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Early Appendicectomy Versus Conservative Management for Appendicular Mass: A Comparative Study

Debabrata Ray [1], Biswajit Singh [2], Himansu Shekhar Mishra *[3]

[1]Assistant Professor, Department of General Surgery, Dharanidhar Medical College and Hospital, Keonjhar, Odisha, India.
[2]Assistant Professor, Department of General Surgery, Dharanidhar Medical College and Hospital, Keonjhar, Odisha, India.
[3]Assistant Professor, General Surgery SCB Medical College and Hospital, Cuttack, Odisha, India.

*Corresponding Author: Dr. Himansu Shekhar Mishra; *himansumishra83@gmail.com*

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Abstract

Background: Appendicular mass, a common complication of acute appendicitis, typically develops after three days of symptom onset. Management strategies vary from surgical intervention to conservative treatment. ***Aim and Objectives:*** This study aimed to compare the outcomes of early appendicectomy versus conservative management followed by interval appendicectomy for appendicular mass, and to evaluate the overall efficacy of appendectomy. ***Material and Methods:*** This prospective study, conducted at VIMSAR, Burla (October 2016 - October 2018), included 60 patients with appendicular mass. Patients were randomized into Group A (early appendicectomy after resuscitation) and Group B (initial conservative treatment with antibiotics, followed by interval appendicectomy 6-8 weeks later). ***Results:*** The cohort comprised 45 males (75%) and 15 females (25%), with a 3:1 male-to-female ratio and a median age incidence in the 26-30 years group (23%). All patients presented with abdominal pain, fever, a palpable right iliac fossa mass, and tachycardia; 80% reported vomiting/nausea. Leukocytosis (>12,000/mm3) was found in 93% of patients. Symptom duration ranged from 2-7 days, and 90% had no prior appendicitis history. Total hospital stay was significantly shorter in Group A, requiring one admission versus two in Group B. However, Group A had a higher overall complication rate. Interval appendectomy in Group B was surgically challenging in 15% of cases due to dense adhesions. ***Conclusion:*** Early appendicectomy appears to be a superior and safer treatment option for appendicular mass compared to conservative management followed by interval appendectomy, despite a higher complication rate in the early intervention group.

Keywords: ***Acute appendicitis; appendicular mass; early appendicectomy.***

Introduction

Acute appendicitis is a common surgical condition. An appendicular mass, a frequent complication, typically manifests several days after the onset of acute appendicitis. This mass comprises the inflamed appendix, omentum, edematous cecal wall, and adjacent small bowel loops [1-3]. In the modern era, early appendicectomy for appendicular mass is considered an effective treatment strategy, offering benefits such as good patient compliance, prevention of recurrence, lower costs, and reduced hospital stay duration [4].

However, early appendicectomy in these cases carries a risk of complications, including wound infections, intra-abdominal abscesses, bowel injury, and fecal fistulas. Historically, these patients were managed conservatively with the Ochsner-Sherren regimen, followed by an interval appendicectomy 4-6 weeks later. This approach was based on the belief that early appendicectomy in these cases was dangerous, time-consuming, and potentially life-threatening. Nevertheless, this conservative policy is not uniformly successful, with approximately 15-20% of patients failing to respond, necessitating a delayed and potentially more challenging appendicectomy, sometimes involving laparotomy and bowel resection. This clinical challenge has prompted our study to compare the outcomes of early appendicectomy versus conservative treatment followed by interval appendicectomy in the management of appendicular mass.

Materials and Methods

This prospective study was conducted in the Department of General Surgery, VIMSAR, Burla, between October 2016 and October 2018. A total of 60 patients presenting with an appendicular mass were enrolled.

Inclusion Criteria

- Patients aged 15-60 years, irrespective of sex.

- Patients with a right iliac fossa mass clinically consistent with an appendicular mass. (An appendicular mass is defined as a tender mass, frequently palpable in the right iliac fossa, composed of an inflamed appendix, omentum, edematous cecal wall, and/or a loop of ileum.)

Exclusion Criteria

- Age below 15 years or above 60 years.
- Symptoms of less than 72 hours' duration.
- Immunocompromised status.

Patients were admitted through both outpatient and emergency departments. All enrolled patients underwent comprehensive clinical evaluation, resuscitation, and subsequent basic investigations. Patients were then randomized into Group A and Group B. Both treatment options were thoroughly explained to each patient and their informed consent was obtained.

Patients in Group A underwent appendicectomy within 24 hours of admission, following resuscitation and under appropriate antibiotic coverage. Patients in Group B were initially managed with conservative treatment, comprising intravenous fluids, broad-spectrum antibiotics (e.g., ceftriaxone, metronidazole, and amikacin), and analgesics. The size of the mass, blood pressure, temperature, and pulse rate were regularly monitored to assess the response to conservative treatment. Patients in Group B were discharged upon complete resolution of the acute inflammatory mass and subsequently re-admitted after 6-8 weeks for interval appendicectomy.

The variables analyzed in both groups included age, sex, clinical features, total duration of hospital stay, postoperative complications, and patient compliance.

Results

A total of 60 patients with appendicular mass were included in the study, ranging in age from 15 to 60 years. The cohort comprised 45 males (75%) and 15 females (25%), resulting in a male-to-female ratio of 3:1(**Table 1**). The maximum incidence of appendicular mass was noted in the 26-30 years age group (23%) (**Table 2**).

Table 1: Sex wise distribution of appendicular mass cases.

Sex	No. of cases	Percentage
Male	45	75
Female	15	25

Table 2: Age wise distribution of appendicular mass cases.

Age in years	No. of cases	Percentage
0-15	0	0
15-20	8	13
21-25	10	17
26-30	14	23
31-35	10	17
36-40	9	15
41-45	5	8
46-50	2	3
51-55	1	2
56-60	1	2

Upon admission, all patients presented with abdominal pain, fever, a palpable mass in the right iliac fossa, and tachycardia. Vomiting/nausea was observed in 80% of patients. Elevated total white blood cell (WBC) counts (>12,000/mm3) were observed in 56 patients (93%), while 4 patients (7%) had WBC counts within the normal range (**Table 3**).

Table 3: Clinical features of included cases

Clinical Features	No. of cases	Percentage
Pain abdomen	60	100
Fever	60	100
Vomiting/Nausea	48	80
Bowel disturbances:		
• Constipation	12	20
• Loose Motion	6	10
• No change	42	17
Lump	60	100
Passage of flatus:		
• Present	49	82
• Absent	11	18
Peritonitis:		
• Generalized	6	10
• Localized	9	15
• No peritonitis	45	75
Bowel sound:		
• Present	48	80
• Absent	12	20
Presence of tachycardia	60	100
Presence of toxemia	8	14
Presence of rectal tenderness	60	100

All patients with a palpable mass had a history of symptoms lasting at least 2-3 days, with the longest reported duration being 7 days (**Table 4**).

Table 4: Duration of lump of included cases

Duration	No. of cases	Percentage
Within 24 hours	6	10
1-2 days	15	25
3-4 days	36	60
>4 days	3	5

The majority of patients (90%) had no history of previous appendicitis attacks (**Table 5**).

Table 5: Incidence of previous attacks of appendicitis

No. of attacks	No. of cases	Percentage
1st attack with lump	54	90
One previous attack	3	5
Two previous attack	3	5

The total hospital stay was significantly shorter in Group A patients compared to Group B. Group A patients required only one hospital admission, whereas Group B patients underwent two admissions (initial conservative management and subsequent interval appendicectomy) (**Table 6**).

Table 6: Comparison of total hospital stay between the two groups.

No. of Days	Group A	Group B
5 – 7 days	4 (13%)	1 (4%)
7-9 days	7 (23%)	4 (13%)
9-12 days	12 (40%)	5 (17%)
12 – 15 days	6 (20%)	13(43%)
> 15 days	1 (4%)	7 (23%)

Regarding postoperative complications, lengthening of incisions was required in 15% of patients undergoing interval appendectomy (Group B) due to firm adhesions, indicating increased surgical difficulty in these cases. Overall, Group A had a higher total complication rate compared to Group B (**Table 7**).

Table 7: Comparison of post-operative complication between the two groups

Complications	Group A	Group B
1. Wound infections	3 (10%)	2 (8%)
2. Residual Abscess	1 (3%)	0
3. Faecal Fistula	1 (3%)	0
4. Chest complication	2 (3%)	1 (3%)
5. Adhesive intestinal obstruction	2 (8%)	1 (3%)
Total	8 (27%)	4 (14%)

Discussion

The management of appendicular mass lacks a universal consensus, with strategies ranging from traditional conservative approaches, like the Ochsner-Sherren regimen followed by interval appendectomy, to immediate early appendectomy. Many surgeons still favor conservative management, positing that patients responding well may not require interval appendectomy, as recurrence rates are reported to be as low as 5-20% [6-7] and recurrent disease is often milder [4].

Globally, four primary treatment modalities exist [8-11]: conventional management (initial conservative treatment followed by interval appendectomy), totally conservative treatment (without interval appendectomy), early aggressive appendectomy, and laparoscopic management. The conventional Ochsner-Sherren regimen, historically favored due to perceived surgical hazards in acute inflammation, involves bowel rest, intravenous antibiotics, and close monitoring, with a 2-3% failure rate necessitating urgent exploration. Advocates highlight its safety, 88-95% success rate, and diagnostic confirmation [8-13].

However, critics cite issues with patient compliance, re-admission burden, and surgical difficulties during interval appendectomy (e.g., in this study, 15% of interval appendectomies required longer incisions due to adhesions). Approximately 10% of conservatively managed patients may require emergency exploration [5,6]. The "wait and watch" policy, omitting interval appendectomy, is supported by low recurrence rates (5-20%) and milder recurrent disease [4,6,7], and is considered cost-effective. Conversely, early appendectomy, increasingly safe with modern techniques, offers definitive cure and faster recovery, obviating re-admission [4-19]. Our study investigated the outcomes of early appendicectomy versus conservative management followed by interval appendicectomy in patients presenting with an appendicular mass. Our findings provide valuable insights into demographic characteristics, clinical presentations, and comparative outcomes between these two treatment strategies.

The study population comprised a predominantly male cohort (75%), with the highest incidence of appendicular mass observed in patients aged 26-30 years. These demographic trends align broadly with existing literature on appendicitis epidemiology, which often reports a higher prevalence in younger to middle-aged adults and a slight male predilection. All patients presented with classic signs and symptoms, including abdominal pain, fever, a palpable right iliac fossa mass, and tachycardia, reinforcing the consistent clinical presentation of appendicular mass. The high incidence of elevated WBC counts (93%) further underscores the inflammatory nature of the condition, though the presence of normal WBC counts in a small percentage of patients highlights that laboratory values alone may not be solely relied upon for diagnosis.

A notable finding was the universal history of symptoms lasting at least 2-3 days, with some extending up to 7 days, indicating that patients presented after the initial acute phase, allowing for mass formation. The fact that 90% of patients had no history of previous appendicitis attacks suggests that appendicular mass, in most cases, represents a first acute inflammatory episode that has walled off.

Our comparative analysis of hospital stay revealed a significantly shorter total hospital stay for Group A (early appendicectomy) patients compared to Group B (conservative management followed by interval appendicectomy). This is a critical outcome, as it directly impacts healthcare resource utilization and patient convenience. While Group B patients initially avoided surgery, their need for two separate hospital admissions – one for conservative management and another for interval appendicectomy – ultimately extended their overall time within the hospital system. This finding supports the argument that early surgical intervention can lead to a more streamlined treatment course, potentially reducing the burden on both patients and healthcare facilities.

Regarding postoperative complications, our study found a higher overall complication rate in Group A (27%) compared to Group B (14%). Specifically, Group A had slightly higher rates of wound infections, residual abscess, faecal fistula, and adhesive intestinal obstruction. A significant observation was the increased surgical difficulty encountered during interval appendicectomy in Group B, evidenced by the need for lengthened incisions in 15% of cases due to firm adhesions. This highlights a well-documented challenge of operating in a previously inflamed and fibrosed field, potentially increasing operative time and technical demands. The higher overall complication rate in Group A, despite the benefits of a single admission, warrants careful consideration. It might reflect the challenges of operating on an acutely inflamed and edematous mass, where tissue planes can be indistinct and the risk of complications like wound infections or residual collections may be elevated compared to an elective, less inflamed interval appendicectomy. However, it is crucial to balance this with the potential for complications related to conservative management itself (e.g., failure of resolution, recurrence before interval appendicectomy), which were not specifically detailed as "complications" in Table 7 but could contribute to patient morbidity.

Conclusion

While early appendicectomy offers the benefit of a single hospital admission and a shorter overall hospital stay, our results suggest a trade-off with a potentially higher rate of postoperative complications compared to a two-stage conservative approach. The increased surgical difficulty encountered during interval appendicectomy in the conservative group underscores the challenges of delayed surgery in a scarred field. These findings contribute to the ongoing discussion about the optimal management strategy for appendicular mass, emphasizing the need for a comprehensive assessment of both benefits and risks associated with each approach. Further research, possibly with larger cohorts and longer follow-up periods, is necessary to conclusively determine the long-term advantages and disadvantages of each treatment modality, including recurrence rates and quality of life measures.

Declarations

Ethical Approval and Consent to participate

Not applicable as retrospective nature of study.

Consent for publication

Not applicable as retrospective nature of study.

Availability of supporting data

Upon request to the corresponding author.

Competing interests

Nil

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Nil

Authors contributions

All authors made substantial contributions to the reported work, including in the areas of conception, study design, execution, data collection, analysis, and interpretation. They participated in drafting, revising, and critically reviewing the article, gave final approval for the version to be published, agreed on the journal for submission, and accepted responsibility for all aspects of the work.

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