Interval appendicectomy after resolution of adult inflammatory appendix mass – is it necessary?

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Introduction: The management of adult inflammatory appendix mass is evolving. Traditional management has been shown to be initially conservative, with interval appendicectomy performed after the mass resolved. This remains the most common approach in UK surgical practice. Recently, an increasing number of studies have challenged this approach. This review looks at the management of the inflammatory appendix mass in the adult in light of these recent changes and suggests a management approach based on the current evidence. Methods: A Medline, Pubmed and Cochrane database search was performed using key words including combinations of; appendix, appendiceal, interval, appendectomy, appendicectomy, mass, abscess, phlegmon, and appendicitis. All articles were cross-referenced. Findings: A conservative management approach will be successful in the majority of patients presenting with an appendix mass. The incidence of recurrence of symptoms following successful conservative management is low. Conclusion: After initial successful conservative management, routine use of interval appendicectomy is not justified in asymptomatic patients.

Keywords: appendix mass, appendix abscess, appendix phlegmon, appendicitis, interval appendicectomy
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INTRODUCTION

An appendix mass is a common surgical clinical entity, encountered in 2–6% of patients presenting with acute appendicitis.[1,2,3] It forms a spectrum of diseases ranging from an inflamed appendix, walled off by the omentum (an appendiceal *phlegmon*), to a large collection of pus surrounded by adherent and inflamed omentum (an appendiceal *abscess)*. Management of an appendix mass is controversial with three general approaches. 'Classical management' involves initial conservative management with broad-spectrum antibiotics and intravenous fluid until the inflammatory mass resolves. The patient is then offered interval appendicectomy following resolution of symptoms. More recently, the need for interval appendicectomy has been questioned, with a number of authors adopting an entirely conservative approach without interval appendicectomy.[10] A third approach involves performing immediate appendicectomy during the initial admission prior to resolution of the mass.

Advocates of immediate appendicectomy describe the advantages of avoiding the need for readmission for interval appendicectomy, and the exclusion of other pathologies masquerading as an appendix mass.[4,5,6,7] Advocates of interval appendicectomy describe the advantages of avoiding recurrence of symptoms and the misdiagnosis of an appendix mass.[8,9] They suggest interval appendicectomy is a less hazardous and challenging operation, compared with immediate appendicectomy during the initial admission.[8,9] Proponents of an entirely conservative approach claim appendicectomy, whether interval or immediate, is unnecessary.[10,11,12]

None of these three approaches has gained universal acceptance. A recent study by the authors looking at adult appendix mass management in the mid-Trent region demonstrated widely differing management of identical clinical scenarios within a single region.[13] Seventy-five per cent of consultants

questioned favoured the 'classical approach'. This article aims to review the current available literature related to adult appendix mass and suggests a management approach based on the recent available evidence.

METHODS

A Medline, Pubmed and Cochrane database search was performed using key words including combinations of: appendix, appendiceal, interval, appendectomy, appendicectomy, mass, abscess, phlegmon and appendicitis. Relevant articles including review articles, case series and individual case reports relating to adult appendix mass were selected. Studies of paediatric appendix mass were not considered. All articles were read by both authors and cross-referenced.

FINDINGS

The majority of studies were small retrospective studies reviewing series of patients undergoing one or two of the three management approaches. One review article was identified, written in 1993.[14] One prospective randomised control study was identified.[15] Although appendiceal phlegmon and abscess are considered a spectrum of the same pathology, studies were frequently vague in their definitions. Additionally, older studies did not routinely perform radiological imaging making the distinction between phlegmon and small abscess difficult to assess. A number of recent, larger studies were identified which provide good evidence for an entirely non-operative approach and are discussed.[11,12,14,16-20]

DISCUSSION

Conservative management

At the beginning of the 20th century, Oschner (1901) proposed non-operative management for the appendix mass.[21] This approach involved the administration of intravenous fluids and antibiotics whilst keeping the patient starved. The aim of this approach was to achieve resolution of the mass and an asymptomatic patient. Most authors agree that this is effective in the majority of patients.[22] Adalla (1996) treated 30 consecutive patients who presented with an appendix mass or abscess, confirmed by ultrasound, using a conservative approach.[10] Twenty-six patients responded successfully to conservative treatment – resolution of the mass in an asymptomatic patient (87%). The four patients who failed to respond required emergency appendicectomy within 48 hours of admission.

Radiological guided percutaneous drainage

The development of computerised tomography (CT) and ultrasound over the past 20 years has allowed increasing use of radiological guided percutaneous drainage of appendiceal abscesses.[23] Percutaneous drainage of appendiceal abscess does not require general anaesthetic and is effective in resolving the majority of appendiceal abscess.[23] Jeffrey *et al* (1987) reviewed 20 patients with appendiceal abscesses confirmed on CT scan that were treated with percutaneous catheter drainage under CT guidance.[24] Sixteen patients were treated successfully and in two patients the abscesses recurred but were successfully treated with a further course of antibiotics without further drainage. Two patients failed to respond to percutaneous drainage and required surgery, giving a success rate of 90%. This figure is similar to other studies looking at percutaneous drainage of an appendix mass.[2]

Yamini *et al* (1998) conservatively treated 64 patients with appendiceal abscess (n=54) or phlegmon (n=10).[26] Thirty of the patients with abscesses had collections amenable to radiological-guided percutaneous drainage. This was performed during conservative treatment. Of the 64 patients, 62 responded successfully to conservative treatment when combined with percutanious drainage, i.e. achieved resolution of the mass in an asymptomatic patient (97%). These figures are similar to other published series.[19,27,28,29]

Not all appendiceal abscesses require drainage. In the same study of 54 abscesses, they treated 30 with percutaneous

TABLE 1: PUBLISHED SERIES SINCE 1993, OF PATIENTS WITH AN APPENDIX MASS SUCCESSFULLY MANAGED CONSERVATIVELY WITHOUT INTERVAL APPENDICECTOMY, SHOWING INCIDENCE OF RECURRENCE AND FOLLOW-UP

Author	Year	Patients	Recurrence (%)	Mean follow-up (months)
Kaminski *et al* [35]	2005	864	5%	48
Kumar *et al* [15]	2005	20	10%	34
Eryilmaz *et al* [35]	2004	28	12%	35
Dixon *et al* [29]	2003	237	14%	n/a
Oliak *et al* [28]	2001	88	8%	8
Oliak *et al* [27]	2000	77	6.5%	6
Addalla *et al* [10]	1996	30	7%	16