

A Clinical Study on Complications of Acute Appendicitis in a Tertiary Care Hospital

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Abstract: ***Background:** Acute Appendicitis is a disease which can progress to multiple complications if and when left alone. Even though the gold standard of treatment is surgery but in few cases we might go for conservative as well. It is estimated that as much as 6% to 7% of the general population will develop appendicitis during their lifetime, with the incidence peaking in the second decade of life, out of which 2 - 6% may develop appendiceal mass. **Methods:** In this hospital based observational prospective study, all 50 inpatients over the age of 12 years with a diagnosis of acute appendicitis and its complications were admitted in Assam Medical College and Hospital between June 1st 2021 to May 31st 2022. A detailed history and clinical examination combined with relevant investigation in diagnosis, choice of treatment and prognosis of the condition were chosen. **Results:** 46 cases were found to be of appendicular abscess, 2 cases of appendicular perforation with abscess 2 cases of gangrenous appendicitis. In this study out of 50 cases, 35 cases were treated conservatively, 11 cases underwent abscess drainage only, 2 cases underwent operative surgery appendectomy and another 2 underwent appendectomy with peritoneal lavage. **Conclusion:** In many cases of complicated acute appendicitis, conservative therapy was beneficial for the majority of patients which reduced overall hospital stay.*

Keywords: Complications, Acute appendicitis, Appendicular abscess, Conservative

1. Introduction

The incidence of appendicitis along with its complications have risen in first half of this century with its traditional approach being surgical¹. However an emerging society of researchers are in favour of conservative treatment in complicated cases. A growing body of circumstantial data implies that resolution may be a frequent occurrence in acute appendicitis and that not all patients will advance to perforation. Additional complications of acute appendicitis include retrocaecal abscess, pre - and post - ileal abscesses, pelvic abscesses, and lumbar abscesses, gangrenous appendicitis. Rupture of the appendix results in generalised peritonitis, which has a mortality rate of 10–20%.^{2,3,4}

Aim: To study the various complications of acute appendicitis

Objectives: To study the various clinical presentations of complicated acute appendicitis and their diagnosis and management strategies.

2. Materials and Methods

Study Place: Assam Medical College and hospital

Study Design: Prospective Observational Study

Study Period: June 1st 2021 to May 31st 2022

Subject Selection: General Surgery, AMCH

Inclusion criteria

- 1) Age more than 11 years of age.
- 2) Patients diagnosed clinically and radiologically and during operation as Complicated acute appendicitis during the study period.

Exclusion Criteria:

- 1) Pregnant Patients
- 2) Moribund Cases

Ethical Committee Approval:

Ethical clearance was taken from the Institutional Ethics Committee (H), AMCH. All patients were given information outlining the experimental protocol and all the patients signed a consent form prior to entering the study

Methodology

It is a hospital based observational prospective study of 50 cases in General Surgery Department requiring hospital admission with treatment planned according to the clinical presentation. After getting approval from the ethical committee, this study was conducted and it was carried out in our tertiary care hospital affiliated to a teaching institute. The period of the study is from June 1st 2021 to May 31st 2022.

The total number of patients included in our study are 50, between the age group of 13 to 65 years of both sexes. These patients are observed clinically and radiologically before planning the surgical or conservative management.

3. Statistical Analysis & Results

Microsoft Excel 2010 was used to tabulate the data and statistical product and service solutions (SPSS) 20.0 software (SPSS, Chicago, Illinois, USA) was used for the computer - based analysis. Proportions and percentages were used to condense the category variables. Because the study was an observational one conducted in a hospital, no statistical comparisons between the parameters were made.

3.1 Results

Table 1: Age Distribution

Age Group (in years)	Number (n)	Percentage (%)
12–20	12	24
21–30	16	32
31–40	7	14
41–50	6	12
51–60	5	10
> 60	4	8
Total	50	100

In our study of 50 cases, the mean (\pm SD) age of presentation was found to be 32.26 ± 15.77 , ranging from 12 years to 68 years and the peak incidence was found to be in 21 - 30years (24%) and 12 - 20years (24%) age group

Table 2: Gender Distribution

Gender	Number	Percentage
Male	27	58
Female	23	42
Total	50	100

In our study subjects, 27 cases were of male gender and 23 were of female gender, which shows almost equal distribution with a male - to - female ratio of 1.17: 1

Table 3: Origin of Pain Abdomen

Origin of Pain	Number	Percentage
Peri - umbilical region	33	66
Right iliac fossa	11	22
Epigastrium	3	6
Diffuse pain over abdomen	3	6
Total	50	100

In this study, 66% had pain originating in and around the umbilicus, 22% in the right iliac fossa, 6% in the epigastrium, and 6% of them had diffuse pain all over the abdomen.

Table 4: Symptoms

Symptoms	Number (n = 50)	Percentage
Abdominal pain	50	100
Migratory RIF pain	38	76
Anorexia	32	64
Nausea and Vomiting	40	80
Constipation	24	48
Diarrhoea	2	4
Burning Micturation	2	4

Table 7: Length of Hospital Stay

Length of Hospital Stay	Conservative (n = 35)	Drainage of Abscess (n = 11)	Appendicectomy with Peritoneal Lavage (n = 2)	Appendicectomy (n = 2)
<5 days	12	6	0	0
6 - 8 days	21	3	0	1
>8 days	2	2	2	1
Total	35	11	2	2

In our study, majority 35 (70%) of the patients managed conservatively out of which (12) 34.28% stayed for less than 5days along with (21) 60% who stayed around 6 - 8 days and (2) 5.71% stayed for more than 8 days. Among the patients of abscess drainage (6) 54.54% stayed less than 5 days, (3) 27.27% stayed around 6 - 8 days, (2) 18.18% stayed more than 8 days. While in appendicectomy with

In this study, all patients had presented with pain abdomen. But typical Migratory abdominal pain was present in 38 (76%) of the patients. Nausea and vomiting were the most common presenting symptom of 40 (80%) of cases. Anorexia was the next most common presenting symptoms accounting for 32 (64%) of cases. Constipation was found in 24 (48%) of the cases and diarrhoea, burning micturition in 2 (4%) of cases individually).

Table 5: USG based diagnosis

USG Guided Diagnosis	Number (n)	Percentage (%)
Appendicular Abscess	46	92.00
Appendicular Perforation with Abscess	4	8.00
Total	50	100.00

USG abdomen including graded compression technique was carried out in 50 patients (100%) in this study. Out of them 46 (92%) of cases were found to be appendicular abscess ranging from size 3.5–4.5 cm². Four cases were diagnosed as appendicular perforation with abscess.

Table 6: Intraoperative Finding Leading To The Final Diagnosis Of The Patient

Final Diagnosis	Number	Percentage
Appendicular abscess	9	50
Appendicular perforation with abscess	4	22.22
Appendicular lump	3	16.67
Gangrenous Appendicitis	2	11.11
Total	18	100

In our study of 50 cases diagnosis was made based on clinical, radiological, and intra - operative findings. Intraoperative findings include of the number of patients failed to be managed conservatively and by intraabdominal drain 46 cases were diagnosed to have appendicular abscess, 2 cases werediagnosed to have appendicular perforation with abscess radiologically, and 2 similar cases which were confirmed intra - operatively after their symptoms failed to improve by failed conservative and abscess drainage methods.3 patient had appendicular lump in similar scenario however appendicectomy was done and 2 had gangrenous appendicitis confirmed intraoperatively.

peritoneal lavage 2 (18.18%) and simple appendicectomy (9%) it was more than 8 days

Table 7: Different Modalities of Treatment

Treatment	Number	Percentage
Conservative	35	70
Drainage of abscess	11	22
Appendectomy with peritoneal lavage	2	4
Appendectomy	2	4
Total	50	100

In this study, 35 patients with appendicular abscess were managed solely by conservative management, 11 patients with appendicular abscess were managed by drainage of the abscess. 5 patients managed by conservative management had a recurrence after 1 - 3 months, 3 - 6 months and interval appendectomy was done, 3 patients who were unresponsive to conservative management and developed signs of peritonitis were managed by emergency appendectomy. 2 (4%) cases of appendicular perforation with abscess was done appendectomy with peritoneal lavage and another with just appendectomy, while 1 case of gangrenous appendicitis was done appendectomy.

4. Discussion

The present study comprised of 50 cases of acute appendicitis with appendicular abscess admitted to any of the seven general surgical units of department of general surgery, Assam Medical College and Hospital, Dibrugarh for a period of 1 year from June 1st 2021 to 31st May 2022.

The various modes of presentation of acute appendicitis along with its complications and different treatment modalities was studied.

Out of the 50 cases, Males accounted for 58% of the cases and 42% of the cases were female. Male: Female ratio was 1.17: 1

The maximum number of patients was found to be in the age group 21 - 30 years. The peak incidence of acute appendicitis with appendicular abscess in this study was found in 2nd and 3rd decade of life with the mean age being 32.26 ± 15.77 . Roy et al⁴ in 1960 they studying 500 cases they concluded that the acute appendicitis was commonest in the 21 - 30 years of age groups decade of life.

Pain was present in all cases (100%). Duration of pain prior to admission was varied from a minimum of 8 hours to 72 hours in this study. Majority were admitted in their 24 - 48 hours of illness. Out of total 50 patients 33 patients (66%) had classical presentation with pain originating in and around the umbilicus, in 11 cases (22%) pain started in the right iliac fossa, 3 (6%) cases had pain in the epigastrium, while other 3 (6%) had diffuse pain all over the abdomen at the time of onset. Roy et al⁴ (1969) in their study found that the pain originating around the umbilicus in most of the cases 42% and around right iliac fossa 24%. In the right lower abdomen 7.4% and upper abdomen 3% while whole abdomen 3%.

In our study, 11 patients with appendicular abscess underwent drainage while 35 patients with appendicular abscess received only conservative therapy. One instance of gangrenous appendicitis required appendectomy, whereas two (4% of cases) of appendicular perforation with abscess

required appendectomy with peritoneal lavage and another merely appendectomy.

In our study most of the patients responded to antibiotics therapy and were safely discharged from the hospital after improved. The success rate of conservative treatment reported in present series was 47.144%. In the study, the majority of 35 patients (70%) were treated conservatively; of them, 34.28% stayed for less than five days, 60% lasted for six to eight days, and 5.71% stayed for more than eight days. 54.54% of abscess drainage patients stayed less than five days, 27.27% stayed between six and eight days, and 18.18% stayed longer than eight days. It took more than 8 days for discharge of appendectomy with peritoneal lavage (18.18%) and simple appendectomy (9%) patients. Kim et al⁸ 2010 found that when emergency surgery is performed in Appendicular abscess patients, the incidence of complications is reported to be upto 26%.

Conservative management of complicated acute appendicitis such as in appendicular abscess showed satisfactory response as long as patients vitals and signs were closely monitored and maintained

5. Conclusion

In this observational prospective study of complications of acute appendicitis done during one year duration in Assam Medical College and Hospital General surgery department highest incidence of acute appendicitis was noted in 2nd and 3rd decades of life with male predominance and male: female ratio of 1.17: 1

The Murphy's triad symptoms of pain, vomiting, and fever, as well as a typical presentation of fluctuating pain, were present in the majority of the patients. Together with the Modified Alvarado score, radiological and clinical diagnoses were used to confirm the diagnosis. When taken by itself, a higher leucocyte count, which was present in the majority of instances of pyrexia, is of little significance.

The majority of patients benefited from conservative therapy in numerous cases of appendicular abscesses. Due to any acute appendicitis complications, primary surgical procedures took more time with dissection and required a longer hospital stay than patients who had conservative treatment after being admitted. Due to the small sample size, we were unable to use the results of the numerous patients under varied clinical circumstances to deepen our understanding of the study. Those who underwent surgery did not die, and neither did individuals who got conservative therapy.

It was often successfully treated with merely conservative methods because it was a first episode of complicated acute appendicitis, avoiding the risks of surgical intervention. Yet with conservative therapy, it's important to regularly assess the patient's clinical condition and to keep a close eye out for signs of clinical status improvement that call for surgical intervention.

Treatment for acute appendicitis, appendicular abscess, and other sequelae is increasingly being done conservatively.

Our study demonstrates that although an increasingly bad case may necessitate surgical therapy, conservative management of appendicular abscesses is becoming a plausible therapeutic option. More information on the subject at hand will be available from a larger sample size over a longer time frame.

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Declaration of Conflict of Interest: None

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