Al-Rafidain J Med Sci. 2025;9(2):46-50.
DOI: https://doi.org/10.54133/ajms.v9i2.2322

AJMS

Online ISSN (2789-3219)

Research Article

Is it Possible to Manage Appendicular Mass Without Surgery?

Muhammad Albahadili[1], Saif Mundher Ismael[2], Monaf Faik Al-Samarraee[2]*

[1]*Department of General Surgery, College of Medicine, University of Wasit, Wasit, Iraq;* [2]*Department of General Surgery, College of Medicine, Ibn Sina University of Medical and Pharmaceutical Sciences, Baghdad, Iraq;* [3]*Department of Family and Community Medicine, College of Medicine, Ibn Sina University of Medical and Pharmaceutical Sciences, Baghdad, Iraq*

Received: 15 July 2025; Revised: 28 August 2025; Accepted: 30 August 2025

Abstract

Background: Three ways are available to manage appendicular mass; two of them include surgical intervention. The third approach is conservative treatment and follow-up without interval appendectomy. ***Objective***: To evaluate the outcome of conservative treatment for the appendicular mass and to assess the incidence of acute appendicitis in those patients. ***Methods***: In a study, 98 patients with appendicular mass were divided into two groups. Group A, consisting of 55 patients, was treated with conservative management without appendectomy, while Group B, consisting of 43 patients, was treated with conservative treatment followed by interval appendectomy 8 weeks later. For Group A, the mass was monitored via ultrasound examination every 3-5 days until it subsided, which took 12-25 days. Group B had two admission periods, initially and after the interval. ***Results***: The study found that appendicular mass occurred frequently in patients aged 21–30 in both groups, and there were no significant differences in age and gender between group A and group B. The resolving time of appendicular mass and the duration of the symptom were also not significantly different between the two groups. However, there was a significant difference between Group A and Group B in terms of overall hospitalization time, with Group B having two admission periods. ***Conclusions***: Conservative management, without interval appendectomy, is the preferred method for treating appendicular mass due to the low incidence of acute appendicitis recurrence. This method can avoid unnecessary surgical intervention and associated complications.

Keywords: Acute appendicitis, Appendicular mass, Appendectomy, Conservative management.

هل من الممكن علاج كتلة الزائدة الدودية بدون جراحة؟

الخلاصة

الخلفية: تتوفر ثلاث طرق لعلاج كتلة الزائدة الدودية؛ اثنتان منها تشمل التداخل الجراحي. النهج الثالث هو العلاج التحفظي والمتابعة دون استئصال الزائدة الدودية المتقطع. **الهدف**: تقييم نتائج العلاج التحفظي لكتلة الزائدة الدودية وتقييم حدوث التهاب الزائدة الدودية الحاد لدى هؤلاء المرضى. **الطرائق**: تم تقسيم 98 مريضا يعانون من كتلة الزائدة الدودية إلى مجموعتين. تم علاج المجموعة أ المكونة من 55 مريضا بطريقة تحفظية دون استئصال الزائدة الدودية، بينما عولجت المجموعة B، المكونة من 43 مريضا، بالعلاج التحفظي متبوعا باستئصال الزائدة الدودية الفاصلة بعد 8 أسابيع. بالنسبة للمجموعة أ، تمت مراقبة الكتلة عن طريق الفحص بالموجات فوق الصوتية كل 3-5 أيام حتى تهدأ، والتي استغرقت 12-25 يوما. كان للمجموعة B فترتان لدخول المستشفى، في البداية وبعد الفاصل الزمني. **النتائج**: وجدت الدراسة أن كتلة الزائدة الدودية حدثت بشكل كبير في المرضى الذين تتراوح أعمارهم بين 21 و 30 عاما في كلتا المجموعتين، ولم تكن هناك فروق ذات دلالة إحصائية في العمر والجنس بين المجموعة أ والمجموعة ب. كما لم يكن وقت اختفاء كتلة الزائدة ومدة أعراض المرض مختلفين بشكل كبير بين المجموعتين. ومع ذلك، كان هناك فرق كبير بين المجموعة أ والمجموعة ب من حيث الوقت الإجمالي للدخول إلى المستشفى، حيث كان للمجموعة ب فترتان للدخول. **الاستنتاجات**: العلاج التحفظي، دون استئصال الزائدة الدودية، هو الطريقة المفضلة لعلاج كتلة الزائدة بسبب انخفاض معدل تكرار التهاب الزائدة الدودية الحاد. يمكن أن تتجنب هذه الطريقة التدخل الجراحي غير الضروري والمضاعفات المرتبطة به.

* ***Corresponding author***: Monaf F. Al-Samarraee, Department of Family and Community Medicine, College of Medicine, Ibn Sina University of Medical and Pharmaceutical Sciences, Baghdad, Iraq; Email: dr.monaf.faik@ibnsina.edu.iq

Article citation: Albahadili M, Ismael SM, Al-Samarraee MF. Is it Possible to Manage Appendicular Mass Without Surgery? *Al-Rafidain J Med Sci.* 2025;9(2):46-50. doi: https://doi.org/10.54133/ajms.v9i2.2322

INTRODUCTION

Acute appendicitis is a common surgical emergency worldwide, with a prevalence rate of 7-8%. In Europe, America, and Australia, 16% of the population undergoes an appendectomy [1]. About 10% of acute appendicitis patients have a mass [2], which can range from an inflammatory mass to a more severe condition, such as appendicular perforation or gangrene. This can result in a peri-appendiceal collection of pus, also known as an appendiceal abscess [3]. There are three approaches to managing appendicular mass. The first approach is conservative management, which involves using broad-spectrum antibiotics and intravenous fluids, followed by interval appendectomy, typically performed 6-8 weeks after the initial treatment. This approach was proposed in 1901 and is widely practiced worldwide [4]. The second approach is also conservative treatment but without interval appendectomy. Reasons for proposing this alternative include minimal incidence of infection

and recurrence, making interval appendectomy unnecessary. Patients over 40 will require follow-up treatment, such as colonoscopy and CT scans [5]. The third approach is a relatively new alternative to traditional appendectomy: quick appendectomy. By choosing this option, you can say goodbye to interval appendectomy and the danger of recurrence. Open and laparoscopic appendectomies are two surgical options. Due to reduced postoperative pain, faster recovery, and earlier discharge to home, laparoscopic appendectomy is quickly replacing open appendectomy as the treatment of choice [6]. Currently, conservative treatment of appendicular mass is the most favored by most surgeons. However, there is a growing trend to opt against interval appendectomy due to the low rate of recurrent infection and the early return to work. The need for interval appendectomy after conservative treatment remains a pressing question. Our study aims to assess the outcome of conservative treatment for the appendicular mass and to evaluate the incidence of acute appendicitis in those patients.

METHODS

Study design and setting

This was an interventional study carried out in the Department of General Surgery, Aziziyah Hospital in Wasit and Al-Ramadi Teaching Hospital, Al-Anbar, Iraq, during a period between March 2020 and October 2024.

Study population

The study included 98 adult patients diagnosed with appendicular mass. We discussed the management options with their possible advantages or adverse effects, and then they decided which option they preferred. So, they were divided into two groups, the conservative group, which included 55 patients underwent conservative management without appendectomy, and the surgical group: Included 43 patients underwent conservative treatment followed by interval appendectomy eight weeks later.

Exclusion criteria

Patients who had appendicular abscess, diffuse peritonitis, pregnant women, those with comorbidities like diabetes mellitus, patients who were lost during the follow-up period, those not fit for surgery, and those who refused to be a part of this study were excluded from the study.

Diagnostic approach

Diagnosis of appendicular mass was made by a detailed history and clinical examination, which included general condition, temperature, pulse and respiratory rates, pallor, peristaltic movement, hyperesthesia, any obvious mass, abdominal tenderness (localized or diffuse), rebound tenderness, guarding of muscle, and rigidity in the absence of other obvious pathology. To confirm the diagnosis of appendicular mass, an ultrasonic examination of the abdomen was done. The ultrasound showed that the appendix had poor echo texture and an asymmetric and irregular contour and was surrounded by a mass of inflamed mesentery, which is large, heteroechoic, and non-compressible, and the omentum, cecum, and terminal ileum. It was determined that the appendicular abscess was a tiny, irregularly shaped, sonolucent formation near the caecum that contained echogenic particles. If the USG abdomen was inconclusive, then a CT examination of the abdomen with pelvis was done. Peri-appendiceal phlegmon appears as a soft tissue high-density mass, while abscesses are significantly lower in density.

Interventions and follow-up

After admitting a patient with appendicular mass, a complete investigation, including CBC, virology screen, and renal function tests, was done for indicated cases. A conservative treatment regimen in the hospital is followed for 3-7 days (Ochsner Sherren Regime) [7]. This included intravenous fluids and antibiotics (ceftriaxone and metronidazole). The intravenous antibiotics are administered until pain and fever subside before the patient is discharged. This regimen was followed by both groups. All patients (both groups) were followed up as the patient's appendicular mass was monitored via ultrasound examination every 3-5 days until the mass subsided (duration of follow-up for patients of group A was one year). During the period of conservative treatment, any signs of failure (Increase in temperature, size of mass, and persistence or increment in inflammatory markers) were monitored. We stopped the conservative treatment and implemented surgical intervention if there were any of the above signs of failure. For group A, any patients over the age ≥ 40 (14 patients) were sent for a colonoscopy four weeks after discharge to exclude tumors as a cause of the mass and confirmed the mass disappeared by MRI study.

Data collection

Parameters included in the study were demographic data such as age, gender, and occupation; length of hospital stay; complications; recurrence of appendicitis; rate of interval appendicectomy for group B patients; and follow-ups.

Ethical issues

The research followed all the guidelines established by the 1964 Declaration of Helsinki and any subsequent revisions to it, as well as any other relevant ethical guidelines. In this case, the College of Medicine at Ibn-Sina University for Medical and Pharmaceutical Sciences' Scientific Committee gave their administrative blessing. Everyone who needed to

provide their consent had to do it. Instead of names, identification codes were used. Confidential information is stored on a laptop that requires a password and is used only for study.

Statistical analysis

Using IBM SPSS version 26, the data was statistically analyzed. To compare the continuous variables between the research groups, an independent t-test with two tails was utilized. For categorical variables, the Chi-square test was utilized for association assessment; however, for predicted frequencies below 5, the Fisher exact test was substituted. The link between mass resolving time and age and complaint length was evaluated using Pearson's correlation test (r). A significant correlation was defined as a *p*-value less than 0.05.

RESULTS

In this study, the age of 98 patients ranged from 15 to 60 years with a mean of 33.5 ± 11.1 years. We noticed that the duration of hospitalization and the proportion of patients who had intraabdominal abscesses were significantly higher ($p< 0.05$) in the surgical group than in the conservative group. No statistically significant differences were detected ($p> 0.05$) in age, BMI, gender, duration of complaint, and resolving period between study groups (Table 1).

Table 1: Comparison between study groups by clinical characteristics

Variable	Study group		*p*-value
	Conservative	Surgical	
Age (year)	32.49±12.1	34.79±9.8	0.3
BMI (kg/m^2)	25.85±2.9	26.45±3.1	0.122
Gender (M/F)	36(65.5)/19(34.5)	21(48.8)/22(51.2)	0.098
Duration of complaint (day)	5.01±1.7	5.48±1.1	0.101
Resolving period (day)	17.83±3.1	17.97±3.0	0.821
Hospitalization (days	5.29±0.9	7.41±1.2	0.001
Intraabdominal abscess	2(3.6)	7(16.3)	0.031

Values were expressed frequency, percentage, and mean±SD.

Regarding patients treated conservatively, we noticed that the failure rate was 10.9% and the recurrence rate was 3.6% (Table 2). Regarding complications in patients treated surgically, surgical site infection was noticed in 18.4%, enterocutaneous fistula in 2%, and small bowel obstruction in 2% (Table 3).

Table 2: Distribution of patients in conservative group by outcome

Variable	Result n(%)
Failure of conservative treatment	6(10.9)
Recurrence of appendicitis	2(3.6)

Table 3: Distribution of patients in surgical group by complications

Variable	Result n(%)
Surgical site infection	9(18.4)
Enterocutaneous fistula	1(2)
Small bowel obstruction	1(2)
Intraabdominal bleeding	1(2)

As shown in Table 4 and Figure 1, a moderate positive correlation was detected between mass resolving time and duration of complaint (r= 0.448, p= 0.001). No statistically significant correlation (p=0.408) was detected between mass resolving time and age.

Table 4: Correlation between mass resolving time and both age and duration of complaint

Variable		Mass resolving Duration (day)
Duration of complaint (day)	r	0.448
	p-value	0.001
Age (year)	r	- 0.085
	p-value	0.408

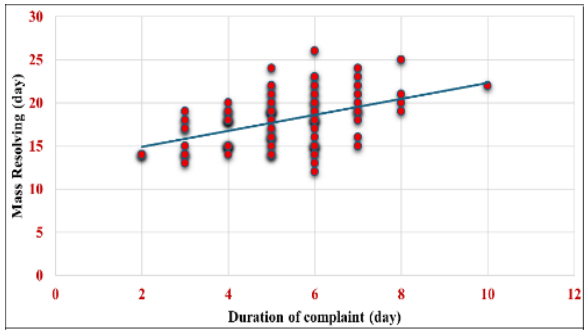

Figure 1: Correlation between mass resolving time and duration of complaint (r= 0.448, p= 0.001).

DISCUSSION

Acute appendicitis is a common surgical emergency [8] that can present with an appendicular mass. Its prevalence is 2-6% [9], although some studies report higher incidences of up to 34.87% [10]. The management of appendicular mass varies among surgeons, with some opting for early exploration for appendectomy to reduce the need for second admission and minimize the risk of misdiagnosis of cecal carcinoma, also resulting in a shorter stay in the hospital [11-13,7], while others prefer interval appendectomy after a conservative period of 8 to 12 weeks to prevent the recurrence and confirm the pathology. Studies have shown that interval appendectomies are safer and have lower morbidity rates [4,14]. Additionally, due to the increased incidence of neoplasms after the age of 30, some surgeons recommend interval appendectomy [15-17]. Other surgeons follow the interval appendectomy because of the uncertainty of the pathology [18]. There are advantages and disadvantages to both appendicular

mass management techniques. Although conservative treatment without appendectomy prevents surgical complications, there is a chance that it will recur. Interval appendectomy, on the other hand, has the potential to cause surgical problems but attempts to prevent recurrence. Individual variables, risk tolerance, and clinical judgement should all be considered when choosing between these strategies [12]. Our study conducted on a conservative group aims to manage appendicular mass conservatively and follow up with patients for a minimum of six months without interval appendectomy. This approach has been accepted in several studies [7,19-21] and didn't show significant differences from the surgical group in terms of age, symptoms before first admission to the hospital, gender, and the resolving time of appendicular mass. However, there was a significant difference between both groups in overall hospitalization, which may be attributed to the second admission for the surgical group for appendectomy, which isn't needed for the conservative group when the management is composed of follow-up only and the recurrence rate was (3.6%). In our study, the hospital stay period for management of appendicular mass for the conservative group was 5.29 days, which may approach the time of admission in other studies, such as the Yilmaz *et al*. study (6.6 days) [20] and the Almoamin *et al.* study (8.1 days) [12], which used the same protocol of management (follow-up without appendectomy), but the overall hospital stay period for management of appendicular mass for the surgical group was longer (p-value < 0.05). The recurrence rate in our study was 3.6% in the follow-up period of one year, despite the small number of patients in this study. Compared with other studies, Tekin *et al*. study revealed that the recurrent rate was 14.6% of 98 patients in the first 6 months [22]. The Mani *et al*. study shows that the recurrent rate was 6.6% of 60 patients for 6 months of follow-up [23]. The recurrence rate was 5.77% of 52 patients for 6 months of follow-up in the study done by Qureshi *et al.* [24]. In the study of Alsubsiee *et al*., the recurrence rate was 4.5% of 152 in 6-12 months of follow-up [25]. The recurrence rate was 12.5% in 40 patients who followed up for 12 months in the study done by Khaja *et al.* [26]. As a complication in the surgical group, surgical wound infection was detected in 18.4%, which is lower than that found by the Appa *et al*. study (27.7%) [13]. There are risks associated with interval appendectomy, which is done following initial conservative therapy. Complication rates, which include problems including sepsis, bowel perforation, small bowel ileus, fistulas, and wound infections, are reported to be between 12% and 23% [27].

Study limitations

Despite all the work done, the study faced some limitations: First, some information was collected either from the medical records or from the patients themselves, which can be time-consuming and prone to errors**.** Second, loss to follow-up was a challenging event in this study because we were tracking patients over an extended period (one year), particularly if patients moved or changed contact information.

Conclusion

The management of appendicular mass is still a topic of debate among medical professionals. However, due to the low recurrence rate and the minimally invasive procedures available for follow-up (such as colonoscopy and MRI) to exclude tumors for patients over the age of 40, it is recommended to avoid unnecessary surgical intervention and associated complications of surgery and anesthesia. Conservative management without interval appendectomy for appendicular mass is the preferred method of treatment.

ACKNOWLEDGMENTS

The authors thank the staff of Aziziyah Hospital in Wasit and Al-Ramadi Teaching Hospital, Al-Anbar for their invaluable contributions to this research. We are grateful for individuals' willingness to share their experiences and data.

Conflict of interests

The authors declared no conflict of interest.

Funding source

The authors did not receive any source of funds.

Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

REFERENCES

1. Mulson J. The vermiform appendix. In: O'Connell PR, McCaskie AW, Sayers RD, (eds.), Bailey and loves short practice of surgery, (28th ed.) Taylor & Francis Group; 2023. P. 1335-53.
2. Rahman MA, Chowdhury TK, Chowdhury MZ, Farooq MA. Early appendectomy for appendicular mass: operative findings and outcome in 220 children—a developing country perspective. *Ann Pediatric Surg*. 2020;16(39):1-5. doi: 10.1186/s43159-020-00051-x.
3. Dixon F, Singh A. Acute appendicitis. *Surgery (Oxford)*. 2020;38(6):310-317. doi: 10.1016/j.mpsur.2020.03.015.
4. van Amstel P, Sluckin TC, van Amstel T, van der Lee JH, de Vries R, Derikx JPM, et al. Management of appendiceal mass and abscess in children; early appendectomy or initial non-operative treatment? A systematic review and meta-analysis. *Surg Endosc*. 2020;34(12):5234-5249. doi: 10.1007/s00464-020-07822-y.
5. Tarar B, Batool S, Majeed S, Saleem A, Tarar B. Comparison between early appendectomy vs. conservative management in cases of appendicular mass. *Cureus*. 2023;15(4). doi: 10.7759/cureus.37986.
6. Rajah KH, Menon S. Complicated appendicitis-shifting towards early appendectomy-A comprehensive review. *IIUM Med J Malaysia*. 2024;23(01). doi: 10.31436/imjm.v23i01.2372.

7. Rajah KH, Menon S, Ramachandran G. Current management of appendicular mas-a narrative. *Med J Malaysia*. 2023;78(5):669. PMID: 37775496.
8. Zeb M, Khattak SK, Samad M, Shah SS, Shah SQ, Haseeb A. Comparison of Alvarado score, appendicitis inflammatory response score (AIR) and Raja Isteri Pengiran Anak Saleha appendicitis (RIPASA) score in predicting acute appendicitis. *Heliyon*. 2023;9(1). doi: 10.1016/j.heliyon.2023.e13013.
9. López CD, Sánchez LA, Vázquez JM, Salinas RE, Sánchez JJ, López IE, et al. Early surgery in appendicular mass: Surgical technique and morbidity. *Int J Sci Acad Res*. 2023;4(4):5513-5518.
10. Koirala A, Thakur D, Agrawal S, Pathak KR, Bhattarai M, Sharma A. Appendicular mass: a conservative approach. *J Nobel Med Coll*. 2016;5(2):47-50. doi: 10.3126/jonmc.v5i2.16317.
11. Israr S, Akhtar J, Taqvi SM, Zamir N. Early surgical management of appendicular mass in pediatric patients. *J Coll Physicians Surg Pak*. 2021;31(3):302-306. doi: 10.29271/jcpsp.2021.03.302.
12. Almoamin HH. Factors affecting the effectiveness of conservative management of appendicular mass. *Polish J Surg*. 2021;93(3):17-21. doi: 10.5604/01.3001.0014.8132.
13. Appa SK, Kumar KK, Vuppala C. Appendicular mass: early or interval appendicectomy. *Int J Acad Med Pharm*. 2023;5(1):787-793. doi: 10.47009/jamp.2022.5.1.164.
14. Takahashi Y, Obata S, Matsuura T, Kawano Y, Yanagi Y, Yoshimaru K, et al. The experiences of interval appendectomy for inflammatory appendiceal mass. *Pediatrics Int*. 2021;63(1):88-93. doi: 10.1111/ped.14358.
15. Hayes D, Reiter S, Hagen E, Lucas G, Chu I, Muñiz T, et al. Is interval appendectomy needed? A closer look at neoplasm rates in adult patients undergoing interval appendectomy after complicated appendicitis. *Surg Endoscopy*. 2021; 35:3855-3860. doi: 10.1007/s00464-020-07798-9.
16. Son J, Park YJ, Lee SR, Kim HO, Jung KU. Increased risk of neoplasms in adult patients undergoing interval appendectomy. *Ann Coloproctol*. 2020;36(5):311. doi: 10.3393/ac.2019.10.15.1.
17. Al-Atta DM, Al-Samarraee MF, Fadhil AA, Kadhim ST, Alsarhan HW. Compliance with second visit of diabetes mellitus screening program and impact of dietary and exercise modification on glycemic control. *Al-Rafidain J Med Sci*. 2025;8(2):150-156. doi: 10.54133/ajms.v8i2.1929.
18. Fouad D, Kauffman JD, Chandler NM. Pathology findings following interval appendectomy: Should it stay or go? *J Pediatric Surg*. 2020;55(4):737-741. doi: 10.1016/j.jpedsurg.2019.05.001.
19. Janakiraman R. A prospective comparative study of interval appendicectomy vs conservative management with follow-up in appendiceal mass in GRH Madurai. *IOSR J Dent Med Sci*. 2020;19(11):34-40. doi: 10.9790/0853-1911033440.
20. Yılmaz Y, Kamer E, Acar N, Etlik MN, Güngör H, Kar H, et al. Approach to appendiceal masses due to acute appendicitis: Analysis of 126 cases. *Turk J Colorectal Dis*. 2020;30(2):134-137. doi: 0.4274/tjcd.galenos.2020.2020-2-5.
21. Memon ZA, Khowaja MA, Zardari IA, Ghumro AH, Dahri FJ, Soomro IA. Comparison of early appendectomy versus conservative management for appendicular lump at tertiary care hospital. *Professional Med J*. 2020;27(09):1818-1822. doi: 10.29309/TPMJ/2020.27.09.3961.
22. Tekin A, Kurtoğlu HC, Can I, Öztan S. Routine interval appendectomy is unnecessary after conservative treatment of appendiceal mass. *Colorectal Dis*. 2008;10(5):465-468. doi: 10.1111/j.1463-1318.2007.
23. Mani V, Chejara R, Arya SV, Bhatia A, Chaudhary R, Raj M. Evaluation of conservative management in uncomplicated acute appendicitis. *Int J Res Med Sci*. 2021;9(9):2618. doi: 10.18203/2320-6012.ijrms20213179.
24. Qureshi AG, Idris SA. The study of non-operative treatment for acute appendicitis (NOTA). *Saudi J Med*. 2020;5(1):11-15. doi: 10.36348/sjm.2020.v05i01.003.
25. Alsubsiee IFN, Alsubsiee AFN. Appendicectomy for uncomplicated simple appendicitis: Is it always required? *Surg Res Pract*. 2021;2021. doi: 10.1155/2021/8848162.
26. Khaja A, Khaleel MI. A study on treatment option for appendicitis-conservative vs surgical methods and its outcomes with Alvarado score of five. *Int J Adv Res Med*. 2019;1(2):112-114. doi: 10.22271/27069567.2019.v1.i2b.99.
27. Bemelman WA, Warusavitarne J, Sampietro GM, Serclova Z, Zmora O, Luglio G, et al. ECCO-ESCP consensus on surgery for Crohn's disease. *J Crohn's Colitis*. 2018;12(1):1-6. doi: 10.1093/ecco-jcc/jjx061.