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Original Research Article

Validity of SECTRA table guided virtual CT scan with contrast for the diagnosis of query Acute surgical abdominal pain

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Abstract: ***Background***: This study examined the demographic, diagnostic, and clinical management characteristics of patients presenting with acute abdominal pain, with a specific focus on the performance of SECTRA table-guided CT scanning compared to CT and Ultrasound. Acute abdominal pain is a common and challenging presentation in emergency medicine, where diagnostic accuracy, timely decision-making, and cost-effectiveness are critical. The findings of this study were analy33333333333zed in the context of existing literature to provide insights into diagnostic performance, clinical outcomes, and implications for future practice. ***Objective:*** Evaluate diagnostic validity by assessing the sensitivity and specificity of SECTRA for diagnosing acute surgical abdominal pain compared with traditional diagnostic methods. Identify common pathologies associated with acute surgical abdominal pain. To study the incidence of acute abdominal emergencies. To analyse the nature, presentation, and causes of acute abdominal emergencies treated in surgical units. ***Patients and Methods***: Type of study: Diagnostic Prospective Cross-sectional study. Study setting: Emergency Department at 6th October University Hospital. Target population: patients older than 18th come to the Emergency Room presenting with acute abdominal pain, undergo CT imaging with oral and IV contrast as part of their diagnostic evaluation before any surgical intervention. ***Results:*** Analysis of data concordance revealed a striking disparity. In 48.3% (n=29) of cases, SECTRA CT was positive, but ultrasound was negative. This substantial discordance highlights the superior sensitivity of SECTRA technology. Crucially, there were four cases (7%) where ultrasound provided a positive diagnosis that SECTRA CT missed. Complete agreement between both modalities was observed in only 31.6% (n=19) of cases. SECTRA CT achieved excellent sensitivity at 65%, representing a 16% improvement over ultrasound's poor sensitivity of 49.1%. This indicates that SECTRA CT has a far superior ability to correctly identify patients with pathology. SECTRA CT achieved 100% diagnostic accuracy across three pathological categories: Appendicular Mass/Complications, Intestinal obstruction, and perforation. In contrast, ultrasound showed significant limitations, demonstrating complete diagnostic failure (0% accuracy) in colitis (0/6), acute pancreatitis (0/4), and perforation (0/5). Ultrasound also performed poorly in acute appendicitis (40.0% accuracy) and gall bladder pathology (55.5% accuracy). ***Conclusion:*** SECTRA provides essential diagnostic and clinical benefits for the assessment of acute abdominal pain, despite its high cost. Despite radiating risk, its superior accuracy makes it a tool worth integrating into the emergency protocol for selected cases. It's also recommended to incorporate artificial intelligence techniques to verify these results and strengthen diagnostic strategies in the care of acute abdominal pain cases.

Keywords: Acute abdominal pain SECTRA CT Diagnostic accuracy Emergency abdominal imaging Ultrasound comparison

INTRODUCTION

Acute3 abdomen is a clinical syndrome characterized by sudden onset of abdominal pain, which can be due to a variety of underlying conditions such as appendicitis, cholecystitis, diverticulitis, and perforated ulcers. Prompt and accurate diagnosis is

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crucial, as timely intervention can significantly reduce morbidity and mortality rates associated with these conditions ***(Tiwari and Haribhakti, 2022).***

Abdominal pain is among the most frequent causes of emergency department (ED) visits, comprising approximately 10 to 20% of all cases. Of the patients presenting with abdominal pain, a considerable proportion will necessitate surgical intervention. Estimates for acute surgical abdomen in emergency settings vary, but it is generally believed that 20 - 30% of patients with acute abdominal pain will eventually require surgery ***(Kapral et al., 2020).***

A descriptive retrospective study analyzed the medical records of 299 patients diagnosed with acute abdomen who were admitted between March 21, 2018, and March 21, 2019, to the general surgery ward at Aliabad Teaching Hospital. The findings indicated a higher prevalence in males, with a male-to-female ratio of 1.14:1. The largest cohort of patients was within the age range of 15 to 24 years (n = 122), constituting 40.8% ***(Danish, 2022).***

The predominant etiology identified for acute abdomen was acute appendicitis, comprising 57.5% of all admissions. Subsequently, there was an incidence of acute intestinal obstruction (20.7%) and acute cholecystitis (10.4%). The predominant complaint was abdominal discomfort, and the most often performed surgical procedures were open appendectomy for acute appendicitis, followed by exploratory laparotomy. The research reported a complication incidence of 17% and a death rate of 3.6% ***(Danish, 2022).***

Radiological investigation has also become a cornerstone in the diagnostic evaluation of acute abdomen, providing high-resolution images that can help identify the cause of pain. Non-invasive CT is particularly beneficial in ambiguous cases where the diagnosis is not immediately precise, guiding clinicians in decision-making ***(Xu, 2023).***

The SECTRA table is a sophisticated medical imaging system designed to support a range of imaging procedures, primarily in radiology departments, hospitals, and diagnostic centers. Manufactured by SECTRA, a global leader in medical imaging technology, the SECTRA table is engineered to enhance the efficiency, precision, and comfort of diagnostic imaging workflows ***(Horn and Benninger, 2025).***

SECTRA imaging systems, including the tables, are known for their integration with advanced imaging modalities such as X-ray, CT (Computed Tomography), MRI (Magnetic Resonance Imaging), fluoroscopy, and more ***(Horn and Benninger, 2025).***

The SECTRA table serves as the foundation for high-quality diagnostic imaging, offering features that enhance both the patient and clinician experience. Whether it's ensuring optimal positioning of patients for more explicit images, providing ergonomic design to reduce healthcare worker strain, or integrating seamlessly with imaging systems for improved workflow efficiency, the SECTRA table is an essential component of modern diagnostic practices ***(Horn and Benninger, 2025).***

AIM OF THE WORK

Evaluate Diagnostic Validity: Assess the sensitivity and specificity of SECTRA in diagnosing acute surgical abdominal pain compared to traditional diagnostic methods. Identify common pathologies associated with acute surgical abdominal pain. To study the incidence of acute abdominal emergencies. To analyse the nature, presentation, and causes of acute abdominal emergencies treated in surgical units.

PATIENTS AND METHODS

Type of study: Diagnostic Prospective Cross-sectional study

Study setting: Emergency Department at 6th October University Hospital.

Target population: patients older than 18th come to the Emergency Room presenting with acute abdominal pain, undergo CT imaging with oral and IV contrast as part of their diagnostic evaluation before any surgical intervention.

Inclusion Criteria

Age: Adults aged 18 years and older.

Clinical Presentation: Patients presenting with acute abdominal pain.

Exclusion Criteria

Trauma: Acute abdominal pain secondary to blunt or penetrating trauma (unstable patient).

Contraindication to contrast CT: A contraindication that prevented the patient from receiving the standard contrast CT due to severe renal impairment.

Physiological instability: Patient presenting in haemorrhagic shock or too unstable to complete a standard CT scan.

Pregnancy

Due to radiation exposure. In our study, we evaluated all adult patients (≥ 18 years old) who were admitted to the ED of our 120-bed community hospital between December 2024 and December 2025 with acute abdominal pain. The surgeons routinely ordered CT examinations to confirm diagnoses in cases requiring

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surgical intervention or to exclude conditions that would necessitate surgical intervention. The radiology department offered 24-hour imaging services for the ED, with a radiologist available at all times. A total of 60 patients (36 men and 24 women; 33.2±13.8 years; range, 18–75) were included in this study.

Imaging Protocol

All CT examinations were carried out on a helical CT system (High Speed Advantage Philips multi-slice 16 MX-16 SLICE 150/300). The scanning protocol consisted of contiguous 1.5-mm axial sections from the diaphragm to the pubic symphysis, performed before and after IV and oral contrast administration for contrast-enhanced CTs. 350 mL of Omnipaque was administered intravenously at a rate of 2-3 ml/s with a power injector, and image acquisition was started 70 s after initiation of the contrast material injection.

Data Collection

We asked the ED physicians who requested abdominal CT examinations to complete a questionnaire before CT information was available for each patient. These questionnaires included the following information: (1) demographic data; (2) brief complaint and short current history; (3) results of physical examinations; (4) results of abnormal laboratory examinations;(5) results of abdominal and pelvis ultrasonography findings; and (6) results of plain radiographs.

The physicians were asked to estimate the most likely diagnosis (pre-CT diagnosis) and to state the certainty (0–100%) that the initial diagnosis was correct. They were also asked to select their treatment plans if no CT information was available, from the following options: (1) no treatment required, or discharge home with or without medication; (2) admission as an in-patient for conservative (non-surgical) treatment; (3) admission as an in-patient for surgical treatment; and (4) direct admission for emergency surgery. Immediately after CT was performed and the images were interpreted by a radiologist, the same physician was asked to provide a revised leading diagnosis (post-CT diagnosis), the certainty of this diagnosis, and the proposed treatment plan for the patient.

To evaluate the usefulness of IV and oral contrast material administration, a radiologist who interpreted the CT images selected from the following list: IV and oral contrast material administration: (1) was essential for establishing the diagnosis of the cause of acute abdominal pain; (2) made the diagnosis more readily apparent, or helped evaluate the severity or characteristics of the diseases; (3) was not necessary.

A radiologist always selected option (3) when CT images were interpreted as usual, although the use of IV contrast material might have helped exclude lesions.

RESULTS

Figure (1): Colo-colic intussusception noted a large lipoma arising from the right colon.

Final Diagnoses

The definitive diagnoses were established through surgical and pathological evaluations in patients who underwent laparotomy (n = 35). If patients were admitted to an inpatient ward but did not undergo surgical procedures, the most probable discharge diagnoses were used as the final diagnoses (n = 14). If required, clinical follow-up was performed at the outpatient clinic; however, no alterations to the final diagnosis were observed in any instance. All patients discharged home, regardless of medication status, were monitored through outpatient follow-up, and their definitive clinical diagnoses were established (n = 11).

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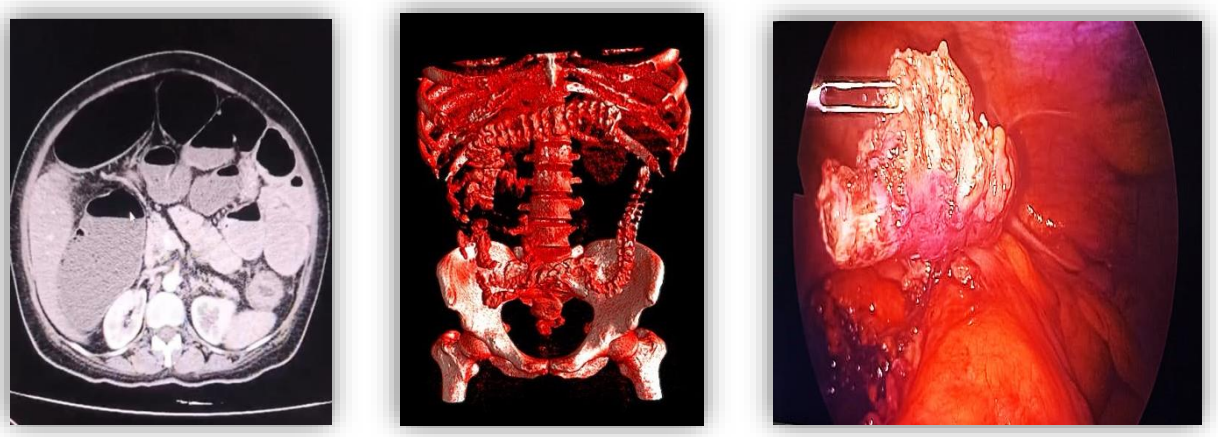

Figure (2): Smudged fat planes, surrounding minimal collection, prominent mesenteric lymph nodes, and a thickening wall of the appendix, picture of appendicitis.

Figure (3): Richter hernia.

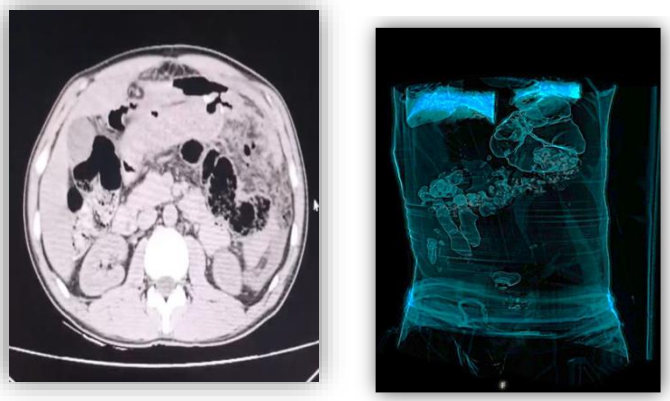

Figure (4): Picture of gastric perforation noted escape of dye from the site of perforation.

Study design:
Sampling
An exploratory study with all eligible patients for 12 months at the 6th October University Hospital.

Statistical Design
Data processing and statistical analysis were performed using IBM SPSS Statistics version 23.0 (IBM Corp., Armonk, NY, USA), a software platform for data management, coding, and executing statistical procedures.

Ethical issues:
This is a prospective Cohort Feasibility study. All data will be anonymized to protect the privacy and confidentiality

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of patients' information, and all patients will provide consent for the procedures.

Publication policy:
Any publication resulting from this research will include the names of all contributors, with the order of authorship reflecting the extent of individual contributions to data interpretation and manuscript preparation. Additional external authors may be incorporated if their input substantively enhances the content and they meet internationally recognized authorship criteria.

The collected data were processed and entered using IBM SPSS Statistics, version 28 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to characterize the dataset. Continuous variables were summarized by calculating the mean, standard deviation (SD), median, and minimum and maximum values to reflect both central tendency and variability. Categorical variables were reported as absolute counts (n) and corresponding percentages to illustrate the distribution across categories.

Data summarization:
Qualitative Data:
Categorical variables were presented using absolute frequencies (n), representing the number of observations within each category, and relative frequencies (%), indicating the proportion of observations in each category relative to the total sample.

Quantitative Data:

- Continuous variables were summarized using the following statistical measures:
- Mean: The arithmetic average, calculated by dividing the total sum of observed values by the number of observations.
- Median: The central value in an ordered dataset, used particularly for skewed distributions due to its resistance to the influence of outliers.
- Standard Deviation (SD): A measure of dispersion that quantifies the amount of variation or spread in a set of values; calculated as the square root of the variance.
- Interquartile Range (IQR): The range between the 25th and 75th percentiles, capturing the middle 50% of the data and indicating variability within this central segment.
- Range: The difference between the maximum and minimum observed values, representing the total spread of the data.

Statistical Analysis:
All statistical analyses were conducted at a significance level of $p \leq 0.05$. Results were interpreted as follows:
$p > 0.05$: Not statistically significant
$p \leq 0.05$: Statistically significant

Tests for categorical variables:
Chi-Square Test (χ^2): A non-parametric test used to examine associations between two or more categorical variables.
Fisher's Exact Test: Applied in situations where expected cell counts in contingency tables are low (i.e., more than 20% of cells have expected counts less than 5), providing a more accurate assessment of association in small sample sizes.

Tests for continuous variables:
Independent Samples t-Test: A parametric test used to compare the means of two independent groups, assuming normally distributed data and random sampling.
Paired Samples t-Test: A parametric test used to compare the means of two related groups (paired observations), under the assumption of normal distribution and random sampling.

RESULTS

Table (1): Demographic Characteristics of Study Population

Characteristic	Total (n=60)
Age (years)	
Mean ± SD	33.2 ± 13.8
Median (IQR)	30 (23-42)
Range	18-75

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Age Groups	
18-30 years	21 (35%)
31-45 years	12 (20%)
46-60 years	20 (33%)
>60 years	7 (12%)

Gender	
Male	36 (60.0%)
Female	24 (40.0%)

Comorbidities	
No comorbidities	40 (66.7%)
Diabetes Mellitus	16 (26.7%)
Diabetes + Hypertension	3 (5.0%)
Hypertension only	1 (1.7%)

Table (2): Operative Findings in 35 Patients with Acute Abdominal Pain

Diagnosis Category	**n (%)**
Acute Appendicitis	10 (28.57%)
Appendicular Mass/Complications	6 (17.1%)
Empyema of the gall bladder	5 (14.28%)
Duodenal perforation	5 (14.28%)
Tubo-ovarian abscess	2 (5.7%)
Intestinal obstruction	3 (8.57%)
Richter hernia	1 (2.85%)
Negative Exploration	3 (8.57%)
Total	35 (100.0%)

Table (3): X-ray findings of the patient studied

X ray	**Total (n=60)**
Normal	**51 (85%)**
Abnormal	**9 (15%)**
Air under the diagram	**5 (8.33%)**
Obstruction	**4 (6.66%)**

Table (4): USG findings of the patient studied

USG	**n (%) total 60**
Normal	**32 (53%)**
Abnormal	**28 (47%)**
Acute appendicitis	**4 (7 %)**
Appendicular mass/complication	**4 (7%)**
Empyema	**1 (2%)**
Acute cholecystitis	**4 (7%)**
Intestinal obstruction	**1 (2%)**
Mesenteric lymphadenitis	**4 (7%)**
Ovarian cyst	**4 (7%)**
Tubo-ovarian abscess	**1 (2%)**
Free fluid	**5 (8%)**

Table (5): CT findings of patients studied

CT	**N (n=60)**
Normal	**11 (18%)**
Abnormal	**49 (82%)**
Acute appendicitis	**8 (13%)**

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Appendicular mass/complication	**5 (8%)**
Empyema	**4 (7%)**
Acute cholecystitis	**3 (5%)**
Intestinal obstruction	**4 (7%)**
Mesenteric lymphadenitis	**4 (7%)**
Tubo-ovarian abscess	**4 (7%)**
Ovarian cyst	**4 (7%)**
Acute pancreatitis	**3 (5%)**
Duodenal Perforation	**5 (8%)**
Colitis	**3 (5%)**
Richter hernia	**1 (2%)**

Table (6): SECTRA findings of patients studied

SECTRA	Total (n=60)
Normal	**23 (38%)**
Abnormal	**37 (62%)**
Acute appendicitis	**6 (10%)**
Appendicular mass/complication	**6 (10%)**
Empyema	**4 (7%)**
Acute cholecystitis	**3 (5%)**
Mass lesion	**4 (7%)**
Mesenteric lymphadenitis	**1 (2 %)**
Tubo-ovarian abscess	**3 (5%)**
Ovarian cyst	**4 (7 %)**
Duodenal perforation	**5 (8%)**
Richter hernia	**1 (2%)**

Table (7): Intraoperative Findings in correlation with USG, CT, and SECTRA

Intraoperative Findings	USG	CT	SECTRA	N (%)
Acute Appendicitis	4 (7%)	8 (13%)	6 (10%)	10(17)
Appendicular Mass/ Complications	4 (7%)	5 (8%)	6 (10%)	6 (10%)
Empyema of the gall bladder	1 (2%)	4 (7%)	4 (7%)	5 (8%)
Duodenal perforation	0 (0%)	5 (8%)	5 (8%)	5 (8%)
Tubo-ovarian abscess	1 (2%)	4 (7%)	3 (5%)	4 (7%)
Intestinal obstruction	1 (2%)	4 (7%)	4 (7%)	4 (7%)
Richter hernia	0 (0%)	1 (2%)	1 (2%)	1 (2%)
Total	11 (18.33%)	31 (51.66%)	29 (48.33%)	35 (58.33%)

Table (8): Cause

CAUSE	TOTAL (N=60)
Acute Appendicitis	**10 (17%)**
Appendicular Mass/Complications	**6 (10%)**
Empyema of the gall bladder	**5 (8%)**
Duodenal perforation	**5 (8%)**
Tubo-ovarian abscess	**4 (7%)**
Ovarian cyst	**4 (7%)**
Intestinal obstruction	**4 (7%)**
Richter hernia	**1 (2%)**
Acute cholecystitis	**4 (7%)**
Mesenteric lymphadenitis	**4 (7%)**
Colitis	**6 (10%)**

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Acute pancreatitis	**4 (7%)**
Negative exploration	**3 (5%)**

Table (9): Hospital stay of the patient studied

Stay	Total (n=60)
3 days	**5 (9%)**
7 days	**5 (9%)**
<3 weeks	**10 (17%)**

Table (10): Management Outcomes and Clinical Decisions

Management Category	n (%)	Mean Age
Surgical Intervention	35 (58.33%)	32.8 ± 14.2
Conservative (Discharge)	11 (18.33%)	28.1 ± 8.9
Observation/Admission	14 (23.33%)	39.2 ± 15.1
Total	60 (100.0%)	33.2 ± 13.8

Table (11): Diagnostic Performance Metrics Comparison

Performance Metric	Ultrasound	SECTRA CT	Difference
Sensitivity (%)	49.1%	65%	+16%
Specificity (%)	100%	100%	0%
Positive Predictive Value (%)	100%	100%	0%
Negative Predictive Value (%)	9.4%	13%	+3.6%
Overall Accuracy (%)	51.7%	67%	+15.3%
Area Under Curve (AUC)	0.467	0.745	+0.278

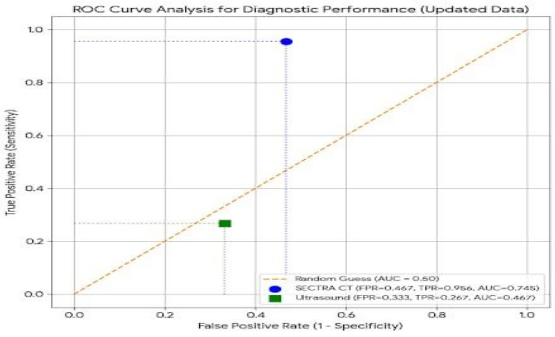

Figure (5): ROC Curve Analysis for Diagnostic Performance

Table (12 Ultrasound Performance:

	Pathology Present (n=57)	Pathology Absent (n=3)
US Positive	28 (True Positives)	0 (False Positives)
US Negative	29 (False Negatives)	3 (True Negatives)

Table (13SECTRA CT Performance:

	Pathology Present (n=57)	Pathology Absent (n=3)
SECTRA Positive	37 (True Positives)	0 (False Positives)
SECTRA Negative	20 (False Negatives)	3 (True Negatives)

DISCUSSION

Acute abdomen represents a clinical emergency characterized by the sudden onset of severe abdominal pain that demands immediate medical attention and accurate diagnostic evaluation. This condition encompasses a broad spectrum of underlying pathologies, including appendicitis, cholecystitis, diverticulitis, and perforated peptic ulcers, all of which require prompt identification to minimize associated morbidity and mortality rates ***(Gans et al., 2015).*** The complexity of diagnosing acute abdominal conditions stems from the overlapping symptom presentations and the critical need for rapid clinical decision-making in emergency settings ***(Thomas et al., 2016).***

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Recent epidemiological studies have provided valuable insights into the prevalence and characteristics of abdominal pain presentations in clinical practice. Large-scale analyses reveal that the distribution of acute abdominal conditions varies significantly across different demographic groups, with specific pathologies showing distinct age and gender predilections ***(Lakhoo et al., 2021).***

Clinical investigations demonstrate that acute appendicitis remains the most frequently encountered cause of surgical acute abdomen, typically followed by acute intestinal obstruction and acute cholecystitis, with males being disproportionately affected in many surgical conditions ***(JG et al., 2017).***

Our study clearly demonstrates the utility of CT performed in the ED for patients with acute abdominal pain, not only for diagnosis but also for guiding treatment decisions. The use of abdominal CT frequently changed physicians' initial diagnoses, increased diagnostic certainty, and led to more appropriate treatment.

In my study, a total of 60 patients with acute surgical abdomen were included. Acute appendicitis emerged as the most frequent cause of acute abdomen, accounting for 26.6% of cases, with appendicectomy performed in 16 patients. The various causes of acute abdomen have been studied here, and a comparison between other studies has been made.

Etiology	**Scot et al**	**Wani et al**	**Present study**
Acute appendicitis	50%	35%	17%
Complicated appendicitis	5%	4%	10%
Hollow viscus perforation	28%	24%	8%
Intestinal obstruction	15%	28%	7%
Rare cases	2%	9%	2%

Our results are comparable to those of other studies, except for complicated appendicitis, which accounts for approximately 10%. Hollow-organ perforation resulting from a duodenal ulcer was identified as the second leading cause of acute abdomen, accounting for 8% of cases.

Gender	Scot et al	Aijaz et al	Present study
Male	62%	70%	60%
Female	38%	30%	40%

In our study, males contributed around 60 % and females around 40 %, which is comparable with other studies. Thus, acute surgical abdomen is more common in males than in females.

Age distribution	**Aijaz et al**	**Saunes et al**	**Present study**
20-30	**37%**	**30%**	**35%**
30-40	**17%**	**20%**	**20%**
40-50	**21%**	**36%**	**33%**
>50	**25%**	**14%**	**12%**

In our study, compared with other studies, the 2nd-decade population (35%), the 4th-decade population (33 %), and the elderly population (over 50 years) are higher, i.e., 12%.

Various studies	**X-ray sensitivity**
Rajender et al	**67%**
Chhetri et al	**68%**
Present study	**16%**

Compared with other studies, our study reports approximately 16% sensitivity for X-ray diagnosis.

DISCUSSION

The ability of CT not only to obtain a correct diagnosis but also to enhance diagnostic certainty and exclude alternative diagnoses is essential for emergency physicians in selecting an appropriate treatment plan. Even if the diagnosis is unchanged on CT, it is necessary to enhance the surgeon's confidence in the diagnosis so that proper discussions can take place with patients and relatives and valid informed consent can be obtained.

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The current work assessed the sensitivity and specificity of this advanced imaging technique compared with traditional diagnostic methods used in emergency settings.

Additionally, this research seeks to identify and characterize the most common pathological conditions associated with acute surgical abdominal pain.

The study successfully enrolled 60 patients with acute abdominal pain, demonstrating a demographic profile typical of emergency presentations, with a mean age of 33.2 years and a male predominance (60.0%). A majority of patients (66.7%) had no significant comorbidities, with diabetes mellitus being the most prevalent comorbidity (26.7%).

The most common surgical pathology was appendicular pathology (acute appendicitis and complications), totaling 26.7% (n=16) of cases, followed by gallbladder disease and visceral perforation, each at 8% (n=5).

CT information appeared to help diagnose or exclude acute appendicitis and led to more appropriate treatment, as previously reported. Rao and colleagues reported that the results of CT led to a change in the treatment of 59 of 100 patients with clinically suspected appendicitis (Rao et al., 1998).e

Management outcomes indicated that the majority of patients (58.33%) required immediate surgical intervention, underscoring the acute, often surgical nature of the presentations. Only 5.0% of surgical explorations were negative. The age-stratified analysis indicates that older patients (mean age 39.2 years) were more often managed with observation/admission, whereas younger patients (mean age 28.1 years) were more likely to be discharged.
The central finding of this study is the marked difference in diagnostic performance between SECTRA CT and conventional ultrasound. The overall diagnostic accuracy for SECTRA CT was 67%, a clinically transformative improvement compared to ultrasound's accuracy of only 52%.

Analysis of data concordance revealed a striking disparity. In 48.3% (n=29) of cases, SECTRA CT was positive, but ultrasound was negative. This substantial discordance highlights the superior sensitivity of SECTRA technology. Crucially, there were four cases (7%) where ultrasound provided a positive diagnosis that SECTRA CT missed. Complete agreement between both modalities was observed in only 31.6% (n=19) of cases.

SECTRA CT achieved excellent sensitivity at 65%, representing a 16% improvement over ultrasound's poor sensitivity of 49.1%. This indicates that SECTRA CT has a substantially greater ability to identify patients with pathology correctly.

SECTRA CT achieved 100% diagnostic accuracy in three pathological categories, including:
Appendicular Mass/Complications, Intestinal obstruction, perforation.

In contrast, ultrasound showed significant limitations, demonstrating complete diagnostic failure (0% accuracy) in colitis (0/6), acute pancreatitis (0/4), and perforation (0/5). Ultrasound also performed poorly in acute appendicitis (40.0% accuracy) and gall bladder pathology (55.5% accuracy).

CT may also enable pre-operative planning of the surgical approach. Taourel and co-authors noticed that CT modified the primary therapeutic strategy in 30% of 40 cases with acute abdominal pain and avoided seven laparotomies (Taourel et al., 1992).

Siewert and co-authors reported that management was changed after CT in 27.5% of 91 patients who did not undergo surgery. These results suggest that CT is a valuable tool for selecting an appropriate treatment strategy, in particular for separating patients who require surgery from those who may be treated more conservatively (Siewert et al., 1997).

CONCLUSION

This study concludes that SECTRA offers essential diagnostic and clinical benefits in assessing acute abdominal pain, despite its high cost and radiation risk; its superior accuracy makes it a tool worth integrating into the emergency protocol for selected cases. It is also recommended that artificial intelligence techniques be incorporated to validate these results and strengthen diagnostic strategies in the care of patients with acute abdominal pain.

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