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## *Appendiceal Mass: Interval Appendectomy Should Not Be the Rule*

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### **Abstract**

**Introduction:** An appendiceal mass is the end result of a walled-off appendiceal perforation and occurs in 2 to 6 per cent of patients with appendicitis. Conservative treatment with intravenous antibiotics remains the standard approach. In the past, interval appendectomy was recommended to prevent repeated episodes of acute appendicitis which occurred in 10 to 20 per cent of patients mostly during the first year after the initial attack. Theoretically, routine elective interval appendectomy may be safely omitted in more than 80 per cent of patients.

**Research design:** Retrospective descriptive study.

**Setting:** University Hospital.

**Patient selection:** All patients clinically diagnosed with an appendiceal mass in Department of Surgery, Faculty of Medicine, King Chulalongkorn Memorial Hospital between January 1993 and December 1998.

**Method:** The medical records were reviewed case by case. The patients were classified into 2 groups. Appendectomy was performed in group 1. The patients who did not return for appendectomy (group 2) were asked for any symptoms suggesting recurrent appendicitis either by phone or by letter. The rate of recurrent appendicitis after initial conservative management is the main outcome.

**Results:** Appendiceal mass was diagnosed in 82 patients over the 6-year period in which the study was retrospectively reviewed. Their age ranged from 3 to 87 years (mean 37 years), the duration of symptoms ranged from 1 to 20 days (mean, 5.73 days). The diagnosis was confirmed by ultrasonography in 10 patients. Almost all patients received initial conservative management and scheduled for interval appendectomy. Interval appendectomy was performed in 43 patients, 5 of them (6.17%) had recurrence of symptoms before surgery. Immediate appendectomy without initial conservative treatment was done in one patient. The remaining 38 patients did not come back for appendectomy, 4 patients were lost to follow-up. No recurrent appendicitis was found in this group of patients.

**Conclusion:** Routine interval appendectomy is unnecessary in more than 80 per cent of patients. Appendectomy should be done only when the symptoms recur.

Acute appendicitis is the most common cause of an acute abdomen requiring surgery. An appendiceal mass is the end result of a walled-off appendiceal perforation and is found in 2 to 6 per cent of patients. Classically, following the successful conservative management with intravenous antibiotics, elective interval appendectomy was performed 6 to 12 weeks later.<sup>1,2</sup> However, several authors have questioned if interval appendectomy is necessary, as the recurrence is low (10 to 20%).<sup>2-7</sup> Theoretically, routine elective interval appendectomy may be safely omitted in more than 80 per cent of patients.

## MATERIALS AND METHODS

All patients clinically diagnosed with appendiceal mass, treated in Department of Surgery, King Chulalongkorn Memorial Hospital between January 1993 and December 1998 were included in this study. The medical records of these patients were retrospectively reviewed.

Appendiceal mass was diagnosed if the patients gave a history of right lower quadrant pain, fever and palpable mass. Most patients were hospitalized and intravenous antibiotics, usually gentamicin plus metronidazole, were given until their symptoms subsided. All patients were scheduled for elective interval appendectomy 6 to 8 weeks after the initial hospital admission.

Patients who did not return for interval appendectomy were asked for any symptoms suggesting recurrent appendicitis either by phone or by letters. The data collection ended on March 1999.

## RESULTS

Appendiceal mass was diagnosed in 82 patients over the 6-year period in which the study was retrospectively reviewed. The mean age was 37 years (range 3-87), male to female ratio was 1 to 1.38. The duration of symptoms ranged from 1 to 20 days (mean 5.73). The ultrasonography was performed to confirm diagnosis in 10 patients, 7 cases of phlegmon and 3 cases of abscess were identified.

Appendectomy was performed in 44 patients. Among these patients, immediate surgery without conservative treatment was performed in one patient. Five patients had recurrent abdominal pain and returned

**Table 1** Intra-operative finding in patients undergoing interval appendectomy (38 patients).

Finding	No. of patients (%)
Adhesions	8 (21.05)
Inflammation	3 (7.89)
Normal	16 (42.11)
Atrophic appendix	11 (28.95)
<b>Total</b>	<b>38 (100.00)</b>

**Table 2** Histological findings.

Finding	No. of patients (%)
Acute inflammation	1 (2.63)
Subacute inflammation	3 (7.89)
Chronic appendicitis	10 (26.32)
Fibrotic or obliterated lumen	10 (26.32)
Normal	2 (5.26)
Not examined	12 (27.58)
<b>Total</b>	<b>38 (100.00)</b>

for surgery at 1, 3, 13, 13 and 40 weeks after the first admission. The rest of this group (38 patients) routine interval appendectomy was done without any symptoms indicating recurrent appendicitis before surgery. Wound infection developed in two patients (5.26%). The mean interval between the first symptoms of appendicitis and interval appendectomy was 16.7 weeks (range 6-40 weeks). The operative findings are shown in Table 1. Twenty-six specimens of appendix were sent for pathologic examination (Table 2).

Thirty-eight patients did not return to the hospital for interval appendectomy. Four patients were lost to follow-up and did not answer the questionnaire. No recurrent symptoms were found in the remaining of the patients (34 cases). Duration from the initial attack was 7 to 75 months (mean 27.38 months).

Barium enema was performed in 18 patients, most of the cases, after the symptoms subsided. The appendix was completely seen in 6 patients, partially seen in 6 and not filled in 4 patients. In two patients, caecal diverticulum was seen by barium enema.

## DISCUSSION

An appendiceal mass, either phlegmon or abscess, may occur in 2 to 6 per cent of patients with appendicitis.<sup>1,8</sup> Although the operative treatment of acute appendicitis is widely accepted, management of the condition complicated by a palpable mass has evoked controversy. In 1901, Oschner introduced an initial non-operative approach because of the fear that infection would be spread by early surgical intervention.

With the improvement of antibiotic therapy, some surgeons advocated immediate appendectomy and claimed that the procedure could be done safely and the readmission for interval appendectomy could be avoided.<sup>1,2</sup> But multiple reports noting a high morbidity rate with immediate appendectomy.<sup>3,5</sup> Recently, it was suggested that initial conservative treatment is the best way to treat appendiceal mass. If the mass and/or signs of infection persist, the diagnosis of an abscess is established and surgical intervention is indicated.

In this study, 81 patients were successfully treated with the conservative regimen. No surgical intervention was required during the first admission. One patient who did not receive conservative treatment before operation, had to stay in the hospital for 15 days due to postoperative gut obstruction.

The role of interval appendectomy is much more controversial. The main issues of this argument focus on the risk of recurrent appendicitis and missed pathological finding. From a review of literature, the reported frequency of recurrent appendicitis was found to be between 10 and 20 per cent.<sup>2,4,5,7</sup> Our recurrent rate of 6.17 per cent is lower than many reports and all of 5 patients had recurrent abdominal pain within one year after initial attack. If the others 4 patients who lost to follow-up had recurrent symptoms, the recurrent rate would become 11.11 per cent.

Among 38 patients who underwent interval appendectomy, we found macroscopically atrophic appendix in 11 patients (28.95%). Many surgeons believed that the risk of recurrence depending upon the patency of the appendiceal lumen. The histological finding also showed fibrotic or obliterated lumen in 10 specimens (26.32%). No malignancy was found in our patients.

Carcinoma of the caecum is rare in patients

younger than 40 years while appendicitis become less common after the age of 40. Consequently, Most authors have recommended that all patients over the age of 40 to 50 years should undergo routine follow-up with barium enema or colonoscopy to exclude tumors of the colon after the resolution of the acute episode.<sup>1-3,5,8-10</sup> In our study, barium enema was performed in 18 only patients and caecal diverticulum was identified in 2 patients.

## CONCLUSION

All patients presenting with an appendiceal mass should initially be treated conservatively. In the absence of rapid improvement, abdominal ultrasonography should be performed. When an abscess is demonstrated, percutaneous drainage is the treatment of choice while the open procedure may be required in complex multiloculated abscesses. Routine elective, interval appendectomy is not recommended. However, patients over the age of 40 years should be followed with appropriate radiological studies or colonoscopy to exclude abdominal malignancy.

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