



E-ISSN: 2616-3470  
P-ISSN: 2616-3462  
© Surgery Science  
www.surgeryscience.com  
2020; 4(1): 295-298  
Received: 06-11-2019  
Accepted: 10-12-2019

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## Acute appendicitis as the cause of non-traumatic acute abdomen in a tertiary care hospital: A retrospective study

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DOI: <https://doi.org/10.33545/surgery.2020.v4.i1f.352>

#### Abstract

**Background:** In our era of improved care at primary and secondary health care centres, we wanted to study the epidemiology and clinico-radiological presentation of acute appendicitis in our tertiary care centre.

**Materials and Method:** The age and sex incidence, position of appendix, radiological correlation with clinical diagnosis were analysed retrospectively of 132 cases of acute appendicitis out of 200 cases of acute abdomen which were treated surgically in department of general surgery Trichy SRM medical college, from October 2018 to October 2019.

**Results:** Highest incidence of appendicitis was 61 cases (46.21 %) were in the 21-30 years age group, among 32 cases 88 cases (66.67%) were male and 44 cases (34.09%) were female, Retrocaecal position was 68.18% and 95% of times radiological correlation was positive or acute appendicitis.

**Conclusion:** Our study showed highest incidence of acute appendicitis in the age group of 21-30 yrs with male preponderance. Most common position of tip of appendix was retrocaecal and radiological correlation of diagnosis of acute appendicitis was 95%.

**Keywords:** acute abdomen, acute appendicitis, position of appendix, radiology in appendicitis

#### Introduction

An Imprecise term 'non traumatic acute abdomen' leaves much to be desired from a semantic point of view but is useful in practice, included under the heading are all the painful abdominal syndromes, sometimes benign, frequently potentially lethal and of several origin; characterized by sudden appearance of pain with accompanying local or general signs and symptoms. Out of this various causes Vermiform Appendix a mysterious structure, being the frequent site of inflammation, with no function. Acute appendicitis is most common surgical emergency. The diagnosis and position of appendix is elusive and needs high index of suspicion in preventing serious complication. This is a study about incidence of Acute appendicitis in acute abdomen in our hospital.

#### Aims of the study

- To determine the incidence of acute appendicitis in a tertiary care centre.
- To find out the age and sex distribution of this condition.
- To determine the incidence of various positions of the appendix among the study subjects.
- To compare the clinical and radiological findings, and their outcomes.

#### Methodology

##### Materials

The study material consists of 200 cases of non-traumatic acute abdomen, of which 132 cases were of acute appendicitis, admitted in five surgical units in Trichy SRM Medical College Hospital and Research Centre, during the period of October 2018 to October 2019.

##### Methods

The following procedures were adopted according to the condition, investigations and clinical

diagnosis of the patient, i.e. Conservative management and emergency surgeries. In selected cases, pre-operative and post-operative, clinical and operative photographs were taken. All the patients were followed in the immediate post-operative period and in subsequent period for three months till the end of study. The age and sex incidence, the common clinical presentation, the different types of management were analysed and discussed in relevance to each of the patients.

The various investigations that were available in the institution had been used, that includes biochemical and radiological. The various treatment options were considered for each of the cases and each case was provided the best optimal treatment available in the institution.

**Type of study**

Retrospective study.

**Inclusion criteria**

All the patients admitted with acute appendicitis and managed surgically are included in the study.

**Exclusion criteria**

Patients with other causes of acute abdomen were excluded from the study. Children below the age of 12 and gynaecological emergencies are excluded from the study. Patients treated by conservative management are excluded from the study.

**Study centre**

This study was carried out at The Department of General Surgery, Trichy SRM Medical College Hospital and Research Centre. In this study, the Acute Appendicitis cases operated counts to 132.

**Results**

A total of 200 study subjects with non-traumatic acute abdomen were analysed and diagnosed in the given study period. The incidence is as follows:

**Table 1:** Total number of acute abdomen

Acute abdomen	Total numbers	Percentage	Male	Percentage	Female	Percentage
Appendicitis	132	66	88	66.67	44	34.09
Perforation	28	14	26	90.9	2	9.09
Obstructed hernia	17	8.5	14	82.35	3	17.65
Intestinal obstruction	18	9	9	50	9	50
Others	5	2.5	3	60	2	40

Of these, a total of 132 cases of acute appendicitis were found and operated on. These include cases of uncomplicated acute appendicitis as well as those associated with complications such as appendicular abscess, mass, perforation and gangrenous appendix.

**Age incidence**

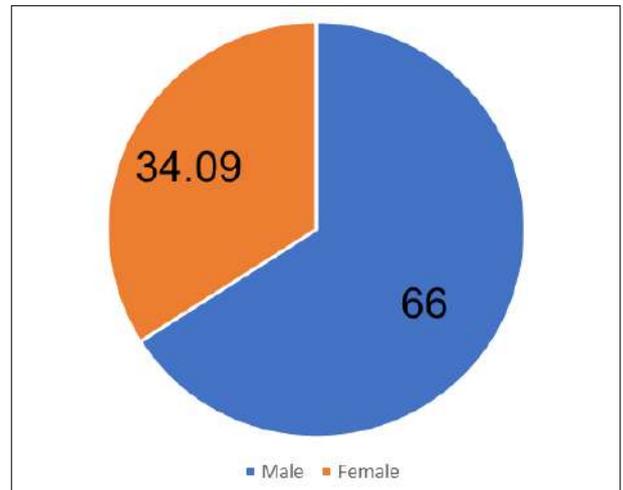
The incidence of the disease has been classified as follows: The youngest was a 12 yr. old male, while the oldest was 58 yrs. old male. It was observed that the majority of cases, 61 cases (46.21 %) were in the 21-30years age group.

**Sex incidence**

Of the 132 cases studied 88 cases (66.67%) were male and 44 cases (34.09%) were female patients. This reflected of a male preponderance.

**Table 2:** Sex distribution of Acute Appendicitis

Acute appendicitis	Number of patients	Percentage
Male	88	66
Female	44	34



**Fig 1:** Sex distribution of acute appendicitis

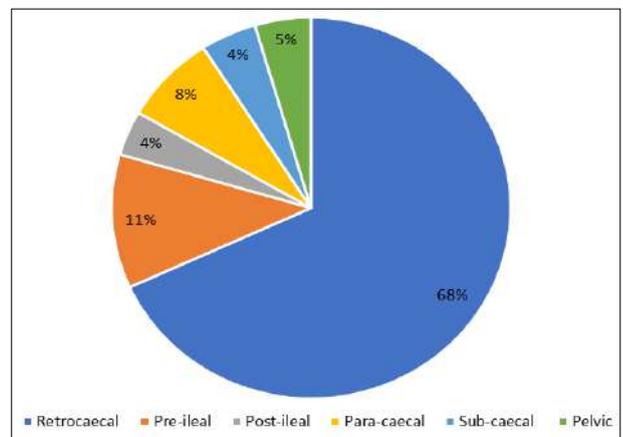
**Position of appendix**

Of the total of 132 patients in the study, the position of appendix were as follows:

Associated findings and complications of the total 132 cases analysed and there were 6 (4.55%) cases of appendicular perforations, 5 cases (3.79%) of early mass formation in which appendicectomy was possible, 6 cases (4.55%) were appendicular abscess and 115 cases (87.12%) were acute appendicitis.

**Table 3:** Positions of Appendix

Position of appendix	Total number	Percentage
Retrocaecal	90	68.18
Pre-ileal	15	11.36
Post-ileal	5	3.79
Para-caecal	10	7.58
Sub-caecal	6	4.55
Pelvic	6	4.55



**Fig 2:** Positions of appendix

**Accuracy of clinical vs. radiological findings**

**Radiological findings**

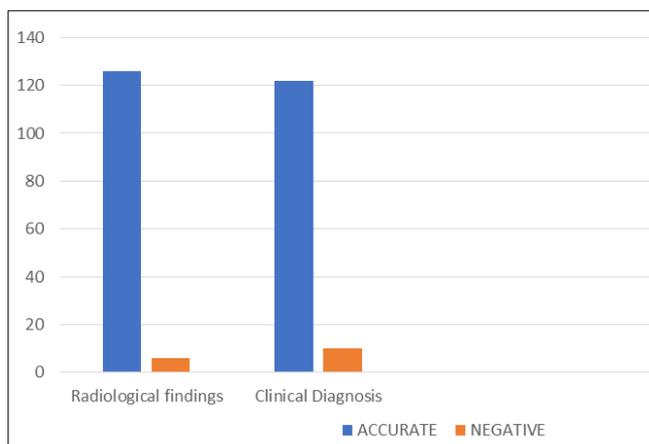
Of the 132 cases studied 126 cases (95%) had accurate radiological diagnosis.

### Clinical findings

Of the 132 cases studied 122 cases (92%) were diagnosed by accurate clinical findings.

**Table 4:** Accuracy of clinical vs. radiological findings

Appendicitis	Accurate	Negative
Radiological findings	126	6
Clinical Diagnosis	122	10



**Fig 3:** Accuracy of clinical vs. radiological findings

### Discussion

Comparing the age incidence, there was a maximum incidence of cases in 21-30 age groups, which accounted for almost 46.21% of all cases in this study.

In our study, the male incidence (66.67%) predominated over the female incidence (34.09%).

Regarding the position of the appendix 68.18% of the cases were retrocaecal as compared to western series 75% to 80%. Also 11.36% of our cases had preileal position, compared to the usual 1-2%. There was a reduced incidence of pelvic appendix 4.45% as compared to the western series 20-25%. This study thus showed a decrease in the frequency of retrocaecal position.

The mortality in this series was 0% as compared to the usual 1-2%. Of the 132 cases of acute appendicitis, 126 cases (95%) had accurate radiological diagnosis and 122 cases (92%) were diagnosed by accurate clinical findings.

Comparing the clinical and radiological findings the p-value of 0.302 was not significant.

The age and sex incidence of appendicitis in this study had a significant p-value of 0.04 and chi square value of 10.02.

Emergency open appendectomy was done for all the 126 cases that includes acute appendicitis, appendicular abscess and appendicular mass. Laparotomy was done for 6 cases of appendicular perforation. All the patients had an uneventful postoperative period and recovered well.

Sandy Criag *et al.*, Incidence of appendicitis, American Journal of Surgery March 2000, states that in Asian and African countries, the incidence of acute appendicitis is probably lower because of the dietary habits. In the last few years, a decrease in frequency of appendicitis in Western countries has been reported, which may be related to changes in dietary fibre intake. The incidence is more in males as in this study. Retrocaecal presentation accounts for about 80% while it is only 68.18% in our study.

Liu CD, McFadden DW *et al.*, Acute abdomen and appendix. In: Greenfield LJ, *et al.*, eds. Surgery: scientific principles and practice. 2d ed. Philadelphia: Lippincott-Raven, 1997:1246-61 states that the incidence of appendicitis is more in the 2nd

decade as in this study. There is a male predominance as seen in this study also. Geis WP, Miller CE, *et al.*, Laparoscopic appendectomy for acute appendicitis: Contemp Surg. 1992; 40:13-9 states that open appendectomy is the treatment for acute appendicitis, but laparoscopic appendectomy can be done in early cases without any complication. In this study, open appendectomy was done.

Styrud J, Eriksson S, Nilsson I, *et al.* Appendectomy versus antibiotic treatment in acute appendicitis. A prospective multicentre randomized controlled trial. World Journal of Surgery. 2006; 30: 1033-1037, states that appropriate antibiotics along with monitoring of vitals can also be done when the infection seems to be controlled. But in this study, surgery was one for cases of early appendicitis and also recurrent appendicitis in order to prevent the recurrence.

### Conclusion

- The incidence of acute appendicitis is more common in males when compared to females.
- Among the cases of acute appendicitis, the incidence is more males of the 3rd decade when compared to females.
- There is a decrease in retrocaecal position of appendicitis when compared to the western countries
- Radiological diagnosis and clinical diagnosis are more or less equally accurate in diagnosing acute appendicitis, with better radiological diagnosis in specific cases that helps in appropriate surgical treatment.
- Appendectomy still remains the commonest non traumatic abdominal emergency surgery.

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