Management of the Acute Appendix Mass: A Survey of Surgical Practice

Abstract:

M Irfan, AM Hogan, R Gately, AJ Lowery, R Waldron, W Khan, K Barry
Department of Surgery, Mayo General Hospital, Castlebar, Co Mayo

Abstract
Management of the appendix mass is controversial with no consensus in the literature. Traditionally, the approach has been conservative followed by interval appendicectomy. A survey was distributed to 117 surgeons (100 consultants and 17 final year specialist registrars) to determine how the appendix mass is currently treated in Ireland. In total, 70 surgeons responded. 51 (73%) adopt a conservative approach initially. 48 (68%) favoured interval appendicectomy at six weeks after a period of successful conservative management. 34 (49%) gave risk of recurrence as the reason for performing interval appendicectomy and 16 (22%) would perform interval appendicectomy in order to obtain histological analysis to outrule caecal or appendiceal neoplasm. 44 (63%) opted for a laparoscopic rather than an open approach for interval appendicectomy. No consensus exists in Ireland for management of the appendix mass presenting acutely. The present series demonstrates a trend towards conservative approach initially followed by interval appendicectomy.

Introduction
Acute appendicitis remains the most common surgical emergency. Between 2 and 10% of cases of appendicitis are complicated by the formation of an appendix mass [1-3]. These masses include a spectrum of clinical presentations superseded by pathological processes ranging from localised collections of pus (peri-appendicular abscesses) to inflamed appendices which have become adherent to the omentum and surrounding viscera to form a phlegmon [4]. While the problem of management of the acute appendix mass is one that faces all surgeons on a general call rota several times a year, there is widespread controversy as to how best to adequately treat this very common and potentially serious condition without unnecessarily radical surgical intervention.

Traditional teaching would suggest that if a mass is palpated in an anaesthetized, systemically well patient due to undergo emergency appendicectomy, the anaesthethic should be reversed and the patient treated conservatively (with antibiotics, gut rest and intravenous fluids) with a plan for an interval appendicectomy six to eight weeks later depending on surgeon preference. This approach has been challenged in recent years, however, with several studies demonstrating the advantages of adopting a wholly conservative approach without the necessity of emergency or interval appendicectomy [5-7]. There are, however, concerns associated with this management strategy, perhaps most importantly concerning the problem of missing neoplastic process in the caecum or the right colon masquerading as appendicitis in the older patient. Concerning the management of the appendix mass in the Irish setting, the decision was taken to perform a literature search in order to ascertain current best practice. To date, no studies have been published regarding surgical management of this condition in Ireland and there is indeed no clear consensus or set of guidelines in the international literature pertaining to optimal care of these patients. To address this obvious dearth in the literature, the present study aims to determine the preferred approach taken to management of the acute appendix mass by both trainee and consultant surgeons in Ireland.

Methods
A questionnaire was constructed and distributed to 117 surgeons (100 consultants and 17 final year specialist registrars). An internet based survey forum was utilised as a means of distributing the questionnaire and collecting completed copies. The survey included eleven questions designed to establish the respondentsâ level of seniority, type of hospital in which they worked and current practice regarding management of the appendix mass. The questionnaire explored surgeon preference for emergency or interval operation, open versus laparoscopic intervention and timing of interval procedure. The response options were categorical and each question had between two and seven answers. Responses were entered onto an electronic database and tabulated in percentage and absolute terms. In brief, having ascertained the grade of the responding doctor, the questions enquired as to preference for emergency intervention or conservative management of appendix mass, course of action on palpation of a mass in the anaesthetized patient, whether interval appendicectomy is routinely performed and, if so, timing of same and preference for laparoscopic or open appendicectomy at the index or interval operation.

Figure 1: Management of a suspected appendix mass: What do you do?

Figure 2: If surgery is to be adopted, what type of surgery do you perform for emergency appendicectomy for appendicular masses?

Results
A total of 117 surgeons were surveyed (100 consultants and 17 specialist registrars in the final year of formal training). The overall response rate was 60%. Of the 100 consultants surveyed 57 (57%) responded. 13 of 17 specialist registrars responded giving a response rate of 76%. Results were analysed according to grade of doctor and no significant difference was demonstrated (results not shown). For this reason, analysis was performed of all responses as a combined group. The highest concordance amongst surgeons was shown regarding the method of managing the appendix mass â 51/70 (73%) deemed it prudent to adopt a conservative approach initially rather than performance of emergency surgery. Likewise the majority 48/70 (69%) of respondents favoured interval appendicectomy at six weeksafter a period of successful conservative management. 34/70 (49%) stated risk of recurrence as the reason for performing interval appendicectomy and 16/70 (23%) would perform interval appendicectomy to acquire histological analysis with the aim of out-ruling either appendiceal or caecal neoplasm. A majority (44/70 (63%)) opted for laparoscopic rather than open approach for interval appendicectomy.

There was marked disagreement amongst respondents on how best to perform an emergency appendicectomy in the context of an appendix mass with 25/70 (36%) preferring to adopt the conventional open method and the remaining 29 (41%) preferring a laparoscopic approach. When asked about the most suitable surveillance investigation following purely conservative management of the appendix mass, the population surveyed favoured colonoscopy 19 (27%) and CT scan 18/70 (26%) as first line follow-up investigation. All surgeons surveyed (70/70) reported a willingness to abandon conservative management in selected circumstances if the clinical condition of the patient necessitated this (failure of intravenous antibiotics, persistent pyrexia, signs of generalised peritonitis and CT findings of appendix abscess).

A pictorial summary of results is provided in figures 1, 2 and 3.

Figure 3: If an interval appendicectomy is to be performed, what approach would you take?

Discussion

When a literature review was performed to assess national and international standards of management of the appendix mass in the acute setting, it was surprising to note the vast diversity in opinion regarding this very common surgical condition. There are no clear-cut guidelines and, as a result, there is widespread variation in management of patients with acute appendicitis which has gone on to form an intraperitoneal mass. Traditional dogma associated emergent operative management of the acute appendix mass with an increased incidence of morbidity in the form of intra-peritoneal bleeding, wound infection and entero-cutaneous fistula formation. It was also considered to have an unacceptably high risk of bowel resection, usually in the form of modified right hemicolectomy or ileo-caecectomy. However, in recent times, with the advent of minimally invasive surgery, these opinions may be based on the assumption that laparoscopy in the setting of an appendix mass is technically demanding and dependent on surgeon experience. With the worldwide laparoscopic learning curve improving dramatically, it may be that in experienced hands, emergent laparoscopic appendicectomy is a safe and reasonable management option. This course of action has not, however, to date been verified by a randomised controlled trial.

Of the eleven questions in the present study, nine were clinically based and two related to demographics. While some questions demonstrated a relative uniformity of opinion regarding the management of appendix mass, the majority of questions demonstrated divergence of opinion. This is in keeping with the international literature which is, however, scant. A recent questionnaire of 67 consultants and specialist registrars in the mid-Trent region of England showed no agreed consensus on the management of the appendix mass. More recently, a survey of 90 consultant surgeons from a single United Kingdom training region revealed that 53% of surgeons perform interval appendicectomy routinely at 6weeks to 3months, mainly because of concerns about recurrence [10].

In the present series, a vast majority of surgeons surveyed were in favour of conservative management and interval appendicectomy at a mean of 6 weeks after successful initial conservative management. In this scenario laparoscopic intervention was favoured. This is in keeping with much of the published literature [9]. While conservative management without interval appendicectomy has been proposed in selected publications [5], this policy is of questionable value in patients over the age of sixty [15], where the risk of alternative pathology (caecal carcinoma, carcinoid tumour) must be excluded. The bulk of respondents in the present study favoured a conservative approach initially which is unsurprising since this has been the standard of care since 1901 when it was introduced by Ochsner in Chicago [2]. This method has repeatedly been shown to be both safe and effective [3]. Failure to respond to antibiotics or demonstrable abscess on CT was not sufficient to encourage the majority of surgeons in Ireland to intervene emergently. Most would persist with conservative treatment until overt signs of peritonitis are evident. The majority of surgeons would still perform an interval appendicectomy despite an increasing body of evidence that has recently been published to the contrary [16].

Whether or not the popularization of interventional radiology and minimally invasive techniques over the last decade has played a role in more conservative management has not yet been investigated. Diagnostic laparotomy was a common surgical procedure before the improvement of both interventional and therapeutic radiology. Doubtlessly, this has a role to play in minimising intervention, whether because of pre-operative CT scanning or radiological drainage of abscesses.

The present study is by no means exhaustive or prescriptive. It, like all studies has some clear limitations. An overall response rate of 60% was taken considered reasonable to allow conclusions to be drawn based on a representative selection of Irish consultant and final year trainee surgeons. Data presented does not necessarily deliver any new evidence but rather attempts to highlight the diversity in management of the appendix mass in the Irish population and to draw the readersâ attention to variation in opinion in a relatively small and homogenous population. It aims to alert the Irish surgical community to the need for guidelines to promote uniformity in management based on a sound evidence base which should be standard procedure in the current age of widespread litigation. It calls for a population based study as, unfortunately while the appendix mass is a common problem, it may not be sufficiently so to lend itself to a randomised controlled trial. It was both unsurprising and reassuring that there was no difference in management delivered by consultants and those in the final year of training.

In conclusion, there is no clear consensus in the Irish setting regarding management of the acute appendix mass. There is a tendency to perform interval appendicectomy after an initial conservative period of management. However, this is at odds with current literature which favours conservative management without interval appendicectomy [1,2]. This phenomenon is not particular to Ireland with a recent survey of English surgeons demonstrating that they too would perform an interval appendicectomy after successful conservative management [8]. If an interval appendicectomy is to be performed then the method of choice for the majority of respondents is laparoscopic but there is no such consensus on approach in the emergency setting. There is an almost equal split in popularity of laparoscopic and open procedures with slightly more surgeons preferring the laparoscopic method. As is evidenced by this study, there is a necessity for clear guidelines and protocols to be devised for the management of the acute appendix mass.

Correspondence: AM Hogan
Department of Surgery, Mayo General Hospital, Castlebar, Co Mayo
Email: Aislinghogan@yahoo.com

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