

Outcomes of Antibiotics as Primary Therapy in Uncomplicated Acute Appendicitis at PUMHS Nawabshah

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ABSTRACT

Objective: Over bearing, appendectomies have continuously been pushing the surgical wisdom to connote on non-operative option of treatment so this study was designed with an objective to assess the outcomes of antibiotics as primary therapy for un-complicated acute appendicitis.

Methods: A total of 96 patients of both genders from 16 to 60 years of age having uncomplicated acute appendicitis enrolled in this study were treated with antibiotics and were discharged on third day with having oral treatment on ciprofloxacin (500mg) twice a day and metronidazole (400mg) thrice a day for 07 days. Routine follow up was taken on days 15, 30, 90 180 and 360 and outcomes were recorded.

Results: Among 96 patients, 10 (10.41%) worsened in symptoms (pain on visual analogue scale) were confirmed with WBC & Ultrasound reports and under went for appendectomies during initial hospital stay. While within 9 months, during follow up 11 (11.45%) patients were readmitted in hospital and operated after confirmation on re-examination and re- investigations. Total of 21 (22%) patients were subjected to appendectomy.

Conclusion: Under proper observation, antibiotic treatment can be safe and effective in un-complicated acute appendicitis with reduced recurrence.

Key words: Acute appendicitis, Appendectomy, Antibiotic treatment.

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INTRODUCTION

The reality of appendicitis is as old as mankind itself. French surgeon Claudius Amyand while performing Herniotomy, removed perforated appendix from hernial sac of an 11-year old boy on December 6, 1735 at St. George's Hospital in London¹. Then, after long time Mr. Abraham Goves performed first ever proper appendectomy in august 1883².

While, Reginald Fitz pronounced the appendectomy as an effective treatment of acute appendicitis in early 1886³. There after every surgeon believed that every subject of acute appendicitis invariably ends on perforation and this

dogma kept all appendicitis with appendectomy as a standard option of treatment⁴.

The estimated lifetime rate of appendicitis ranges from 7 to 14%, on the basis of sex, life expectancy and accuracy of diagnosis and puts a large burden on health care system⁵. As only in USA, about 300,000 appendectomies performed each year as the most common emergent abdominal surgery^{6,7}.

Despite the fact that appendectomy is generally well tolerated, but being a major surgical intervention can be associated with post-operative dreadful morbidity^{8,9}.

So, these over bearing appendectomies have continuously been pushing the surgical wisdom to connote on non-operative option of treatment, as because, before advent of antibiotics many of the appendicitis were resolved spontaneously as reported earlier by Fitz in his article concerning 247 patients in 1886¹⁰. And in this line of thinking, Mr. Coldrey also proposed a conservative treatment with his inference on 471 patients with low mortality and morbidity in 1959¹¹.

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Since then, the idea regarding the rational option of the treatment in acute appendicitis remains to be defined.

However, most of the researches from basic science and epidemiological studies have provided evidence that perforated and non-perforated appendicitis are pathophysiological distinct entities^{12,13}.

Further studies have envisaged that non-perforated appendicitis behaves similarly to non-perforated diverticulitis and thus may have no added risk of progressing to perforation^{14,15}. Recent studies have shown that acute appendicitis in children be treated with antibiotics^{16,17}. Conclusions from meta-analysis of randomized control trials support that the first strategy treatment with antibiotics is safe and effective in majority of patients^{18,19,20}.

Hence in this pathophysiological perspective of acute appendicitis, the selection of reasonable (Surgical or non-surgical) treatment remains on lock horns with questions as to what and how the treatment be selected. Therefore, this study was designed with an objective to assess the outcomes of antibiotics as primary therapy for un-complicated acute appendicitis.

MATERIALS & METHODS

A total of 96 patients of both genders from 16 to 60 years in age having no H/O previous episode of appendicitis, surgery or co-morbidities presented with acute uncomplicated appendicitis from April 2014 to April 2016, were enrolled in this cross sectional study at surgical unit one of People’s University of Medical and Health Sciences (PUMHS) Nawabshah. Informed consent for participation in this study taken from every patient. Sample technique was consecutive. Uncomplicated acute appendicitis were diagnosed on the clinical history, physical examination, ultrasound reports and WBC reports. Un-complicated acute appendicitis means as an inflamed but grossly intact non-gangrenous, non-suppurative appendix with no associated complications¹, and this group were allocated with antibiotic treatment. After keeping NPO, Intravenous fluids + antibiotics (ciprofloxacin 500mg ½ x BD) plus metronidazole (500mg ½ x 8hmlly) and analgesics with diclofenac sodium (50-75mg ½ daily) were administered for two days to group A. Daily follow up of these patients were done with clinical examination, fever and CBC. Patient resistant and refractive to antibiotherapy with worsening symptoms confirmed on Ultrasound were subjected to appendectomy. Patients with clinical improvement confirmed on CBC and US were discharged on third day and received oral treatment with ciprofloxacin (500mg) twice a day and metronidazole (400mg) thrice a day for 07 days.

Outcomes:

- 1) Primary objective is to assess the cure rate of uncomplicated acute appendicitis with antibiotic treatment.
- 2) Secondary objective is to determine frequency of conversion from antibiotic treatment to surgery in uncomplicated acute appendicitis.

Data analyzed on SPSS version 20. Proposed Data presented in forms of tables and graphs and percentage calculated.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008. Informed consent was obtained from all patients for being included in the study.

RESULTS

Under screening through strict inclusion and exclusion criteria, 96 patients were found eligible for recruitment in this cross sectional study. These 96 patients in this study group consisted of 61 men and 35 women with median age at diagnosis was 25 + 1 ranged from (16 – 60yrs). The demographics and clinico-pathological characteristics of study population are in following table:

Particulars	Male	Female	Total
Sex	61	35	96
Age range	16 - 60	20-55	-
Median age	26	24	-
Median, pain score on NRS (0-10)	4	5	-
No. of patients discharged satisfactory	57	29	
No. of patients, worsened in symptoms during hospital stay.	04	06	
Conversion to surgery / cross-over during hospital stay	04	06	
cross-over during follow up	04	07	
Range of hospital stay	1 - 15	1-20	
Mean length of hospital stay	3 + 1	4 + 1	
Adverse effects on antibiotics / Diarrhea	02	04	
No. of days not worked by patients (Mean)	03	04	
Recurrent appendicitis	06	10	
Total conversion from antibiotics to surgery	08	13	
Negative appendectomies	02	03	05
Wound infection	02	03	05
Mortality	00	00	00

hospital and operated for having complicated acute appendicitis as confirmed on re-examination and re-investigations. Hence, 21 (22%) patients subjected to surgery. Every resected appendix specimen was submitted for histopathological scrutiny, which revealed 16 (17%) as recurrent inflamed appendicitis and 05 as normal appendixes, hence accounting (5.2%) as negative appendectomies. None of the patient found with perforated appendix. The patients converted from antibiotic treatment to surgery had 5 (5.2%) wound infection.

There was no mortality in any patient in this study. In this study, 21 (22%) patients have not responded to antibiotic therapy.

50) showed 88% recovered without surgery, with recurrence rate of 15 % within one year and is closely corresponding to our study on males as 87% of patients responded to antibiotics and 13% got recurrence^{28,29}.

Cobben et al suggested slightly higher risk of recurrence in male than female in acute appendicitis³⁰, but was not confirm in Kaminski³¹ and our study.

The study of Hansson et al²³ referenced that antibiotic treatment was effective in 90.8% of cases with a 13.9% chance of recurrence within one year. While our study showed 79% without surgery & 21% with surgery.

First author	Followup period	crossover during Index hospitalization*		Total Appendectomy rate after follow-up		Perforation rates, n (%)	Length of stay, d	Away from work/school, d	Complications after surgery n(%)
frisson ¹¹ in = 40)	17 mo (average)	0/20	0	7/20	35	1/20 (5)1	Abx: 3.1	NR~	1/20 (5)
Situd! ² (n = 252)		15/128	12	31/128	24	6/124 (5)	Abx: 3.0	Abx: 8	17/124 (14)
uirhan! ¹ (n = 290)	1 y	19/107	18	26/107	24	34/183 (19)	Abx: 3.14	NR	Surg: 8/183 (4.4)
Huisson' (n = 369)	1 y	96/202	53	122/202	60	NR"	Abx: 3.0	Abx: 7	35/167 (33)1
Vons! ⁵ (n - 239)	1 y	NR		39/120	33	NR	Abx: 3.96	Abx: 9.8	1/H9 <1)
Silminen! ¹⁶ (n = 530)	1 y	15/257	6	70/257	27	Surg: 2/273	Abx: 3.0	Abx: 7	45/220 (20.5)
Gulshan (this study)	1 y	10/96	10.41	21/96	21.87	<1)	Abx: 3.5	Abx 3.5	5/96 (5.2)

DISCUSSION

Since long time, before the advent of antibiotics, acute appendicitis considering a dreadful entity have traditionally been treated with surgery; and, then after discovery of anaesthesia in 1920 made it a widely practiced procedure²¹. Mr. Eriksson and Granstorm performed first ever prospective randomized study in acute appendicitis with antibiotics in 1995²², and then a large number of patients treated with antibiotics have reported a reasonable success rates^{22,24,25}.

In surgical practice, the acute appendicitis may be either complicated (20%) or un-complicated (80%) as two distinct entities²⁶. So far as risk is concerned in surgery, the surgical practice in recent times have made a paradigm shift with increasing interest for antibiotics as first strategy treatment in un-complicated acute appendicitis with rescue surgery^{22,27}. Insofar as, this study has investigated the effectiveness of antibiotic treatment in patients with acute appendicitis for recovery within 15 days and or any recurrence within one year.

While, the results of Styrud et al, Eriksson and Granstorm based only on male 128 Patients (aged 18-

- Salminen Petal³² and Malik AA³³ noticed the length of hospital stay about 3.0 to 3.96 days in antibiotic first treatment as little lessurgery and were in corresponding similarity to our study. While the days of pain and mean days away from work were about (3-4) which is corresponding to all studies shown in below table.
- Converted appendectomies after failure of antibiotic treatment during hospital stay & during follow up were also corresponding similarity with studies show in below table.
- Outcomes of antibiotic treatment for uncomplicated acute appendicitis are corresponding to following studies.

CONCLUSION

Under proper observation, antibiotic treatment can be safe and effective in un-complicated acute appendicitis with reduced recurrence.

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