

## **Modified Alvarado Score and Histopathology in Acute Appendicitis Cases**

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### **Abstract**

**Background:** The aims of study were to evaluate the MAS in acute appendicitis cases.

**Methods:** 100 consecutive patients suspected of acute appendicitis who were admitted in department of surgery. They were prospectively evaluated using the modified Alvarado scoring (MAS) to determine whether or not they had acute appendicitis. The MAS was correlated with histopathological findings.

**Results:** Modified Alvarado scoring system diagnostic accuracy was 88.46%, Sensitivity was 92.00%, specificity was 100.00%, positive predictive value was 100.00% and negative predictive value was 41.67% in our study

**Conclusion:** This study shows that use of modified Alvarado scoring system in patients with acute appendicitis provides a high degree of diagnostic accuracy.

**Keywords:** Modified Alvarado Score (MAS), acute appendicitis, false positive.

### **Introduction**

Acute abdominal pain is a most common complaint amongst emergency patients. Acute appendicitis was most common in acute abdominal pain.<sup>1</sup>

Acute appendicitis is the most common surgically correctable cause of abdominal pain, the diagnosis of which remains difficult in many instances. Some of the signs and symptoms can be subtle to both the clinician and the patient and may not be present in all instances. Arriving at the correct diagnosis is essential, however, a delay may allow progression to perforation and significantly increased morbidity and mortality. Incorrectly diagnosing a patient with appendicitis although not catastrophic often subjects the patient to an unnecessary operation<sup>2</sup>

The diagnosis of acute appendicitis is essentially clinical; however a decision to operate based on clinical suspicion alone can lead to removal of a normal appendix in 15-30% cases. The premise that it is better to remove a normal appendix than to delay diagnosis doesn't stand up to close scrutiny, particularly in the

elderly. A number of clinical and laboratory based scoring systems have been devised to assist diagnosis. The most commonly used is the Alvarado score and equally its modifications<sup>3</sup>

**Material and Methods**

**Study design:** Hospital based prospective study.

**Sampling Method:** Convenience sampling

**Inclusion Criteria**

Patients with provisional clinical diagnosis of acute appendicitis

**Exclusion Criteria**

1. Patients of age less than or equal to 15 years
2. Patients with generalised peritonitis due to appendicular perforation
3. Patients with appendicular mass or abscess

**Data Collection**

An excel sheet was used for data collection and statistical analysis was done.

Data was recorded as per Performa. The data analysis was computer based; SPSS-22 was used for analysis. For categoric variables chi-square test was used. For continuous variables independent samples’s t-test was used. P-value <0.05 was considered as significant.

**Results**

Table 1: Overall Sensitivity and Specificity of Modified Alvarado Score.

	HPE positive	HPE negative	Total
MAS positive ( $\leq 7$ )	88	0	88
MAS negative	7	5	12
Total	95	5	100

88 (true positive) patients who had MAS 7 or more had appendicitis on histopathology while no patients (false positive) had a normal appendix; 7 (false negative)

patients with MAS less than 7 had appendicitis and 5(true negative) had a normal appendix removed.

Sensitivity -92.00%

Specificity- 100%

Positive predictive value-100%

Negative predictive value-41.67%

Diagnostic accuracy=93.00%

Diagnostic accuracy-88.46%

MAS diagnostic accuracy was 88.46%, Sensitivity was 92.00%, specificity was 100.00%, positive predictive value was 100.00% and negative predictive value was 41.67% in our study.

**Discussion**

This study set out to establish the diagnostic accuracy of a protocol based on modified Alvarado score in acute appendicitis

Modified Alvarado score of 7 and above had a positive predictive value of 100%. In this study 92.00% of the patients who were predicted to have appendicitis by a high score had confirmed appendicitis on histopathology. This gave a crude negative appendicectomy rate of 10% that is in keeping with what Ongaro<sup>6</sup> found in his study in 2007Year. A high Alvarado score was however unable to distinguish between appendicitis and other mimicking diagnosis in 5 cases.

A systematic review by Ohle et al<sup>4</sup> found out that a high Alvarado score was less sensitive as a 'rule in' score than as a 'rule out' for those below 5.48. Our study suggests that a high Alvarado score is a useful tool to set aside patients for immediate appendicectomy without further diagnostics. This contrasts with a study by Saidi and Chavda<sup>5</sup>that suggested that the scoring system has no value over clinical experience.

## **Conclusion**

This study shows that use of modified Alvarado scoring system in patients with acute appendicitis provides a high degree of diagnostic accuracy.

## **Reference**

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