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RESEARCH ARTICLE

A COMPARATIVE STUDY BETWEEN SURGICAL AND CONSERVATIVE MANAGEMENT OF APPENDICULAR MASS

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ABSTRACT

Background: Acute appendicitis remains the commonest cause of acute abdomen in teenagers requiring surgical intervention. Most patients presenting late in the course of acute appendicitis are complicated by the development of an inflammatory mass in right iliac fossa. This inflammatory mass is composed of the inflamed appendix, omentum and bowel loops. **Aim of the work:** Evaluate the outcome of emergency surgery versus conservative management in patients with complicated appendicitis with appendicular mass. **Patient and Methods:** A prospective study was accomplished for 60 patients who were suspected provisionally to have appendicular mass, and attended to the emergency department of Al-Azhar University Hospitals, in Cairo, Egypt, during the period from January 20/2019 to October 20/2019.The patients were divided randomly in two groups, each containing (30). In Group I : early surgical exploration was done by open appendicectomy operative procedure within 24 hrs of admission. Pre- operative preparation was done by keeping the patients nothing per mouth, 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 10th 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. **Results:** There was statistically significant difference between study groups in the operative findings ($p<0.001$).There was statistical insignificant difference between groups in operative problems ($p=0.683$).There was statistical significant difference between the study groups as regards complications ($p=0.021$) with more complications occurring in the group of patients treated by Ochsner Sherren regimen followed by interval appendicectomy and hence these patients had more morbidity. **Conclusion:** Early appendicectomy obviates the need for a second admission andprovides 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.

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INTRODUCTION

Acute appendicitis remains the commonest cause of acute abdomen in teenagers requiring surgical intervention. Most patients presenting late in the course of acute appendicitis are complicated by the development of an inflammatory mass in right iliac fossa. This inflammatory mass is composed of the inflamed appendix, omentum and bowel loops. (Arshad *et al*, 2008).The treatment of this appendicular mass is controversial and there are several management options (Senapathi *et al*., 2002).

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Traditionally, those patients are managed conservatively followed by interval appendicectomy 4–6 weeks later, believing that an early appendicectomy in these cases is hazardous, time consuming and may lead to life threatening complications such as faecal fistula (Russellet a.l, 2004).Others prefer an operative intervention, including the drainage of the mass and conservative treatment, and later an interval appendicectomy depending on the results of colonoscopy or barium enema which could help in excluding other underlying lesions (Lai*et al*., 2005).Acute appendicitis is the commonest cause of "acute surgical abdomen". The best treatment of acute appendicitis is emergency appendicectomy. If the treatment is delayed then complications like appendicular lump can result (Farquharson *et al*, 2005).

Appendicular mass is formed in 2-6% cases of acute appendicitis, if appendicectomy is not done (Willemsen *et al.*, 2002).The Appendicular mass is more commonly seen amongst elderly males (Malik & Shaikh, 2012).Mass forms after 48-72 hours of first symptoms of acute appendicitis. Mass develops when appendicitis is caused by obstruction of the lumen and there is danger of perforation of appendix following ischemic necrosis and gangrene of the appendicular wall (William & Bulstrode, 2008).Conventional treatment according to Ochsner-Sherren regime, popularised by Oschner has been practised over many years as the standard treatment for the appendicular lump (Ochsner, 1901). Failure of conservative regime occurs in 2-4% cases (upto 10% cases), where urgent exploration is essential (Oliak *et al.*, 2000). Conventional treatment is complications like damage to caecum and the development of faecal fistula (Gillick *et al.*, 2001). Conservative management can be done with success rate of 88-95% (Ullah *et al.*, 2011). The aim of this work is to evaluate the outcome of emergency surgery versus conservative management in patients with complicated appendicitis with appendicular mass.

MATERIALS AND METHODS

A prospective study was accomplished for 60 patients who were suspected provisionally to have appendicular mass, and attended to the emergency department of Al-Azhar University Hospitals, in Cairo, Egypt, during the period from January 20/2019 to October 20/2019.

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.

Exclusion criteria

- Pregnant patients
- Patients not fit for surgery
- Patients with signs of diffuse peritonitis

MATERIALS AND METHODS

The patients were divided randomly in two groups, each containing (30). In Group I: early surgical exploration was done by open appendicectomy operative procedure within 24 hrs of admission. Pre- operative preparation was done by keeping the patients nothing per mouth, giving adequate parenteral fluids to maintain fluid and electrolyte balance, antibiotics and analgesics. (antibiotics used was Ceftriaxone injection as prophylactic antibiotics in reducing the postoperative infective complications after appendectomy). In Group II : conservative approach with Ochsner Sherren Regime was adopted followed by interval appendectomy 6-8 weeks later. This approach involved the administration of intravenous fluids and antibiotics while keeping the patient on nothing per mouth. The aim of this approach was to achieve complete resolution of the inflammatory mass and the disappearance of symptoms in the patient before any surgical intervention. 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 were noted.

Ethical consent: The nature of the study was clearly explained to each patient. An informed written consent was obtained. Also, an approval from the local committee was taken.

RESULTS

Results were analyzed using SPSS (ver. 23.0; IBM, Chicago, IL, USA). Quantitative data was displayed in the form of mean ± standard deviation (SD). Qualitative data was demonstrated through figures of frequency and percentage.

Table 1. Symptomatology

SYMPTOMS	No. of cases	Percentage
Pain abdomen	60	**100%**
Anorexia	55	**91.66%**
Nausea/Vomiting	48	**80%**
Fever	36	**60%**
Altered bowel habits	6	**10%**
Abdominal distension	**1**	**1.66%**

Table 2. Operative findings

perative findings	Type of Treatment		*P_value*	*Significanc*
	Group I N (%)	Group II N (%)		
Simple mass	20 (66.66%)	4 (15.38%)		
Adhesions	8 (26.66%)	7 (26.84%)		
Loculated pus	2 (6.66%)	0		
hesive intestinal obstruction	0	1 (3.84%)	**<0.001**[*1]	significant
Normal	0	14 (53.84%)		
Total	**30**	**26**		

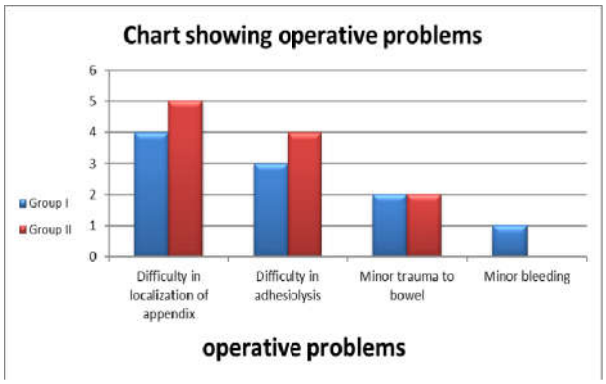

Table 1. This table showed that all the patients had pain abdomen and 55(91%) cases had associated anorexia with nausea/vomiting in 48 (80%) cases. 60%, patients had fever. Table 2. This table showed that In-group I, the operative finding in majority (66.66%) of the patients was simple mass,

Table 3. Comparison of complications:

Complications	Group I N (%)	Group II N (%)	*P_value*	*Significanc*
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%)	**0.021**[*1]	significant
Respiratory tract infection	0	3 (10%)		
Adhesive intestinal obstruction	0	1 (3.33%)		
Total	**4(13.33%)**	**14(46.66%)**		

Table 4. Total Duration of parenteral medication:

Total duration of medications	Group I N (%)	Group II N (%)*	P_ value
</= 5 days	27 (90%)	8 (26.66%)	
6-8 days	3 (10%)	21 (70%)	0.007*1
>8 days	0	1 (3.33%)	
Mean±SD (days)	4.27±1.04	4.3±0.915	0.896*

Table 5. Comparison of operative findings with other studies

STUDIES	OPERATIVE FINDINGS	
	Group-I	Group-II
Malik Arshad,et al.	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	Abscess -100% Adhesions -100%	Abscess -79.2% Adhesions -81.3%
This study	Simple Mass -66.6% Adhesions -26.66% Loculated Pus -6.66%	Simple Mass -15.38% Adhesions - 26.84% Adhesive Intestinal Obstruction- 3.84% Normal -53.84%

Table 6. Comparison of operative problems with other studies

STUDIES	OPERATIVE PROBLEMS	
	Group-I	Group-II
Malik ihad et al.	Difficulty in localization of appendix-46.6% Difficulty in adhesiolysis-26.1% Minor trauma to bowel-14.8% Minor bleeding-12.5%	Difficulty in localization of appendix-59.1% Difficulty in adhesiolysis-36.4% Minor trauma to bowel-2.3% Minor bleeding-2.3%
his study	Difficulty in localization of appendix-13.33% Difficulty in adhesiolysis-10% Minor trauma to bowel-6.66% Minor bleeding-3.33%	Difficulty in localization of appendix-19.23% Difficulty in adhesiolysis - 15.38% Minor trauma to bowel-7.69%

8 had adhesions and loculated pus in 2 while in-group II the operative finding after interval appendicectomy in majority (53.84%) of the patients was a normal finding, 4 had simple mass, 7 had adhesions, and adhesive intestinal obstruction in 1.

Table 7. Comparison of complications with other studies:

STUDIES	COMPLICATIONS	
	Group-I	Group-II
Ali S, Rafique HM	20%	83.33%
Malik Arshad et al.	21.6%	9%
Samuel M, et al	11.76%	0
This study	13.33%	46.66%

There was statistically significant difference between study groups in the operative findings (p<0.001). Figure 1. This figure showed that the major (13.33%) operative problem in-group I patients was difficulty in localization of appendix while the major (19.23%) operative problem in-group II patients also was difficulty in localization of appendix. There was statistical insignificant difference between groups in operative problems (p=0.683) Table 3. This table showed that the major (10%) complication in-group I patients was wound infection and the overall rate of complication was 13.33% while 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.

While 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 OschnerSherren regime did not return for interval appendicectomy and their fate is unknown.This table found statistical significant difference between the study groups as regards complications (p=0.021) Table 4. This table showed that the majority (90%) of group I patients had parenteral medications for </= 5 days and the mean duration of parenteral medication was 3.3 days in this group. 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 ,with statistical significant difference (p=0.007). Mean duration showed statistical insignificant difference between both groups (p=0.896).

DISCUSSION

In this 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, 7 had adhesions, and adhesive intestinal obstruction in 1. .Malik *et al*., 2012 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 massin 23.9% and adhesions in 76.1%. Samuel *et al*., had abscesses in 79.2%, adhesions in 81.3%, in-group II. In-group I, abscess and adhesions were seen in all the cases. In this study, There was statistical insignificant difference between groups in operative problems (p=0.683), faced during surgery between the two groups. In this study, the complication rate was more in-group II (46.66%) compared to group I (13.33%) in thisstudy. Ali*et al*., in their study had complications in 20% in-group I and 83.33% of patient's in-group II. Samuel *et al*., in their study had no complications in group I and 11.76% of patients in-group II. Malik *et al*., in their study had complications in 21.6% in-group I and 9% of patient's in-group II. In this study, the total duration of hospital stay was </= 5 days in 63.33% cases and the mean duration of hospital stay was 5.3 days in-group I patients. 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.In the study by Ali *et al*., 80% patients had hospital stay <3 days in-group I. While in group II all the cases stayed >4 days in the hospital.

In the study by Samuel M, *et al*., the mean duration of hospital stay was 4.8 days in-group I while in-group II it was 13.2 days.

Conclusion

- Appendicular mass is common in males.
- Mean age of presentation of appendicular mass is 27.58 yrs. ranging from 13 to 48 years.
- Ultrasound is the investigation of choice in pts, with appendicular mass.
- There was statistical significant difference between the study groups as regards complications (p=0.021) with more complications occurring in the group of patients treated by Ochsner Sherren 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 Mean duration was statistical insignificant difference between both groups (p=0.896).
- The total duration of hospital stay was more in-group II patients than in-group I hence increasing the economic burden on the patient, and Mean duration of hospital stay was significantly higheramong group I (7.67±2.7) days than group II (6.13±2.5) days with statistically significant difference (p=0.027).
- Early appendicectomy obviates the need for a second admission andprovides 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

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