

## Original Research Article

# Interval appendectomy-do we need to do it in current era?

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**Received:** 04 March 2023

**Revised:** 05 April 2023

**Accepted:** 10 April 2023

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### ABSTRACT

**Background:** Our current treatment of an appendiceal mass is initially conservative, followed by an interval appendectomy. The necessity of this routine interval appendectomy is debatable. Aim was to evaluate whether surgical factors and pathological features of the excised appendices support interval appendectomy.

**Methods:** It was a retrospective study conducted for a period of 5 years (2017-2022). To assess the number of patients with appendicitis and a peri-appendiceal mass, all patients in both hospitals encoded for appendicitis were listed. Over this period of 5 years a total of 2,090 patients were diagnosed with acute appendicitis. Of these, 230 patients were operated through Interval appendectomy. All medical records of these patients were then reviewed and relevant variables were registered.

**Results:** It was found that clinical findings alone were not specific enough to diagnose an appendiceal mass; 47% had a palpable abdominal mass and the median temperature was 38.2°C ranging from 36 to 40.5°C. Ultrasound examination was done in 70% of patients and showed an appendiceal mass in 72%. During the interval period, 4 patients presented with an appendiceal mass needing drainage, and 3 with acute appendicitis requiring emergency appendectomy.

**Conclusions:** We conclude that when causes for the appendiceal mass other than appendicitis are excluded, interval appendectomy seems unnecessary in patients who respond well to initial conservative treatment.

**Keywords:** Interval appendectomy, Appendiceal mass, Diagnosis, Conservative treatment

### INTRODUCTION

At the time of diagnosis, an appendiceal mass complicates two to six percent of appendicitis cases.<sup>1,2</sup> A cause of an appendiceal mass is a Appendiceal puncture with a wall. For more than a century, there has been debate concerning the diagnosis and treatment of this illness. Because it was anticipated that early surgical intervention may spread infection, a non-operative method was initially recommended. Later, an urgent appendectomy was advised for all appendicitis states due

to advances in anesthesia, the development of antibiotics, and better supportive care. Nowadays, it seems that a cautious nonoperative treatment that consists solely of fluids, bed rest, and antibiotics is the ideal strategy.<sup>3,4</sup>

Using ultrasound imaging and erythrocyte sedimentation rate analysis, oral meal intake is reintroduced and increased when pain and the size of the palpable mass reduce. ESR as techniques for monitoring the mass.<sup>4,5</sup> In the majority of centers, an elective appendectomy is carried out around 8 weeks following the acute episode.<sup>6</sup>

In the past, we have taken this method; however, further proof has recently been published in the literature suggesting that this interval appendectomy can be skipped.<sup>3</sup> In addition, we discovered that a significant proportion of appendices removed during interval appendectomy were identified as having no evidence of prior inflammation. The study was done to evaluate whether surgical factors and pathological features of the excised appendices support interval appendectomy.

## METHODS

It was a retrospective study conducted at department of general surgery in Prime hospital Dubai for a period of 5 years (2017-2022). To assess the number of patients with appendicitis and a peri-appendiceal mass, all patients in both hospitals encoded for appendicitis were listed. Over this period of 5 years a total of 2,090 patients were diagnosed with acute appendicitis. Of these, 230 patients were operated through interval appendectomy.

### Inclusion criteria

All medical records of these patients were then reviewed and relevant variables were registered. Variables included in this study are patient characteristics and parameters that focus on the diagnosis of appendicitis with appendiceal mass, hospitalisation and morbidity until the interval appendectomy, pathology of the appendectomy specimen, and morbidity related to the elective interval appendectomy.

### Exclusion criteria

Patients who had an appendectomy while being operated for another reason were excluded from this study.

The study was approved by institutional ethics committee.

### Statistical analysis

The statistical analysis was performed using SPSS for windows version 22.0 software (Mac, and Linux). The findings were present in number and percentage analyzed by frequency, percent, and Chi-squared test. Chi-squared test was used to find the association among variables. The critical value of p indicating the probability of significant difference was taken as <0.05 for comparison.

## RESULTS

As per Table 1 a total of 230/2090 (11%) patients with appendicitis were diagnosed to have an appendiceal mass and were treated conservatively and all undergoes interval appendectomy. This group consisted of 120 (53.6%) women and 108 (46.4%) men and the median age of the patients in the study group was 40 years (range: 3-92). The diagnosis of appendiceal mass was made on clinical grounds.

**Table 1: Demographic and clinical data of study participants.**

Variables	N (%)
Appendicitis	2090 (100)
Interval appendectomy	229/2090 (11)
Male/female	108/112
Appendiceal mass	230
Age (Years) (Mean $\pm$ SD)	40 $\pm$ 12

**Table 2: Clinical aspects and laboratory presentation in study participants.**

Variables	Mean	Range
<b>Clinical aspects (230)</b>		
Duration of symptoms, days	5	1-32
Palpable mass	110 (70%)	-
Temperature	38.4	36.2-40.4
Duration of admission, days	10 days	2-52
<b>Laboratory results</b>		
Leucocytosis	13.6 $\times$ 10 <sup>4</sup>	4.6-28.4 $\times$ 10 <sup>4</sup>
ESR	45	11-92
Ultrasound	150/230	-
Positive	115/150	
Negative	35/150	

As per Table 2 mean duration of symptoms was for 5 days. Mean duration of admission were 10 days. Leucocytosis was common in study participants suggestive of infection with high mean ESR. An ultrasound examination was performed in 150/230 (70%) patients, showing an appendicular mass in 115/150 (71.9%) patients. Ultrasound examination was negative for an appendiceal mass in 35/150 (14.6%) patients. Of these 35 patients, one patient developed an intra-abdominal abscess in Douglas' pouch that evacuated spontaneously.

**Table 3: Postoperative complications.**

Complications	Number
Urinary tract infection	11
Wound abscess	11
Airway infection/pneumonia	2
Douglas' pouch abscess	1
Sepsis (peripheral line)	1
Perforation	1
Urinary bladder retention	1
Wound pain	1
Small bowel ileus	1

As per Table 3 interval appendectomy was done in 229 patients out of 230, in 1 patient, the appendix was extremely fibrosed and so shrunken that a purse-string was applied and what was left of the appendix was invaginated.

## DISCUSSION

One of the most difficult surgical issues is the acute abdomen. Nearly all of the information needed to decide whether to operate is clinical. Laboratory primarily utilized to corroborate the clinical suspicion are radiological investigations.<sup>1,2,7</sup>

This is undoubtedly true when a diagnosis of acute appendicitis is made. To speak of appendicitis, some minimal anatomopathological requirements must be met, including disturbance of the mucosa as well as invasive infection and inflammation. Ischemia accompanied by mucosal ulceration, transmural necrosis, and bacterial penetration leads to an appendiceal perforation. In all cases of appendicitis that progress to perforation, luminal blockage eventually appears.

The pathological spectrum of an appendiceal mass spans from phlegmon to an abscess brought on by a walled-off appendicular hole.<sup>3</sup> Infrared is helpful in determining whether a mass or an abscess is taking space in the lower right quadrant of the abdomen. The use of ultrasound to confirm the diagnosis and type of an appendiceal mass was first accomplished in 1987 by Bagi et al.<sup>4</sup> According to Puylaert, ultrasonography can see the appendix in 85% of patients with an appendiceal mass.<sup>5</sup> About 50% of appendiceal masses exhibited localized fluid collections. They spontaneously resolved or emptied themselves in roughly half of the instances. It seems crucial that qualified sonographers are on hand to conduct the examination.

In a group of 18 juvenile patients, Mazziotti et al discovered that every appendix that was removed during an interval appendectomy had a patent appendiceal lumen.<sup>8</sup> This implies that there was a long-term danger of recurring illness for every patient. In 2/18 individuals and in 5/18 unexpected pathological abnormalities (appendiceal duplication, Meckel's diverticulitis, and granulomatous appendicitis), recurrent acute appendicitis was discovered. These two justifications led these researchers to recommend interval appendectomy. It's crucial to understand, nevertheless, that the patient's clinical condition did not correspond with the microscopic findings.

We concur with Mosegaard et al and other writers that a barium enema or colonoscopy must be performed at the very least in all patients above the age of 40 the age at which the "appendiceal bulk" has disappeared.<sup>3,9-11</sup> Because appendix primary adenocarcinomas are uncommon, routine interval appendectomy is not warranted. There are complications associated with interval appendectomy. About 18% of the patients in our series had postoperative problems, according to our analysis. This figure is comparable to that given by Eriksson in his research.<sup>12</sup> In a recent study, Oliak et al discovered that 16% of interval appendectomy patients experienced complications.<sup>13</sup> Our study has few

limitations firstly retrospective nature of study can change the associations and impact. Secondly, our findings cannot be useful in development of clinical practice guidelines for appendectomy and further economic evaluations. Thirdly, no information was reported on the expertise of the surgeons performing the interval appendectomy.

## CONCLUSION

We are no longer able to advise a routine interval appendectomy based on the findings of our microscopic inspection of the removed appendix. Interval Appendectomy should only be carried out in cases of recurrence. Nonetheless, it is crucial that patients over the age of 40 have additional testing to rule out any underlying diseases (such as cancer) as the mass's source once the right iliac fossa mass has resolved. More research is required to determine the role of laparoscopy in the treatment of appendiceal masses.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Singhal VK, Alaswad FD, Asif UH, Singhal VVV, Ojha V. Interval appendectomy- do we need to do it in current era? *Int Surg J* 2023;10:964-7.