

Early versus Interval Appendicectomy in Appendicular Mass

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Abstract: The aim of the present study is to study the safety and feasibility of emergency appendicectomy in appendicular mass and to compare the complications, morbidity and mortality in emergency appendicectomy versus conservatively treated appendicular mass. Patients and methods: This hospital based prospective study includes 60 consecutive cases diagnosed with appendicular mass admitted in Siddhartha Medical College and General Hospital between July 2016 to December 2017. Results: Males (70%) were commonly affected with male to female ratio 2.66:1. Pain abdomen was the commonest symptom with which patient presented. There is no significant difference in the operative problems faced between the two lines of management studied here. More complications were noted in the group of patients treated by Ochsner-Sherren regimen followed by interval appendicectomy and hence these patients had more morbidity. Low morbidity, reduced hospital stay, low cost and patient compliance favour operative management of appendicular mass by experienced surgeons thus obviating the old practice of conservative treatment followed by interval appendicectomy.

Keywords: Appendicular mass, Interval Appendicectomy, Ochsner-Sherren Regimen, Early Appendicectomy

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I. Introduction

Acute appendicitis remains the commonest cause of acute abdomen in young people requiring surgical intervention. An appendicular mass is a common surgical clinical entity, encountered in 2-6% of patients presenting with acute appendicitis.¹ Appendicular mass is the localization of infection occurring 3 to 5 days after an attack of acute appendicitis. This inflammatory mass is composed of the inflamed appendix, omentum and bowel loops.

The treatment of appendicular mass is controversial. Traditionally, these patients are managed conservatively followed by interval appendicectomy 4-6 weeks later (Ochsner-Sherren Regime), believing that an early appendicectomy in these cases is hazardous, time consuming and may lead to life threatening complications such as faecal fistula. Advocates of initial conservative approach claim lower rate of complications compared to early operative approach.² The early surgical intervention is known to be an effective alternate to conservative therapy for a long time as it considerably reduces the total hospital stay and obviates the need for a second admission. It is obvious that a true controversy exists as to the best approach towards this problem and the opinion is divided about the management of appendicular mass. The present study is designed to evaluate the feasibility and safety of immediate appendicectomy in appendicular mass in our hospital by comparing the results of an equal number of patients treated conservatively.

II. Aims And Objectives

- To study the safety and feasibility of emergency appendicectomy in appendicular mass.
- To compare the complications, morbidity and mortality in emergency appendicectomy versus conservatively treated appendicular mass.

III. Materials And Methods

3.1 SOURCE OF DATA: 60 Patients with appendicular mass admitted to surgical wards of Siddhartha Medical College and General Hospital between July 2016 to December 2017.

3.2 STUDY DESIGN: Hospital based prospective and comparative study

3.3 INCLUSION CRITERIA:

- Patients admitted with signs and symptoms of appendicular mass during the study period.
- Patients diagnosed with appendicular mass during surgery for acute appendicitis.

3.4 EXCLUSION CRITERIA:

1. Pregnant patients.
2. Patients not fit for surgery.
3. Patients with signs of diffuse peritonitis.

3.5 METHOD OF COLLECTION OF DATA:

60 consecutive cases were admitted, examined, investigated and operated during the period of July 2016 to December 2017. Thorough history and clinical examination was made. Complete blood count; urinalysis; urea and electrolytes; plain x-ray abdomen; and ultrasonography of abdomen and other investigations as per need of the patient were done. The patients were divided randomly in two groups, each containing thirty.

In Group I, early surgical exploration was done within 24 hours of admission. Pre-operative preparation was done by keeping the patients nil orally, giving adequate parenteral fluids to maintain fluid and electrolyte balance, antibiotics and analgesics. Drains were kept in a few cases which were removed after 48hrs and sutures were removed on the 7th post-operative day. Most of the operated patients had uneventful recovery. Post-operative period was monitored; intake output charts and vital charts were maintained.

In Group II, conservative approach with Ochsner-Sherren Regime was adopted followed by interval appendectomy 6-8 weeks later.

Patients in both study groups were discharged as soon as possible and duration of stay and duration of antibiotics and analgesics used in number of days was noted. There was no mortality noted in either group. The patients were followed up for a variable period of time. A full record of all the patients was maintained on the proforma designed for this purpose. A comparison of outcome between two groups was done statistically by applying Fisher's exact test and t test.

IV. Observations And Results

The present study is a hospital based prospective study, which included a total of 60 cases that were treated on inpatient basis at Government General Hospital, Vijayawada from July 2016 to December 2017.

Table 1: Demographic Profile of Patients in Present Study

AGE GROUP	SEX		TOTAL (%)
	M	F	
< 20	10	2	12 (20%)
21-30	19	11	30 (50%)
31-40	11	4	15 (25%)
>40	2	1	3 (5%)
TOTAL	42 (70%)	18 (30%)	60 (100%)

In our study of 60 cases, the mean age of patients was 27.58 (SD 8.11) years ranging from 13 to 48 and majority of patients (50%) belonged to age group of 21-30 years. There was male preponderance (70%) with male to female ratio of 2.66:1.

Table 2: Symptomatology

SYMPTOMS	NO. OF CASES	PERCENTAGE
Pain Abdomen	60	100 %
Anorexia	55	91.66 %
Nausea / Vomiting	48	80 %
Fever	36	60 %
Altered Bowel Habits	06	10 %
Abdominal Distension	01	1.66 %

Table 3: Operative Findings

OPERATIVE FINDINGS	TYPE OF TREATMENT	
	GROUP I	GROUP II
Simple mass	20	4
Adhesions	8	6
Loculated Pus	2	1
Adhesive Intestinal Obstruction	0	1
Normal	0	14
Total	30	26

In group I, the operative finding in majority (66.66%) of the patients was simple mass, 8 had adhesions and loculated pus in 2. In group II the operative finding in majority (53.84%) of the patients was a normal finding, 4 had simple mass, 6 had adhesions, 1 had loculated pus and adhesive intestinal obstruction in 1.

Table 4: Operative Difficulties

OPERATIVE DIFFICULTIES	TYPE OF TREATMENT	
	GROUP I	GROUP II
Difficulty in Localization of Appendix	4	5
Difficulty in adhesiolysis	3	4
Minor Trauma to Bowel	2	2
Minor Bleeding	1	0
Total	10	11

In our study, the major (13.33%) operative problem in group I patients was difficulty in localization of appendix. The major (19.23%) operative problem in group II patients also was difficulty in localization of appendix. Fisher's exact test was applied and the p value was found to be >0.05 which is insignificant.

Table 5: Comparison of Complications

COMPLICATIONS	GROUP I	GROUP II
Wound Infection	3 (10%)	2 (6.66%)
Faecal Fistula	1 (3.33%)	0
Failure of Treatment	0	4 (13.33%)
Lost Follow Up	0	4 (13.33%)
Respiratory Tract Infection	0	3 (10%)
Adhesive Intestinal Obstruction	0	1 (3.33%)
Total	4 (13.33%)	14 (46.66%)

In our study, the major (10%) complication in group I patients was wound infection and the overall rate of complication was 13.33%. The major (13.33%) complication in group II patients was failure of treatment and lost follow up and the overall rate of complication was 46.66%. Faecal fistula developed in one patient in group I which was managed successfully, conservatively.

Four patients in group II had failure of conservative management and had to undergo emergency surgery in a difficult situation. Of the four, one had adhesive intestinal obstruction and had to undergo laparotomy, adhesiolysis and appendicectomy with an uneventful post op recovery. Another four patients managed successfully by Oschner-Sherren regime did not return for interval appendicectomy and their fate is unknown.

Fisher's exact test was applied and the p value was found to be >0.05 (insignificant) while comparing individual complications but the p value was <0.05 (significant) when the overall complication rates between the two groups was compared.

Table 6: Duration of Hospital Stay

DURATION OF HOSPITAL STAY	GROUP I	GROUP II
≤ 5 Days	19 (63.33%)	2 (6.66%)
6 – 8 Days	10 (33.33%)	14 (46.66%)
> 8 Days	1 (3.33%)	14 (46.66%)
Mean	5.3 days	8.5 days
SD	2.409035	1.943158
SE	0.4398276	0.3547704
95 % C.I.	4.400452 – 6.199548	7.774413 – 9.225587

SD: Standard Deviation; SE: Standard Error; C.I.: Confidence Interval

In this study, the majority (63.33%) of group I patients had total duration of hospital stay for ≤ 5 days and the mean duration of hospital stay was 5.3 days in this group. Whereas in group II only 6.66% of patients had total duration of hospital stay for ≤ 5 days and the mean duration of hospital stay was 8.5 days in them. t test was applied and the p value was calculated to be <0.05 which is significant.

V. Discussion

In our study, in group I, the operative finding in majority (66.66%) of the patients was simple mass, 8 had adhesions and loculated pus in 2. In group II the operative finding in majority (53.84%) of the patients was a normal finding, 4 had simple mass, 6 had adhesions, 1 had loculated pus and adhesive intestinal obstruction in 1. Malik Arshad, et al.,⁵ had simple mass in 72.7%, perforated appendix in 9.1%, loculated pus in 8%, abscess in 4.5%, Adhesions in 5.7%, in group I. In group II they had simple mass in 23.9% and adhesions in 76.1%. Samuel

M⁶, et al., had abscessin 79.2%, adhesionsin 81.3%, in group II. In group I, abscess and adhesions were seen in all the cases.

Table 7:Comparison of Operative Findings with Other Studies

STUDIES	OPERATIVE FINDINGS	
	GROUP I	GROUP II
Malik Arshad, et al. ⁵	Simple Mass – 72.7% Perforated Appendix – 9.1% Loculated Pus – 8% Abscess – 4.5% Adhesions – 5.7%	Simple Mass – 23.9% Adhesions – 76.1%
Samuel M, et al. ⁶	Abscess – 100% Adhesions – 100%	Abscess – 79.2% Adhesions – 81.3%
Present Study	Simple Mass – 66.6% Adhesions – 26.66% Loculated Pus – 6.66%	Simple Mass – 15.38% Adhesions – 23% Loculated Pus – 3.84% Intestinal Obstruction – 3.84% Normal – 53.84%

Table 8:Comparison of Operative Difficulties with Other Studies

STUDIES	OPERATIVE DIFFICULTIES	
	GROUP I	GROUP II
Malik Arshad et al ⁵	Difficulty Localising Appendix - 46.6% Difficulty in Adhesiolysis - 26.1% Minor Trauma to Bowel - 14.8% Minor Bleeding - 12.5%	Difficulty Localising Appendix - 59.1% Difficulty in Adhesiolysis - 36.4% Minor Trauma to Bowel - 2.3% Minor Bleeding - 2.3%
Present Study	Difficulty Localising Appendix - 13.33% Difficulty in Adhesiolysis - 10% Minor Trauma to Bowel - 6.66% Minor Bleeding - 3.33%	Difficulty Localising Appendix - 19.23% Difficulty in Adhesiolysis - 15.38% Minor Trauma to Bowel - 7.69%

In our study, the complication rate was more in group II (46.66%) compared to group I (13.33%) in our study.

Ali S, Rafique HM⁴, in their study had complications in 20% in group I and 83.33% of patients in group II.

Samuel M, et al.,⁶ in their study had no complications in group I and 11.76% of patients in group II.

Malik Arshad et al.,⁵ in their study had complications in 21.6% in group I and 9% of patients in group II.

Table 9: Site of Previous Incision Compared with Literature

STUDIES	OPERATIVE DIFFICULTIES	
	GROUP I	GROUP II
Ali S, Rafique HM ⁴	< 3 days – 80%	> 4 days – 100%
Samuel M, et al ⁶	Mean – 4.8 days	Mean – 13.2 days
Present Study	< 5 days – 63.33% Mean – 5.3 days	>6 days – 93.32% Mean – 8.5 days

VI. Conclusions

- Appendicular mass is common in males.
- Mean age of presentation of appendicular mass is 27.58 yrs. ranging from 13 to 48 years.
- There is no significant difference in the operative problems faced between the two lines of management studied here.
- There was a significant difference in the complications between the two groups with more complications occurring in the group of patients treated by OchsnerSherren regimen followed by interval appendicectomy and hence these patients had more morbidity.
- The duration of parenteral medications was more in group II than in group I and was statistically significant.

- The total duration of hospital stay was more in group II patients than in group I hence increasing the economic burden on the patient.
- Early appendicectomy obviates the need for a second admission and provides curative treatment during the index admission whereby minimizing total expenses.
- Early appendicectomy may also avoid the consequences of the misdiagnosis and mistreatment of other surgical pathologies.
- Early appendicectomy in appendicular mass is safe owing to the improvements in surgical skills and better post-operative care.
- Low morbidity, reduced hospital stay, low cost and patient compliance favour operative management of appendicular mass by experienced surgeons thus obviating the old practice of conservative treatment followed by interval appendicectomy.

VII. Summary

- Patients of various age groups were included in the study ranging from 13 to 48 years. Males (70%) were commonly affected with male to female ratio 2.66:1.
- Pain abdomen was the commonest symptom with which patient presented. The other symptoms were anorexia, nausea/vomiting, fever, altered bowel habits and abdominal distension.
- The operative finding in majority (66.66%) of the patients in group I was simple mass. In group II the operative finding in majority (53.84%) of the patients was a normal finding.
- The major (13.33%) operative problem in group I patients was difficulty in localization of appendix. The major (19.23%) operative problem in group II patients also was difficulty in localization of appendix. P value was >0.05 which is insignificant
- The major (10%) complication in group I patients was wound infection and the overall rate of complication was 13.33%. The major (13.33%) complication in group II patients was failure of treatment and lost follow up and the overall rate of complication was 46.66%. P value was <0.05 which is significant.
- The majority (90%) of group I patients had parenteral medications for ≤ 5 days and the mean duration of parenteral medication was 3.3 days. Whereas in group II, the majority (70%) of patients had parenteral medications for 6-8 days and the mean duration of parenteral medication was 6.2 days in them. P value was <0.05 which is significant.
- The majority (63.33%) of group I patients had total duration of hospital stay for ≤ 5 days and the mean duration of hospital stay was 5.3 days. Whereas in group II only 6.66% of patients had total duration of hospital stay for ≤ 5 days and the mean duration of hospital stay was 8.5 days in them. P value was <0.05 which is significant.

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