

## Review of Acute Appendicitis in Tertiary Care Unit, Gujranwala, Punjab, Pakistan

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### Abstract

*This study has been performed to highlight the prevalence of acute appendicitis in patients of different gender and age group in DHQ teaching hospital Gujranwala in Pakistan as a Retrospective study. Out of a total of 146 patients, there were 84 males and 62 females. In our study 15 (10.3%) had gangrenous appendix, while 17 (11.6%) patients had perforated appendix with a few having both gangrenous as well as perforated appendix, and 49 (33.6%) had acutely inflamed appendix, similar to what is found in the literature, Our management consisted of surgery as soon as diagnosis was confirmed and the patient was considered fit for general anesthesia or spinal anesthesia. The complication rate was higher in patients with perforated appendix and co-morbid conditions. While acute appendicitis is primarily a disease of the all age groups with only approximately 40% of cases occurring after the age of 20. The incidence of appendicitis in older patients seems to be increasing with an increase in life expectancy. Less than half of the elderly patients with acute appendicitis present with the classical signs and symptoms including nausea, vomiting, loss of appetite and migrating pain.<sup>14</sup> Perforated appendicitis and sepsis is the main cause of undesirable outcomes*

**Keywords:** Acute appendicitis, Co-morbid conditions, Perforated appendix, Spinal anesthesia

### Introduction

About 7% of the patients from general population will have appendicitis in their lifetime<sup>1</sup> with the peak incidence occurring between the age group of 10 and 30 years.<sup>2</sup> Evaluating a patient who presents with abdominal pain is a difficult challenge and one that we will be faced more often as the mean age increases. Understanding why elderly patients present differently than their younger counterparts can improve the outcomes by minimizing diagnostic mistakes and delays in treatment. Appendicitis is a disease also occurring in the elder group of age and is subject to both delayed presentation and diagnosis.

When compared to the younger generation, the elder group has much higher morbidity and mortality rates. The risk of perforation in the population of elder group is reaching levels up to 70%, and morbidity and mortality in the population of elder group remain significant at 28-60% and 10% respectively. The differential diagnoses of acute appendicitis are many and vary accordingly. Despite recent advancements, the diagnosis of appendicitis is still based primarily on the patient's history and physical examination, ALVARADO score.

In approximately 20% of all patients, however, the diagnosis is not correct, and patients undergo surgical interventions without having acute appendicitis. Proper diagnosis and surgical consultations will reduce the risk of complications regarding acute appendicitis. The increased rate of appendectomies without histological evidence of acute inflammation, especially in young women, and the high perforation rate in children and elder group of patients reflect poor diagnostic accuracy. The objective of this study was to review the prevalence, gender & age distribution, clinical experience (ALVARADO scoring), in diagnosis, management, treatment and outcome of patients presenting with acute appendicitis at the Tertiary care unit, Gujranwala Punjab Pakistan.

**Objective:** The objective of this research is to review the prevalence, gender & age distribution, clinical experience (ALVARADO scoring), in diagnosis, management, treatment and outcome of patients presenting with acute appendicitis at the Tertiary care unit, Gujranwala Punjab Pakistan

### Methodology

All patients of different age groups presenting in a surgical emergency were retrospectively reviewed. Patients who were clinically diagnosed with acute appendicitis were included in this case series which was conducted at DHQ / University Teaching Hospital Gujranwala from December 2016 to May 2017. Proper detailed history of clinical examination, clinical presentation, the time between presentation and surgical intervention, anesthesia used and operative findings and post-operative results were recorded.

The diagnosis was made on the basis of history and clinical examination & by ALVARADO scoring. Alvarado score is a clinical scoring system used in the diagnosis of appendicitis. The score has 6

clinical items and 2 laboratory measurements with a total 10 points. All the details were recorded on a questionnaire with the approval from the ethical committee. We used SPSS 16 for statistical analysis.

### Material and method

All patients of different age groups presenting in a surgical emergency were retrospectively reviewed. Patients who were clinically diagnosed with acute appendicitis were included in this case series which was conducted at DHQ / University Teaching Hospital Gujranwala from December 2016 to May 2017. DHQ / University Teaching Hospital Gujranwala is a 525 bedded tertiary care hospital. This hospital is the most well-equipped hospital in Gujranwala dealing with all kinds of emergencies and has very busy outpatients department. It has two surgical units with a total of 80 beds (40 beds each).

The surgical unit also deals with urological emergencies. It covers whole Gujranwala and its surrounding areas, including Wazirabad, Kamokhi, Daska, Gujrat, etc. Patients presented in a surgical emergency were studied and those who diagnosed with diseases other than appendicitis excluded from the study. Information obtained included proper detailed history with clinical examination. The diagnosis was made on the basis of history and clinical examination & by ALVARADO scoring; the primary admission diagnosis was usually established in the emergency department by a surgical resident then after that diagnosis is confirmed by consultant surgeon, available 24/7 in hospital.

The diagnosis was based on history and clinical examination, basically by ALVARADO scoring. Alvarado score is a clinical scoring system used in the diagnosis of appendicitis. The score has 6 clinical items and 2 laboratory measurements with a total 10 points. Following parameters were used

1. Abdominal pain that migrates to the right iliac fossa
2. Anorexia (loss of appetite)
3. Nausea or vomiting
4. Tenderness in the right iliac fossa
5. Rebound tenderness
6. Fever of 37.3 °C or more
7. Leukocytosis, or more than 11,000 white blood cells per microliter in the serum
8. Neutrophilia, or an increase in the percentage of neutrophils in the serum white blood cell count.

One hundred and forty-six patients admitted to Surgical Unit-I DHQ / University Teaching Hospital Gujranwala between Decembers -2016 to May-2017 with a diagnosis of acute appendicitis were studied.

Record of one hundred and forty-six patients studied, and Performa was completed for age and sex of the patient, duration of symptoms before admission to hospital, detailed history, general physical examination, including abdominal examination, CBC, operative findings, post-operative course and

### Outcome of procedures

Out of a total of 146 patients, there were 84 males and 62 females (Male to female ratio 1.35: 1).

We divided patients into different age groups, below 5 years of age 0.7%, 9.6% patients are in range of 5 to 10 years of age, 26.7% patients are in range of 11 to 15 years age group, 22.6% patients between range of 16 to 20 years and remaining 40.4% patients are above 20 years old.

One hundred and forty-six patients had a clinical diagnosis of acute appendicitis, 65 had only symptoms of pain right iliac fossa, 58 patients had vomiting and fever along with pain right iliac fossa, 10 patients presented with generalized abdominal pain, 12 patients had complaint of burning micturition along with generalized abdominal pain, and 1 patient presented with irrelevant complaints (table 1)

**Table-1 : Presenting complaints**

	Frequency	Percent
Pain RIF	65	44.5
Pain RIF, Vomiting Fever	58	39.7
Generalized Abdominal Pain	10	6.8
Generalized Abdominal Pain, Burning Micturiton	12	8.2
Others	1	0.7
Total	146	100.0

Out of total 146 patients presented to us in surgical emergency 85.6 % patients had Alvarado score of more than 7 and remaining 14.5 had below 7 (Table-2).

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**Table-2: Alvarado score**

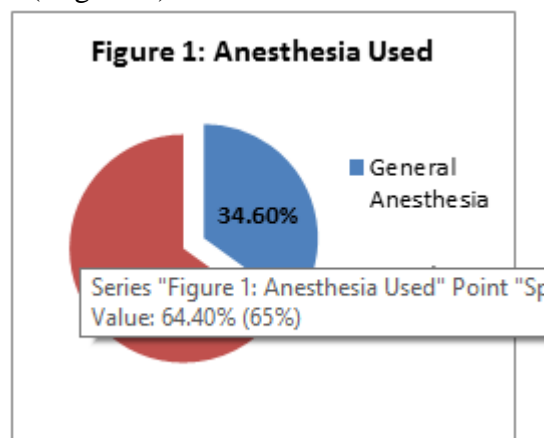
	Frequency	Percent
BELOW 5	9	6.2
5 TO 7	12	8.2
ABOVE 7	125	85.6
TOTAL	146	100.0

**Table-3: Age Distribution**

	Frequency	Percent
Below 5 Years	1	.7
Between 5 and 10 Years	14	9.6
Between 11 and 15 Years	39	26.7
Between 16 and 20 Years	33	22.6
Above 20 Year	59	40.4
Total	146	100.0

One hundred and forty-six patients who presented with suspicion of acute appendicitis were subjected to an appendectomy. 83.6 % patient received surgical intervention before 12 hours after presentation in a surgical emergency, remaining 16.4% received surgical intervention after 12 hours.

Out of 146 patients, 96 underwent appendectomy in spinal anesthesia and remaining 52 patients we used general anesthesia (figure-1). In total 146 operated patients, 5 patients had a normal appendix, 60 patients had a mildly inflamed appendix, 49 patients had highly Inflamed Appendix, 17 patients had perforated Appendix, and 15 patients had gangrenous Appendix( Figure-2).



95.2 % patients had a Retrocecal position of the appendix, 2.1% of patients had postIleal, and 2.7% of patients had a subcecal position of appendix found intra operatively (Table-5)

All the patients were put on antibiotics post operatively.

Only 5.5 % of patients developed post operatively complications like wound infection and abscess.

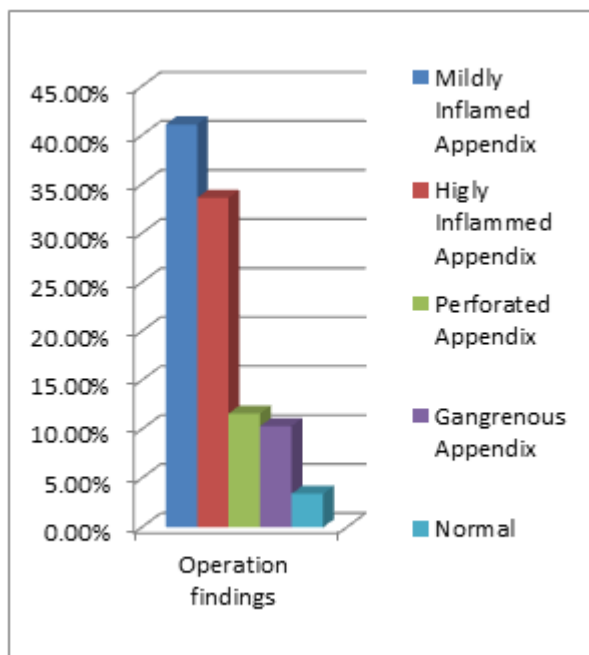
**Table-4: Time between presentation and surgical interventions.**

	Frequency	Percent
Less Than 12Hours	122	83.6
12 Hours to 24 Hours	20	13.7
24 hours to 48 hours	1	0.7
More than 48 Hours	3	2.1
Total	146	100.0

**Table-5: Position of appendix**

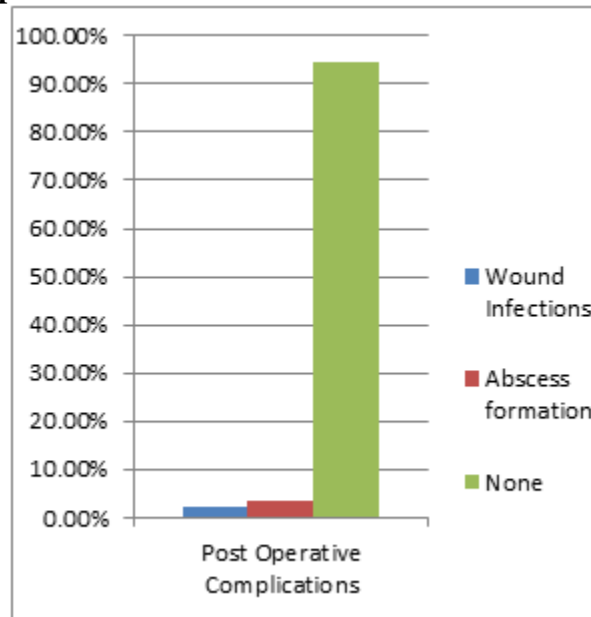
Position	Frequency	Percent
Retrocecal	139	95.2
PostIleal	3	2.1
Subcecal	4	2.7
Total	146	100.0

**Figure-2 Operative findings**



**Table-6: Total stay in Hospital**

Days	Frequency	Percent
1	15	10.3
2	72	49.3
3	40	27.4
4	10	6.8
5	2	1.4
More than 5 Days	7	4.8

**Figure-6 Post-Operative Complications**

Out of 146 patients, only 15 patients discharged on the same day of admission while 72 discharged on the second day of admission and 7 patients remained admitted inward for more than 5 days ( above Table-6).

#### Analysis

A six months retrospective study on 146 patients undergoing surgery for acute appendicitis and its complications was conducted at the Surgical Unit-I DHQ / University Teaching Hospital Gujranwala. Acute appendicitis is the commonest emergency in that hospital during the study period (December 2016 – May 2017). It was most often diagnosed in the age group above 20 years. There were 1.35 males to one female. Only 0.7% patients were below 5 years, and 40.4% were above 20 years, remaining were between 5 and 20 years. 85.6 % patients had ALVARADO score 7 or more than 7. Out of total 146 patients, only 5 patients had a normal appendix

#### Results

Acute appendicitis was the most common acute abdominal emergency encountered during the study period in this hospital. Proper clinical examination & history, Alvarado scoring will help a lot in the clinical diagnosis of acute appendicitis

#### Discussion

The risk of perforation in the elderly population is high, reaching levels of up to 70% in some reports,<sup>15,16</sup> and only one-tenth show increased leucocytosis Only 40 % of patients have a classic presentation of appendicitis - poorly localised periumbilical pain followed by nausea and vomiting with subsequent migration of pain to the right lower quadrant. Other patients may present with pain in the right upper quadrant. As opposed to the classical migration of pain from the epigastrium to the right iliac fossa, some patients may more frequently have

localized pain in the right iliac fossa from the onset.<sup>17</sup> Unusual presentations of appendicitis tend to occur when the appendix is in a retrocecal location when the patient is at an extreme of age.<sup>18</sup> When compared with younger patients, however, the conservative treatment consists of appendectomy as it provides a prompt and definitive treatment and also reduces the risk of further attacks of appendicitis. However, associated risks include post-operative wound infection, fistula formation, and ileus as well as anesthetic problems. Progress has been made in the treatment of acute appendicitis. In 1944, the mortality of the acute appendicitis was 2.4%; today this figure is less than 1% of the general population. Despite such progress, morbidity and mortality in elderly remain significant at 28- 60% and 10% respectively.

## Recommendations

The vermiform appendix of the elderly patient develops vascular sclerosis, narrowing of the lumen by fibrosis, the muscular layer is infiltrated with fat, and there is a structural weakness with a tendency towards early perforation. Diagnostic studies may cause further delay in definitive management, and associated illnesses increase operative risks. Urgent investigations, therefore, are necessary for all patients presented in surgical emergency with suspicion of acute appendicitis to reach a definitive diagnosis as early as possible.

Acute appendicitis needs to be considered while diagnosis patients with abdominal pain as it is most common surgical emergency in DHQ / University Teaching Hospital Gujranwala. A high index of suspicion is necessary to prevent misdiagnosis. Delays in a presentation in emergency and diagnosis are linked with higher rates of complications related to appendicitis. Proper clinical examination, a high index of suspicion and urgent investigations are necessary for a proper diagnosis.

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