



INTERVAL APPENDICECTOMY – IS IT REALLY REQUIRED?

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ABSTRACT

Background: The need for interval appendicectomy after successful conservative management of appendicular mass has been questioned recently. Traditional approaches are making way for new modalities.

Objective: To evaluate need for interval appendicectomy in patients treated conservatively for appendicular mass.

Method: This prospective study was done in SKIMS Medical College Hospital, Srinagar, India from July 2014 to March 2018. 54 patients treated conservatively for appendicular mass were enrolled till March 2017 and a followed up for 1 year.

Results: Interval appendicectomy was not performed routinely. Appendicectomy was required in 5 patients (9.26%) for recurrent appendicitis. Two patients developed appendicular abscess (3.7%) and were operated upon. Conservative treatment was successful in 47 patients (87.04%).

Conclusion: Routine interval appendicectomy after successful conservative management of appendicular mass is not warranted.

KEYWORDS : Interval appendicectomy, appendicular mass, appendicitis.

Introduction:

Acute appendicitis is most common acute surgical emergency. It has 6 types: 1-catarrhal appendicitis; slightly red 2-phlegmonous: moderate inflammation and ischemia 3-gangrenous :(partial) necrosis 4-perforated 5-appendicular mass 6-appendicular abscess¹. The development of an appendiceal mass occurs in 2%-10% of cases². This mass results from a walled-off appendiceal perforation and represents a wide pathological spectrum ranging from an inflammatory mass that consists of the inflamed appendix, some adjacent viscera and the greater omentum (a phlegmon) to a periappendiceal abscess³. Ultrasonography has been advocated as the diagnostic modality of choice, revealing the diagnosis in 70% of cases, however, contrast-enhanced computerized tomography (CT) scanning is far superior². Management of an appendicular mass is controversial and may be treated in several ways⁴. The three most commonly used methods for treating appendicular mass are: first method include initial conservative treatment followed by interval appendicectomy six to eight weeks later. Second: appendicectomy as soon as appendicular mass resolved using conservative measures. Third include conservative treatment alone^{4,5,6}. The standard treatment which was introduced by Ochsner in 1901 advocating a conservative regimen (nil by mouth, intravenous antibiotics, bed rest and watchful observation) has proved popular over the years and has been shown to be safe and effective². It allows the acute inflammatory process to subside in more than 80% of cases before interval appendicectomy (I.A) is performed some 8-12 wk later.

More recently, the need for interval appendicectomy has been questioned by a number of surgeons adopting an entirely conservative approach without interval appendicectomy^{1,7,8}. Advocates of interval appendicectomy described the advantage of avoiding recurrence of symptoms and misdiagnosis of an interval appendicectomy mass^{9,10}. Proponents of an entirely non-operative approach suggest that appendicectomy, whether interval or immediate is unnecessary, especially in a symptomatic patients following successful initial conservative treatment¹¹.

A recent questionnaire study of 67 surgeons in the Mid Trent region of England showed no agreed consensus on the management of appendiceal mass⁷. A survey of 663 surgeons in North America revealed that I.A is routinely performed by 86% of the surveyed surgeons¹¹. The most cited reason is the risk of recurrent appendicitis which is reported to occur in 21%-37% of cases^{11,13}.

The argument of recurrent appendicitis has been questioned as it occurs in less than 20% of cases and the risk becomes minimal after the first 2 years of the initial episode^{12,14}. Hence, more than 80% of patients with appendiceal mass can be spared the morbidity of a surgical intervention that has questionable validity. Moreover, a recent large retrospective population-based cohort study of 1012 patients treated initially with conservative therapy showed that only 39 (5%) patients developed recurrent symptoms after a median follow-up of 4 years with male sex having a slight influence on recurrence¹¹.

Our study was aimed to evaluate the need for interval appendicectomy after successful conservative management of appendicular mass.

Methods:

The study was carried in General Surgery department of SKIMS Medical College Hospital from July 2014 to March 2018. Patient enrollment was done up till March 2017 and follow up period was one year. 61 patients presented with appendicular mass during said period. Two patients were found to have ileocaecal tuberculosis while one patient had caecal growth. Four patients were lost to follow up. Thus our study population was constituted by 54 patients. All these patients were worked up as per the standard protocol including detailed history and examination followed by complete blood counts, urine analysis and ultrasonography of abdomen. Contrast Enhanced Computed Tomography was performed in 13 patients where diagnosis was doubtful based on initial investigations. All the 54 patients were diagnosed as having inflammatory appendiceal mass (Phlegmon) and were treated on the lines of Ochsner Sherrin regimen (nil by mouth, intravenous antibiotics, bed rest and watchful observation). Antibiotics used were Ceftriaxone 1g iv bd and metronidazole 500mg iv tid. Monitoring of vital signs was done by a chart including pulse and temperature record, marking of the mass by serial clinical exam and/or USG examination to see the response of the mass to conservative treatment.

Patients who responded to conservative treatment as evidenced by reduced amount of pain and tenderness of right iliac fossa, normalization of vital signs, decreasing dimensions or disappearance of mass, were sent home with a regular follow up extending up to 1 year.

Results:

Our study population comprised of 23 males and 31 females (Male:Female = 0.74:1) aged between 14 to 50 years with mean age of 24.5 years. Two patients (3.7%) did not respond to conservative treatment and were found to have appendicular abscess. Both these patients were males and were operated upon for drainage of abscess after which they showed clinical improvement. 52 patients (96.3%) responded completely to the conservative management. During the follow up of one year, five patients (9.26%) presented with recurrent acute appendicitis and underwent appendectomy. Three of the five patients (60%) presented in the second month after discharge; while one (20%) presented in the 5th month and another (20%) in the 10th month after discharge. Thus conservative treatment was successful in 47 patients (87.04%) over a follow up period of 1 year.

Discussion:

The ideal treatment of acute appendicitis (AA) is considered to be appendectomy failing which a number of complications, including an appendicular mass, usually result^{2,15}. This usually follows a late presentation or failure of diagnosis at presentation. Delayed diagnosis changes the uncomplicated simple acute appendicitis into complicated appendicitis¹⁶. Appendicular mass ranges from a phlegmon to an abscess formation and is usually palpable as a tender mass in the right iliac fossa^{17,18}.

Oschner (1901) proposed conservative management for the appendicular mass since the beginning of 20th century^{19,20,21}. This approach involved the administration of intravenous fluid and paraenteral antibiotics while keeping the patient nil by mouth. This modality of treatment has been found effective in the majority of patients²¹.

We follow the same regimen in our study and 47 of our patients (87.04%) responded completely to conservative treatment only and no recurrence of symptoms occur in these patients. Our results are comparable to Safirulla et. Al (88%)²² and Ibrahim F. Noori (86.1%)²³. We followed all patients including those who developed appendicular abscess for 1 year. In our study recurrence rate of acute appendicitis was 9.26% (5 patients) which is similar to the study done by Ibrahim F Noori²³. Recurrences following conservative management may be observed in about 5%-14% of patients^{2,9,10,24,25}. Recently, Kaminski et al reported a 5% recurrence rate with a median follow-up of 4 years in 864 patients treated with antibiotics alone⁴. Dixon et al reported a similar low incidence of recurrent appendicitis and found that subsequent attacks were less frequent and less severe²⁶.

Appendicular abscess formed in two patients (3.7%) which is lower than that recorded by Ibrahim F Noori (6.1%)²³ and Jeffrey et al (7.5%)²⁷. Non-operative management has been proposed for the management of patients with localized abscess formation due to perforated appendicitis¹⁰. Antibiotic therapy is successful in about 93% of these patients; in about 20% of them, image-guided percutaneous drainage of the abscess will eventually be required²⁸. Interestingly, Nadler et al suggested that patients with a phlegmon on imaging tests as opposed to an abscess are more likely to respond to conservative treatment and that the presence of a phlegmon reflected improved host defenses²⁹.

In our study 80% (4 patients out of 5) recurrences occurred during first 6 months period after successful conservative management of appendicular mass. The greatest risk of developing recurrent appendicitis after successful conservative management is during the first 6 months³⁰.

The principal reasons for justifying I.A are to prevent recurrence of acute appendicitis to avoid misdiagnosis of an alternative pathology such as malignancy. Several studies have examined the microscopic changes in the I.A specimen. Many specimens show chronic inflammatory changes (52%)³¹ and acute inflammation (50%)³² however, this may be of little clinical importance in the asymptomatic patient. Appendicular malignancy is rare and may be

missed if appendectomy is not performed; however, it is likely that such patients will have either non resolving mass or early recurrence. Colonic malignancy is a more common concern, but I.A is not a reliable method of detecting a caecal or colonic tumor.

Although there are some groups suggesting routine I.A for all patients who have had nonsurgical treatment of an episode of AA, in clinical practice most surgeons question its routine use. The basic question which should be answered is the following: is the risk of surgery and general anesthesia justified by the risk of recurrent AA. The clinician should keep in his/her mind that appendectomy is associated with a small, albeit significant, morbidity and even mortality, despite being considered a "routine" surgical procedure. Indeed, following emergency appendectomy, mortality ranges from 0.07% to 0.7% in patients without and 0.5% to 2.4% in patients with perforation^{33,34,35}. Operative mortality increases in the presence of co-morbidity (e.g., heart and lung diseases, morbid obesity, etc.) and in aged patients (< 0.1% in patients younger than 40 years, 2.6% in septuagenarians, 6.8% in octogenarians and 16.4% in nonagenarians)³⁴. Morbidity rates range between 10% and 20% for AA without perforation and reach up to 30% for perforated appendicitis^{28,24,36}. Common complications after appendectomy include wound and (more rarely) intraabdominal septic complications, adhesive small bowel obstruction (a long term complication requiring surgery in about 1.5% of patients by 30 years)^{37,38}. Even the less invasive laparoscopic appendectomy is also associated with its one morbidity and even mortality rates.

Most of the studies regarding the role of interval appendectomy provide good evidence, firstly: that risk of recurrent acute appendicitis following successful conservative management is low; secondly, in the minority of patients whose symptoms recurred, this usually occur in the 1st year of initial attack and are usually with mild clinical course which can be managed by both operative and non operative approaches. Thirdly, there is no accurate method for predicting patients who are liable for recurrence^{39,40}. For the few patients who develop recurrent disease, the hospital stay is shorter than for those treated with interval appendectomy, so routine interval is not justified following initial successful-non operative Management of appendicitis⁴¹.

Conclusion:

Conservative management of appendicular mass is successful in majority of cases. However, some concerns need to be addressed like completeness of pathological diagnosis, need for close follow up so that other pathologies are recognized in time, access to surgical care in the event of recurrence and patient's willingness to accept the risk of recurrence whatever small it may be. Based upon present evidence I.A is not justified and should be abandoned but large Randomized Control Trials are required to standardize the practice.

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