EAS Journal of Radiology and Imaging Technology
Abbreviated Key Title: EAS J Radiol Imaging Technol
ISSN: 2663-1008 (Print) & ISSN: 2663-7340 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-8 | Issue-6 | Nov-Dec-2026 | DOI: https://doi.org/10.36349/easjrit.2026.v08i06.005

Original Research Article

A Prospective Observational Study on Utilisation of Computed Tomography and Ultrasound in Evaluation of Non-Traumatic Acute Abdomen Among Adults

Dr. Abdul Majeed K[1]*, Dr. Sunil S Patil[2], Dr. Shephali S Pawar[3]

[1]Junior Resident, Department of Radiodiagnosis, B. J. Government Medical College & Sassoon General Hospital, Pune, (MH) India
[2]Professor, Department of Radiodiagnosis, B. J. Government Medical College & Sassoon General Hospital, Pune, (MH) India
[3]Professor and Head of Department, Department of Radiodiagnosis, B. J. Government Medical College & Sassoon General Hospital, Pune, (MH) India

Article History
Received: 09.09.2026
Accepted: 05.11.2026
Published: 09.11.2026

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background:*** Non-traumatic acute abdomen is a common emergency presentation requiring timely diagnosis to guide appropriate treatment. Clinical assessment alone may not reliably identify the underlying pathology, making imaging essential. ***Aim:*** To evaluate the utilisation of ultrasonography (USG) and computed tomography (CT) in the assessment of non-traumatic acute abdomen among adults and compare their diagnostic accuracy and contribution to management. ***Methods:*** This prospective observational study included 90 adult patients presenting with non-traumatic acute abdomen. Clinical findings and admission diagnoses were recorded. All patients underwent USG and CT evaluation, and imaging findings were compared with the final diagnosis and, where available, operative findings. Diagnostic accuracy and changes in management following imaging were assessed. ***Results:*** The mean age of participants was 42.1 ± 14.2 years, and 62.2% were male. Acute appendicitis was the most common final diagnosis (25.6%), followed by intestinal obstruction and ureteric colic/urolithiasis (13.3% each). The admission clinical diagnosis was correct in 54.4% of cases. Overall diagnostic accuracy was 85.6% for USG and 95.6% for CT; the difference was not statistically significant (p=0.052). Among patients with operative findings, diagnostic concordance was 87.0% for USG and 96.3% for CT. USG was sufficient to guide management in 62.2% of patients, whereas CT altered the management plan in 37.8% and helped avert potentially unnecessary surgery in 11.1%. USG findings were equivocal in 10.0% of cases, while CT findings were indeterminate in 4.4% in the present study. ***Conclusion:*** USG is a useful initial investigation for adult patients with non-traumatic acute abdomen, while CT provides additional diagnostic clarity and influences management when further evaluation is required. A selective, sequential imaging approach may support appropriate clinical decision-making.

Keywords: Acute abdomen.

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Non-traumatic acute abdomen is one of the most common and clinically challenging presentations encountered in emergency departments. It encompasses a wide spectrum of intra-abdominal disorders, ranging from self-limiting conditions to life-threatening emergencies requiring urgent surgical intervention. Acute abdominal pain accounts for approximately 7–10% of emergency department visits, and its underlying causes vary considerably according to age, sex and associated clinical conditions. In a large retrospective study involving 5,340 patients, Cervellin *et al.,* reported that non-specific abdominal pain and renal colic constituted the predominant causes of acute abdominal presentations.[1] In an Indian tertiary care setting, Thakur and Kumar reported that acute abdominal pain accounted for 14.2% of emergency hospital admissions, with acute appendicitis being the leading surgical cause.[2] Similarly, Kumar *et al.,* identified peptic ulcer disease, acute appendicitis and intestinal obstruction

***Corresponding Author:** Dr. Abdul Majeed K
Junior Resident, Department of Radiodiagnosis, B. J. Government Medical College & Sassoon General Hospital, Pune, (MH)India

among the common causes of non-traumatic acute abdomen in their prospective study of 200 patients.[3]

The diagnosis of acute abdomen remains challenging because different intra-abdominal conditions frequently present with overlapping clinical symptoms and physical findings. Clinical examination alone may not reliably establish the underlying pathology, particularly in patients with atypical presentations. Salem *et al.,* reported that the admission clinical diagnosis was correct in only 47% of patients evaluated for acute abdomen, highlighting the importance of diagnostic imaging in clinical decision-making.[4] Similarly, Ng *et al.,* demonstrated the additional diagnostic value of early abdominopelvic computed tomography in patients presenting with acute abdominal pain of uncertain aetiology.[5]

Ultrasonography (USG) is widely used as the initial imaging modality because of its non-invasive nature, absence of ionising radiation, relatively low cost and widespread availability. It provides real-time assessment of abdominal organs and is particularly useful in evaluating hepatobiliary disorders, urinary tract abnormalities, appendicitis and intestinal pathology. Agrawal and Yadav demonstrated the diagnostic usefulness of ultrasonography in various acute abdominal conditions, supporting its role as an important first-line investigation.[6] However, its diagnostic performance may be affected by operator dependency, obesity, overlying bowel gas and difficulty in evaluating certain retroperitoneal and deep intra-abdominal structures.

Computed tomography (CT), particularly multidetector computed tomography (MDCT), provides detailed cross-sectional anatomical evaluation and facilitates identification of complex intra-abdominal pathologies. It is particularly valuable in diagnosing intestinal obstruction, hollow viscus perforation, acute pancreatitis, mesenteric ischaemia and alternative causes of abdominal pain. Laméris *et al.,* demonstrated significantly higher sensitivity of CT compared with ultrasonography for detecting urgent conditions in patients with acute abdominal pain.[7] Van Randen *et al.,* also reported superior diagnostic performance of CT for several common causes of acute abdominal pain, including appendicitis and diverticulitis.[8] Chaurasia and Kumar highlighted the additional diagnostic contribution of CT in patients with negative, equivocal or inconclusive ultrasonographic findings.[9]

Despite its diagnostic advantages, CT utilisation requires consideration of ionising radiation exposure, contrast-related risks, cost and availability. Rud *et al.,* in their Cochrane systematic review, demonstrated high sensitivity and specificity of CT for diagnosing acute appendicitis in adults.[10] Furthermore, Hajibandeh *et al.,* reported that routine CT did not demonstrate a statistically significant advantage over selective CT in improving diagnostic accuracy or mortality among adults with non-traumatic acute abdominal pain.[11]

Therefore, the appropriate utilisation of USG and CT requires consideration of their complementary diagnostic capabilities rather than relying exclusively on either modality. Evaluating their diagnostic accuracy, correlation with final diagnoses and contribution to management decisions is essential for developing an effective imaging strategy. The present prospective observational study was undertaken to assess the utilisation of computed tomography and ultrasonography in evaluating non-traumatic acute abdomen among adults, with particular emphasis on their clinical utility in guiding surgical and conservative management.

METHODOLOGY

The present study was conducted as a prospective observational study employing a cross-sectional analytical framework at the Department of Radiodiagnosis, in collaboration with the Department of General Surgery, at a tertiary care centre over a period of 18 months. Adult patients aged 18 years and above presenting with non-traumatic acute abdominal pain and willing to provide informed consent were enrolled. Patients with traumatic acute abdomen, pregnancy, age below 18 years, refusal of consent, iodinated contrast allergy or serum creatinine above 1.5 mg/dL were excluded. A sample size of 90 was calculated using Cochran's formula, and systematic random sampling was employed by enrolling every fifth eligible patient. Demographic details, clinical history, examination findings, laboratory parameters and provisional clinical diagnoses were recorded using a structured case record form. All enrolled patients underwent transabdominal ultrasonography using a GE Voluson P8 system, followed by multidetector computed tomography using a Siemens SOMATOM Definition Edge 128-slice scanner. Final diagnoses were established using operative findings, histopathological examination where available, and clinical follow-up. Data were analysed using IBM SPSS Statistics version 26.0. Appropriate descriptive and inferential statistical tests were applied, and a p-value below 0.05 was considered statistically significant.[12]

RESULT

Table 1: Baseline demographic and clinical profile of patients with non-traumatic acute abdomen

Characteristic	n (%)
Age (years)	
18–30	20 (22.2)
31–45	31 (34.4)
46–60	32 (35.6)
>60	7 (7.8)
Mean ± SD (range)	42.1 ± 14.2 (18–80)
Sex	
Male	56 (62.2)
Female	34 (37.8)
Male : Female ratio	1.65 : 1
Duration of symptoms at presentation (hours)	
≤24	23 (25.6)
25–48	40 (44.4)
49–72	19 (21.1)
>72	8 (8.9)
Mean ± SD	40.6 ± 20.6
Median (IQR)	38 (24–52)
Presenting features	
Abdominal pain	89 (98.9)
Vomiting	32 (35.6)
Fever	21 (23.3)
Leucocytosis (TLC >11,000 cells/mm³)	64 (71.1)
Comorbidities	
Any comorbidity	18 (20.0)
Obesity	9 (10.0)
Diabetes mellitus	8 (8.9)
Hypertension	3 (3.3)
Ischaemic heart disease	0 (0.0)
No comorbidity	72 (80.0)

Table 2: Spectrum of final diagnoses, sex distribution and accuracy of the admission clinical diagnosis

Final diagnosis	n (%)	Male	Female	Clinical diagnosis correct, n/N (%)
Acute appendicitis	23 (25.6)	16	7	10/23 (43.5)
Intestinal obstruction	12 (13.3)	8	4	3/12 (25.0)
Ureteric colic / urolithiasis	12 (13.3)	10	2	6/12 (50.0)
Hollow viscus perforation	11 (12.2)	11	0	7/11 (63.6)
Acute cholecystitis	10 (11.1)	2	8	7/10 (70.0)
Acute pancreatitis	10 (11.1)	4	6	9/10 (90.0)
Mesenteric ischaemia	3 (3.3)	3	0	2/3 (66.7)
Acute diverticulitis	2 (2.2)	0	2	2/2 (100.0)
Others*	7 (7.8)	2	5	3/7 (42.9)
Total	**90 (100)**	**56**	**34**	**49/90 (54.4)**

Table 3: Diagnostic performance of ultrasonography (USG) versus computed tomography (CT)

Panel A. Overall diagnostic performance

Parameter	USG	CT	p value
Correct diagnosis, n (%)	77 (85.6)	86 (95.6)	0.052†
95% CI for accuracy	78.3–92.8	91.3–99.8	
Equivocal (USG) / indeterminate (CT), n (%)	9 (10.0)	4 (4.4)	
Incorrect diagnosis, n (%)	4 (4.4)	0 (0.0)	
Concordance with operative findings (n = 54), n (%)	47 (87.0)	52 (96.3)	0.182†

Panel B. Condition-specific diagnostic performance (%)

Final diagnosis (n)	USG Sens	USG Spec	USG PPV	USG NPV	USG Acc	CT Sens	CT Spec	CT PPV	CT NPV	CT Acc
Acute appendicitis (23)	87.0	100	100	95.7	96.7	100	100	100	100	100
Intestinal obstruction (12)	91.7	100	100	98.7	98.9	91.7	100	100	98.7	98.9
Hollow viscus perforation (11)	90.9	98.7	90.9	98.7	97.8	90.9	100	100	98.8	98.9
Acute cholecystitis (10)	80.0	100	100	97.6	97.8	90.0	100	100	98.8	98.9
Acute pancreatitis (10)	90.0	97.5	81.8	98.7	96.7	100	100	100	100	100
Ureteric colic / urolithiasis (12)	100	98.7	92.3	100	98.9	100	100	100	100	100

Table 4: Clinical utility of USG and CT in guiding management of non-traumatic acute abdomen

Panel A. Ability of each modality to predict the final management pathway

Parameter	USG	CT
Final management: surgical / conservative, n (%)	54 (60.0) / 36 (40.0)	54 (60.0) / 36 (40.0)
Unable to guide management (further imaging advised), n (%)	13 (14.4)	0 (0.0)
Correctly predicted final management, n (%)	55/77 (71.4)‡	66/90 (73.3)
Suggested surgery that was performed, n (%)	36/47 (76.6)	40/50 (80.0)
Suggested conservative care that was sufficient, n (%)	19/30 (63.3)	26/40 (65.0)
Cohen's κ with final management	0.399	0.455

Panel B. Impact of CT on management relative to USG, by final diagnosis

Final diagnosis (n)	CT changed management, n (%)	Unnecessary surgery averted by CT, n (%)
Acute appendicitis (23)	6 (26.1)	2 (8.7)
Intestinal obstruction (12)	5 (41.7)	3 (25.0)
Ureteric colic / urolithiasis (12)	5 (41.7)	4 (33.3)
Hollow viscus perforation (11)	4 (36.4)	0 (0.0)
Acute cholecystitis (10)	3 (30.0)	0 (0.0)
Acute pancreatitis (10)	4 (40.0)	1 (10.0)
Mesenteric ischaemia (3)	3 (100.0)	0 (0.0)
Acute diverticulitis (2)	0 (0.0)	0 (0.0)
Others (7)	4 (57.1)	0 (0.0)
Total (90)	**34 (37.8)**	**10 (11.1)**

Panel C. Nature of CT-induced management change and adequacy of USG

Parameter	n (%)
Type of change (n = 34)	
Surgical → medical/conservative	8 (23.5)
Medical/conservative → surgical	8 (23.5)
Conservative/unknown → surgical	7 (20.6)
New diagnosis identified, management clarified	6 (17.6)
Change in surgical approach	5 (14.7)
Adequacy of USG (n = 90)	
USG sufficient, CT confirmatory only	56 (62.2; 95% CI 52.2–72.2)
CT indispensable	34 (37.8; 95% CI 27.8–47.8)

A total of 90 patients presenting with non-traumatic acute abdomen were included in the study. The mean age of the participants was 42.1 ± 14.2 years, with an age range of 18–80 years. The majority of patients belonged to the 46–60 years age group (35.6%), followed by 31–45 years (34.4%). Males constituted 62.2% of the study population, while females accounted for 37.8%, with a male-to-female ratio of 1.65:1. Regarding the duration of symptoms, 44.4% of patients presented within 25–48 hours, while 25.6% presented within 24 hours. The mean duration of symptoms was 40.6 ± 20.6 hours, with a median of 38 hours (IQR: 24–52). Abdominal pain was the predominant presenting complaint (98.9%), followed by vomiting (35.6%) and

fever (23.3%). Leucocytosis (total leucocyte count above 11,000 cells/mm³) was observed in 71.1% of patients. Most patients (80.0%) had no documented comorbidity, while obesity (10.0%) and diabetes mellitus (8.9%) were the most frequently reported comorbid conditions. Although the prevalence of diabetes increased across successive age groups, the association was not statistically significant ($\chi^2 = 6.04$, $p = 0.110$).

Acute appendicitis was the most common final diagnosis, accounting for 25.6% of cases, followed by intestinal obstruction and ureteric colic/urolithiasis, each contributing 13.3%. Hollow viscus perforation was observed in 12.2% of patients, while acute cholecystitis and acute pancreatitis each accounted for 11.1%. Mesenteric ischaemia and acute diverticulitis were less frequent, accounting for 3.3% and 2.2%, respectively. Other diagnoses included omental infarction, epiploic appendagitis and non-specific abdominal pain without demonstrable pathology on either imaging modality. A statistically significant association was observed between sex and the final diagnostic category ($\chi^2 = 27.75$, $p = 0.001$). The admission clinical diagnosis was correct in 49 patients (54.4%). Condition-specific clinical diagnostic accuracy was highest for acute diverticulitis (100%) and acute pancreatitis (90.0%), whereas the lowest accuracy was observed for intestinal obstruction (25.0%) and acute appendicitis (43.5%).

Ultrasonography correctly identified the final diagnosis in 77 patients (85.6%), whereas computed tomography correctly diagnosed 86 patients (95.6%). The difference in overall diagnostic accuracy between the two modalities was 10 percentage points; however, it did not reach statistical significance (McNemar's test, $p = 0.052$). The 95% confidence intervals for diagnostic accuracy were 78.3–92.8% for USG and 91.3–99.8% for CT. Equivocal or non-diagnostic findings were observed in 10.0% of USG examinations compared with 4.4% of CT examinations. Incorrect diagnoses were recorded in 4.4% of USG examinations, whereas no incorrect diagnoses were reported with CT. Both modalities demonstrated diagnostic concordance in 81.1% of cases. Among the 54 patients who underwent surgery, USG findings were concordant with operative findings in 47 patients (87.0%), compared with 52 patients (96.3%) for CT; this difference was not statistically significant (McNemar's test, $p = 0.182$).

Condition-specific diagnostic assessment demonstrated that CT had sensitivity equal to or higher than USG across the six major diagnostic categories evaluated. For acute appendicitis, USG demonstrated a sensitivity of 87.0% and accuracy of 96.7%, while CT achieved 100% sensitivity and accuracy. In intestinal obstruction, both modalities showed a sensitivity of 91.7% and accuracy of 98.9%. For hollow viscus perforation, the sensitivity was 90.9% with both modalities, while diagnostic accuracy was 97.8% for USG and 98.9% for CT. In acute cholecystitis, sensitivity was 80.0% for USG and 90.0% for CT, with corresponding accuracies of 97.8% and 98.9%. For acute pancreatitis, USG demonstrated a sensitivity of 90.0% and accuracy of 96.7%, whereas CT achieved 100% sensitivity and accuracy. Both modalities demonstrated high diagnostic performance in ureteric colic/urolithiasis, with 100% sensitivity; the corresponding diagnostic accuracy was 98.9% for USG and 100% for CT.

Regarding clinical utility, the final management plan involved surgical intervention in 54 patients (60.0%) and conservative management in 36 patients (40.0%). USG was unable to provide definitive management guidance in 13 patients (14.4%), for whom further imaging was advised. Among the 77 patients in whom USG provided a management recommendation, the predicted management pathway was correct in 55 (71.4%). CT correctly predicted the final management pathway in 66 patients (73.3%). The agreement between imaging-suggested and final management was fair for USG ($\kappa = 0.399$) and moderate for CT ($\kappa = 0.455$). CT altered the management decision relative to USG in 34 patients (37.8%). These changes included conversion from surgical to medical or conservative management in eight patients (23.5%), conversion from medical or conservative management to surgery in eight (23.5%), identification of a need for surgery in seven (20.6%), identification of a new diagnosis or clarification of management in six (17.6%), and modification of the surgical approach in five (14.7%). CT helped avert potentially unnecessary surgical intervention in 10 patients (11.1%). This was most frequent in ureteric colic/urolithiasis (33.3%) and intestinal obstruction (25.0%). USG was sufficient to guide management in 56 patients (62.2%), whereas CT was considered indispensable in 34 patients (37.8%). The variation in CT-induced management changes across diagnostic categories was not statistically significant ($\chi^2 = 9.05$, $p = 0.338$).

DISCUSSION

The present study evaluated the diagnostic performance and clinical utility of ultrasonography and computed tomography in 90 adults presenting with non-traumatic acute abdomen. The findings demonstrated that both imaging modalities contributed to diagnosis and management, although CT showed higher overall diagnostic accuracy and influenced management decisions in a considerable proportion of patients.

The mean age of the study population was 42.1 ± 14.2 years, and males constituted 62.2% of the participants. Acute appendicitis was the most frequent diagnosis (25.6%), followed by intestinal obstruction and ureteric colic/urolithiasis. The predominance of these conditions reflects the varied gastrointestinal and urinary causes of acute abdominal presentations. Cervellin *et al.,* reported a broad spectrum of causes among patients presenting with acute abdominal pain in

a large emergency department cohort.[1] Similarly, Thakur and Kumar described the epidemiological profile of acute abdominal pain in an Indian tertiary care hospital, while Kumar *et al.,* reported appendicitis and intestinal obstruction among the important causes of acute abdomen.[2,3] Differences in the frequency of individual diagnoses may be related to variations in referral patterns, study populations and geographical settings.

An important finding was that the admission clinical diagnosis was correct in only 54.4% of patients. The lowest clinical diagnostic accuracy was observed in intestinal obstruction (25.0%) and acute appendicitis (43.5%). This indicates that clinical assessment alone may be insufficient to establish the underlying pathology in a substantial proportion of patients, particularly when different abdominal conditions present with overlapping clinical features. Salem *et al.,* highlighted the diagnostic contribution of CT in patients with acute abdomen, while Ng *et al.,* demonstrated the usefulness of early abdominopelvic CT in patients with acute abdominal pain of uncertain cause. [4,5] The findings of the present study further emphasise the importance of radiological evaluation in improving diagnostic certainty.

In the present study, USG achieved an overall diagnostic accuracy of 85.6%, compared with 95.6% for CT. Although CT showed a 10-percentage-point higher accuracy, the difference did not reach statistical significance ($p = 0.052$). This finding suggests a numerical diagnostic advantage for CT, although the study did not establish a statistically significant difference between the two modalities. USG demonstrated good diagnostic performance and was able to provide a correct diagnosis in more than four-fifths of the patients. Its advantages include the absence of ionising radiation, relatively low cost, availability and real-time assessment. Agrawal and Yadav reported the diagnostic usefulness of ultrasonography in acute abdominal conditions, supporting its role as an important initial imaging investigation.[6] However, its diagnostic performance may be affected by bowel gas, body habitus and operator dependence.

CT demonstrated fewer indeterminate examinations and higher overall diagnostic accuracy. These findings are consistent with the work of Laméris *et al.,*, who evaluated imaging strategies for detecting urgent conditions in patients with acute abdominal pain.[7] Van Randen *et al.,* also compared the diagnostic accuracy of USG and CT in common causes of acute abdominal pain and demonstrated the importance of both modalities in the diagnostic pathway.[8] Chaurasia and Kumar further described the role of CT in the evaluation of non-traumatic acute abdomen among adults.[9] In the present study, CT achieved 100% sensitivity and accuracy for acute appendicitis, acute pancreatitis and ureteric colic/urolithiasis. Nevertheless, USG also demonstrated high diagnostic performance in several conditions, particularly intestinal obstruction and ureteric colic. These findings suggest that USG may provide adequate diagnostic information in selected patients, while CT offers additional diagnostic certainty when further anatomical assessment is required.

Among patients who underwent surgery, CT demonstrated higher concordance with operative findings than USG (96.3% versus 87.0%). Although this difference was not statistically significant, the higher concordance with CT may reflect its ability to provide detailed cross-sectional anatomical information and demonstrate the extent of disease and associated complications. This additional information may be useful in preoperative assessment and surgical planning.

The clinical utility of imaging was particularly evident in its influence on management decisions. CT altered the management pathway relative to USG in 37.8% of patients. The changes included escalation from conservative to surgical management, conversion from surgical to conservative treatment, identification of additional diagnoses and modification of the planned surgical approach. Importantly, CT helped avert potentially unnecessary surgical intervention in 11.1% of patients, particularly those with ureteric colic/urolithiasis and intestinal obstruction. These findings indicate that the contribution of CT extended beyond diagnostic accuracy and had a direct impact on therapeutic decision-making.

USG was sufficient to guide management in 62.2% of patients, whereas CT was considered indispensable in 37.8%. This finding supports a selective rather than routine approach to CT utilisation. Rud *et al.,*, in their Cochrane review, evaluated the diagnostic accuracy of CT for acute appendicitis in adults and established its important role in the diagnostic evaluation of suspected appendicitis. [10] However, the need for CT should also be considered in relation to radiation exposure, contrast-related risks and healthcare costs. Hajibandeh *et al.,* compared routine and selective CT strategies in non-traumatic acute abdominal pain and reported no statistically significant advantage of routine CT over selective CT in overall diagnostic accuracy, mortality or length of hospital stay. [11] The findings of the present study are consistent with the clinical relevance of selective CT utilisation, particularly when USG is equivocal, non-diagnostic or insufficient to guide management.

Overall, the findings suggest that USG and CT should be regarded as complementary imaging modalities. USG provided adequate diagnostic and management information in a majority of patients, while CT offered additional diagnostic information and modified management in more than one-third of the study population. A sequential imaging approach, beginning with USG and followed by CT when clinically indicated, may therefore be appropriate for the evaluation of non-traumatic acute abdomen. However,

the findings should be interpreted in the context of the relatively small sample size and single-centre study setting. The non-significant difference in overall diagnostic accuracy also warrants cautious interpretation, and larger multicentre studies would be useful to establish the comparative diagnostic and management benefits of the two modalities.

CONCLUSION

Ultrasonography served as a useful initial imaging modality, while CT demonstrated higher diagnostic accuracy and significantly contributed to management decisions in patients with non-traumatic acute abdomen. CT altered the management plan in 37.8% of cases and helped avoid unnecessary surgery in 11.1%. The study supports a selective, sequential imaging approach, with CT used when ultrasonography is inconclusive or further diagnostic clarification is required.

REFERENCES

1. Cervellin G, Mora R, Ticinesi A, Meschi T, Comelli I, Catena F, *et al.,* Epidemiology and outcomes of acute abdominal pain in a large urban Emergency Department: retrospective analysis of 5,340 cases. Ann Transl Med. 2016;4(19):362. doi:10.21037/atm.2016.09.10.
2. Thakur JK, Kumar R. Epidemiology of acute abdominal pain: a cross-sectional study in a tertiary care hospital of Eastern India. Int Surg J. 2019;6(2):345-348. doi:10.18203/2349-2902.isj20190380.
3. Kumar NR, Krishna BS, Satyanarayana V, Reddy VV, Madhusudhan M, Subramanyam P. Study of clinical features and outcomes in patients presenting to the emergency department with acute abdomen. J Clin Sci Res. 2019;8(4):172-176. doi: 10.4103/JCSR.JCSR_110_19.
4. Salem TA, Molloy RG, O'Dwyer PJ. Prospective study on the role of the CT scan in patients with an acute abdomen. Colorectal Dis. 2005;7(5):460-466. doi:10.1111/j.1463-1318.2005.00822.x.
5. Ng CS, Watson CJE, Palmer CR, See TC, Beharry NA, Housden BA, *et al.,* Evaluation of early abdominopelvic computed tomography in patients with acute abdominal pain of unknown cause: prospective randomised study. BMJ. 2002;325(7377):1387-1389. doi:10.1136/bmj.325.7377.1387.
6. Agrawal P, Yadav A. Efficacy of ultrasound as a diagnostic tool in acute abdominal conditions: a descriptive study. Int J Anat Radiol Surg. 2021;10(2):SO08-SO11. doi:10.7860/IJARS/2021/46364.2643.
7. Laméris W, van Randen A, van Es HW, van Heesewijk JPM, van Ramshorst B, Bouma WH, *et al.,* Imaging strategies for detection of urgent conditions in patients with acute abdominal pain: diagnostic accuracy study. BMJ. 2009;338:b2431. doi:10.1136/bmj.b2431.
8. van Randen A, Laméris W, van Es HW, van Heesewijk JPM, van Ramshorst B, Ten Hove W, *et al.,* A comparison of the accuracy of ultrasound and computed tomography in common diagnoses causing acute abdominal pain. Eur Radiol. 2011;21(7):1535-1545. doi:10.1007/s00330-011-2087-5.
9. Chaurasia R, Kumar P. Role of computed tomography in non-traumatic acute abdomen in adults. Asian J Med Sci. 2022;13(11):232-237. doi:10.3126/ajms.v13i11.45440.
10. Rud B, Vejborg TS, Rappeport ED, Reitsma JB, Wille-Jørgensen P. Computed tomography for diagnosis of acute appendicitis in adults. Cochrane Database Syst Rev. 2019;(11):CD009977. doi: 10.1002/14651858.CD009977.pub2.
11. Hajibandeh S, Loutfi M, Hajibandeh S, Abulkhir A, Rehman S, Mansour M, *et al.,* Routine versus selective computed tomography in non-traumatic acute abdominal pain: meta-analysis of randomised trials. Langenbecks Arch Surg. 2020;405(3):283-291. doi:10.1007/s00423-020-01884-1.

Cite This Article: Majeed, A. K., Patil, S. S., & Pawar, S. S. (2026). A Prospective Observational Study on Utilisation of Computed Tomography and Ultrasound in Evaluation of Non-Traumatic Acute Abdomen Among Adults. *EAS J Radiol Imaging Technol, 8*(6), 179-185. https://doi.org/10.36349/easjrit.2026.v08i06.005