



## **A Prospective Study on Clinico-Radiological Correlation and Conservative Management of Non-Traumatic Acute Abdomen at a Tertiary Care Centre**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author RM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SC and MY managed the analyses of the study. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** Acute abdomen is a condition in which the patient complains of a sudden or gradual attack of abdominal pain over a duration of several hours and presents with a set of symptoms which indicate a life threatening illness that needs an urgent or quick diagnosis for early treatment. Delay in diagnosis will worsen the condition of the patient and can even have a fatal outcome. It is crucial to recognize situations where laparotomy can be avoided in order to bring down morbidity and financial costs. Hence this study is being conducted to evaluate various clinical presentations, accuracy of clinical diagnosis, causes, better imaging studies and effectiveness of conservative management of non-traumatic acute abdomen.

#### **Objectives:**

1. To study various clinical presentation of non-traumatic acute abdomen.
2. To study the accuracy of clinical diagnosis of non-traumatic acute abdomen
3. To study different causes of acute abdomen.
4. Compare different imaging studies in cases of acute abdomen and to evaluate their accuracy in diagnosing the condition.

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5. To study the effectiveness of conservative management (Ochsner-Scherren regimen) in cases of acute abdomen.

**Methods:** The study will be done at Dept. of General Surgery, J.N.M.C and AVBRH, Wardha. The duration of the study will be 2 years from September 2020 to August 2022. In this study, 80-100 Patients of acute abdomen attending the routine OPD and Emergency room at AVBR Hospital will be studied. Thorough clinical examination will be done and Patients with Abdominal pain will be categorized according to inclusion and exclusion criteria. Clinical findings with Radiological findings will be correlated and the sensitivity of imaging studies in diagnosing acute abdomen will be evaluated. The outcome of conservative management of non-traumatic acute abdomen will be observed.

**Results:** We expect to study various clinical presentations of acute abdomen, causes, evaluate the accuracy of imaging studies and to study the effectiveness of conservative management all of which in turn would lead to early and better management of acute abdomen.

**Conclusion:** Better understanding about presentation, causes, the accuracy of radiological studies and effectiveness of conservative management would help in identification of cases in which laparotomy can be avoided to prevent unnecessary surgery with its associated morbidity and financial burden.

*Keywords: Acute abdomen; conservative management; ochsner scherren regimen.*

## 1. INTRODUCTION

Presentation of acute abdomen can vary from mild dull aching pain to frank guarding and rigidity with associated systemic symptoms [1,2]. A surgeon managing a case of acute abdomen should be aware of diverse etiology of acute abdomen and management of such cases should be done at the earliest. For this, relevant radiological investigations should be done so that a fast and definitive diagnosis can be made within a short period of time [3].

There have been advancements in radiological diagnosis of acute abdomen with invention of USG, CT and MRI however, a plain X-Ray abdomen erect is still considered first line of investigations. After making a proper radiological diagnosis, correct management should be given [4,5,6].

The decision to proceed with emergency laparotomy remains subjective despite considering conservative management and is completely dependent on symptoms, clinical and laboratory results and imaging studies. Hence a thorough clinical examination remains the most important determinant for conserving a case of acute abdomen [7].

Traumatic injury to the abdomen can cause solid organ injury, hemoperitoneum, intestinal obstruction and pneumoperitoneum. Lower grades of solid organ injury can be managed conservatively however, higher grades will require surgical management. In cases of hemoperitoneum, pneumoperitoneum, etc.

conservation has less role and often requires emergency laparotomy [8] because conserving these cases can result in series of events as in sepsis, shock, MODS, death. Hence traumatic cases are not included in the study [9].

The most common cause of emergency abdominal surgery is acute appendicitis. Although the diagnosis is mostly clinical, a large fraction of people have normal appendix during surgery. This leads to increased rate of unnecessary appendectomy. Lately acute appendicitis is being managed more and more conservatively. This change can be somewhat attributed to better diagnosis. High resolution USG and spiral CT are helpful in reducing the false positive rates.

Pain in the periumbilical region and lower epigastrium is usually the first symptom of appendicitis which is followed by pain shifting to the lower right quadrant and an increase in the intensity of pain. This classical sequence of pain is although typical but not always present.

The clinical appearance is variable for appendicitis. While in patients, the clinical diagnosis can be clear with classic signs and symptoms. Atypical signs and symptoms causes delayed treatment and confusion in diagnosis. "A lot of other additionally present with symptoms resembling acute appendicitis. The differential diagnosis include-Acute Mesenteric Adenitis, Acute gastroenteritis, Intussusception, Crohns disease, appendicitis, Stones, Cholecystitis, UTI, Peritonitis, etc.

Patients' complications, morbidity, and costs rise as a result of unnecessary surgery for suspected appendicitis. Misdiagnoses and deceptive laparotomies can be reduced with radiological examination, and diagnosis can be aided.

In patients with ambiguous clinical findings, judicious use of graded compression ultrasound and computed tomography (CT) results in lower false-negative appendectomy levels. Radiological testing can help reduce the number of misdiagnoses and false laparotomies.

Appendicitis is very common. Infact it is among the commonest causes of acute right lower quadrant abdomen pain. Often the diagnosis of appendicitis can be done based on history and physical examination. Although less, still large number of people get operated without the inflammation being present because of similar clinical, conventional radiological findings. Recently though with availability of different imaging techniques i.e usg, spiral ct false positive acute appendicitishave reduced thereby reducing false appendectomies.

Such change in the management of acute appendicitis is an example in the list of entities socalled acute abdomen and hence acute abdomen in general needs to be examined carefully, quickly and in the most effective manner possible so as to reduce the associated mortality.

Good patients with intestinal obstruction and a history of abdominal surgery are difficult to treat. In the case of a high-grade obstruction, intestinal intubation and decompression, as well as intensive intravenous rehydration and antibiotics, should be tried.

The very first concept is that a severe and detailed approach at diagnosis, generally based on the history and physical examination, is required. One of the most common disorders that requires immediate diagnosis and treatment is abdominal pain. Other symptoms usually, but not always, accompany the pain, but pain is the primary symptom in most cases of acute abdominal disease. Sometimes, a precise diagnosis can only be made by surgery, and the opening of the abdomen reveals many surprises. As a result, in cases involving the abdomen, it is always the last court of appeal. The anatomy and causes of acute intestinal obstruction are much too complex to be thoroughly addressed in a short piece. We're only interested in the most

common causes and the most common types of cases brought in for diagnosis. It is not always necessary to know the exact cause of the obstruction in order to diagnose it, but every attempt should be made to determine it as precisely as possible.

Before an acute attack, intestinal obstruction may occur in a chronic or subacute form for a long time. Symptoms in the chronic form are similar to those in the acute form but not to the same extent as those caused by an acute attack. If left untreated, chronic obstruction normally results in an acute attack sooner or later. Acute symptoms result from obstruction high up in the small intestine; vomiting starts early and is regular and violent; immediate discomfort is greater; and distention does not appear until later. The vomit is bilious and green. When a large gallstone ulcerates into the duodenum, such symptoms are common. Due to sudden spasms, obstruction of the duodenum by a cicatrized ulcer may be acute. Anything eaten by mouth is returned in these cases, but there is no feculent vomit, the stomach peristalsis may be visible. Infants with congenital hypertrophic pyloric stenosis show the same signs and symptoms. Only the epigastric area shows signs of distention. When the upper jejunum is obstructed, the symptoms are still severe, and vomiting occurs early and often, though distention is not apparent at first. The signs are less severe the further down the jejunum the obstruction occurs. Obstruction of the small intestine's lower half The pain isn't as bad as it is when there's a blockage higher up. Shock and pain may be present, but vomiting takes longer to develop and feculent vomiting takes longer to develop. After a few hours, constipation sets in. Peristalsis is often evident in subacute situations, as is the ladder pattern of distention. Since much fluid is still drained from the bowel proximal to the destruction when the lower ileum is obstructed, the extent of early volume deficits may not be significant. Volume deficits are common with upper jejunal obstruction, even when symptoms are mild. In case of a bowel obstruction pain is uncommon (except in certain instances of volvulus and intussusception), much less severe, vomiting is a late and uncommon symptom, and distention occurs almost immediately after the acute attack begins. In the case of intussusception, however, distention is not an early symptom and should not be ignored, since a distended abdomen associated with an intussusception usually indicates that strangulation has occurred.

The pain in renal colic usually begins in the loin and radiates to the groin or the corresponding testicle, although this is not always the case. It may be caused by solid or semisolid matter moving through the ureter. The diagnosis is generally straightforward, but appendicular colic or even appendicitis may sometimes cause similar pain. However, there will normally be persistent local muscular rigidity in appendicitis extreme enough to simulate renal colic, which is not usually seen in renal colic. Renal colic is one of the most painful conditions a patient may have. Urinary symptoms are common in pelvic hematocele caused by a ruptured ectopic pregnancy. Urine retention can occur at times, as can minor pain or frequency. Ectopic pregnancy should be considered in a severely anaemic woman with abdominal pain and urinary symptoms. Acute bladder distention may cause extreme hypogastric pain and often pain in the lower lumbar region; there should be no trouble palpating or percussing out the distended bladder, and the fact that urine may be transferred through the process of overflow incontinence should not be misunderstood. It can be difficult to ascertain the location of the bladder by percussion in some rare cases where it does not distend outward but rather backward and upward, but bimanual examination may determine it, and the passing of a catheter may assist in the diagnosis.

All the above mentioned diagnoses are also a part of the entity so called acute abdomen. Every patient presenting with acute abdomen needs a thorough study and examination so as to be certain of the clinical diagnosis but given the nature of invasive management generally implemented the diagnosis cannot be solely clinical and a thorough study is required to ascertain a relationship between the clinical presentation and the radiological findings so as to have a sense of the accuracy and gravity of the diagnoses, more so a misdiagnosis. Since acute abdomen cannot be solely diagnosed clinically and number of false or negative laparotomies carry high risk and monetary burden, conservative management should be considered before resorting to invasive management given the patient is clinically stable for the same.

### 1.1 Rationale

Conventionally Acute abdomen is an entity that brings surgical intervention as the first choice of management due to high incidence of mortality

amongst the group and hence increasing the number of unnecessary exploratory laparotomy and prolonged hospital stay and its associated monetary burden. Hence there was a need for a way to correctly, quickly and accurately diagnose acute abdomen so as to confer appropriate treatment to the patient without increasing false surgical procedures. Recent advances in the radiological studies has made it possible to diagnose acute abdomen without compromising the precious time of the patient and also reducing the incidences of false surgeries. This in turn has made it possible for a avoiding surgical intervention in cases that can be managed conservatively and hence reducing unnecessary burden to the patient.

Inflammation of the renal pelvis, ureter, or bladder by the inflamed appendix or contiguous peritonitis may cause pain or frequency of urination in appendicitis. When this symptom is combined with pelvic tenderness, a tender lump in the rectum, or a positive obturator examination, the appendix is most often present in the pelvis, irritating the bladder. When an inflammatory mass is located next to the bladder, this series of symptoms appears. Urinary frequency, urgency, fever, and a pelvic mass are all symptoms of sigmoid diverticulitis or Crohn's disease.

### 1.2 Objectives

1. To study various clinical presentation of non-traumatic acute abdomen.
2. To study the accuracy of clinical diagnosis of non-traumatic acute abdomen
3. To study different causes of acute abdomen.
4. Compare different imaging studies in cases of acute abdomen and to evaluate their accuracy in diagnosing the condition.
5. To study the effectiveness of conservative management (Ochsner-Scherren regimen) in cases of acute abdomen.

## 2. METHODS

### 2.1 Study Area

Acharya VinobaBhave Rural Hospital (AVBRH), Sawangi and Jawaharlal Nehru Medical College(JNMC).

### 2.2 Source of Data

Patients from AVBRH attached to DMIMS. The patients are taken from both OPD and EMERGENCY ROOM.

## 2.3 Study Design

Prospective Observational Study.

## 2.4 Setting

A.V.B.R.H. Sawangi (Meghe) Wardha.

Duration of study: 2 years (September 2020- Oct 2022)

Sample Size- 80-100 (attending the routine OPD and Emergency room)

## 2.5 Study Population

Inclusion Criteria –

- All Patients of acute abdomen attending the routine OPD and Emergency room.

Exclusion Criteria–

- All obstetric cases of acute abdomen.
- All medical causes of abdominal pain.
- Previously operated cases for abdominal pathology.

## 3. RESULT/EXPECTED OUTCOME

We expect to study various clinical presentations of acute abdomen, causes, evaluate the accuracy of imaging studies and to study the effectiveness of conservative management all of which in turn would lead to early and better management of acute abdomen.

## 4. DISCUSSION

Rehan, M. [10] conducted a study and found that the leading cause of acute abdomen was acute appendicitis at 42%, followed by perforated DU at 28%. He found that though there has been large advancements in radiological imaging in the form of CT and MRI, mainstay remained X-ray abdomen in erect posture, ultrasonogram and sound clinical judgement [10].

Thus comparing our study with other studies we would like to study various clinical presentations of acute abdomen, causes, evaluate the accuracy of imaging studies and to study the effectiveness of conservative management all of which in turn would lead to early and better management of acute abdomen [11-13]. Studies on acute abdomen and abdominal pain were reported [14-16]. Related studies by Vaidya et. al. [17], Wanjari et. al. [18], Jindal et. al. [19] and Bhagvat et. al. [20] were reviewed.

## 5. CONCLUSION

Better understanding about presentation, causes, the accuracy of radiological studies and effectiveness of conservative management would help in identification of cases in which laparotomy can be avoided to prevent unnecessary surgery with its associated morbidity and financial burden.

## CONSENT

As per international standard or university standard, patients' written consent will be taken by the author(s).

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval will be taken by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Das S. A manual on clinical surgery. S. Das; 2000.
2. Brewer RJ, Golden GT, Hitch DC, Rudolf LE, Wangenstein SL. Abdominal pain: An analysis of 1,000 consecutive cases in a university hospital emergency room. The American journal of surgery. 1976;131(2):219-23.
3. Turnage RH. Abdominal wall, umbilicus, peritoneum, mesenteries, omentum, and retroperitoneum. Sabiston textbook of surgery. 2008;1150-1.
4. Stoker J, van Randen A, Laméris W, Boormeester MA. Imaging patients with acute abdominal pain. Radiology. 2009;253(1):31-46.
5. Yashwant R Lamture, Gode Dilip, Aditya Mundada. A rare case report of isolated tuberculous caecal perforation presented as acute appendicitis. Indian Journal of Forensic Medicine and Toxicology, October-December. 2020;14(4):6233-6236.
6. Ahn SH, Mayo-Smith WW, Murphy BL, Reinert SE, Cronan JJ. Acute nontraumatic abdominal pain in adult patients: abdominal radiography compared with CT evaluation. Radiology. 2002;225(1):159-64.

7. Kishore Kumar K. A clinical study on acute intestinal obstruction (Doctoral dissertation, Tirunelveli Medical College, Tirunelveli); 2016.
8. Alizadeh L, Shakeri-Darzekonani M, Sadraza A, Nouri-Vaskeh M, Basirjafari S. Conservative management of asymptomatic pneumoperitoneum; Report of two cases. Archives of academic emergency medicine. 2019;7(1).
9. Brill SE, Skipworth J, Stoker DL. Conservative management of pneumatosis intestinalis and massive pneumoperitoneum in the acute abdomen: A case report. Annals of The Royal College of Surgeons of England. 2008;90(2):W11.
10. Rehan M. Clinico-pathological study and management of non-traumatic acute abdomen (Doctoral dissertation, RGUHS).
11. Priya N, Lamture YR, Luthra L. A comparative study of scalpel versus surgical diathermy skin incisions in clean and clean-contaminated effective abdominal surgeries in AVBRH, Wardha, Maharashtra, India. J Datta Meghe Inst Med Sci Univ. 2017;12:21-5. DOI: 10.4103/jdmimsu.jdmimsu\_15\_17
12. Yashwant R. Lamture, Rajesh Domkunti, Avinash Rinait, Mangesh Padmawar. Enterocutaneous fistula in an operated case of total abdominal hysterectomy: A rare case report. Journal of critical reviews. 2020;7(8):1085-88. DOI: <http://dx.doi.org/10.31838/jcr.07.08.227>
13. Rajesh D, Lamture YR. A study on the correlation between endoscopic findings and symptoms of gastro-esophageal reflux disease (GERD). Journal of critical reviews. 2019;6(6):860-864. DOI: <https://dx.doi.org/10.31838/jcr.06.06.145>
14. Raja, Kolluru Karthik, Shilpa Gaidhane, Sharad Bhagwanrao Sonawane, Nazli Khatib, Yash Gupte. Atrial fibrillation presenting with acute abdomen in an elderly patient - A case report. Journal of Evolution of Medical and Dental Sciences-JEMDS. 2020;9(40):3019-21. Available: <https://doi.org/10.14260/jemds/2020/661>
15. Shinde, Raju, Sajika Dighe, Sangeeta Shinde. A rare case of triple vessel disease of abdomen. Medical Science. 2021;25(107):101-5.
16. Singh, Rohan Kumar, Shirish V Vaidya, Prerna Anup Patwa, Gaurav Vedprakash Mishra, Bhushita Lakhkar. Unorthodox display of nephroblastoma with abdominal pain and distention. Journal of Evolution of Medical and Dental Sciences-JEMDS. 2020;9(47):3588-91. Available: <https://doi.org/10.14260/jemds/2020/788>
17. Vaidya, Vikram Panjabrao, Yashwant R. Lamture, Harshal Ramteke, Aditya Mundada, Varsha Gajbhiye, MinakshiYeola. Migration of abdominal pain - an effective tool to identify appendicitis and the only parameter to screen. Journal of Evolution of Medical and Dental Sciences-JEMDS. 2020;9(33):2329-33. Available: <https://doi.org/10.14260/jemds/2020/506>
18. Wanjari Anil K, Arjun J Deshmukh, Parimal S Tayde, Yashwant Lonkar. Midgut malrotation with chronic abdominal pain. North American Journal of Medical Sciences. 2012;4(4):196-98. Available: <https://doi.org/10.4103/1947-2714.94950>
19. Jindal, Raghav, Manish Swarnkar. Outcomes are local: A cross sectional patient specific study of risk factors for surgical site infections in major abdominal surgeries. Journal of Krishna Institute of Medical Sciences University. 2020;9(1):43-50.
20. Bhagvat, Aditya, Shilpa Abhay Gaidhane, Anusha Gupta, Nazli Khatib, Priti Abhay Karabdhajane. Scleroderma renal crisis presenting as posterior reversible encephalopathy syndrome. Journal of Evolution of Medical and Dental Sciences-JEMDS. 2020;9(52):4009-11. Available: <https://doi.org/10.14260/jemds/2020/876>

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