



ORIGINAL ARTICLE

New Score (Muzammil-Mudassar appendicitis severity score) an effective tool for conservative management of acute appendicitis.

Muzammal Ayaz¹, Mudassar Murtaza², Mumtaz Ali³, Fakhar Irfan⁴, Saira Aleem⁵

Article Citation: Ayaz M, Murtaza M, Ali M, Irfan F, Aleem S. New Score (Muzammil-Mudassar appendicitis severity score) an effective tool for conservative management of acute appendicitis. Professional Med J 2023; 30(03):296-300. <https://doi.org/10.29309/TPMJ/2023.30.03.7106>

ABSTRACT... Objective: To determine the frequency of conservatively managed patients of acute appendicitis by using new (Muzammil-Mudassar appendicitis severity score) scoring system. **Study Design:** Cross Sectional Observational study. **Setting:** Government Teaching Hospital, Shahdara. **Period:** October 2021 to April 2022. **Material & Methods:** 267 patients diagnosed with acute appendicitis by ALVARADO score were enrolled. New appendicitis severity score was devised by searching online literature. A cut off value of 11 was defined after conducting a pilot study. Patients having score of < 11 were eligible for conservative management. All patients undergoing conservative treatment were receiving nothing per oral and given intravenous antibiotics (ciprofloxacin and metronidazole), intravenous fluids and infusion Paracetamol three times a day for at least 24-48 hours. Surgery was done in failed or unsatisfied cases. Weekly follow-up for first two weeks and then monthly for three months was done. **Results:** In our study mean age of the patients was 46.23 ± 19.33 years, 187(70.04%) patients had age ≤ 60 years. The conservative management was successful in 214(80.15%) patients. Recurrence after three months was noted in 13(4.87%) patients. After 3 month follow up the anorexia was found in 4(1.5%) patients, nausea/vomiting in 5(1.9%) patients and pain was noted in 7(2.6%) patients. **Conclusion:** new score (Muzammil-Mudassar appendicitis severity score) is highly effective in predicting patients who will benefit from conservative management in terms of recurrence.

Key words: Appendicitis, Conservative, Recurrence, Severity, Score.

INTRODUCTION

In general surgery practice, acute appendicitis is the most common surgical emergency. Perforation and generalized peritonitis can be the severe reported complications. Currently, appendectomy has been selected as a basic procedure, even in case of unsubstantiated diagnosis, giving the low rate of major problems.¹ However, appendectomy itself can bring about numerous complications; for example, tubal infertility in females, intestinal obstruction due to adhesions and pneumonia. Diagnosis of acute appendicitis may become challenging, particularly among the young, elderly and females of reproductive age. This difficulty may lead to two extremes of either negative appendectomy versus delayed operation leading to appendicular perforation and generalized peritonitis. Diagnostic tools like CT and ultrasonography, although helpful but

are costly and operator dependent. For example, according to a research, an estimated 443 people would have a CT result indicating appendicitis, and of these, 8% would not have acute appendicitis.²

Coldrey reported treating 471 patients with antibiotics in 1956.³ Although traditional approach of appendectomy for treating appendicitis is widespread due to complications like perforation many researchers have believed infection to be the primary cause of acute appendicitis. Hence, making antibiotics its logical treatment. In 2015, Salminen et al. presented research, which involved 530 adults, and found fewer complications in conservative treatment, 6% initial antibiotic nonresponse, 23% 1-year recurrence rates, and 12 fewer disability days compared with open appendectomy.⁴ Previous studies have shown that patients who had negative appendectomies,

1. MBBS, Registrar General Surgery, GTHS/ FJMU.
2. MBBS, FCPS, Assistant Professor Surgery, GTHS/FJMU.
3. MS (General Surgery), Specialist Registrar Surgery, GTHS/FJMU.
4. MBBS, FCPS, Consultant Surgeon, Indus Hospital, Lahore.
5. MBBS, Medical Officer, Jinnah Hospital, Lahore.

Correspondence Address:
Dr. Mudassar Murtaza
Department of Surgery
GTHS/FJMU.
drnudassirmurtaza@gmail.com

Article received on: 06/06/2022
Accepted for publication: 19/09/2022

suffered post-operative complications and infections secondary to hospital stay and even fatality.⁵ Patients and doctors alike have preference for non-operative management of acute appendicitis to avoid both surgery and its complications.⁶

Patients with the novel Coronavirus disease 2019 (COVID-19), for example, have higher operative risks. In such patients, conservative management has shown to be a successful form of treatment which benefits both Patients and health care professionals.⁷ Surgical intervention for a patient with undetected or asymptomatic covid19 disease may lead to transmission to anyone who come in contact with, whether they are healthcare professionals or providers. Secondary transmission of COVID-19 in the hospital setting is not uncommon.⁸ Similarly, in case of natural disaster and national emergency, our operation theaters and health care facilities are limited. Until now literature is lacking in appendectomy severity scores. Although some have suggested some features which favor failure of conservative management like appendicolith. As appendectomy is still most commonly performed emergency procedure. So, by use of this severity score, we will be able to limit appendectomies. Our research provides a conservative form of treatment depending on severity in case of pandemic, natural disaster or war, where access to health professionals and hospital is not available.

MATERIAL & METHODS

It was observational cross-sectional study conducted at Government Teaching Hospital Shahdara, Lahore from October 2021 to April 2022. The study was approved from ethical review committee (48-Synopsis-MS-surgery Shahdara/FJ/ERC). The calculated sample size was 267. Sample size calculation was done by using 95% confidence level, 6% absolute precision and by taking expected percentage of acute appendicitis as 48%. We included patients of both gender between 12 to 60 years age, who were diagnosed as acute appendicitis by using ALVARADO score. Patients with history of pain for more than 72 hours, mass formation, pregnant females, renal

failure and cardiac patients were excluded from the study. Successful conservative management was decided if patients discharged from the hospital without need of surgical procedure. Failed conservative management indicated no clinical improvement within 24-48 hours, needing appendectomy during conservative treatment in the patients admitted in hospital. Complicated appendicitis is one with signs of peritonitis and/or abscess/phlegmon is noted on ultrasonography. Required investigations were carried out from hospital laboratory.

New scoring system (Muzammil-Mudassar Appendicitis Severity Score) was applied. This score has been generated using parameters i.e. age, gender, residence, diabetes, pulse rate, body temperature, CRP, ultra-sonography and neutrophil- lymphocytes ratio (NLR) after thorough research from different publications. Minimum value of this score is 6 and maximum value is 18. A cut off value of 11 was defined after having pilot study on 40 patients. Patients were explained about both forms of treatment and informed consent was taken. Patients opting for operative treatment were discontinued and proceeded for surgery as per the wishes of the patient.

All patients who underwent conservative treatment received nothing per oral and given intravenous antibiotics (ciprofloxacin 400mg/100ml two times a day and metronidazole infusion 500 mg/100 ml 3 times per day), intravenous fluids and painkillers for at least 24-48hours. Patients were monitored 6 hourly (temperature, blood pressure, pulse rate, respiratory rate and local abdominal signs) with a low threshold for surgery to avoid any complication. Successfully managed patients were discharged with prescribed medicine of (ciprofloxacin 500 mg two times a day and metronidazole 400 mg thrice a day) for a total of 7 days. Patients were operated whose medical condition was worsened or did not respond to conservative management within 24-48 hours. Patients were asked to report instantly if pain recurred or vomiting and fever occurred. Weekly follow-up for first two weeks and then monthly for three months was done to see if symptoms have

recurred or the patient has undergone surgery anywhere else. Data was collected and entered into and analysed by SPSS v25.0. Qualitative variables such as gender and presence/absence of acute appendicitis were presented in form of frequencies and percentages. Quantitative variables such as age, score and number of patients managed conservatively and number of patients failed conservative treatment and number of patients develop complicated appendicitis were also analysed, calculating their mean and standard deviation. Frequency and percentage of successfully conservatively managed patients were calculated.

RESULTS

In this study total 267 patients participated. The mean age of the patients is shown in Table-I.

Age (Years)	N	267
	Mean	46.23
	Standard Deviation	19.33
	Minimum	15.00
	Maximum	80.00

Table-I Descriptive statistics of age (Years)

According to this study 162(60.67%) patients were male and 105(39.33%) patients were females. Male to female ratio was 1.5:1. 144(53.9%) patients were from urban area and 123(46.1%) patients were from rural area. Diabetes mellitus was seen in 68(25.5%) patients. The percentage of successfully managed patients is shown in Figure-1. The pulse rate ≤ 100 was observed in 199(74.5%) patients and pulse rate between range of 101-110 was observed in 68(25.5%) patients. Out of 267 patients the temperature was < 100 in 247(92.5%) patients. CRP was > 50 g/l 11(4.1%) patients.

According to this study, on ultrasound abdomen, unremarkable findings were noted in 176(65.92%) patients, mildly swollen findings were noted in 80(29.96%) patients and peri appendicular findings were noted in 11(4.12%) patients. In this study NLR between 1-3 was found in 97(36.33%) patients, > 3 and < 8.8 NLR was noted in 156(58.43%) patients and > 8.8 NLR was noted in 14(5.24%) patients.

After 3rd month follow up the anorexia was found in 4(1.5%) patients, nausea/vomiting in 5(1.9%) patients, pain in 7(2.6%) patients. Recurrence after 3rd month noted in 13(4.87%) patients.

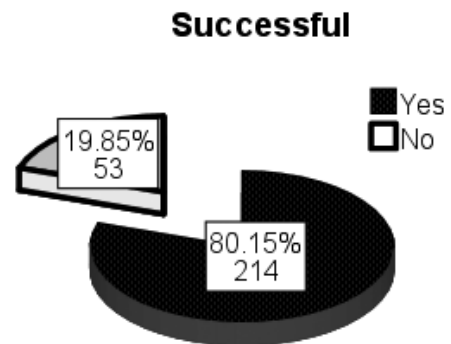


Figure-1. Distribution of successful conservative management

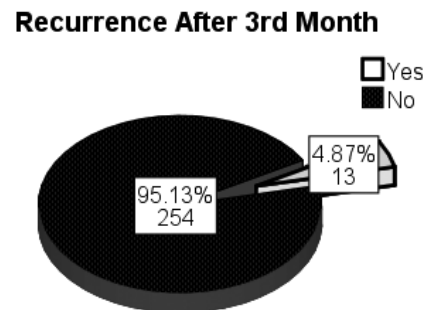


Figure-2. Recurrence rate after 3 months

DISCUSSION

Appendicitis symptoms and indicators are typically similar to, if not identical to, those of other acute gastrointestinal illnesses, and optimal treatment needs early diagnosis and rapid intervention. Patients with ambiguous indications can be difficult to diagnose and are frequently admitted to the surgical department for observation. The longer it takes to diagnose a problem, the higher the risk of morbidity and fatality.

Even in this age of technical developments, the surgeon's clinical assessment and expertise remain the most important factors in determining the diagnosis of acute appendicitis. Many scoring methods are now in use, but the Alvarado scoring system, which is based on a history, physical examination, and a few laboratory investigations, is the most user-friendly. The Alvarado scoring

system is a basic scoring system that may be implemented quickly in an outpatient setting to determine if an individual should be discharged, observed, or have an appendectomy. Lotfallah et al has used Alvarado score and imaging techniques to predict conservative management but Alvarado score is basically used to diagnose the acute appendicitis not the severity.⁹

In this study by conservative management using cut off value of new score as <11, the success was noted in 214(80.15%) patients and after 3rd month follow up recurrence was noted in only 13(4.87%) patients.

A recent meta-analysis of 11 trials comprising 2751 patients show that 1463 patients underwent conservative and 1288 patients underwent appendectomy. In this analysis overall complication rate and effective rate were lower in conservative groups. Although hospital stay was less in conservative groups.¹⁰

In past no case selection was made for selection under conservative management. Hansson et al. undertook a randomized clinical trial to examine the efficacy of conservative treatment against surgery in the treatment of acute appendicitis. They found that conservative antibiotic treatment was effective in about 91 percent cases, with relapse rate of 14 percent at the 12-months mark. About 1/3rd relapses occurred within first 2 weeks of being released from the hospital, while the other two-thirds happened between 3 and 16 months after discharge. Patients treated conservatively and surgically experienced similar rates of mild problems including diarrhea, vomiting, and/or nosocomial infection. However, serious sequelae like "appendix abscesses, paralytic obstruction, and / or pulmonary embolism" were considerably more common in those who were surgically treated ($p < 0.05$).¹¹

In a trial published in JAMA, 27.3 % patients who were in conservative group had undergone surgery for recurrence of appendicitis thus showing high rate of recurrence.¹²

In our study the recurrence rate has been reduced

to less than 5%. Recently appendicolith has been suggested as a factor that should favor the surgical management of acute appendicitis. Presence of appendicolith has been associated with 2 times increased risk of operative treatment within 30 days of initiating antibiotics. Our scoring system is an attempt to select cases for conservative management on the basis of severity.¹³

Similarly, in case of natural disaster and national emergency, our operation theaters and health care facilities are limited. As appendectomy is still most commonly performed emergency procedure. So, by use of this score, we were able to limit appendectomies. Our research provides a conservative form of treatment depending upon severity of disease which will help in case of a natural disaster like COVID or war, where access to health professionals and hospital is not available. We also recommend that further studies should be done on this score to improve the outcome on large scale.

CONCLUSION

New Muzammil-Mudassar appendicitis severity score is more effective to increase the percentage of patients who will benefit from conservative management in terms of recurrence.





Copyright© 19 Sep, 2022.

REFERENCES

1. Alnaser MK, Hassan QA, Hindosh LN. **Effectiveness of conservative management of uncomplicated acute appendicitis: A single hospital based prospective study.** IJSO. 2018; 1(10):1-4.
2. Rud B, Vejborg TS, Rapoport ED, Reitsma JB, Wille Jørgensen P. **Computed tomography for diagnosis of acute appendicitis in adults.** CDSR. 2019 (11):1-203.
3. Kang H, Choi YS, Seo SW, Choi GJ, Lee SE. **Appendectomy versus conservative antibiotics treatment for non-complicated acute appendicitis: A meta-analysis of randomized controlled trials.** Clin Surg. 2018; 3:2164.
4. Talan DA, Saltzman DJ, DeUgarte DA, Moran GJ. **Methods of conservative antibiotic treatment of acute uncomplicated appendicitis: A systematic review.** JTACS. 2019; 86(4):722.

5. Kabir SA, Kabir SI, Sun R, Jafferbhoy S, Karim A. **How to diagnose an acutely inflamed appendix; A systematic review of the latest evidence.** IJS. 2017; 40:155-62.
6. Di Saverio S, Podda M, De Simone B, Ceresoli M, Augustin G, Gori A et al. **Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines.** WJES. 2020 Dec; 15:1-42.
7. Kulachanya S, Nehad S. **Successful conservative management of acute appendicitis in a coronavirus disease 2019 (COVID-19) patient.** Cureus. 2020 Apr; 12(4): e7834. <https://doi.org/10.7759/cureus.7834>
8. Aminian A, Safari S, Razeghian-Jahromi A, Ghorbani M, Delaney CP. **COVID-19 outbreak and surgical practice: unexpected fatality in perioperative period.** *Annals of surgery.* 2020 Mar 25. e27-e29. <https://doi.org/10.1097/SLA.0000000000003925>.
9. Lotfallah A, Aamery A, Moussa G, Manu M. **Surgical versus conservative management of acute appendicitis during the COVID-19 pandemic: A single-centre retrospective study.** Cureus 13(3):1-8. doi:10.7759/cureus.14095.
10. Yang, Z., Sun, F., Ai, S. et al. **Meta-analysis of studies comparing conservative treatment with antibiotics and appendectomy for acute appendicitis in the adult.** BMC Surg 19, 110 (2019). <https://doi.org/10.1186/s12893-019-0578-5>
11. Hansson J, Körner U, Khorram-Manesh A, Solberg A, Lundholm K. **Randomized clinical trial of antibiotic therapy versus appendectomy as primary treatment of acute appendicitis in unselected patients.** Journal of British Surgery. 2009; 96(5):473-81.
12. Salminen P, Paajanen H, Rautio T, Nordström P, Aranio M, Rantanen T et al. **Antibiotic therapy vs appendectomy for treatment of uncomplicated acute appendicitis: The APPAC randomized clinical trial.** JAMA:2015; (313),23; 2.2340-4
13. Writing Group for the CODA Collaborative. **Patient factors associated with appendectomy within 30 days of initiating antibiotic treatment for appendicitis** JAMA surg. 2022; 157(3): e216900. doi:10.1001/jamasurg.2021.6900.

AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Muzammal Ayaz	Principal investigator.	
2	Mudassar Murtaza	Supervision and approval of score and contributions monitoring of results, Final article.	
3	Mumtaz Ali	Literature search, Proof reading.	
4	Fakhar Irfan	References and literature search.	
5	Saira Aleem	Article writing, Final proof reading, discussion.	