

OPINION

MANAGEMENT OF APPENDICEAL MASS

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Abstract

Background: The management of appendiceal mass is surrounded with controversy. Traditional management has been conservative, with interval appendectomy performed weeks after the mass had resolved. This remains the most common approach at many centers in the world. Recently, an increasing number of studies have challenged this approach. This article reviews some of the controversial issues in the management of appendix mass, assesses current practice and suggests an appropriate approach for the management of appendix mass.

Methods: A Medline, Pubmed and Cochrane database search were used to find such key words and combinations of: appendix, appendiceal, appendicular, interval, appendectomy, appendicitis, mass, abscess, phlegmon, and appendicitis. Results were saved and managed by Reference manager 11. All articles were cross-referenced by the authors.

Results: A conservative management is still a highly acceptable approach for appendix mass. This should be followed with interval appendectomy especially in patients with persistent right iliac fossa pain.

Conclusion: We recommend initially conservative approach to the management of appendiceal mass especially in our environment.

Keywords: Appendiceal mass, appendix abscess, appendix phlegmon, appendicitis, interval appendectomy

Résumé

Contexte: La prise en charge du plastron appendiculaire est entourée de controverses. Le traitement usuel a toujours été conservateur avec l'appendicectomie réalisée plusieurs semaines après la fonte de la masse. C'est l'attitude la plus commune dans la plupart des centres à travers le monde. Récemment, un nombre croissant d'études ont contesté cette approche. Cet article passe en revue certaines controverses dans la prise en charge du plastron appendiculaire, présente les pratiques actuelles, et suggère une approche appropriée de la prise en charge du plastron appendiculaire.

Méthode: Une recherche dans les bases documentaires Medline, Pubmed et Cochrane ont été faites par la recherche et la combinaison des mots clés que sont: appendice, appendiculaire, intervalle, appendicectomie, masse, abcès, phlegmon et appendicite. Les résultats ont été sauvegardés et traités à l'aide de Référence Manager 11. Tous les articles ont été recoupés par les auteurs.

Résultats: Un traitement conservateur est encore une approche très acceptable pour le plastron appendiculaire. Cela devrait être suivi à distance par une appendicectomie particulièrement chez les patients ayant une douleur persistante de la fosse iliaque droite.

Conclusion: Nous recommandons initialement une approche conservatrice pour la prise en charge du plastron appendiculaire particulièrement dans notre contexte.

Mots clés: Masse appendiculaire, abcès appendiculaire, phlegmon appendiculaire, appendicite, appendicectomie à distance

Introduction

An appendiceal mass is the end result of a walled-off appendiceal perforation and represents a pathological spectrum ranging from phlegmon to abscess.^{1,2} It is a common surgical entity, encountered in 2%-6% of patients presenting with acute appendicitis.¹⁻³ Management of an appendiceal mass is controversial with three general approaches usually employed.²⁻²⁹ 'Classical management' involves initial conservative management with broad-spectrum antibiotics and intravenous fluid until the inflammatory mass resolves. Patients are offered interval appendectomy following resolution of symptoms. More recently, the need for interval appendectomy has been questioned, with a number of authors adopting semi conservative approach with immediate appendectomy or entirely conservative approach without interval appendectomy.⁴⁻⁶

The semi-conservative approach involves performing immediate appendectomy during the initial admission after resolution of the inflammatory mass. Advocates of immediate appendectomy mentioned advantages of avoiding the need for readmission for interval appendectomy, and the exclusion of other pathologies masquerading as an appendix mass.⁴⁻⁷ while advocates of interval appendectomy described the advantages of avoiding recurrence of symptoms and the misdiagnosis of an appendix mass.^{8,9} They argue that interval appendectomy is a less hazardous and less challenging operation, compared with immediate appendectomy during the initial admission.^{8,9} Proponents of an entirely conservative approach claim appendectomy, whether interval (delayed) or immediate (during initial admission), is unnecessary.¹⁰⁻¹²

None of these three approaches has gained total universal acceptance. At our center at Ahmadu Bello University Teaching Hospital Zaria, a classical approach is still favored by the majorities of the consultants (personal communications). This article aims to review the current available literatures describing management of appendix mass and suggest an acceptable approach based on available local resources.

Materials and Methods

A Medline, Pubmed and Cochrane database search was performed using reference manager 11 applying search key words such as: appendicitis, appendiceal mass, interval, appendectomy, abscess and phlegmon. We also searched with the combinations of these key words using Boolean approach. Relevant articles including case series, review articles and individual case reports relating to adult appendix

mass were selected and saved into the reference manager 11. Cases of children appendiceal masses were excluded from this review. All articles were read by the two authors and cross-referenced.

Discussion

An Appendiceal mass range from phlegmon to abscess and it develops in 2%-6% of cases following acute appendicitis^{2, 9-16}. For obvious cases of appendiceal abscesses, there is no controversy as regarding its management; immediate surgical drainage (percutaneous or open) is the treatment of choice by the majority of the authors of the articles reviewed.⁶ For phlegmon, a number of treatment options ranging from conservative to aggressive approaches are available. We compared the three most popular approaches to the treatment of appendix mass. This discussion shall be grouped under the three main methods of approaches to treatment of appendix mass.

Approach A

Initial conservative treatment followed by interval appendectomy six to eight weeks later

Oschner in 1901 proposed non-operative management for treatment of appendix mass.^{15, 16} This approach involved the administration of intravenous fluids and antibiotics while keeping the patient on nil per oral. The aim of this approach was to achieve complete resolution of the inflammatory mass and the disappearance of symptoms in the patient before any surgical intervention (Figure 1). Some authors favor this approach on the ground that it is effective in the majority of patients.¹⁶⁻¹⁸ What are the reasons for justifying interval appendectomy? It is first to prevent recurrence of acute appendicitis and second to avoid misdiagnosing an alternative pathology such as malignancy.^{12,14,16}

An article in favor of initial conservative approach published in 1993 by Nitecki et al² reported a mean incidence of recurrent acute appendicitis in a meta-analysis of 329 patients managed conservatively as 13.7% (range 0%-20%).¹⁴ Most recurrences occurred within the first two years. There were also fewer operative difficulties in this group of patients and there was a far less frequent need to extend the incisions during surgery. As a result of these peculiar advantages the operative time was significantly shorter than other methods of treatment. There was also no significant postoperative complication in this group.

Approach B

Immediate appendectomy following inflammatory mass resolution

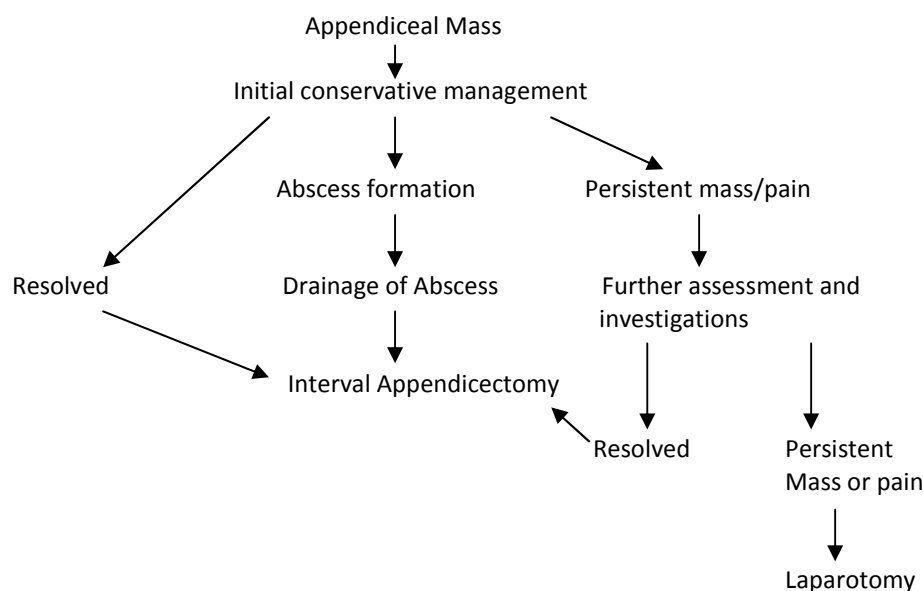
With the advent of antibiotics designed to prevent the growth of anaerobes, early appendectomy can

now be carried out without complication¹⁹ Hence emergency appendectomy for appendix mass is emerging as an alternative to conventional conservative treatment. It is said to be feasible, safe, and cost-effective, allowing early diagnosis and treatment of unexpected pathology.¹⁸ However, the appropriate timing for emergency surgery is contentious.¹⁸

One method involves immediate appendectomy as soon as there is resolution of the mass before patient is discharged home during the initial admission. However some more aggressive surgeons actually embark on right hemicolectomy for appendiceal mass as soon as the patients present.^{2,5,8} Immediate appendectomy has the advantages of being safe, eliminates risk of recurrent appendicitis and eliminates the need for re-admission for interval

appendectomy.⁵ It is generally reported to reduce total hospital stay^{2,8} However, it has a high complication rate of about 36%, almost comparable to that for perforated appendicitis.⁹ Immediate surgery leads to dissemination of infection and intestinal fistula formation.² This obviously seems to obviate the advantages enumerated above. The inflammatory appendiceal mass may be mistaken at surgery for a malignant tumor, occasionally leading to right hemicolectomy. A malignant mass may be mistakenly under-treated by appendectomy. In view of the above complications it is advisable not to adopt this method in our environment, as this group has significant complications and over treatment compared to the traditional initial conservative method.

Figure 1. Algorithm for management of appendiceal mass



Approach C

An entirely conservative approach without interval appendicectomy in patients with appendiceal mass

A school of thought argued that after a successful conservative management, interval appendicectomy is not necessary and can safely be omitted, except in patients with recurrent symptoms. In patients above 40 years of age, one must exclude other pathological causes of right iliac fossa mass by further investigations such as barium enema, colonoscopy and computerized tomography scan. A close follow up is needed in this category of patients.¹⁸

Obviously patients in Groups A and B above have significantly longer duration of hospital stay as well as time lost from work. Dixon et al²⁰ reviewed the characteristics of 32 patients who had recurrence of symptoms following conservative management.²⁰ Mean time to recurrence was five months following

the initial episode. They compared the clinical characteristics of each patient at initial admission with the same characteristics at recurrence. They demonstrated that when recurrence of appendicitis occurs this followed a milder clinical course. The recurrences were treated successfully with both operative and non-operative approaches and were not associated with any significant mortality or morbidity. They also compared clinical and demographic characteristics of the recurrence group to the non-recurrence group and found no significant risk factors for recurrence, including the severity of the initial presentation. There is, therefore, good evidence, first, that the risk of recurrent acute appendicitis following successful conservative management is low; between 5% and 14%. Second, in the minority of patients whose symptoms do recur, this usually occurs within one year.

Third, recurrence of appendicitis following conservative management is usually associated with a milder clinical course amenable to both operative and non-operative approaches. Fourthly, there is no accurate method for predicting patients at risk of recurrence. The conservatively managed group also had the shortest length of hospital stay even when the recurrences were included. They concluded that conservative management without interval appendectomy was the most appropriate management for appendix mass and that immediate appendectomy should only be used when initial conservative management fails.^{21,23,25,29}

Conclusion

Misdiagnosis of appendiceal tumor or colonic tumor can be disastrous in patients with appendiceal mass so we should exercise caution when adopting entirely conservative approach. Sophisticated investigations such as MRI, CT scans are not easily accessible in this part of the world. Hence to adequately rule out other pathologies may be difficult when we adopt entirely conservative approach. A traditional initial conservative management is still a highly acceptable approach for appendix mass. This should be followed with interval appendectomy more so in patients with persistent right lower abdominal pain. During the waiting period further investigating should be carried out. Advanced imaging techniques should not be applied routinely although they may be valuable when the clinical diagnosis is uncertain. Ultrasound is particularly valuable in women. Active observation is an appropriate method for managing uncertain cases.

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