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Analytic Study of Cases of Acute Abdomen Correlating clinically, Radiologically, and Intraoperatively

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Abstract

Background:
Acute abdomen is a common clinical condition requiring prompt diagnosis and surgical intervention. Accurate correlation between clinical findings, radiological investigations, and intraoperative observations is crucial for effective management.

Objective:
To correlate clinical findings with radiological and intraoperative diagnoses in patients presenting with acute abdomen.

Methods:
A prospective observational study was conducted on 125 patients with acute abdominal pain of non-traumatic origin who underwent surgical intervention. Clinical assessments were documented via structured proformas. Radiological imaging (X-ray, USG, CT) was performed based on physician discretion. Intraoperative findings were used as the definitive diagnosis.
Statistical analysis was performed using IBM SPSS 2G.0. Results:
The most common causes of acute abdomen were acute appendicitis (32%), peptic ulcer perforation (30%), and intestinal obstruction (1G%). Mean patient age was 35.88 ± 12.55 years, with a male-to-female ratio of 3.55:1. Radiological imaging showed strong diagnostic accuracy, particularly in peptic ulcer perforation (100% gas under diaphragm), and intestinal obstruction (100% with multiple air-fluid levels). Clinical and radiological correlations varied by diagnosis and symptom profile.

Conclusion:
Clinical and radiological evaluation play a complementary role in diagnosing acute abdomen. Correlation with intraoperative findings confirms that timely imaging and clinical judgment are indispensable for optimal surgical decision-making.

Keywords: NIL

Introduction

Acute abdomen represents a group of urgent abdominal conditions requiring surgical attention. Despite advances in diagnostic modalities, clinical acumen remains essential. This study aims to evaluate the correlation between clinical, radiological, and intraoperative findings in acute abdominal emergencies.

Aims and Objectives

To study the correlation of clinical findings with radiological diagnosis.

To evaluate presentation patterns of acute abdomen.

To assess the accuracy of clinical and radiological diagnoses using intraoperative findings as gold standard.

Materials and Methods

Study Design: Prospective observational study Setting: Department of Surgery, VDGMC, Latur Sample Size: 125 patients

Duration: April 2023 – March 2025 Inclusion Criteria:

1. Patients presenting to emergency department with clinical diagnosis of acute abdomen
2. Underwent surgical intervention Exclusion Criteria:
3. Pediatric patients (<14 years)
4. Pregnant women
5. Gynaecological and conservatively managed cases
6. Immunocompromised patients or those on chemotherapeutic agents
7. Patients treated elsewhere
8. Mentally ill or uncooperative patients Data Collection:
9. Clinical history and examination
10. Radiological investigations (X-ray, USG, CT)
11. Intraoperative findings
12. Laboratory parameters (CBC, ESR, Urine R/M, Widal, aspiration if required) Statistical Analysis:
13. Descriptive statistics
14. Sensitivity, specificity, PPV, NPV
15. p-values <0.05 considered significant

Observations and Results4.1 Etiology of Acute Abdomen

Observations and Results

Etiology of Acute Abdomen

1. Appendicitis (40 cases, 32%)
2. Peptic Ulcer Perforation (38 cases, 30%)
3. Intestinal Obstruction (20 cases, 1G%)
4. Others: Cholecystitis, Ileal perforation, Hernia, Pancreatitis, etc.

Figure - causes of acute abdomen as noted at operation

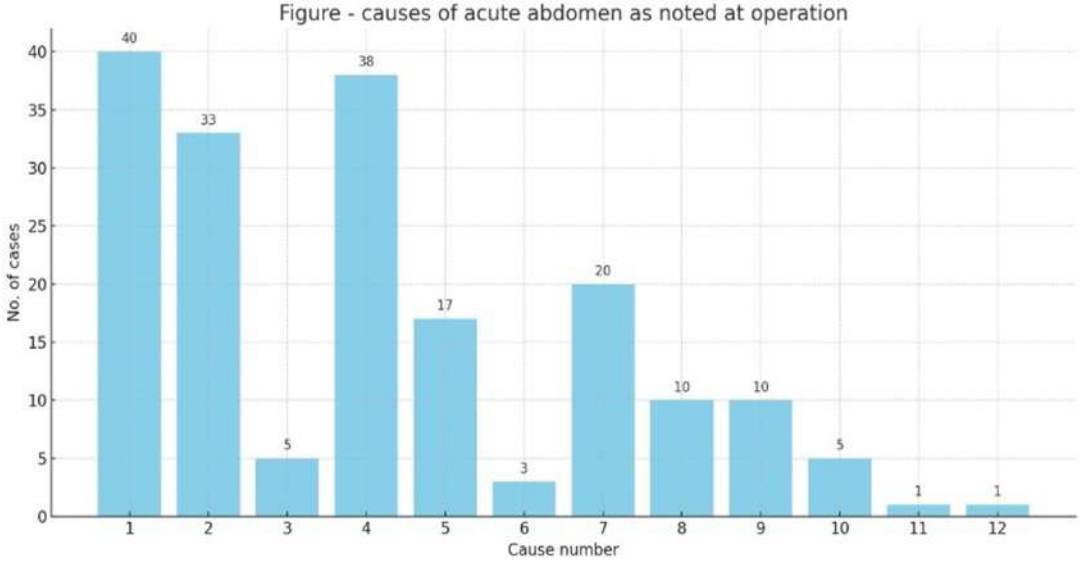

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Table-1 Causes of acute abdomen as noted at operation

Causes of acute abdomen	No. of cases	Percentage
Acute appendicitis	40	32
Perforated duodenal ulcer	33	
Perforated gastric ulcer	5	
Perforated Peptic Ulcer	38	30
Intestinal obstruction, small bowel	17	
Intestinal obstruction, large bowel	3	
Intestinal obstruction	20	16
Acute cholecystitis	10	8
Ileal perforation	10	8
Obstructed hernia	5	4
Necrotizing pancreatitis	1	1
Colonic perforation	1	1

Demographics

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Age Group	Males	Females	Total	Cumulative Frequency
10-19	10	3	13	10%
20-29	25	5	30	34%
30-39	22	6	28	56%
40-49	22	6	28	78%
50-59	17	9	26	100%
Total	96	29	125	100%

Mean Age: 35.88 ± 12.55 years

Significant age differences between disease groups ($p < 0.05$)

Table-5 Sex ratio by causes of acute abdomen.

Cause of acute abdomen	Sex Ratio (Males: Females)
Acute appendicitis	2.6: 1
Peptic ulcer perforation	5 : 1
Intestinal obstruction	3.2:1
Illeal perforation	3.5: 0
Acute cholecystitis	0:8
Miscellaneous	2:1

Sex Ratio: M:F = 3.55:1

All cholecystitis cases were female

Male predominance was statistically significant ($p = 0.004$)

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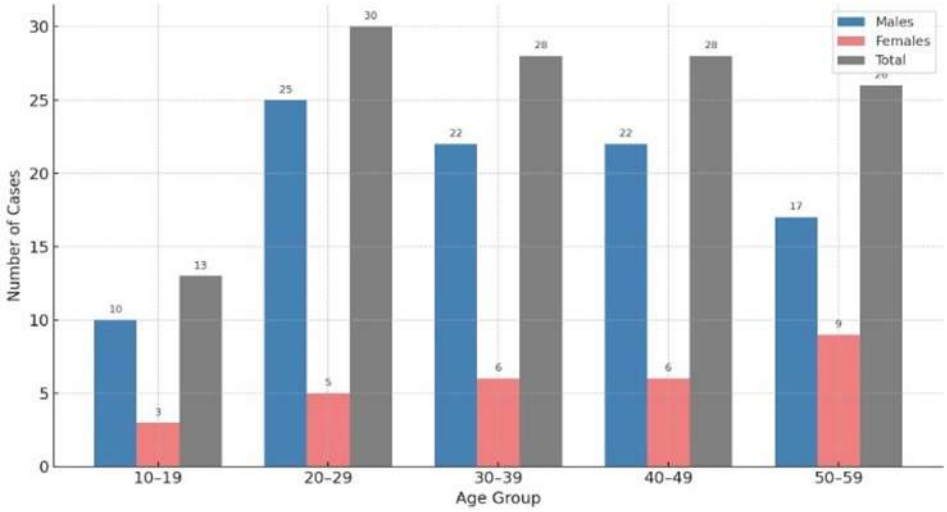

Cause	Mean age Yrs.	SD Yrs.
Acute Appendicitis	28.6	11.73
Peptic ulcer perforation	38.53	11.6
Intestinal Obstruction	42.13	9.1
Ileal perforation	36.7	18.32
Miscellaneous	33	10.81

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Table-3 Comparative age distribution of acute appendicitis and peptic ulcer perforation:-

Age Group	Acute Appendicitis	Peptic ulcer Perforation
10-19	10	3
20-29	13	5
30-39	9	13
40-49	5	10
50-59	3	7

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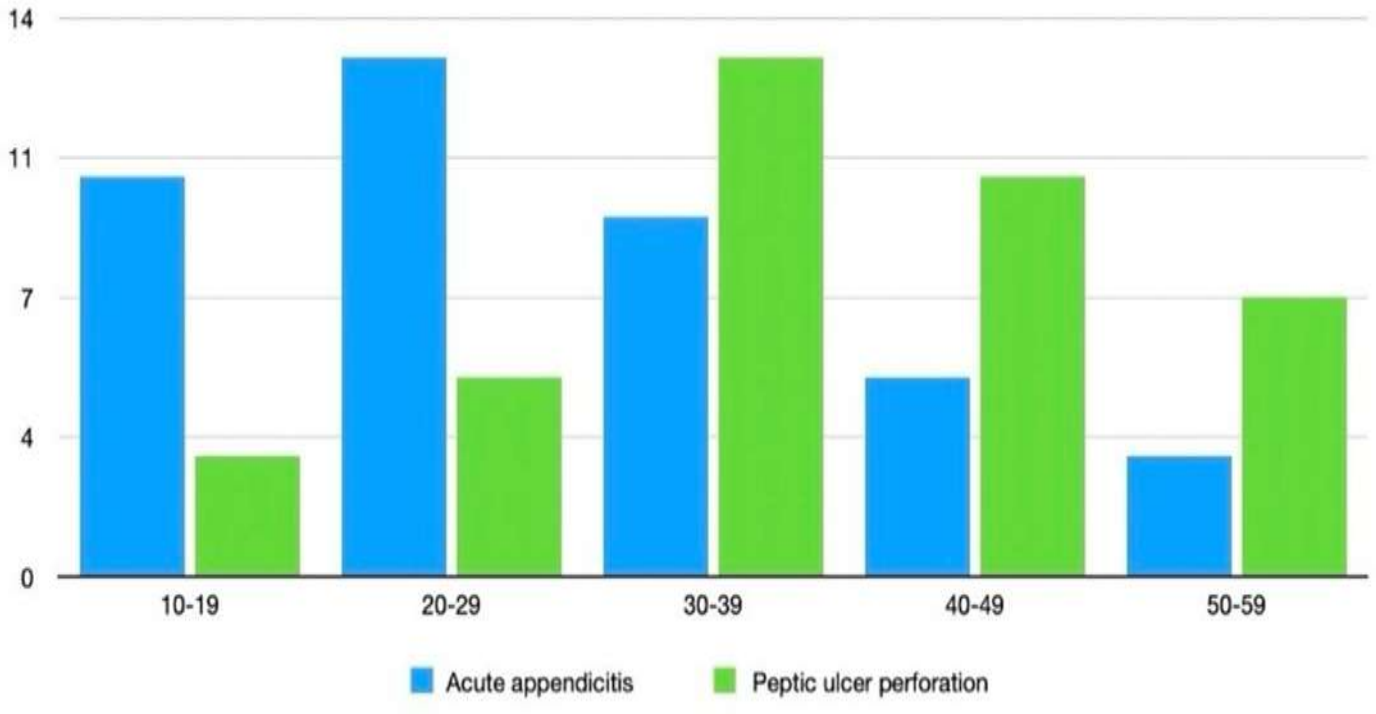

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Clinical Presentation

Pain: Universal symptom

Mean Duration: 53.7G ± 1U.84 hours

Site varied:

Epigastric (ulcer), Umbilical (appendicitis, obstruction), RIF (appendicitis at admission), Diffuse (perforation, ileal)

Table-6 The presenting symptoms in 125 cases of acute abdomen :-

Symptom	Frequency	Percent
Pain	125	100
Vomiting	85	68
Constipation	53	42
Fever following pain	35	28
Fever before pain	15	12
Diarrhoea	20	16
Blood in stools	5	4

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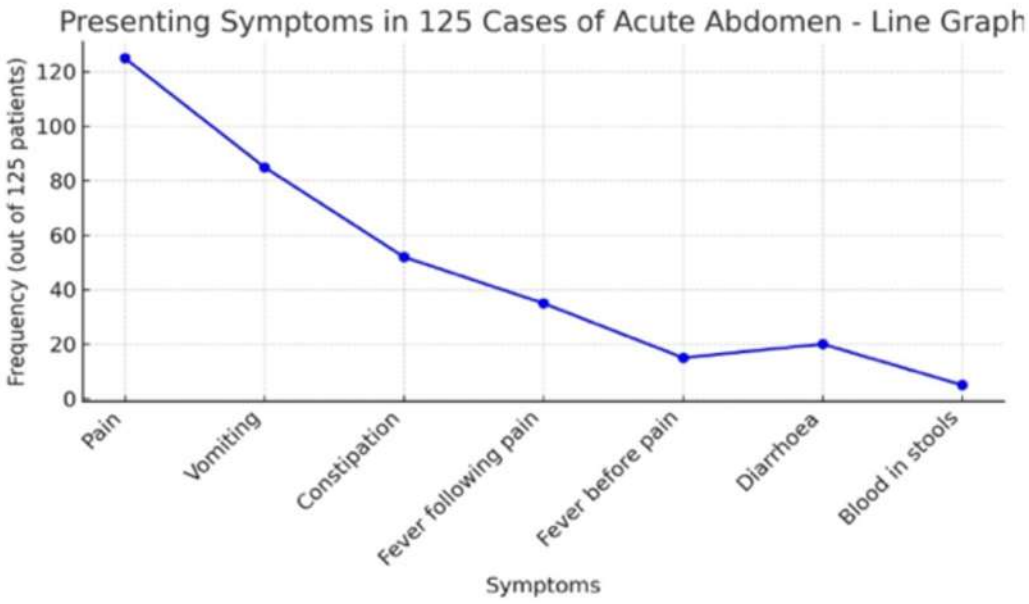
Figure -4



1. Pain
2. Vomiting
3. Constipation
4. Fever following pain
5. Fever before pain
6. Diarrhoea
7. Blood in stools

Signs

1. Common Findings: Tenderness (100%), guarding, distension, tachycardia
2. Cholecystitis: Pain in R hypochondrium, radiation to back
3. Appendicitis: RIF tenderness, guarding, rigidity
4. Obstruction: Distension, abnormal bowel sounds

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Table-9: Four leading signs in different kinds of acute abdomen:-

Type of acute abdomen	First leading feature	Second leading feature	Third leading feature	Fourth leading feature
Acute appendicitis	Tenderness (100%)	Guarding (75%) -	Tachycardia (68.8%)	Fever (43.8%)
Peptic Ulcer Perforation	Tenderness (100%)	Obliteration of liver dullness (100%)	Guarding (100%)	Rigidity (100%)
Intestinal Obstruction	Tenderness (100%)	Guarding (87.5%)	Abnormal bowel sounds (87.5%)	Abdominal Distention (75%)
Ileal Perforation	Tenderness (100%)	Fever (100%)	Guarding + Rigidity (100%)	Obliteration of liver dullness (100%)
Acute Cholecystitis	Tenderness (100%)	Guarding (100%)	-	-

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e-8 Signs in 125 cases of acute abdomen :-

Sign	Frequency	Percent
Abdominal distension	75	60
Tenderness	125	100
Guarding	110	88
Rigidity	70	56
Liver dullness obliteration	58	46
Free Fluid	63	50
Fever	50	40
Tachycardia	68	54
Abdominal mass	8	6
Tenderness per rectum	25	20
Abolished/ diminished bowel sounds	60	48
Increased bowel sounds	5	4
Shock	43	34
Dehydration	43	34

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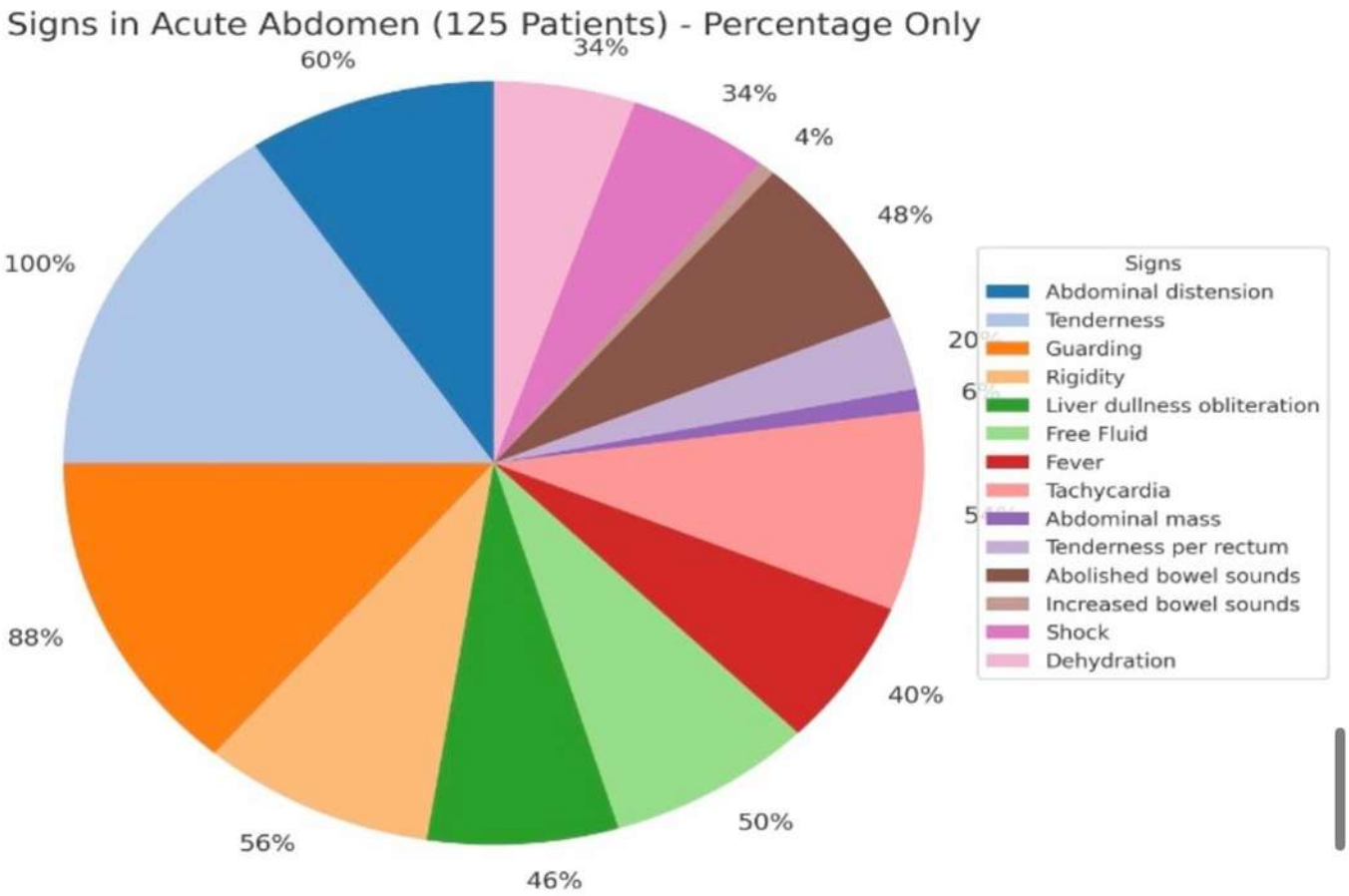
Figure-5



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Radiological Findings

1. X-ray taken in 75 cases
2. Peptic ulcer perforation: 100% had gas under diaphragm
3. Intestinal obstruction: 100% showed multiple air-fluid levels
4. Ileal perforation: Gas under diaphragm (70%)
5. Diagnostic accuracy was high when clinical suspicion was strong

Discussion

The study underscores the value of clinical skills in diagnosing acute abdomen. Radiology provided significant confirmation, especially in cases like peptic ulcer perforation and bowel obstruction. However, in complex or overlapping presentations, surgical exploration remained definitive.

Conclusion

Clinical evaluation and radiological imaging, when combined, can lead to early and accurate diagnosis of acute abdominal emergencies. Surgical exploration continues to be the gold standard. Better diagnostic accuracy ultimately leads to reduced morbidity and improved patient outcomes.

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