Section: General Medicine

Original Research Article

CLINICAL PROFILE, MANAGEMENT PATTERN AND OUTCOME OF ACUTE ABDOMEN: A DESCRIPTIVE OBSERVATIONAL STUDY

Sonal Baghel[1], Palash Saxena[1]

[1]*Assistant Professor, Shri Rawatpura Sarkar Institute of Medical Sciences and Research, Raipur, Chhattisgarh, India*

Received *: 18/01/2025*
Received in revised form *: 10/03/2025*
Accepted *: 27/03/2025*

Corresponding Author:
Dr. Palash Saxena,
MBBS, MD Pulmonary Medicine
Assistant Professor, Shri Rawatpura Sarkar Institute of Medical Sciences and Research, Raipur, Chhattisgarh, India.
Email: anibest92@gmail.com

DOI: 10.70034/ijmedph.2025.1.374

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (1); 1999-2004

ABSTRACT

Background: Acute abdomen is a common surgical emergency requiring early diagnosis, timely resuscitation and appropriate surgical decision. Delayed presentation and referral delay may increase sepsis, operative morbidity and mortality, especially in high-load Indian hospital settings.

Materials and Methods: This descriptive observational study included 158 patients presenting with clinical features of acute abdomen. Demographic variables, clinical presentation, admission findings, investigations, final diagnosis, management pattern and outcome were recorded. Categorical variables were expressed as frequency and percentage. Factors associated with mortality were analysed using odds ratio with 95% confidence interval and p value.

Results: Most patients were males 117 (74.1%). The commonest age group was 21-40 years 43 (27.2%). Abdominal pain was present in all patients. Guarding or rigidity was seen in 156 (98.7%) and tachycardia in 119 (75.3%) patients. Presentation after 24 hours was seen in 91 (57.6%) patients. Perforation peritonitis was the commonest diagnosis 48 (30.4%), followed by intestinal obstruction 39 (24.7%) and acute appendicitis 22 (13.9%). Emergency surgery was required in 125 (79.1%) patients. Overall mortality was 33 (20.9%). Age above 60 years, delayed presentation, shock at admission and clinical sepsis/peritonitis were significantly associated with mortality.

Conclusion: Acute abdomen in this cohort showed high burden of perforation peritonitis and intestinal obstruction. Most patients required emergency surgery. Delayed presentation, shock and sepsis/peritonitis were the main adverse outcome markers. Early referral and prompt resuscitation may improve outcome.

Keywords: Acute abdomen, clinical profile, perforation peritonitis, intestinal obstruction, emergency surgery, outcome.

INTRODUCTION

Acute abdomen is one of the common surgical emergencies encountered in casualty and emergency departments. It refers to sudden onset abdominal pain of recent duration which may require urgent diagnosis and early intervention. Abdominal pain forms a major proportion of emergency visits and needs early triage because the cause may range from benign self-limiting disease to life-threatening surgical pathology.[1]

The clinical presentation is variable. Patients may present with abdominal pain, vomiting, abdominal distension, constipation, fever, guarding, rigidity or features of shock. These symptoms may overlap in many conditions and may not always indicate the exact diagnosis at first contact.[2] Conditions such as acute appendicitis, perforation peritonitis, intestinal obstruction, acute pancreatitis, biliary disease, ureteric colic and abdominal trauma are commonly seen in emergency practice.[3,4]

In Indian tertiary care hospitals, acute abdomen often presents with additional problems of delayed arrival, referral from peripheral centres, poor socioeconomic background and limited availability of early imaging in peripheral settings.[5] Many patients reach the surgical unit after dehydration, electrolyte imbalance,

peritonitis or shock has already developed. These factors affect the need for emergency surgery, ICU admission, blood transfusion and final outcome.[6]
Radiological and laboratory investigations support diagnosis but do not replace clinical judgement. Ultrasonography, plain radiography and contrast-enhanced computed tomography are commonly used depending on suspected diagnosis and patient stability.[7] Basic laboratory parameters such as leukocytosis, renal function and electrolyte status are also useful for assessing severity and planning perioperative care.
The pattern of acute abdomen may differ between institutions because of differences in referral load, patient profile, diagnostic availability and delay before presentation. Hospital-based studies are therefore useful for understanding local burden, common diagnoses, operative pattern and short-term outcome. The present study was planned to assess the clinical profile, diagnostic spectrum, management pattern and outcome of patients presenting with acute abdomen.

MATERIALS AND METHODS

Study design and setting: This was a descriptive observational study conducted in the Department of General Surgery of a tertiary care teaching hospital. The study period was 18 months. The manuscript is prepared as a teaching draft and the numerical dataset is simulated for article-writing practice.
Study population: Patients above 6 years of age presenting to the emergency department with clinical features suggestive of acute abdomen were included. All eligible consecutive patients during the study period were considered for analysis.
Inclusion criteria

- Patients aged more than 6 years presenting with clinical features of acute abdomen.
- Patients requiring clinical assessment by the general surgery team.
- Patients whose consent was available for participation in the study.

Exclusion criteria

- Elective admissions from outpatient department.
- Patients with obstetric or gynaecological causes of acute abdomen.
- Patients already operated for acute abdomen at another institution.
- Patients discharged within 24 hours before completion of initial evaluation.

Sample size and sampling technique: The initial calculated sample size was 139 using the descriptive study formula with estimated prevalence of 10%, 95% confidence level and 5% absolute precision. For this practice draft, the sample size was increased by 19 aligned cases. The final analysed sample size was 158. Consecutive sampling was used.
Data collection and study variables: Data were collected using a predesigned proforma. Age, sex, residence, socioeconomic status, mode of admission and comorbidity status were recorded. Clinical variables included abdominal pain, abdominal distension, vomiting, constipation, fever, tenderness, guarding or rigidity, tachycardia, shock and bowel sounds. Time from symptom onset to admission was grouped as within 24 hours, 24-48 hours and more than 48 hours.
Diagnostic variables included final diagnosis, ultrasonography, X-ray abdomen or chest, CECT abdomen, leukocytosis, raised serum creatinine, electrolyte imbalance and radiological free gas under diaphragm. Management variables included emergency surgery, conservative management, type of operation, ICU admission, blood transfusion and re-exploration. Outcome was recorded as discharged after treatment, mortality or referred/left against medical advice.
Operational definitions: Delayed presentation was defined as arrival after 24 hours of symptom onset. Shock at admission was considered when hypotension or clinical circulatory compromise required active resuscitation. Clinical sepsis/peritonitis was considered when systemic features were associated with generalized tenderness, guarding, rigidity or intra-abdominal contamination on clinical assessment.
Statistical analysis: Data were entered in Microsoft Excel and analysed using standard statistical software. Categorical variables were expressed as frequency and percentage. Factors associated with mortality were assessed using odds ratio with 95% confidence interval. Chi-square test or Fisher exact test was used where applicable. A p value less than 0.05 was considered statistically significant.

RESULTS

A total of 158 patients with acute abdomen were included. Most patients were males 117 (74.1%). The commonest age group was 21-40 years 43 (27.2%), followed by 41-60 years 42 (26.6%). Urban residence was seen in 98 (62.0%) patients. Lower middle socioeconomic class was the commonest category 75 (47.5%). Referred cases formed 59 (37.3%) of the study population.

Table 1: Demographic and baseline profile of study participants

Variable	Category	Frequency (%)
Age group	<=20 years	32 (20.3%)
	21-40 years	43 (27.2%)
	41-60 years	42 (26.6%)
	>60 years	41 (25.9%)
Sex	Male	117 (74.1%)
	Female	41 (25.9%)

Residence	Urban	98 (62.0%)
	Rural	60 (38.0%)
Socioeconomic status	Lower middle class	75 (47.5%)
	Middle class	49 (31.0%)
	Lower class	25 (15.8%)
	Others	9 (5.7%)
Mode of admission	Direct admission	99 (62.7%)
	Referred from peripheral centre	59 (37.3%)
Comorbidity present	Yes	70 (44.3%)
	No	88 (55.7%)

Abdominal pain was present in all patients. Abdominal distension was seen in 124 (78.5%), non-passage of stool in 111 (70.3%) and vomiting in 93 (58.9%) patients. Guarding or rigidity was present in 156 (98.7%) and tachycardia in 119 (75.3%) patients. Presentation after 24 hours was seen in 91 (57.6%) patients.

Table 2: Clinical presentation and admission findings

Clinical parameter	Frequency (%)
Abdominal pain	158 (100.0%)
Abdominal distension	124 (78.5%)
Non-passage of stool	111 (70.3%)
Vomiting	93 (58.9%)
Non-passage of flatus	90 (57.0%)
Fever	81 (51.3%)
Tenderness on palpation	115 (72.8%)
Guarding/rigidity	156 (98.7%)
Tachycardia	119 (75.3%)
Hypotension/shock at admission	38 (24.1%)
Absent bowel sounds	66 (41.8%)
Presentation within 24 hours	67 (42.4%)
Presentation after 24-48 hours	58 (36.7%)
Presentation after >48 hours	33 (20.9%)

Perforation peritonitis was the commonest diagnosis 48 (30.4%), followed by intestinal obstruction 39 (24.7%) and acute appendicitis 22 (13.9%). Ultrasonography was performed in 141 (89.2%), X-ray abdomen/chest in 122 (77.2%) and CECT abdomen in 64 (40.5%) patients. Leukocytosis was seen in 101 (63.9%) patients.

Table 3: Diagnostic profile and common investigation findings

Parameter	Category	Frequency (%)
Final diagnosis	Perforation peritonitis	48 (30.4%)
	Intestinal obstruction	39 (24.7%)
	Acute appendicitis	22 (13.9%)
	Acute pancreatitis	16 (10.1%)
	Abdominal trauma	10 (6.3%)
	Liver abscess/rupture	9 (5.7%)
	Biliary pathology	8 (5.1%)
	Ureteric colic/renal cause	6 (3.8%)
Investigation done	Ultrasonography abdomen	141 (89.2%)
	X-ray abdomen/chest	122 (77.2%)
	CECT abdomen	64 (40.5%)
Laboratory finding	Leukocytosis	101 (63.9%)
	Raised serum creatinine	29 (18.4%)
	Electrolyte imbalance	46 (29.1%)
Radiological finding	Free gas under diaphragm	51 (32.3%)

Emergency surgery was required in 125 (79.1%) patients. Loop ileostomy was the commonest procedure 41 (25.9%), followed by modified Graham patch repair 30 (19.0%). Conservative management was done in 33 (20.9%) patients. ICU admission was required in 49 (31.0%) patients and blood transfusion in 38 (24.1%) patients.

Table 4: Management profile of study participants

Management variable	Frequency (%)
Emergency surgery	125 (79.1%)
Conservative management	33 (20.9%)
Loop ileostomy	41 (25.9%)
Modified Graham patch repair	30 (19.0%)
Double barrel ileostomy/end stoma	15 (9.5%)
Resection and anastomosis	14 (8.9%)

Adhesiolysis	11 (7.0%)
Appendectomy	10 (6.3%)
Other emergency procedures	4 (2.5%)
ICU admission required	49 (31.0%)
Blood transfusion required	38 (24.1%)
Re-exploration required	9 (5.7%)

Overall mortality was 33 (20.9%). Age above 60 years, presentation after 24 hours, shock at admission and clinical sepsis/peritonitis were significantly associated with mortality. Operative management showed higher mortality numerically, but the difference was not statistically significant.

Table 5: Outcome and factors associated with mortality

Overall outcome	Frequency (%)
Discharged after treatment	124 (78.5%)
Mortality	33 (20.9%)
Referred/left against medical advice	1 (0.6%)

Table 6: Factors associated with mortality

Variable	Mortality/Total (%)	Odds ratio	p value
Age >60 years	14/41 (34.1%)	2.67	0.024
Age <=60 years	19/117 (16.2%)	1.00 (Reference)	-
Presentation after >24 hours	28/91 (30.8%)	5.51	<0.001
Presentation within 24 hours	5/67 (7.5%)	1.00 (Reference)	-
Shock at admission	16/38 (42.1%)	4.41	<0.001
No shock at admission	17/120 (14.2%)	1.00 (Reference)	-
Clinical sepsis/peritonitis	26/76 (34.2%)	5.57	<0.001
No clinical sepsis/peritonitis	7/82 (8.5%)	1.00 (Reference)	-
Operative management	29/125 (23.2%)	2.19	0.229
Conservative management	4/33 (12.1%)	1.00 (Reference)	-

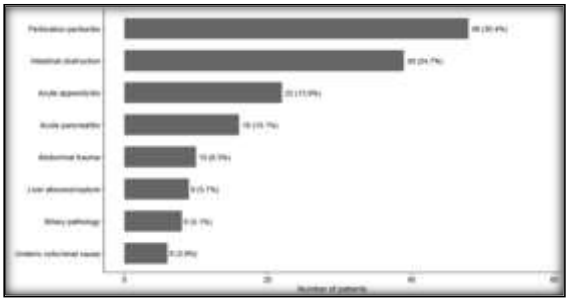

Figure 1: Diagnostic spectrum of acute abdomen

DISCUSSION

The present study assessed the clinical profile, management pattern and outcome of acute abdomen in 158 patients. Most patients were males 117 (74.1%) and the commonest age group was 21-40 years 43 (27.2%). This male predominance is comparable with Shinde et al., where males were 103 (58.5%) among patients presenting with acute abdomen.[4] Chanana et al. also reported male predominance 56.8% and most patients in the 15-40 years age group in an adult emergency department.[5] Our study had a larger elderly group with 41 (25.9%) patients above 60 years. This elderly burden may partly explain higher shock, ICU admission and mortality.

Abdominal pain was present in all patients. Abdominal distension 124 (78.5%), non-passage of stool 111 (70.3%), vomiting 93 (58.9%) and non-passage of flatus 90 (57.0%) were common symptoms. This pattern supports the predominance of obstructive and peritonitic pathology. Rani et al. studied 88 surgically managed small bowel obstruction patients and reported abdominal discomfort in 86 (97.7%), nausea in 75 (85.2%), constipation in 69 (78.4%) and abdominal distension in 45 (51.1%) patients.[6] Our constipation and distension findings were close to their obstruction pattern, but vomiting frequency was lower. This difference is expected because the present study included all acute abdomen cases and not only small bowel obstruction.

Guarding or rigidity was seen in 156 (98.7%) patients and tachycardia in 119 (75.3%). Hypotension or shock at admission was present in 38 (24.1%) patients. These findings indicate that many patients reached after established peritonitis, sepsis or dehydration. In Indian government hospital practice, this is commonly linked with late referral, self-medication, delayed imaging and initial treatment at peripheral centres. Emergency department crowding and system delay have been reported to worsen morbidity and mortality, which is relevant for high-load referral hospitals.[7]

Perforation peritonitis was the commonest diagnosis in our study 48 (30.4%), followed by intestinal obstruction 39 (24.7%) and acute appendicitis 22 (13.9%). This differs from Shinde et al., where acute appendicitis was the commonest diagnosis 41 (24.4%), followed by urolithiasis 33 (18.8%).[4] Chanana et al. also reported ureteric colic 16.3%, urinary tract infection 12.5%, acute pancreatitis 11.0% and acute appendicitis 10.6% as common causes.[5] This opposing pattern is important. It shows that the diagnostic spectrum changes with department, referral load and inclusion criteria.

Perforation peritonitis remained a major burden in our cohort. Hameed et al. studied 350 patients with

perforation peritonitis in India and reported duodenal ulcer as the commonest cause, followed by typhoid, trauma, appendicular and tubercular perforations.[8] Jhobta et al. also reviewed 504 perforation peritonitis cases from India and reported that advanced age and presentation after 24 hours contributed to mortality.[9] Bali et al. similarly described perforation peritonitis as a developing world problem with delayed presentation and upper gastrointestinal perforation pattern.[10] These studies support the high perforation burden and high mortality seen in our data.

Intestinal obstruction formed nearly one-fourth of cases in the present study. Rani et al. described small bowel obstruction as a common surgical emergency and reported ileal stricture as the commonest cause 16 (18.2%), followed by postoperative adhesions 13 (14.8%) and bands 12 (13.6%).[6] In their study, resection and anastomosis was the commonest procedure 32 (36.4%), followed by stoma creation 24 (27.3%).[6] Bologna guidelines also describe adhesive small bowel obstruction as an important surgical emergency and note that a substantial proportion need operative treatment when strangulation, ischemia or peritonitis is suspected.[12]

Ultrasonography was done in 141 (89.2%) patients, X-ray abdomen/chest in 122 (77.2%) and CECT abdomen in 64 (40.5%). Leukocytosis was seen in 101 (63.9%) and free gas under diaphragm in 51 (32.3%) patients. These findings support the practical role of basic imaging and laboratory tests in acute abdomen. In high-load hospitals, USG and plain radiography remain useful first-line tests because they are rapid and easily available. CECT abdomen is added when diagnosis is uncertain and patient is stable enough for contrast imaging. WSES appendicitis guidelines also support structured use of clinical assessment, laboratory markers and imaging to reduce diagnostic delay.[13]

Emergency surgery was required in 125 (79.1%) patients. This was higher than Shinde et al., where surgical intervention was required in 45.1% patients.[4] The higher operative rate in our study may be due to more perforation peritonitis, intestinal obstruction and delayed referred cases. WSES guidelines for perforated peptic ulcer stress early recognition, resuscitation and timely source control in perforation.[11] For acute pancreatitis, the revised Atlanta classification separates mild, moderately severe and severe disease, which supports why selected pancreatitis cases can be managed conservatively when there is no surgical indication.[14]

Mortality was 33 (20.9%) in the present study. This is higher than Rani et al., who reported 30-day mortality of 10 (11.4%) among surgically managed small bowel obstruction patients.[6] The difference may be due to inclusion of perforation peritonitis, shock at admission, sepsis and elderly patients in the present cohort. Secondary peritonitis is known to require early diagnosis, source control, antibiotics and organ support and delay can worsen outcome.[15] The higher mortality should therefore be interpreted as a marker of disease severity and late presentation rather than only a failure of operative care.

On analysis of factors associated with mortality, age above 60 years, presentation after 24 hours, shock at admission and clinical sepsis/peritonitis showed significant association. Presentation after 24 hours had odds ratio 5.51. Clinical sepsis/peritonitis had odds ratio 5.57 and shock at admission had odds ratio 4.41. These findings are clinically expected because delay allows progression from local pathology to contamination, dehydration, sepsis and multi-organ dysfunction. Operative management showed higher mortality numerically, but it was not statistically significant. This should not be interpreted as surgery increasing mortality because operated patients had more severe disease at baseline.

The strength of this study is that it covers demographic profile, clinical presentation, investigations, diagnosis, operative pattern and short-term outcome in the same cohort. The addition of delayed presentation, shock, sepsis/peritonitis and mortality association makes the analysis more clinically useful.

The main limitation is that this is a single-centre descriptive study and the findings may not represent other hospitals with different referral patterns. Some categories had small numbers. Confounding factors such as nutritional status, antibiotic use before admission, duration of resuscitation, intraoperative contamination grade and postoperative care differences were not adjusted. The present manuscript is a teaching draft prepared with simulated aligned data, so actual institutional records are required before any submission.

CONCLUSION

Acute abdomen in this cohort showed male predominance and a high burden of perforation peritonitis and intestinal obstruction. Most patients required emergency surgery. Delayed presentation, shock at admission, clinical sepsis/peritonitis and age above 60 years were significantly associated with mortality. Early referral, rapid diagnosis, correction of dehydration and electrolyte imbalance and timely operative decision remain important in improving outcome.

REFERENCES

1. Macaluso CR, McNamara RM. Evaluation and management of acute abdominal pain in the emergency department. Int J Gen Med. 2012;5:789-797. doi:10.2147/IJGM.S25936.
2. Punja VP, Schenarts PJ, editors. Emergency general surgery. Surg Clin North Am. 2023;103(6).
3. Hendrickson M, Naparst TR. Abdominal surgical emergencies in the elderly. Emerg Med Clin North Am. 2003;21(4):937-969. doi:10.1016/S0733-8627(03)00088-1.
4. Shinde V, Dixit Y, Penmetsa P, Nair KR. Clinical and epidemiological profile of patients presenting with acute abdomen to the emergency department of a tertiary care hospital. Cureus. 2024;16(8):e67017. doi:10.7759/cureus.67017.

5. Chanana L, Jegaraj MA, Kalyaniwala K, Yadav B, Abilash K. Clinical profile of non-traumatic acute abdominal pain presenting to an adult emergency department. J Family Med Prim Care. 2015;4(3):422-425. doi:10.4103/2249-4863.161344.
6. Rani S, Puranik A, Chaudhary R, Elhence P, Yadav T, Varshney VK. Clinico-epidemiological analysis of small bowel obstruction in adults at a tertiary care center in India. Cureus. 2024;16(6):e63278. doi:10.7759/cureus.63278.
7. Kelen GD, Wolfe R, D'Onofrio G, Mills AM, Diercks D, Stern SA, et al. Emergency department crowding: The canary in the health care system. NEJM Catalyst Innov Care Deliv. 2021;2(5). doi:10.1056/CAT.21.0183.
8. Hameed T, Kumar A, Sahni S, Bhatia R, Vidhyarthy AK. Emerging spectrum of perforation peritonitis in developing world. Front Surg. 2020;7:50. doi:10.3389/fsurg.2020.00050.
9. Jhobta RS, Attri AK, Kaushik R, Sharma R, Jhobta A. Spectrum of perforation peritonitis in India: review of 504 consecutive cases. World J Emerg Surg. 2006;1:26. doi:10.1186/1749-7922-1-26.
10. Bali RS, Verma S, Agarwal PN, Singh R, Talwar N. Perforation peritonitis and the developing world. ISRN Surg. 2014;2014:105492. doi:10.1155/2014/105492.
11. Tarasconi A, Coccolini F, Biffl WL, Tomasoni M, Ansaloni L, Picetti E, et al. Perforated and bleeding peptic ulcer: WSES guidelines. World J Emerg Surg. 2020;15:3. doi:10.1186/s13017-019-0283-9.
12. Ten Broek RPG, Krielen P, Di Saverio S, Coccolini F, Biffl WL, Ansaloni L, et al. Bologna guidelines for diagnosis and management of adhesive small bowel obstruction: 2017 update of the evidence-based guidelines from the World Society of Emergency Surgery ASBO working group. World J Emerg Surg. 2018;13:24. doi:10.1186/s13017-018-0185-2.
13. Di Saverio S, Podda M, De Simone B, Ceresoli M, Augustin G, Gori A, et al. Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines. World J Emerg Surg. 2020;15:27. doi:10.1186/s13017-020-00306-3.
14. Banks PA, Bollen TL, Dervenis C, Gooszen HG, Johnson CD, Sarr MG, et al. Classification of acute pancreatitis 2012: revision of the Atlanta classification and definitions by international consensus. Gut. 2013;62(1):102-111. doi:10.1136/gutjnl-2012-302779.
15. Ross JT, Matthay MA, Harris HW. Secondary peritonitis: principles of diagnosis and intervention. BMJ. 2018;361:k1407. doi:10.1136/bmj.k1407.