

## Cross-Sectional Study to Assess the Prevalence of Acute Abdomen in Tertiary Care Hospital

Arvind Kumar<sup>1</sup>, Ashok Kumar Sharma<sup>2</sup>

<sup>1</sup>Senior Resident, Department of General Surgery, V.M.M.C and Safdarjung Hospital, New Delhi, India.

<sup>2</sup>Associate Professor, Department of General Surgery, V.M.M.C and Safdarjung Hospital, New Delhi, India.

---

Received: 08-06-2021 / Revised: 03-07-2021 / Accepted: 28-07-2021

Corresponding author: Dr. Arvind Kumar

Conflict of interest: Nil

---

### Abstract

**Aim:** Evaluate the Prevalence of Acute Abdomen in General Surgery in Teaching Hospital.

**Methods:** This cross-sectional study was done the Department of General Surgery, VMMC and Safdarjung Hospital, New Delhi, India from January 2018 to June 2019. Total 2544 patients were admitted through emergency, out of which 336 patients were admitted with pain abdomen. Out of 336 pain abdomen patients 100 of them were admitted with surgical causes of pain abdomen and 236 were admitted with medical and gynecological causes. **Results:** During study period, 2544 patients were admitted through emergency. 336 (13.21%) of them were admitted with complains of pain abdomen. Out of 336 pain abdomen patients, 236 were due to non surgical causes and 100 were due to surgical causes. The frequency of surgical pain abdomen requiring emergency hospitalization was 3.93%. The most common symptom was pain abdomen and was present in all 100 (100.0%) of study subjects. Vomiting was present in 75 (75%) study subjects. 58 (58%) of study subjects reported abdominal distention. Fever was present in 46 (46%) of study subjects. Constipation and diarrhea were present in 55 (55%) and 2 (2%) of the study subjects respectively (Table 3). Most consistent sign was abdominal tenderness, which was present in all 100 (100.0%) of the study subjects. Abdominal guarding was present in 63 (63%) of the study subjects. Absent bowel sounds and tachycardia was present in 53 (53%) and 49 (49%) study population respectively. In this study most common cause of surgical acute abdomen was acute appendicitis. Acute appendicitis was present in 40(40%) of study subjects. Gall bladder pathology was the 2<sup>nd</sup> most common cause of surgical acute abdomen in 22 (22%) of the study subjects. Renal/ureteric colic, perforation peritonitis, intestinal obstruction, and bowel ischemia was the cause of surgical acute abdomen in 13 (13%), 13 (13%), 7 (7%), and 5 (5%) of the study subjects respectively. **Conclusion:** The most common cause of surgical acute abdomen was acute appendicitis. Adequate health infrastructures at the primary and secondary health care level may be an important step forward to address common causes of acute abdomen.

**Keywords:** Acute abdomen, appendicitis, intestinal obstruction, perforation peritonitis, renal calculus, gall bladder pathology, bowel ischemia.

---

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

---

## Introduction

Acute abdomen is an acute onset of abdominal disease entities that require immediate surgical intervention in most of the cases. It is the most common presenting surgical acute abdominal emergency that has been estimated at least 50% of general surgical admissions are emergencies and 50% of them present with acute abdominal pain and encompasses a spectrum of surgical, medical and gynecological conditions, ranging from the trivial to the life-threatening, which require hospital admission, investigation and treatment.[1]

Non traumatic surgical acute abdomen is a part acute abdomen caused by surgical cases excluding trauma and it is common challenging clinical scenario requires a thorough and expeditious workup to determine the need for operative intervention and to initiate appropriate therapy. Many diseases, some of which are not surgical or intra-abdominal can produce acute abdominal pain and tenderness. The diagnoses associated with an acute abdomen vary according to age and gender. Appendicitis is more common in the young whereas biliary disease, bowel obstruction, intestinal ischemia and infarction, and diverticulitis are more common in elderly patients.[2]

The cause of acute abdomen is several and their relative incidence varies in different populations. Several factors are described to be responsible for these differences. Socioeconomic factors and diet have mostly been incriminated to be responsible for the observed differences.[3]

Worldwide, appendicitis, bowel obstructions, incarcerated or strangulated hernias, volvulus, and acute biliary pathology remain the most common causes of the non traumatic surgical acute abdomen. The most common symptoms are abdominal pain and vomiting whereas tenderness and guarding are the most frequent clinical signs. It is common surgical emergency accompanied with high

morbidity and mortality if not managed properly.[4-8]

Intestinal obstruction has been the leading cause of acute abdomen in several African countries whereas acute appendicitis is the most frequently seen cause in the developed world. The leading causes of intestinal obstruction in Africa have mostly been hernia and volvulus whereas adhesions are most frequent in the developed world.[3,5,9] In Ethiopia, especially in SNNR, little is known about non traumatic surgical acute abdomen. But some evidences show that it is a commonly encountered condition accounting for 9.3% total surgeries to 79% of the surgical emergency surgeries. The overall mortality of 18.6% and post-operative hospital mortality rate of 14%. Wound infection, sepsis and pneumonia are the most common postoperative complication and associated with long hospital stay.[10-12]

Acute abdomen is often a surgical emergency and a challenge to any surgeon. It is one of the commonly encountered emergencies in the practice of general surgery and for which emergency surgical operation commonly performed.[1,13]

Non traumatic acute abdomen is an integral of acute abdomen and is an important public health problem that remains a primary concern to both patients and surgeons. It is relatively non preventable common global emergency consuming much in terms of surgical services. It represents up to 54% of general surgical admissions in some Asian countries whereas up to 88.2% of total emergency operations in few African countries. Despite of modern surgery is being practiced; the mortality rate following non traumatic acute abdominal surgical emergencies is still high worldwide being the highest at the extremes of age.[10,14]

Lack of health education, improper health care facilities and late presentations are common factors for increased morbidity and mortality. Old age (> 55- yrs) and

duration of illness greater than two days were factors statistically associated with postoperative complication. Emergency procedures generally are associated with increased morbidity and mortality rate in elderly patients (the overall mortality reaches 22%.[15]

The magnitude of non-traumatic surgical acute abdomen is different in deferent areas due to socioeconomic, demographic factors and diet habit. In addition to this, the incidence of post-operative complications varies in different regions and setups.[16]

The pattern of the disease changes from time to time and needs periodic studies to evaluate the etiological factors and behavior of the disease. Global as well as regional variations in the pattern of non traumatic acute surgical abdomen and changes in the disease pattern over the years are well documented in the literature.[16]

### Material and methods

This cross-sectional study was done the Department of General Surgery, VMHC and Safdarjung Hospital, New Delhi, India for 18 months, after taking the approval of the protocol review committee and institutional ethics committee.

Total 2544 patients were admitted through emergency, out of which 336 patients were admitted with pain abdomen. Out of 336 pain abdomen patients 100 of them were admitted with surgical causes of pain abdomen and 236 were admitted with medical and gynecological causes.

Patients admitted through emergency with surgical acute abdomen were study

population in the present study. All patients aged  $\geq 18$  years and admitted with acute pain abdomen in surgical ward during data collection period were included in this study. Traumatic pain abdomen, Non traumatic pain abdomen in pregnant women, Non emergency hospitalization and Refusal to give consent were excluded from this study.

### Data Collection

Data were collected from 100 study subjects after obtaining written informed consent from them. A pre- tested, semi structured Schedule was used to collect data. Data was collected on the discharge day, by individual interview of the study subjects. In cases were study subjects were not able to give interview, responsible family member was interviewed for information. Relevant medical records like discharge certificates and bed head tickets were reviewed for Clinical presentation, final diagnosis and treatment.

### Statistical analysis

Data were codified and entered in MS Excel spread sheet. Frequency distribution tables were prepared to show results.

### Results

During study period, 2544 patients were admitted through emergency. 336 (13.21%) of them were admitted with complains of pain abdomen. Out of 336 pain abdomen patients, 236 were due to non surgical causes and 100 were due to surgical causes. The frequency of surgical pain abdomen requiring emergency hospitalization was 3.93% (Table 1).

**Table 1: Frequency of acute pain abdomen among study subjects admitted through emergency, n=2544**

Type of hospitalization	N (%)
Total emergency hospitalization	2544 (100.0%)
Total pain abdomen hospitalization	336 (13.21%)
Pain abdomen due to non-surgical causes	236(9.28%)
Pain abdomen due to surgical causes	100 (3.93%)

**Table 2: Socio-demographic characteristics of study population (n=100).**

Socio-demographic characteristics	N (%)
<b>Gender</b>	
Male	67 (67%)
Female	33 (33%)
<b>Age group</b>	
<21 years	11 (11%)
20-40 years	52 (52%)
40-60 years	30 (30%)
>60 Years	7 (7%)
<b>Residence</b>	
Urban	65 (65%)
Rural	35 (35%)

Total of 67 (67%) of the study population were male and 33(33%) were females. 11 (11%) of the study subjects were between 18 years to less than 20 years old. 52 (52%) study subjects were in the age group of 20- 40 years. 30 (30%) study subjects were in the age group 40-60 years and rest 7 (7%) were in the age group >60 years. 65 (65%) of the study subjects were from urban area and rest 35 (35%) were from rural area (Table 2).

**Table 3: Distribution of study population according to their clinical presentation**

Clinical presentation	N (%)
<b>Symptoms</b>	
Pain abdomen	100 (100.0%)
Vomiting	75 (75%)
Abdominal distention	58 (58%)
Constipation	55 (55%)
Fever	46 (46%)
Diarrhea	2 (2%)
<b>Signs</b>	
Abdominal tenderness	100 (100.0%)
Abdominal guarding	63 (63%)
Absent bowel sounds	53 (53%)
Tachycardia	49(49%)

**Table 4: Distribution of study population according to etiology of acute abdomen, n=100**

Etiology	N (%)
Acute appendicitis	40 (40%)
Gall bladder pathology	22 (22%)
Renal/ ureteric stones	13 (13%)
Perforation peritonitis	13 (13%)
Intestinal obstruction	7(7%)
Bowel ischemia	5 (5%)

The most common symptom was pain abdomen and was present in all 100 (100.0%) of study subjects. Vomiting was present in 75(75%) study subjects. 58 (58%) of study subjects reported abdominal

distention. Fever was present in 46 (46%) of study subjects. Constipation and diarrhea were present in 55 (55%) and 2 (2%) of the study subjects respectively (Table 3). Most consistent sign was abdominal tenderness,

which was present in all 100 (100.0%) of the study subjects. Abdominal guarding was present in 63 (63%) of the study subjects. Absent bowel sounds and tachycardia was present in 53 (53%) and 49 (49%) study population respectively (Table 3). In this study most common cause of surgical acute abdomen was acute appendicitis. Acute appendicitis was present in 40(40%) of study subjects. Gall bladder pathology was the 2<sup>nd</sup> most common cause of surgical acute abdomen in 22 (22%) of the study subjects. Renal/ureteric colic, perforation peritonitis, intestinal obstruction, and bowel ischemia was the cause of surgical acute abdomen in 13 (13%), 13 (13%), 7(7%), and 5 (5%) of the study subjects respectively (Table 4).

### Discussion

Acute pain abdomen is one of the common presentations in the medical emergency. Acute abdomen has sudden onset and may be due to the surgical as well as non surgical causes. The etiology varies from region to region and is also influenced by various socio-demographic characteristics. Patients with acute pain abdomen presents with wide range of clinical signs and symptoms. Most of the times sign and symptoms are subtle and are often overlapping. Missed and/or error in etiological diagnosis is common among acute abdomen patients. The chances of error are more in the emergent situation and more so if, health infrastructures are poorly equipped and overburdened. Idea about geographical distribution of acute abdomen etiologies may help in quick and more precise diagnosis, especially in emergency situation and may help in rapid revival of patients. This study was conducted to find out the frequency and etiological spectrum of surgical acute abdomen among patients admitted through emergency department of a tertiary care hospital.

In this study the prevalence of acute pain abdomen was found to be 13.21%. Frequency of surgical acute abdomen among emergency hospitalized patients

was found to be 3.93%. Few other studies also reported the prevalence of surgical acute abdomen between 5%-10% among emergency admission.<sup>17</sup> The most common symptom was pain abdomen and was present in all 100 (100.0%) of study subjects. Vomiting was present in 75(75%) study subjects. 58 (58%) of study subjects reported abdominal distention. Fever was present in 46 (46%) of study subjects. Constipation and diarrhea were present in 55 (55%) and 2 (2%) of the study subjects respectively. Chimkode R et al, also reported pain abdomen as most common presenting symptoms, followed by abdominal distention (78.0%) and vomiting (58.0%).[18] Most consistent sign was abdominal tenderness, which was present in all 100 (100.0%) of the study subjects. Abdominal guarding was present in 63 (63%) of the study subjects. Absent bowel sounds and tachycardia was present in 53 (53%) and 49 (49%) study population respectively. In a study done by Chimkode et al, abdominal tenderness was present in 96.0% of study subjects. Abdominal guarding and tachycardia were present in 96.0% and 46.0% of cases respectively.[18] In this study most common cause of surgical acute abdomen was acute appendicitis. Acute appendicitis was present in 40(40%) of study subjects. Gall bladder pathology was the 2<sup>nd</sup> most common cause of surgical acute abdomen in 22 (22%) of the study subjects. Renal/ureteric colic, perforation peritonitis, intestinal obstruction, and bowel ischemia was the cause of surgical acute abdomen in 13 (13%), 13 (13%), 7(7%), and 5 (5%) of the study subjects respectively. Tariq et al, from Pakistan also reported acute appendicitis as most common cause of acute abdomen, followed by acute pancreatitis and duodenal ulcer.[19] A study by Ohene- Yeboah M, from Ghana, Africa, also reported acute appendicitis followed by typhoid fever, ileal perforation and acute intestinal obstruction as most common cause of acute abdomen.[20] Caterino S et al, also reported acute appendicitis as most common cause of

surgical acute abdomen requiring emergency hospitalization.[21] However, few other studies reported other etiologies as most common cause of surgical acute abdomen. Jain et al, reported perforation peritonitis (39.7%) followed by acute appendicitis (37.7%) as the leading causes of surgical acute abdomen.[22] This etiological difference may be due to selective referral of high-risk cases to these centers.

### Conclusion

The present study concluded that the most common cause of surgical acute abdomen was acute appendicitis. Adequate health infrastructures at the primary and secondary health care level may be an important step forward to address common causes of acute abdomen.

### Reference

1. Faiz O, Banerjee S, Tekkis P, Papagrigoriadis S, Rennie J, et al. (2007) We still need to operate at night. *World J Emerg Surg* 2: 29.
2. Postier RG, Squires RA (2012) *Acute Abdomen. Sabiston Textbook of Surgery.* (18th edn).
3. Kotiso Y, Abdurahman Z (2007) Pattern of Acute Abdomen in adult patients in TikurAnbesa Teaching Hospital, Addis Ababa, Ethiopia. *East and Central African Journal of Surgery* 12: 47-52.
4. Awori MN, Jani PG (2005) Surgical implications of abdominal pain in patients presenting to the Kenyatta National Hospital casualty department with abdominal pain, *East Afr Med J* 82: 307-310.
5. Ohene-Yeboah M (2006) Acute surgical admissions for abdominal pain in adults in Kumasi, Ghana. *ANZ J Surg* 76: 898-903.
6. McConkey MB (2002) Case series of acute abdominal surgery in rural Sierra Leone. *World J Surg* 26: 509-513.
7. Soressa U, Mamo A, Hiko D, Fentahun N (2016) Prevalence, causes and management outcome of intestinal obstruction in Adama Hospital, Ethiopia. *BMC Surg* 16: 38.
8. Hosbey M (1986) An approach to the acute abdomen. In: Faruk H, Pathways in surgical management. (2nd edn) London Edward Arnold, 293-307.
9. Berhane Y, Girmay K, Gebresilassie A (2016) Outcome of emergency surgical operations performed for non-traumatic acute abdomen among adults in Mekele Hospital, Tigray, Ethiopia, 2013. *European Journal of Pharmaceutical and Medical Research* 3: 106-111.
10. A yenew, Z Gizaw, AT Workneh D, Fentahun N (2016) Outcome of non-traumatic surgical acute abdomen in Nekemte Referral Hospital, Southwest, Ethiopia: A retrospective Cross sectional Study. *Surgery Curr Res* 7: 282.
11. Hanks L, Lin CP, Tefera G, Seyoum N (2014) Abdominal surgical emergencies at Tikur Anbesa Specialized Hospital in Ethiopia; A shifting paradigm. *East and Central African Journal of Surgery* 19: 90-94.
12. Al-Mulhim AA (2006) Emergency general surgical admissions. Prospective institutional experience in non-traumatic acute abdomen: Implications for education, training and service. *Saudi Med J* 27: 1674-1679.
13. Ray S, Patel M, Parmar H (2016) Management of acute abdomen: Study of 110 cases. *IAIM* 3: 18-24.
14. Nyundo M, Rugwizangoga E, Ntakiyiruta G, Kakande I (2013) Outcome of Emergency Abdominal Surgery at Kigali University Teaching Hospital: A review of 229 cases. *East and Central African Journal of Surgery* 18.
15. Tassew B, Haile MT, Tefera TB, Balda SS, Gonfa KB, et al. (2017) Presentation and outcome of acute abdomen in goba referral hospital, Goba, Southeast Ethiopia: Retrospective Study. *SM J Fam Med* 1: 1003.
16. Tsegaye S, Osman M, Bekele A (2006) Surgically treated acute abdomen at

- Gondar University Hospital, Ethiopia. East and Central African Journal of Surgery 12: 53-57.
17. White MJ, Councilman FL. Troubleshooting acute abdominal pain. *Emerg Med* 2002; 34(1):34-42
  18. Chinkode R, Shivakumar C.R. Clinical profile of acute abdomen cases at a tertiary care hospital. *Int Surg J*. 2016 Feb;3(1):105-7.
  19. Zahid MA, Abdullah MT, PIMS I. Presentation and outcome of acute abdomen in a tertiary care unit. *Ann Pak Inst Med Sci*. 2011;7(3):137-41.
  20. Ohene-Yeboah M. Acute surgical admissions for abdominal pain in adults in Kumasi, Ghana. *ANZ journal of surgery*. 2006 Oct;76(10):898-903.
  21. Caterino S, Cavallini M, Meli C, Murante G, Schiffino L, Lotito S, et al. Acute abdominal pain in emergency surgery. Clinical epidemiologic study of 450 patients. *Ann Italiani Chir*. 1997;68(6):807-17.
  22. Jain R, Gupta V. A prospective study of epidemiology and clinical presentation of non-traumatic acute abdomen cases in a tertiary care hospital of central India. *Int Surg J*. 2017 Jan;4(1):242-245