

TO FIND THE INCIDENCE OF TYPE OF POST OPERATIVE WOUND INFECTION IN UNCOMPLICATED ACUTE APPENDICITIS CASES USING PROPHYLACTIC POST OPERATIVE ANTIBIOTICS

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Abstract

Background: The efficacy of antibiotic prophylaxis in patients undergoing appendectomy has been examined in several randomized and observational studies showing that appropriate use of antibiotics reduces the risk of SSI following appendectomy by 40-60%. These antibiotics are continued in postoperative period with different courses and combinations according to each case.

Methods: This randomized control prospective study was conducted in IGMC SHIMLA from August 2017 to July 2018. Cases of uncomplicated acute appendicitis undergoing emergency open appendectomy were included in this study.

Results: All the 9 patients who had wound infection developed superficial surgical site infection. None of the patients developed deep surgical site or intra abdominal infections in either of the two groups.

Conclusion: Frequency of post operative wound infection is generally very low in uncomplicated appendicitis. The prolonged use of antibiotics post operatively is unnecessary, can increase antibiotic resistance, can produce side effects and increase cost of treatment.

Keywords: Wound infection, Antibiotic, Acute appendicitis.

Introduction

Acute appendicitis is the most common surgical emergency¹. Life time prevalence rate of acute appendicitis is approximately one in seven and more common in men than women (8.6% versus 6.7%)². About 310,000 appendectomies are performed/year in the United States, of which 250,000 have definite appendicitis, giving a negative appendectomy rate of about 15% to 30%^{3,4,5}.

The efficacy of antibiotic prophylaxis in patients undergoing appendectomy has been examined in several randomized and observational studies showing that appropriate use of antibiotics reduces the risk of SSI following appendectomy by 40-60%¹⁸⁻²⁹. These antibiotics are continued in postoperative period with different courses and combinations according to each case.

This seems logical and necessary for perforated cases due to peritoneal and wound contamination. There is 3 times increase in wound infection, 15 fold increase in intra-abdominal abscess and mortality may be 50 times greater in complicated appendicitis⁶

Material and Methods

This randomized control prospective study was conducted in IGMC SHIMLA from August 2017 to July 2018. Cases of uncomplicated acute appendicitis undergoing emergency open appendectomy were included in this study.

Inclusion Criteria: All patients aged 10-60 years undergoing emergency open appendectomy for acute uncomplicated appendicitis, in the Department of General Surgery, IGMC Shimla were included in this study.

Exclusion Criteria: The following patients were excluded from the study:-

1. Complicated appendicitis cases (appendicular mass, gangrene, perforation and abscess).
2. Patients with pregnancy
3. Patients with other co morbidities like immune compromised state, diabetes, carcinoma and patients on steroids.
4. Co morbid conditions requiring antibiotics.
5. Patients who had received antibiotics within 72 hours of admission
6. History of symptoms more than 3 days
7. Cases lost to follow up
8. Allergic to the respective antibiotics
9. Refused to give consent

Ethical approval was taken from the ethical committee of IGMC Shimla.

A detailed history was taken and thorough clinical examination was done in each case. Appropriate investigations were done as per Performa. Written informed consent was taken in each case.

Patients who were diagnosed with uncomplicated appendicitis and fulfilled the inclusion criteria were

randomized alternatively in two groups A and B. Pre operatively Intravenous Cefuroxime 1.5 gm and Metronidazole 500 mg were given to patients of both groups at induction of spinal anaesthesia. Group A patients received no antibiotics in the post operative period and Group B patients received cefuroxime and metronidazole post operatively for 5 days.

Patients in group B were given i.v. antibiotics until they could tolerate semi-solid or solid diet when i.v. antibiotics were substituted by oral formulae, Cefuroxime 500 mg twice/ day and Metronidazole 400 mg three times/day.

Open appendectomy was performed by senior residents / consultants through right lower quadrant incision (McBurney Incision) by muscle-splitting approach and appendix was removed in the standard fashion. Peritoneum was mopped dry with no peritoneal washing after the appendix was removed. The peritoneum, oblique muscles were closed with 2/0 chromic catgut sutures. External oblique aponeurosis closed with vicryl no 1 and the skin was closed with skin stapler. No wound lavage or local antibiotics were given. Operating time was recorded from the time of first incision to the finishing of the final skin staple. Operative findings were noted. Specimen of appendix was sent for histo pathological confirmation in each case.

The results were statistically evaluated and analysed by Chi Square test.

Results

This study is comprised of 100 cases of uncomplicated acute appendicitis undergoing emergency open appendectomy from August 2017 to July 2018 in IGMC Shimla.

The age of the patients in both the groups ranged from 10 to 60 years. Mean age in group A was (23.3±10) years and in group B was (26.6±12) years. The youngest patient in group A was 10 years of age, whereas in group B was of 11 years. The oldest patient in group A was 52 years old and in group B was of 60 yrs. Most of the patients in both the groups were in the age group of 10 to 20 years. In group A, the total males were 28(56%) and total females were 22(44%). Similarly in group B, there were 24 (48%) male and total females were 26(52%).

Table 1: Comparison of duration of surgery in two groups

VARIABLE	Options	Group A % (number)	Group B % (number)
Operation	30-50	52% 26	54% 27
Duration	51-70	40% 20	38% 19
(mins)	71-90	8% 4	8% 4

Duration of surgery ranged from 30-90 minutes for both the groups. Duration of surgery ranged from 30-50 minutes in 26(52%) cases of group A and for 27(54%)

patients in group B. Duration of surgery in 20(40%) cases of group A, and in 19(38%) cases of group B, was between 51 - 70 minutes. Duration of surgery in 4(8%) cases of group A, and in 4(8%) cases of group B, was between 71 - 90 minutes. Mean duration of surgery in group A was (54 min 48 sec. ±13 mins) and in group B was (55 mins 10 sec±13 mins). There was no statistically significant difference between the two groups (p value- 0.978).

Table 7: Comparison of type of wound infection between two groups

VARIABLE	Options	Group A % (number)	Group B % (number)
Type of wound infection	None	90% 45	92% 46
	Superficial Incisional	10% 5	8% 4
	Deep Incisional	0% 0	0% 0
	Organ/space Infection	0% 0	0% 0

9 patients (5 in Group A and 4 in Group B) developed wound infection. All the 9 patients developed superficial site infection. None of the patients developed deep surgical site or intra abdominal infections in either of the two groups. There was no statistically significant difference between the two groups (p value- 0.727).

Table 3: Comparison of post operative hospital stay between two groups)

VARIABLE	Options	Group A % (number)	Group B % (number)
Hospital Stay	2-3 Days	90% 45	92% 46
	4-5 Days	8% 4	6% 3
	6-7 Days	2% 1	2% 1
	8-9 Days	0% 0	0% 0

45(90%) cases of group A were discharged on 2-3rd postoperative day and 46(92%) cases of group B were discharged on 2-3rd postoperative day. 4(8%) cases of group A were discharged on 4-5th postoperative day and 3(6%) cases of group B were discharged on 4-5th postoperative day. On 6-7th post-operative day 1 case of group A and 1 case of group B was discharged. Mean hospital stay in group A was (2.6 ±0.9) days and mean hospital stay in group B was (2.5±0.9) days.

Patients who developed wound infections had a prolonged hospital stay in which mean hospital stay in group A was 5 days and mean hospital stay in group B was 5.2 days. There was statistically no significant difference between discharges of patients of both groups. (p value-0.926)

Table 4: Comparison of no. of hospital visits between two groups

VARIABLE	Options	Group A % (number)	Group B % (number)
No of Hospital Visits	2 Visits	90% 45	96% 48
	3 Visits	10% 5	2% 1
	4 Visits	0% 0	2% 1

In group A 45(90%) patients had 2 hospital visits. In group B 48(96%) Patients had 2 hospital visits. These 2 visits were at 8th and 30th post operative days. 5(10%) patients in group A visited hospital for 3 times. These all patients had wound infection. Only 1(2%) patient in group B visited hospital 3 times. This patient also had wound infection. 1(2%) patient in group B had four hospital visits. This patient had wound infection. Mean hospital visits in group A were (2.08±0.3) and mean hospital visits in group B were (2.06±0.3).

There was no statistically significant difference between the two groups (p value- 0.152).

Discussion

9 patients (5 in Group A and 4 in Group B) developed wound infection. All the 9 patients developed superficial surgical site infection. None of the patients developed deep surgical site or intra abdominal infections in either of the two groups. There was no statistically significant difference between the two groups (p value- 0.727).

The overall incidence of post appendectomy wound infection in various studies was between 5 to 10% and mostly the infection was superficial surgical site infection. It is due to better operative techniques, better asepsis and better antibiotics.

In the present study in group A 45(90%) cases were discharged on 2-3rd postoperative day, 4(8%) cases on 4-5th postoperative day and 1(2%) case on 6th post-operative day. In group B 46(92%) cases were discharged on 2-3rd postoperative day, 3(6%) cases on 4-5th postoperative day and on 6th post-operative day 1(2%) case was discharged.

Mean hospital stay in group A was 2.6 days and mean hospital stay in group B was 2.5 days. It was statistically insignificant (p-value = 0.926). In both groups mean hospital stay was 5.0 days in those patients who had wound infection.

The duration of antibiotic therapy had no significant effect on the length of hospital stay. This observation is consistent with the study performed by Mohammed Salman et al⁸⁵ in which the mean hospital stay of 3.3 days and 3.5 days was observed for Group A and B, respectively, (p<0.001).

Overall mean hospital visits in group A were 2.08 and mean hospital visits in group B were 2.06

Number of hospital visits were more in patients with wound infections with a mean of 3.50 visits in both the groups. This was because patients were called for wound assessment and aseptic sterile dressings.

Similar observation was made by Mohammed Salman et al⁷. A total of 390 patients were included in the study, out of which 192(49.2%) were in Group A and 198(50.7%) were in Group B. All patients received cefuroxime and metronidazole. Group A received a single dose of cefuroxime sodium and metronidazole half-an-hour before induction, while Group B received one more dose of the same antibiotics postoperatively. Number of surgical site infections was 15(7.8%) in Group A and 18(9.1%) in Group B which was statistically insignificant (p-value - 0.65).

Conclusion

Frequency of post operative wound infection is generally very low in uncomplicated appendicitis. The prolonged use of antibiotics post operatively is unnecessary, can increase antibiotic resistance, can produce side effects and increase cost of treatment.

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