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A prospective study of relevance of interval appendicectomy in treatment of appendicular lump

Sworupa Nanda Mallick[1]*, Koresh Prasad Dash[1], Suvendu Amitav[1]*, Asiso Kumar Pradhan[1], Tapan Kumar Malla[1], Narendra Nath Swain[1]

[1]*Dept. of General Surgery, MKCG Medical College and Hospital, Berhampur, Odisha, India*

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ABSTRACT

Introduction: Appendicitis is one of the most common diseases that a surgeon faces in practice. Sometimes patients may present a few days after the onset of acute appendicitis with a palpable mass a phlegmon is a type of inflammatory tumour that consists of an inflamed appendix, as well as the larger omentum and associated viscera.
Aims and Objectives: To evaluate the need for interval appendicectomy in patients with appendicular lump.
Materials and Methods: The study included all patients with an appendicular mass and was put on conservative management. . Failures of resolution of mass with conservative management were taken up for appendicectomy. The patients were discharged on successful conservative management and followed up at regular intervals for 12 months. Any patient with features suggesting recurrence of acute appendicitis on follow up was admitted and taken up for appendicectomy. All of the above information was gathered and statistically evaluated.
Results: Out of 58 cases of appendicular mass, 3 (5.17%) were operated due to failure of resolution of mass. The remaining 55 (94.83%) cases were successfully treated conservatively and followed up regularly for 12 months. 4 (7.27%) patients were lost to follow up. 1 (1.81%) patient revealed carcinoma of caecum and underwent right hemicolectomy. The remaining 50 (86.2%) cases, from which 42 (84%) patients remained recurrence free. 8 patients (16%) had recurrent appendicitis, out of which 7 (14%) patients underwent emergency appendicectomy, 1(2%) patient developed appendicular lump and was treated non operatively.
Conclusion: In our study recurrence rate of acute appendicitis following resolution of appendicular mass is low (16%). So interval appendicectomy have to no longer be the rule in all patients after resolution of mass and should be reserved for patients with recurrences or with increased risk factors for recurrence.

1. Introduction

Appendicitis is one of the most common diseases that a healthcare provider faces in practice. Sometimes patients may present a few days after the onset of acute appendicitis with a palpable mass.[1]

An appendicular mass or phlegmon is a kind of inflammatory tumour that consists of an inflamed appendix, as well as the larger omentum and oedematous caecum, parietal peritoneum and distal ileum.

Appendiceal mass occurs in 2-7% of acute appendicitis patients; however, with the current tendency of using antibiotics alone to deal with acute appendicitis, this range is predicted to rise.[2]

* *Corresponding authors.*
E-mail address: suvendu4404@gmail.com (S. Amitav).

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Patients presenting with appendicular mass may be managed by numerous approaches and optimal choice relies upon the healthcare provider's preference and experience.

"Classical management" is conservative approach initially followed by interval appendicectomy 6-8 weeks later.[3]

Ochsner-Sherren in 1901 recommended that as nature has already localized the infection, if now disturbed will cause faecal fistula. The regimen includes keeping the patient nil-per-oral, with antibiotics, analgesics and IV fluids and regular monitoring of vitals. Routinely, Interval appendicectomy 6-8 weeks later following sucessful conservative management of a mass is favored by most surgeons throughout the world.[4]

The danger of recurrent appendicitis after nonoperative treatment has been said as 5% to 37%, however maximum of those research are small, or have brief follow-up periods.[5–7] Although IA has been proven to have fewer headaches than emergency appendectomy in instances of abscesses and phlegmonous appendicitis, the query stays as to whether or not IA is vital in any respect if the danger of recurrent appendicitis is low.

Recently a new school of thought opines that after successful conservative management of appendicular mass, interval appendicectomy is not required and can be safely skipped, except in patients with recurrent symptoms.[8]

So, the purpose of the study is to clarify & evaluate the role of interval appendicectomy after resolution of appendicular mass by conservative management.

2. Materials and Methods

This study was conducted over a period of 24 months from July 2019–June 2021 including minimum follow-up period of 1 year in each case. The study included all consecutive patients from both sex and all age groups admitted to the Department of General Surgery, M.K.C.G Medical College & Hospital, Berhampur with a provisional diagnosis of appendicular mass.

2.1. Inclusion criteria

Presence of a palpable and tender right iliac fossa mass.

2.2. Exclusion criteria

1. Patients with features of peritonitis.
2. Patients with severe heart diseases, chronic respiratory diseases, chronic kidney disease, and immunocompromised patients.
3. Patients not responding to non-surgical management
4. Patients lost to follow up.

2.3. Method of collection of data

Appendicular mass was diagnosed by:

1. History and clinical examination
2. Ultrasound showing a large mass of non-compressible fat surrounding an inflamed appendix interspersed with echo lucent streaks
3. All biochemical investigations were done on admission and relevant clinical details were noted.
4. All the patients admitted and included in the study were put on non-surgical management with
5. Withholding of oral feeds {Nil per oral}
6. Intravenous fluid hydration
7. Intravenous empirical antibiotics
8. Intramuscular analgesics

The patients were regularly monitored by recording of pulse, temperature, blood pressure, respiratory rate, bowel sounds, abdominal tenderness and change in size of appendicular mass.

The patients were followed up for 12 months at regular intervals. The patients were given the scheduled dates of their follow up visits in advance at the time of their discharge & were instructed to come to the hospital even earlier (i.e., before their schedule follow up date) if their symptoms reappeared.

During the follow up visits the patients were inquired about their general well being, any symptoms suggesting recurrence of appendicitis and evaluated for signs of acute appendicitis (clinical examination and ultrasonography assessment).

Any patient who had features suggestive of a fresh recurrence of acute appendicitis confirmed both clinically and on ultrasonography was readmitted and taken up for interval appendicectomy.

All of the above information was gathered and statistically evaluated.

3. Observations and Results

The study included total 58 patients. The mean age of the patients included in the study was 32.34 years. The most numbers of patients (26) was 30-45 years old (44.83%). Paediatric population accounted for 8.62 % (5) adolescent and young adults for 29.31% (17) and old age group for 5.17% (3) of cases. 51(87.93%) of patients were males and 7(12.06%) were females.

Surgical exploration was needed in two of these patients; one patient underwent appendicectomy and drainage and the other underwent right hemicolectomy because of difficulty in carrying out appendicectomy. Post-operative histopathological examination in the later patient revealed Crohn's disease. The third patient had persistence of the right iliac fossa mass inspite of resolution of the acute stage. Colonoscopy and biopsy was done at the time of discharge which revealed caecal carcinoma, subsequently the patient underwent right hemicolectomy.

Among the 55 (94.83%) patients in whom conservative management (with or without abscess drainage) was successful initially, 4 (7.27%) patients lost to follow up and 1 (1.81%) patient revealed carcinoma of caecum and ascending colon on colonic evaluation during his initial follow up visits. This was the advantage of colonic evaluation protocol taken for high risk patients.

The rest 50 (86.2%) patients had been followed up for a minimum length of 12 months without interval appendicectomy.

During follow up, 8 /50 (16%) patients were readmitted to the hospital with recurrent acute appendicitis without mass in 7(14%) patients and recurrent appendicitis with a palpable mass in 1(2%) patient. The patients with recurrent appendicitis underwent emergency appendicectomy and the patient with recurrent appendiceal mass was again treated non-operatively. The mass resolved completely, however this patient refused to undergo interval appendicectomy after hospital discharge and he was recurrence free for the rest of the follow up schedule.

Post-operative complications occurred in 1/7 (14.28 %) patients. The remaining 42(84%) patients had been recurrence free during follow up period.

The rate of recurrent appendicitis was 8/50(16%). Of these recurrences 6/8 (75%) occurred in the first 6 months, 3/8(37.5%) of recurrences occurred before 6 weeks, 2/8 (25%) of recurrences occurred between 7 and 12 weeks, and 3/8 (37.5%) occurred after 12 weeks. 8/8(100%) of the recurrences occurred within 12 months of the initial attack.

Table 1: Age group (n = 58)

Age group	No. of patients	Percentage (%)
Up to 15	05	8.62
16-30	17	29.31
31-45	26	44.83
46-60	07	12.06
>60	03	05.17

Table 2: Sex (n = 58)

Sex	No. of Patients	Percentage
Male	51	87.93%
Female	07	12.06%

Table 3: Histopathology of unresolved mass

Histopathology Report	Frequency	Percentage
Acute appendicitis	1	33.33%
Crohn's disease	1	33.33%
Carcinoma Caecum	1	33.33%
Total	3	100%

Table 4: (a) Patient distribution according to initial management at the time of first admission

Management	Variable	Percentage
Purely conservative management	51	51 (87.93%)
Conservative + Drainage	7	7 (12.07%)

(b) Patient distribution according to initial management at the time of first admission

Management	Variable	Percentage
Resolution of mass with conservative management with or without drainage	55	55 (94.83%)
Failed conservative management	3	3 (5.17%)
Appendicectomy + Drainage	1	1 (1.72%)
Right Hemicoectomy	2	2 (3.45%)

Table 5: Patient distribution according to management during follow up period

Management	Variable	Percentage
Lost to follow up	4	7.27%
Diagnosis changed during follow up	1	1.81%
Follow up without interval appendicectomy	50	86%
Recurrence of appendicitis	8	16%
Appendicectomy for recurrent appendicitis	7	14%
Conservative treatment for recurrent appendicitis / appendiceal mass	1	2%

Table 6: Rate of recurrence of appendicitis during follow up of patients

Rate of recurrence	Variable	Percentage
No recurrence	42	84%
Recurrence of appendicitis	8	16%

Table 7: Number of recurrences during follow-up according to their time of occurrence

Time from initial attack (wks)	No. of recurrence
Within 6wks	3
7-12 wks	2
13-18 wks	Nil
19-24 wks	1
25-30 wks	Nil
31-36 wks	Nil
37-42 wks	Nil
43-48 wks	1
>48 wks	1

4. Discussion

Appendicitis is one of the most common surgical problems inside the population as a whole and the occurrence of appendicular mass is on the rise. It's far estimated that an individual has an approximately 7% lifetime chance of developing appendicitis. Approximately 2-6% of appendicitis presents as a palpable mass (either a phlegmon or an abscess) over the right lower quadrant of the abdomen.[9]

Historically, this appendicular mass has been treated with the aid of conservative management and the successful conservative management for an appendicular mass ranges from 76% to 97%. Appendicular abscess can also be managed conservatively with only 58% requiring ultrasound guided drainage and 6% surgical drainage. The present study supports conservative treatment for appendicular mass (Phlegmon or abscess) as conservative management with or without abscess drainage became a success in fifty five/fifty eight (ninety four.83%) sufferers.[10]

Although research reporting histopathologic statistics display proof of infection in about 1/2 of IA specimens, this doesn't correlate with the low threat of recurrent appendicitis detected clinically.[11,12] It has been recommended that due to the low threat of recurrent appendicitis, the bulk of sufferers with appendiceal abscesses can correctly be dealt without an operation.[13,14] Furthermore, sufferers who do recur have been proven to have a milder scientific presentation compared with their preliminary presentation.[15]

The question of whether habitual interval appendectomy (IA) is indicated after initial successful conservative treatment of appendicular mass has been a subject of discussion inside the medical literature.

The recurrence rate of acute appendicitis after conservative treatment of an appendicular mass has been stated to be among 5% & 25.5% with most of the recurrences going on within the first 3 to 6 months.

In the present study the recurrence rate become 8/50(16%), of which 3/8(37.5%) took place earlier than 6 weeks, 2/8(25%) occurred among 7 and 12 weeks, and the remaining 3/8(37.5%) came about after 12 weeks.

Consequently, an IA completed 6 weeks after discharge might have avoided only 10.6%(5/47) of recurrences and less than 6.7% (3/45) of recurrences if performed after 12 weeks leaving 89.4% and 93.3% of patients respectively that could have had an needless appendicectomy.

However, given the effects of the present study, it is tough to defend interval appendicectomy.

The prospective results of the present study are supported by other retrospective studies suggesting that routine IA could be safely omitted in 80% to 93.3% of patients.

The prevalence of other diseases labelled as an appendicular mass to start with is suggested to be up to 12%. In the present study 3(5.17%) out of the 58 patients diagnosed initially as having appendicular mass had incorrect diagnosis either after surgery or survey. One patient was diagnosed after surgical exploration for failed conservative treatment as having Crohn's disease. Previous studies had reported that patients failing initial non-operative treatment of appendicular mass have been more likely to have an aetiology of their symptoms other than appendicitis.

The other two patients revealed cancer colon; one patient had persistent right iliac fossa mass after the acute clinical state subsided; colonoscopy and biopsy was done which revealed caecal carcinoma and the other patient was diagnosed as a case of carcinoma of caecum and ascending colon during colonic evaluation performed for patients with risk for cancer. Colonic and small intestinal evaluation (Colonosopy, barium enema, or small bowel series) was not routinely performed for all patients during the present study.

The rate of recurrence was 8/50 (16%) in this study. Secondly in the minority of patients whose signs and symptoms do recur, this generally occurs within one year.

Thirdly the recurrence of appendicitis following conservative treatment is commonly associated with a milder form amenable to each operative and non-operative management.

Lastly, there is no correct method for predicting patients susceptible to recurrence. The morbidity of IA ranges from 3.4% to 19%.

Therefore habitual interval appendicectomy might be now no longer warranted following a success control of appendicular mass, given the low chance of recurrent appendicitis and overdue headaches of an optional operation.[16–19]

5. Conclusion

There is no consensus about the need of interval appendectomy following the resolution of appendiceal mass (Phlegmon or abscess). More studies and trials are needed to develop a protocol for the management of this common problem.

Primarily based on the findings of the present study, and the review of literature, interval appendectomy can be taken into consideration only in selected patients after resolution of the appendiceal mass, patients with a faecolith in the appendix on imaging, patients displaying recurrent intermittent lower quadrant abdominal pain, and to patients' desire and preference.

Since the rate of recurrence of acute appendicitis following resolution of appendiceal mass is low (16% in this study), asymptomatic patients can be followed up without IA until appendicitis recurs. As most of the recurrences occur within 3 to 6 months (6 cases, 75% of the recurrences), some of the early recurrences won't be prevented by IA. Thus an IA performed 6 weeks after discharge would have prevented only 10.6%(5/47)

of recurrences and less than 6.7%(3/45) of recurrences if performed after 12 weeks leaving 89.4% and 93.3% of patients respectively that would have had a needless appendicectomy.

However all patients above the age of 45 and patients with probable high risk of cancer should be offered additional testing (e.g. colonoscopy, barium enema, or small bowel series) to detect any underlying disease, as in one case that is diagnosed as carcinoma caecum early due to follow-up by this protocol in the present study.

Finally, it can be concluded that "Interval appendectomy should not be the rule in all patients after resolution of appendicular mass by conservative management and appendicectomy should only be reserved for patients with clinically significant recurrences or with increased risk factors for recurrence".

6. Conflict of Interest

None.

7. Source of Funding

None.

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Author biography

Sworupa Nanda Mallick, Assistant Professor

Koresh Prasad Dash, Professor

Suvendu Amitav, Post Graduate Student

Asiso Kumar Pradhan, Associate Professor

Tapan Kumar Malla, Senior Resident

Narendra Nath Swain, Professor

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