



A Prospective Observational Study Of Pattern And Presentation Of Acute Abdomen In A Medical College Hospital.

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Abstract:

Introduction: Acute abdomen is one of the most common reasons for an emergency department visit in any healthcare setup, accounting to about 5% to 10% of all the visits.² It poses a diagnostic challenge for the emergency physicians as the causes are numerous, ranging from benign to life-threatening conditions.

Materials and Methods: A hospital based prospective observational study was done with 100 patients with non traumatic acute abdomen admitted at our tertiary care centre.

Results: Majority of the patients (27%) were from the age group of 31-40 years with 72% being males. The most common sign was tenderness (84%) followed by guarding (66%). The most common symptom was pain in abdomen (100%) followed by vomiting (79%). The most common clinical diagnosis was acute appendicitis (28%) followed by ureteric colic (23%). The onset of pain was sudden in 63 (63%) patients. The most common final Diagnosis was acute appendicitis (27%) followed by ureteric colic (26%).

Conclusions: Both serious and benign intra-abdominal conditions share many relatively nonspecific symptoms. Apart from relieving the patient's symptoms, the emergency physician's primary role is to identify those cases that require immediate intervention in order to limit morbidity and mortality. An unexpected negative test result should prompt a reassessment of the patient and consideration for observation and repeat examination for disease progression.

Keyword: acute abdomen, prospective, medical college hospital

Introduction

The term "acute abdomen" refers to symptoms and signs of abdominal pain and tenderness, a clinical presentation that often requires emergency surgical therapy. Many diseases of which, some do not require surgical treatment produce abdominal pain, thus the evaluation of patient with acute abdominal pain must be methodical and careful.¹

Acute abdominal pain (AAP) accounts for a substantial proportion of patients arriving at a surgical emergency department. Abdominal pain of sudden onset is the hallmark of most non-traumatic emergency surgical presentations.

Acute abdomen is one of the most common reasons for an emergency department visit in any healthcare setup, accounting to about 5% to 10% of all the

visits.² It poses a diagnostic challenge for the emergency physicians as the causes are numerous, ranging from benign to life-threatening conditions. Causes include gastro-intestinal, urological, and gynaecological among others.³

An early and accurate diagnosis results in more accurate management and, subsequently, leads to better outcomes. Causes for acute abdominal pain can be classified as urgent or non-urgent. Urgent causes require immediate treatment (within 24 hour) to prevent complications; whereas for non-urgent causes, immediate treatment is not necessary.⁴ Most common urgent causes are acute appendicitis, perforative peritonitis, bowel obstruction. Most common non-urgent causes are nonspecific abdominal pain and gastro-intestinal diseases. The diagnoses associated with an acute abdomen vary according to age and gender.⁵ Appendicitis is more common in the young, whereas biliary disease, bowel obstruction, intestinal ischemia and infarction, and diverticulitis are more common in the elderly.

Proper management of the patients with acute pain abdomen requires a timely decision about the need for surgical intervention. This decision requires evaluation of the patient's history, physical findings, laboratory data and imaging tests.

The surgeon at surgical emergency department is confronted with a patient who has a collection of symptoms and signs. In the past 20 years, the ability to accurately determine intra-abdominal pathology by radiological imaging has allowed earlier and more accurate diagnosis. Making a correct diagnosis at an early stage is favourable, but often not possible and a tentative diagnosis is made that guides the surgeon into the proper ordering of investigations and decisions about hospitalization. As a delay in the assessment of the patient may be life threatening or cause severe morbidity, the first judgment based on the clinical examination is crucial. The preliminary diagnosis has to be re-evaluated after further investigations are completed. Use of investigations like ultrasonography (USG) and computed tomography (CT) scan has increased in last few years due to patients demand and increasing medico legal issues.

Most of the cases of acute abdomen can be diagnosed clinically by the presence and site of abdominal pain, abdominal tenderness, guarding and rigidity. There

should be a certain diagnostic modality which confirms the diagnosis and the surgeon should feel safe and accurate in deciding which patients require surgical intervention. Although imaging modalities like X-rays, USG, CT, magnetic resonance imaging (MRI) etc. are available and can diagnose accurately, these investigations are not available everywhere or not available for 24 hours, in developing countries like India. For these reasons there should be a diagnostic modality which is simple, accurate and available by the bedside. Therefore, a thorough and logical approach to the diagnosis of abdominal pain is necessary.

Hence the present study will be done at our tertiary care centre to assess the non traumatic acute abdomen, the various clinical patterns that help to make a clinical diagnosis and its correlation with radiological investigations and its influence on clinical decision making. The emphasis laid will be on proper history and clinical examination, coupled with investigations like plain x-ray, ultrasound and CT scan which can help to prove the diagnosis.

Aims And Objectives

- **Aim:** To analyse patterns and presentation of cases of acute abdomen.
- **Objectives:** To correlate accuracy of initial clinical assessment with final diagnosis.

Materials And Methods

A hospital based prospective observational study was done with 100 patients with non traumatic acute abdomen admitted at our tertiary care centre.

Study Area: Medical college hospital located in western suburban part of Mumbai

Study Population: All patients presenting with non traumatic acute abdomen at our medical college hospital will be referred to the surgery/emergency unit and managed by the general surgeons will be recruited for the study.

Study Design: A hospital based prospective observational Study

Study Duration: 9 months

Sample Size: 100 patients

Sample size was calculated using the formula:

$$n = [z^2 p(1-p)] / d^2$$

Where: Z = table value of alpha error from Standard Normal Distribution table (0.95)

Power (p) = 80%

Precision error of estimation (d) = 4%

$$n = [0.95 \times 0.95 \times 0.8 (0.2)] / 0.04 \times 0.04 = 90.25$$

A similar study done by Jain R et al⁽⁸⁾ in 2017 on nontraumatic acute abdomen cases in a tertiary care hospital the sample size was 98 patients.

Hence sample sizes of 100 patients were selected for the study.

Inclusion Criteria:

- Patients presenting with acute pain in abdomen
- Patients with age 13-80 years
- Patients with no history of trauma

Exclusion Criteria

- Patients with history of trauma
- Patients with paediatric age group (<12yr)
- Pregnant women
- Patients with medical and gynaecological diseases which presents as pain in abdomen.

Methodology

A valid consent was taken from patients or relatives as appropriate before inclusion in the study and study details were explained to them thoroughly. Patients were managed with same treatment protocols irrespective of their decision for participation in the study. Detailed history taking emphasizing on the mode and progression of the symptoms with associated co-morbidities were noted. Symptoms and signs were evaluated by the same person throughout the study under the supervision of concerned guide/teacher. All patients included in the study were examined thoroughly with proper history and detailed per abdomen examination. Relevant points in the history included site of pain, character of pain with any radiation, fever, Vomiting, distention abdomen, change of bowel habits, urinary or genital symptoms. Physical examination included vital signs with thorough per abdominal examination with regards to site of pain, localised tenderness, guarding rigidity

and rebound tenderness. Patients with clinical suspicion were subjected to plain X-ray abdomen and ultrasonography. The following investigations were carried out in all the patients as per the need.

Biochemical investigations:

Haemoglobin (Hb), complete blood counts (CBC), serum electrolytes, urine routine examination, liver function tests (LFT), serum amylase & serum lipase levels.

Radiological investigations:

Plain x-ray chests PA view and abdomen AP view in standing position were done in all patients.

In selected cases an ultra sonogram of the abdomen and the pelvis, CT scan of the abdomen or special tests like magnetic resonance cholangiopancreatography (MRCP) were carried out to help us reach a diagnosis. After biochemical tests revised diagnosis was made which were noted as SAME or CHANGE in comparison to previous diagnosis i.e. clinical diagnosis. Similarly after X ray chest and abdomen, USG abdomen and pelvis, CT scan abdomen and pelvis and special tests revised diagnosis were made and noted as SAME or CHANGE in comparisons to previous diagnosis. Patients were followed till discharge. Final diagnosis were made as per investigation reports in conservatively managed patients and operation table findings in operated patients.

Those patients requiring emergency surgical intervention were operated as per the diagnosis following standard surgical protocols.

Correlation with clinical, radiological and surgical diagnosis were studied.

Statistical Analysis

Quantitative data is presented with the help of Mean and standard deviation (SD). Comparison among the study groups is done with the help of unpaired t test as per results of normality test. Qualitative data is presented with the help of frequency and percentage table. Association among the study groups is assessed with the help of Fisher test, student 't' test and Chi-Square test. 'p' value less than 0.05 is taken as significant.

Pearson's chi-squared test

Where X^2 = Pearson's cumulative test statistic.

O_i = an observed frequency;

E_i = an expected frequency, asserted by the null hypothesis;

n = the number of cells in the table.

Results were graphically represented where deemed necessary.

Appropriate statistical software, including but not restricted to MS Excel, SPSS ver. 20 will be used for statistical analysis. Graphical representation will be done in MS Excel 2010

Results

A hospital based prospective observational study was conducted with 100 patients to analyse patterns and presentation of cases of acute abdomen and correlate accuracy of initial clinical assessment with final diagnosis.

Distribution of patients according to Age

Majority of the patients (27%) were from the age group of 31-40 years followed by 24% from the age group of 21-30 years, 20% from the age group of 13-20 years, 12% from the age group of 41-50 years, 10% from the age group of 51-60 years, 4% from the age group of 61-70 years and 3% from the age group of 71-80 years.

Table 1: Distribution of patients according to Age

Age (years)	N	%
13-20 years	20	20%
21-30 years	24	24%
31-40 years	27	27%
41-50 years	12	12%
51-60 years	10	10%
61-70 years	4	4%
71-80 years	3	3%
Total	100	100%

Graph 1: Distribution of patients according to Age

Distribution of patients according to Gender

There were 72 (72%) male patients while female patients constituted 28% of the study group.

Table 2: Distribution of patients according to Gender

Gender	N	%
Male	72	72%
Female	28	28%
Total	100	100%

Graph 2: Distribution of patients according to Gender

Distribution of patients according to Signs

The most common sign was Tenderness (84%) followed by Guarding (66%), Distention (17%), Tachycardia (pulse>100/min) (12%), Rigidity (4%) and Hypotension ($\leq 90/60$ mmhg) (3%).

Table 3: Distribution of patients according to Signs

Signs	N	%
Tenderness	84	84%
Guarding	66	66%
Distention	17	17%
Tachycardia (pulse>100/min)	12	12%
Rigidity	4	4%
Hypotension ($\leq 90/60$ mmhg)	3	3%

Graph 3: Distribution of patients according to Signs

Distribution of patients according to Symptoms

The most common symptom was pain in abdomen (100%) followed by vomiting (79%), distention (58%) and constipation (42%).

Table 4: Distribution of patients according to Symptoms

Symptoms	N	%
Pain in Abdomen	100	100%
Vomiting	79	79%
Distention	58	58%
Constipation	42	42%

Graph 4: Distribution of patients according to Symptoms

Distribution of patients according to Site of Pain

40 (40%) patients reported lower abdominal pain while 22 (22%) had pain in upper abdomen. The pain was generalized in 38 (38%) patients.

Table 5: Distribution of patients according to Site of Pain

Site of Pain	N	%
Lower abdomen	40	40%
Upper abdomen	22	22%
Generalised	38	38%
Total	100	100%

Graph 5: Distribution of patients according to Site of Pain

Distribution of patients according to Onset of Pain

The onset of pain was sudden in 63 (63%) patients while it was gradual in 37 (37%) patients.

Table 6: Distribution of patients according to Onset of Pain

Onset of Pain	N	%
Sudden	63	63%
Gradual	37	37%
Total	100	100%

Graph 6: Distribution of patients according to Onset of Pain

Distribution of patients according to Type of Pain

The most common type of pain was dull aching (49%) followed by colicky (33%), stabbing (9%), burning (7%) and pricking (2%).

Table 7: Distribution of patients according to Type of Pain

Type of Pain	N	%
Dull	49	49%
Colicky	33	33%
Stabbing	9	9%
Burning	7	7%
Pricking	2	2%
Total	100	100%

Graph 7: Distribution of patients according to Type of Pain

Distribution of patients according to Haemoglobin (Hb) values

1 (1%) and 5 (5%) patients had hemoglobin values <7 g/dL and 7-11 g/dL respectively while 66 (66%) and 24 (24%) patients had hemoglobin values 11-13 g/dL and 13-16 g/dL respectively. 4 (4%) patients had hemoglobin values >16 g/dL.

Table 8: Distribution of patients according to Hb values

Hemoglobin (g/dL)	N	%
<7 g/dL	1	1%
7-11 g/dL	5	5%
11-13 g/dL	66	66%
13-16 g/dL	24	24%
>16 g/dL	4	4%
Total	100	100%

Graph 8: Distribution of patients according to Hb values

Distribution of patients according to Total Leukocyte Count (TLC)

2 (2%) patients had total leukocyte count (TLC) of <4,000 cell/mm³ while 57 (57%) and 41 (41%) patients had TLC of 4000-11000 cell/mm³ and >11000 cell/mm³ respectively.

Table 9: Distribution of patients according to TLC

TLC (cell/mm ³)	N	%
<4000 cell/mm ³	2	2%
4000 – 11000 cell/mm ³	57	57%
>11000 cell/mm ³	41	41%
Total	100	100%

Graph 9: Distribution of patients according to TLC

Distribution of patients according to Chest X-ray findings

Chest X-ray findings noted that 4 (4%) patients had free gas under diaphragm (FGUD) while 96 (96%) patients had normal findings.

Table 10: Distribution of patients according to Chest X-ray findings

Chest X-ray findings	N	%
FGUD	4	4%
Normal	96	96%
Total	100	100%

FGUD - Free Gas Under Diaphragm

Graph 10: Distribution of patients according to Chest X-ray findings

Distribution of patients according to Abdomen X-ray findings

23 (23%) patients had positive findings on Abdomen X-ray of which 16 (16%) patients had Air Fluid Levels (AFL) while 7 (7%) patients had distended small bowel.

Table 11: Distribution of patients according to Abdomen X-ray findings

Abdomen X-ray findings	N	%
Air Fluid Levels (AFL)	16	16%
Distended Small Bowel	7	7%
Normal	77	77%
Total	100	100%

Graph 11: Distribution of patients according to Abdomen X-ray findings

Association of tenderness and X-ray findings

84 (84%) patients had tenderness of which 22 (22%) patients had positive X-ray findings. 1 (1%) patient without tenderness had positive X-ray findings. The sensitivity and specificity is 95.65% and 19.48% respectively while positive predictive value (PPV) and negative predictive value (NPV) is 26.19% and 93.75% respectively. Hence routine use of X-ray chest and abdomen in acute abdomen is less useful.

Table 12: Association of tenderness and X-ray findings

Tenderness	X-ray Chest and Abdomen		Total
	Positive	Negative	
Present	22 (22%)	62 (62%)	84 (84%)
Absent	1 (1%)	15 (15%)	16 (16%)
Total	23 (23%)	77 (77%)	100 (100%)

Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
95.65%	19.48%	26.19%	93.75%

Graph 12: Association of tenderness and X-ray findings

Distribution of patients according to Clinical Diagnosis

The most common clinical diagnosis was acute appendicitis (28%) followed by Ureteric colic (23%), Acute cholecystitis (19%), Acute intestinal obstruction (7%), Acute pancreatitis (7%), Perforative peritonitis (6%), Gastritis (5%), Obstructed hernia (3%), Abdominal Koch's (1%) and Colitis (1%).

Table 13: Distribution of patients according to Clinical Diagnosis

Clinical diagnosis	N	%
Acute appendicitis	28	28%
Ureteric colic	23	23%
Acute cholecystitis	19	19%
Acute intestinal obstruction	7	7%
Acute pancreatitis	7	7%
Perforative peritonitis	6	6%
Gastritis	5	5%
Obstructed hernia	3	3%
Abdominal Kochs	1	1%
Colitis	1	1%
Total	100	100%

Graph 13: Distribution of patients according to Clinical Diagnosis

Distribution of patients according to Final Diagnosis

The most common final diagnosis was acute appendicitis (27%) followed by ureteric colic (26%), acute cholecystitis (16%), acute intestinal obstruction (8%), perforative peritonitis (5%), gastritis (5%), acute pancreatitis (4%), obstructed hernia (3%) ovarian cyst (2%), common bile duct (CBD) stone (1%), colitis (1%), ischaemic bowel disease (1%) and Abdominal Koch's (1%).

Table 14: Distribution of patients according to Final Diagnosis

Final diagnosis	N	%
Acute appendicitis	27	27%
Ureteric colic	26	26%
Acute cholecystitis	16	16%
Acute intestinal obstruction	8	8%
Perforative peritonitis	5	5%
Gastritis	5	5%
Acute pancreatitis	4	4%
Obstructed hernia	3	3%
Ovarian cyst	2	2%
CBD stone	1	1%
Colitis	1	1%
Ischaemic Bowel Disease	1	1%
Abdominal Kochs	1	1%
Total	100	100%

Graph 14: Distribution of patients according to Final Diagnosis**Association of Clinical Diagnosis and Final Diagnosis**

The clinical diagnosis matched final diagnosis in 89 (89%) patients while in 11 (11%) patients clinical diagnosis did not match final diagnosis. Clinical diagnosis matched final diagnosis in 96% patients of acute appendicitis, 88% patients of ureteric colic, 94% patients of acute cholecystitis, 87% patients of acute intestinal obstruction, 100% patients of perforative peritonitis 100% patients of gastritis and 75% patients of acute pancreatitis. Three patients of obstructed hernia and one patient each of abdominal Koch's and colitis were clinically correctly diagnosed. Two patients of ovarian cyst and one patient each of CBD stone and ischaemic bowel disease were not diagnosed. Therefore clinical diagnosis has important role in diagnosis of acute abdomen.

Table 15: Association of Clinical Diagnosis and Final Diagnosis

Final diagnosis		Clinical diagnosis	
		Matching	Not matching
Acute appendicitis	N	26	1
	%	96%	4%
Ureteric colic	N	23	3
	%	88%	12%
Acute cholecystitis	N	15	1
	%	94%	6%
Acute intestinal obstruction	N	7	1
	%	87%	13%
Perforative peritonitis	N	5	0
	%	100%	0%
Gastritis	N	5	0
	%	100%	0%
Acute pancreatitis	N	3	1
	%	75%	25%
Obstructed hernia	N	3	0
	%	100%	0%
Ovarian cyst	N	0	2
	%	0%	100%
CBD stone	N	0	1
	%	0%	100%
Colitis	N	1	0
	%	100%	0%
Ischaemic Bowel Disease	N	0	1
	%	0%	100%
Abdominal Kochs	N	1	0
	%	100%	0%
Total	N	89	11
	%	89%	11%

Graph 15: Association of Clinical Diagnosis and Final Diagnosis**Discussion**

A hospital based prospective observational study was conducted with 100 patients to analyse patterns and presentation of cases of acute abdomen and correlate accuracy of initial clinical assessment with final diagnosis.

Acute abdomen may be defined as “An abnormal condition characterised by sudden onset of severe pain within the abdominal cavity which requires immediate evaluation, diagnosis and may require surgical intervention”⁴¹. All patients with abdominal pain do not require extensive diagnostic tests. Sometimes, adequate history and physical evaluation

alone is sufficient to accurately diagnose the condition and treat accordingly. Patients may present with vague complaints and varying associated symptoms making diagnosis difficult which ranges from benign to life threatening conditions³.

In the present study, majority of the patients (27%) were from the age group of 31-40 years followed by 24% from the age group of 21-30 years, 20% from the age group of 13-20 years, 12% from the age group of 41-50 years, 10% from the age group of 51-60 years, 4% from the age group of 61-70 years and 3% from the age group of 71-80 years. There were 72 (72%) male patients while female patients constituted 28% of the study group. This is similar to the studies of Gajjar R *et al*³⁸, Memon AA *et al*⁴², Srivastava AK *et al*³⁷, Agboola JO *et al*³ and Momin RS *et al*⁴³.

The most common sign in our study was Tenderness (84%) followed by Guarding (66%), Distention (17%), Tachycardia (pulse>100/min) (12%), Rigidity (4%) and Hypotension ($\leq 90/60$ mmhg) (3%). This is consistent with the studies of Momin RS *et al*⁴³ and Chimkode R *et al*³⁶.

The most common symptom in the present study was pain in abdomen (100%) followed by vomiting (79%), distention (58%) and constipation (42%). This is comparable to the studies of Momin RS *et al*⁴³, Chimkode R *et al*³⁶ and Gajjar R *et al*³⁸.

In our study, 40 (40%) patients reported lower abdominal pain while 22 (22%) had pain in upper abdomen. The pain was generalized in 38 (38%) patients. This is concordant to the studies of Gajjar R *et al*³⁸, Srivastava AK *et al*³⁷ and Agboola JO *et al*³.

It was observed in the present study that the onset of pain was sudden in 63 (63%) patients while it was gradual in 37 (37%) patients. These findings were consistent with the studies of Gajjar R *et al*³⁸ and Agboola JO *et al*³.

The most common type of pain in the present study was dull aching (49%) followed by colicky (33%), stabbing (9%), burning (7%) and pricking (2%). This is in concordance to the study of Gajjar R *et al*³⁸.

It was observed in our study that 1 (1%) and 5 (5%) patients had hemoglobin values <7 g/dL and 7-11 g/dL respectively while 66 (66%) and 24 (24%) patients had hemoglobin values 11-13 g/dL and 13-16 g/dL respectively. 4 (4%) patients had hemoglobin

values >16 g/dL. 2 (2%) patients had total leukocyte count (TLC) of <4,000 cell/mm³ while 57 (57%) and 41 (41%) patients had TLC of 4000-11000 cell/mm³ and >11000 cell/mm³ respectively.

Chest X-ray findings noted that 4 (4%) patients had free gas under diaphragm (FGUD) while 96 (96%) patients had normal findings. 23 (23%) patients had positive findings on Abdomen X-ray of which 16 (16%) patients had Air Fluid Levels (AFL) while 7 (7%) patients had distended small bowel.

In the present study, 84 (84%) patients had tenderness of which 22 (22%) patients had positive X-ray findings. 1 (1%) patient without tenderness had positive X-ray findings. The sensitivity and specificity is 95.65% and 19.48% respectively while PPV and NPV is 26.19% and 93.75% respectively. Hence routine use of X-ray chest and abdomen in acute abdomen is less useful. Similar observations were noted in the studies of Karandikar S *et al*³⁵ and Momin RS *et al*⁴³.

The most common clinical diagnosis in the present study was acute appendicitis (28%) followed by Ureteric colic (23%), Acute cholecystitis (19%), Acute intestinal obstruction (7%), Acute pancreatitis (7%), Perforative peritonitis (6%), Gastritis (5%), Obstructed hernia (3%), Abdominal Koch's (1%) and Colitis (1%). This is similar to the studies of Momin RS *et al*⁴³, Srivastava AK *et al*³⁷, Jain R *et al*³⁹, Chimkode R *et al*³⁶ and Agboola JO *et al*³.

The most common final diagnosis in our study was acute appendicitis (27%) followed by ureteric colic (26%), acute cholecystitis (16%), acute intestinal obstruction (8%), perforative peritonitis (5%), gastritis (5%), acute pancreatitis (4%), obstructed hernia (3%) ovarian cyst (2%), CBD stone (1%), colitis (1%), ischaemic bowel disease (1%) and Abdominal Kochs (1%). This is comparable to the studies of Karandikar S *et al*³⁵ and Agboola JO *et al*³.

In the present study, the clinical diagnosis matched final diagnosis in 89 (89%) patients while in 11 (11%) patients clinical diagnosis did not match final diagnosis. Clinical diagnosis matched final diagnosis in 96% patients of acute appendicitis, 88% patients of ureteric colic, 94% patients of acute cholecystitis, 87% patients of acute intestinal obstruction, 100% patients of perforative peritonitis 100% patients of gastritis and 75% patients of acute pancreatitis. Three

patients of obstructed hernia and one patient each of abdominal Koch's and colitis were clinically correctly diagnosed. Two patients of ovarian cyst and one patient each of CBD stone and ischaemic bowel disease were not diagnosed. Therefore clinical

Conclusion

Both serious and benign intra-abdominal conditions share many relatively nonspecific symptoms; it is often difficult to identify patients who have life-threatening problems early in the course of their disease. Apart from relieving the patient's symptoms, the emergency physician's primary role is to identify those cases that require immediate intervention in order to limit morbidity and mortality. An unexpected negative test result should prompt a reassessment of the patient and consideration for observation and repeat examination for disease progression. Whenever the diagnosis is in question,

diagnosis has important role in diagnosis of acute abdomen. Similar observations were noted in the studies of Agboola JO *et al*³, Gajjar R *et al*³⁸, Memon AA *et al*⁴² and Momin RS *et al*⁴³.

serial examination as an inpatient in an observation unit or in the emergency department (ED) is a sound strategy. Due to these reasons, designing a common approach to acute abdominal pain is difficult.

It is often difficult to identify patients who have life-threatening problems early in the course of their disease. Apart from relieving the patient's symptoms, the emergency surgeon's primary role is to detect and stabilize life-threatening conditions in a rapid and cost-effective manner. Diagnosis of many acute abdominal conditions relies on a good history and physical examination and the appropriate use of radiological investigations.

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