)
Male, n (%)	34 (34%)
Age 18–30 years, n (%)	26 (26%)
Age 31–45 years, n (%)	37 (37%)
Age 46–60 years, n (%)	23 (23%)
Age 61–65 years, n (%)	14 (14%)

Clinical Presentation: Abdominal pain was the presenting complaint in 92% of patients; the remainder presented with distension, vomiting, or trauma. Nausea/vomiting (55%) and fever (43%) were the next commonest symptoms, followed by

radiation to the back (19%), constipation/obstipation (9%), jaundice (7%), and anorexia (4%). On examination, tenderness was present in 99%, guarding/rigidity in 33%, distension in 22%, ascites in 3%, and organomegaly in 3%.

Table 2: Clinical presentation — symptoms and examination findings (N = 100)

Finding	n (%)
Abdominal pain	92 (92%)
Nausea/vomiting	55 (55%)
Fever	43 (43%)
Radiation of pain to back	19 (19%)
Constipation/obstipation	9 (9%)
Jaundice	7 (7%)
Anorexia	4 (4%)
Tenderness on examination	99 (99%)
Guarding/rigidity	33 (33%)
Abdominal distension	22 (22%)
Ascites	3 (3%)
Organomegaly (hepatomegaly)	3 (3%)

Laboratory Profile: Mean haemoglobin was 11.65 ± 1.59 g/dL, with anaemia in 28%. Mean TLC was $14,450 \pm 8,892/\text{mm}^3$; leucocytosis ($>11,000$) was present in 59% and marked leucocytosis ($>15,000$) in 44%. A hepatobiliary panel obtained in 31 patients

with suspected hepatobiliary disease showed mean bilirubin 1.29 mg/dL (elevated in 13/31), SGOT 61.5 U/L, SGPT 68.3 U/L, and ALP 209.6 U/L. Renal function in the same subset showed mean urea 44.4 mg/dL and creatinine 0.99 mg/dL (impairment in 5).

Serum sodium averaged 139.1 mmol/L, potassium (n=30) 4.01 mmol/L, and platelet count (n=30) $215.8 \times 10^3/\mu\text{L}$.

Table 3: Laboratory profile

Parameter	n available	Mean $\pm$ SD / n (%) abnormal
Haemoglobin (g/dL)	100	11.65 $\pm$ 1.59; anaemia in 28%
TLC (/mm ³)	100	14,450 $\pm$ 8,892; leucocytosis (>11,000) in 59%
S. bilirubin (mg/dL)	31	1.29 $\pm$ —; elevated in 13 (42%)
SGOT (U/L)	31	61.5
SGPT (U/L)	31	68.3
ALP (U/L)	31	209.6
Blood urea (mg/dL)	31	44.4
S. creatinine (mg/dL)	31	0.99; elevated in 5 (16%)
Serum Na ⁺ (mmol/L)	100	139.1
Serum K ⁺ (mmol/L)	30	4.01
Platelet count ($\times 10^3/\mu\text{L}$)	30	215.8

(Hepatobiliary panel, renal function, potassium, and platelet count were obtained selectively in patients where clinically indicated and are reported for the subset in whom they were recorded.)

Radiological Evaluation: Ultrasonography was performed as the primary imaging modality in all patients (100%). CT abdomen was used as an adjunct in 86% of patients, particularly for equivocal

findings, bowel obstruction, perforation, liver abscess, retroperitoneal collections, and complex appendicular pathology. MRI was not required.

Table 4: Radiological evaluation

Modality	n (%) patients
Ultrasonography (USG)	100 (100%)
CT abdomen	86 (86%)
MRI	0 (0%)

Spectrum of Acute Abdominal Conditions: Acute cholecystitis/biliary disease was the commonest category (21%), followed by acute appendicitis (19%), hollow viscus perforation (11%), and intestinal obstruction (10%). Gynaecological

emergencies accounted for 9% and strangulated hernias for 7%; less common diagnoses ($\leq 4\%$ each) are detailed in Table 5. One patient (1%) had no abnormality detected at laparotomy.

Table 5: Spectrum of acute abdominal conditions (N = 100)

Diagnostic category	n	%
Acute cholecystitis / biliary disease	21	21%
Acute appendicitis (incl. complicated)	19	19%
Hollow viscus perforation / perforation peritonitis	11	11%
Intestinal obstruction	10	10%
Gynaecological emergency	9	9%
Strangulated / obstructed hernia	7	7%
Complicated diverticulitis	4	4%
Abdominal trauma	3	3%
Sigmoid / caecal volvulus	3	3%
Pyogenic liver abscess	2	2%
Hydatid cyst of liver	2	2%
Acute / necrotizing pancreatitis	2	2%
Abdominal mass / lymphoma	2	2%
Infected urachal cyst	1	1%
Psoas abscess	1	1%
Renal / urological pathology	1	1%
Bowel gangrene / ischaemia	1	1%
No abnormality detected	1	1%
Total	100	100%

Operative Management: Management was operative in effectively all patients (100%), with no patient managed purely conservatively. Common procedures included laparoscopic or open appendectomy or cholecystectomy, exploratory laparotomy, Graham's omental patch repair, and liver abscess drainage. Among 31 patients with recorded

therapeutic outcome, surgery was therapeutic in 68% and non-therapeutic in 32%. Conversion to open surgery was required in 19%, mostly for complicated biliary disease and obstruction. A drain was placed in 51%, removed at a mean of 3.1 ± 1.9 days; surgery duration (n=53) averaged 94.3 ± 55.2 minutes.

Table 6: Operative management (N = 100 unless otherwise specified)

Parameter	Result
Conversion to open surgery	19 (19%)
Drain placed	51 (51%)
Drain removal, days (n = 49)	3.1 ± 1.9 (range 1–9)
Duration of surgery, minutes (n = 53)	94.3 ± 55.2 (range 25–240)
Therapeutic procedure (n = 31 recorded)	21 (68%)
Non-therapeutic procedure (n = 31 recorded)	10 (32%)

Postoperative Outcomes: Postoperative NRS-11 pain scores declined from 4.1 ± 1.7 at 24 hours to 2.7 ± 1.4 at day 7. Rescue analgesia was required in 7% and surgical site infection in 4%, both managed successfully. Hospital stay (n=30) ranged 2–56 days (mean 7.9 ± 9.5 ; median 6), shortest after

uncomplicated appendicectomy and longest with complicated biliary disease or perforation. The 30-day outcome score (0 = uneventful to 4 = major complication) averaged 1.31 ± 1.04 , with grade 0–1 in 61%. No 30-day mortality occurred.

Table 7: Postoperative pain scores, 30-day outcome, and key outcomes

Parameter	Result
NRS-11 pain score at 24 hours	4.1 ± 1.7
NRS-11 pain score at day 7	2.7 ± 1.4
30-day postoperative outcome score (0–4)	1.31 ± 1.04
Grade 0–1 (uneventful/minor), n (%)	61 (61%)
Grade 2, n (%)	23 (23%)
Grade 3–4 (significant morbidity), n (%)	16 (16%)
Need for rescue analgesia	7 (7%)
Surgical site infection	4 (4%)
Hospital stay, days (n = 30)	7.9 ± 9.5 (median 6; range 2–56)
30-day mortality	0 (0%)

DISCUSSION

Acute abdominal conditions remain among the most frequent surgical emergencies worldwide,^[14] requiring early diagnosis, timely imaging, and prompt intervention to reduce morbidity. This study evaluated the spectrum, management, and short-term outcomes of 100 patients with acute abdominal conditions over one year.

The cohort spanned the full 18–65-year range, with a mean age of 41.5 years and the largest proportion (37%) in the 31–45-year group, confirming that acute abdominal pathology predominantly affects young and middle-aged adults. A female predominance (66%) reflected the high proportion of biliary disease (21%), which disproportionately affects women, consistent with prior Indian and international studies.^[14,15]

Abdominal pain was the presenting complaint in 92% of patients, reaffirming its role as the hallmark symptom of the acute abdomen, though associated symptoms varied with the underlying pathology, consistent with Flasar and Goldberg,^[1] and Cartwright and Knudson,^[2] who emphasized that accompanying features help narrow the differential diagnosis.

Clinical examination remained central to diagnosis: tenderness was present in 99% of patients, while guarding or rigidity, more common in perforation and complicated appendicitis, was documented in a third, reinforcing the continued importance of examination alongside imaging.^[19]

Leucocytosis, present in 59% of patients, was the most consistent laboratory abnormality, correlating with appendicular and biliary sepsis; hepatobiliary

patients showed variable bilirubin and transaminase elevation, consistent with prior reports.^[7,13]

Ultrasonography, performed in every patient, served as the primary investigation for its availability, low cost, and safety, while CT (86%) was valuable in equivocal cases, obstruction, perforation, liver abscess, and complex appendicular pathology, consistent with international recommendations.^[2,4]

The disease spectrum reflected the diversity expected at a tertiary centre, with biliary disease and appendicitis together accounting for 40% of admissions. Complicated appendicitis was the commonest indication for emergency surgery, similar to Bhangu et al,^[6] and the WSES Jerusalem guidelines.^[4] Hollow viscus perforation (11%) and intestinal obstruction (10%) were the next most important categories, underscoring the continued burden of perforated peptic ulcer disease.^[3,10] and adhesive/obstructive pathology.^[5,8] in this population.

Operative intervention was the principal strategy; conversion to open surgery (19%) was most often needed for complicated biliary disease and obstruction, consistent with published laparoscopic literature identifying dense adhesions and severe inflammation as usual causes.^[16–18] A drain was placed in 51% of patients, removed at a mean of 3.1 days.

Postoperative outcomes were encouraging: NRS-11 scores fell from 4.1 at 24 hours to 2.7 by day 7, and the 30-day outcome score averaged 1.31 (61% uneventful or minor). Only 7% required rescue analgesia, and surgical site infection occurred in 4%, managed successfully, in line with published standards.^[11,12] No 30-day mortality occurred.

Hospital stay varied with severity, from 5.3 days for uncomplicated appendectomy to 10–11 days for complicated biliary disease and perforation, consistent with expected recovery patterns.^[9]

Strengths include the prospective design, standardized data collection, and comprehensive assessment of clinical, laboratory, radiological, operative, and postoperative variables across both common and uncommon presentations.

Limitations include incomplete documentation for several secondary variables (hospital stay, surgery duration, drain removal, hepatobiliary/renal panel, therapeutic classification), single-centre design limiting generalizability, and lack of follow-up beyond 30 days or quality-of-life assessment. Larger multicentric studies with complete data capture and longer follow-up are needed.

Overall, rapid assessment combined with appropriate imaging and timely intervention resulted in favourable short-term outcomes for most patients.

CONCLUSION

Acute abdominal emergencies encompass a broad spectrum of surgical disease, with hepatobiliary disease and appendicitis forming the largest share of presentations. Timely diagnosis via ultrasonography and selective CT, together with early surgical intervention, was associated with satisfactory short-term outcomes, low complication rates, and no 30-day mortality, affirming the value of a structured, imaging-guided approach to the acute abdomen.

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