

Post-Operative Use of Antibiotics in Non-Perforated Appendicitis

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Abstract: Acute appendicitis is the most common cause of acute surgical abdomen. Appendectomy is the most commonly done emergency surgery. The preoperative use of antibiotics in patients undergoing appendectomy for acute appendicitis has been shown to decrease the rate of surgical site infections (SSI). The benefits of post operative course of antibiotics in these patients, however, remain unclear. The specific aim of this study were to determine whether the addition of postoperative antibiotics in non-perforated appendicitis is associated with decreased rates of SSI Between March 2013 and February 2015, 57 patients operated for acute appendicitis were studied. There was no statistically significant difference between the two groups for the rate of surgical site infections. In the present study, we found that postoperative antibiotics did not reduce the rate of SSIs in non-perforated appendicitis. Our findings suggest that there is no clinical benefit to the use of postoperative antibiotics in patients who have undergone appendectomy for non-perforated appendicitis. Further, the use of postoperative antibiotics in these patients may increase their risk for antibiotic related complications, add to bacterial antibiotic resistance and increase the cost of care.

Keywords: A Non-perforated appendicitis, Pre-operative antibiotics, Post operative antibiotics, Surgical Site Infection.

I. Introduction

The vermiform appendix is considered by most to be a vestigial Organ. Its importance in surgery results only from its propensity for inflammation, which results in the clinical syndrome known as acute appendicitis. Not with standing advances in modern radiographic imaging and diagnostic laboratory investigations, the diagnosis of appendicitis remains essentially clinical, requiring a mixture of observation, clinical acumen and surgical science. The overall lifetime risk of developing appendicitis is estimated to be of 7% with the highest frequency occurring at ages from 10 to 30 years [1] Its incidence is 1.5-1.9/1000 in male and female population. Appendicitis is the most common cause of an acute abdomen requiring surgical intervention, with an estimated lifetime risk of 6% to 20% [2] and appendectomy is the most commonly done emergency surgery. Acute appendicitis, when presenting in a teenager and with a classical history, presents the surgeon with little by way of a diagnostic challenge. However, this disease is notorious in its ability to simulate other conditions and in the frequency with which it too can be imitated by other pathologies [3]. Although the etiology of appendicitis still remains in debate, it results in a blind pouch intestinal obstruction adjacent to the proximal colon. Untreated, the process can lead to ischemic compromise of the appendiceal wall, perforation with abscess formation, or secondary peritonitis with or without concomitant bacteremia and sepsis. [4]. The stage of the disease process at the time of operation significantly affects the risk for a postoperative surgical site infection (SSI). These cases are categorized as contaminated (operative wound class III) for acute appendicitis without concomitant perforation or dirty or infected (operative wound class IV) in the case of a ruptured appendix with purulent or feculent contamination [5]. In an effort to reduce the risk for SSI after appendectomy, several studies have been conducted in an attempt to determine the efficacy of perioperative antibiotics as a means of preventing postoperative SSI [6-10]. Most of these studies support the use of a single preoperative dose of a second generation cephalosporin to reduce the rate of superficial SSI in non perforated, gangrenous, and perforated appendicitis [6,8]. This was validated in a recent extensive meta-analysis performed by the Cochrane Collaboration.

II. Material and Methods

This is a prospective study performed on 57 patients admitted to Osmania General Hospital, Hyderabad over a period of 2 years from September 2013 to September 2015. These patients were diagnosed to have appendicitis and were operated. Inclusion criteria patients of both gender between 11-50 years of age presenting to emergency department with history of pain at umbilicus or right iliac fossa, vomiting and fever (>99F). On clinical examination tenderness and guarding in the right iliac fossa was present with Alvarado score >7.

Exclusion criteria are patients who are diagnosed other than appendicitis are excluded from the study. Acute appendicitis patients with comorbidities like DM, HIV, Ultrasound showing gangrenous or perforated appendicitis, Patients on steroids, hypoproteinemia and Hb < 10 gm% are excluded from study. Patients fulfilling

the inclusion criteria were included. Informed written consent was obtained from all patients. Patients are divided in to two groups A & B. Group A (Antibiotic Group) Group B (No Antibiotic Group) Every alternate patient is allotted into each group. Pre operative treatment common for both groups Inj.Ceftriaxone(1gm), Inj.Metronidazole(500 mg) given at the time of induction. Inj.Amikacin(750 mg), Intra venous fluids, Inj.Tramadol(50mg) and Inj.Rantac(150mg). The Surgical procedure is same for both groups. Preoperative shaving done for all patients. Open appendicectomy done in all patients. Mc.Burneys incision muscle splitting procedure done. Looked for any intra abdominal collection Antegrade / Retrograde appendicectomy done.

Muscle and External oblique aponeurosis sutured with 2.0 catgut.For Skin 2.0 prolene /skin staplers applied Antiseptic dressing done.



Fig 1 : Appendectomy Incision



Fig 2: Retrieval of appendix



Fig 3: Closure of wound

Post operative care, In Group A 1st POD Inj.Ceftriaxone(1gm), Inj Metronidazole(500mg) and Inj.Tramadol (50mg) was administered. From 2nd POD to 7th POD Tab .Cefixime,Tab.Ornidazole,Tab Tramadol(100mg),Tab.Rantac(150mg) given. In Group B No antibiotics are given in post operative period.Tab.Tramadol(100mg) and Tab Rantac (150mg) given. Pulse rate, temperature, Blood Pressure recorded every day. Operative Site cleaned with povidone-iodine solution and dressing done. Orals allowed after patient passed flatus, since then injectables are converted to orals. Discharged on 7th POD after suture removal. Follow Up for every 15days for 3 times(1 ½ month) done.looked for wound site, Pain at operated site. Intervention stopped when Patient developed fever > 100F for 2 days, Pain not responding to analgesic for > 24 hrs, If Wound infected, Abdominal distension (paralytic ileus) present. Once wound infected seroma/pus drained out Antibiotics started in non antibiotic group. Swab sent for culture and sensitivity in both the groups and appropriate antibiotic used.

III. Observations

A total of 172 patients are admitted in osmania general hospital with pain and guarding at right iliac fossa. Every alternate patient was allotted in to each group, so that 86 patients come under each group. Of these 25 patients from each group are diagnosed to have pathology other than appendicitis and so are excluded from the study. So 61 patients are remaining in each group. Out of 61 patients in each group,11 patients from Group A and 8 patients from Group B are diagnosed to be appendicular perforation on USG abdomen. So, these patients are excluded from the study .So a total of 50 and 53 patients are remaining in each group for study respectively. 7 patients out of 50 patients in Group A and 6 patients out of 53 patients in Group B found to be perforated appendix intra opeatively. These patients are excluded from the study resulting in 43 patients in Group A and 47 patients in Group B for the study. In Group A 8 patients and in Group B 9 patients are found to be anemic. So these patients are excluded from the study resulting in 35 patients and 38 patients available for the study in Group A and Group B respectively. 2 patients from Group A and 3 patients from Group B are found to be HIV positive. These patients are excluded from the study. So a total of 33 patients from Group A and 35 patients from Group B are remaining for the study. 5 patients from Group A and 4 patients from Group B are found to be hypoproteinemic and these patients are excluded from the study resulting in 28 patients in Group A and 31 patients in Group B for the study. On Histopathological examination 1 specimen from each group are came to be normal and excluded from study. So a total of 27 patients from Group A and 30 patients from Group B are available for the study. Finally 27 patients from Group A and 30 patients from Group B are available for the study. In Group A out of 27 patients, 19 patients are male and 8 patients are female,and in Group B out of 30 patients,18 patients are male and 12 patients are female. The mean admission temperature is 99.6 F in GroupA and 99.5 F In Group B. .Mean Mantrels score is 8 in both Groups. The mean duration of surgery from incision to dressing is 45 minutes in Group A and 50 minutes in Group B.

Out of 27 patients in Group A wound is infected in 6 patients(4 male and 2 female patients) and in Group B wound is infected in 7 patients(3 male and 4 female patients) out of 30 patients. The infected wound is drained ,swab is taken and sent for culture and seneitivity.The culture report came to be MRSA and E.Coli as pathogens which are sensitive for Piperacillin+Tazobactam and Amikacin.P value is 0.009965.This signifies that there is no statistical difference between two comparative Groups regarding overall surgical site infections.

Table 1. Wound Infection

	GROUP A	GROUP B	TOTAL
WOUND NON-INFECTED	21	23	44
WOUND INFECTED	6	7	13
TOTAL	27	30	57

IV. Discussion.

Most studies to date have compared the use of pre-opeartive antibiotic with or with out a short course of post operative antibiotics with a placebo alone[2,7,8] . In our study we used Ceftriaxone,Metronidazole and Amikacin as antibiotics of choice to cover Gram Positive,Gram Negative and Anaerobic group of micro-organisms that are responsible for wound infection.In addition we used monofilament suture material 2-0 prolene or skin stapler instead of routiene silk or thread for skin approximation in order to prevent chance of skin infection because of braided suture materials. In our study out of 172 patients 50 patients are daignosed to be other than appendicitis,that is 29% of patients presenting with right iliac fossa pain are found to have non appendicular pathology. These results are comparable with Karamanakos study[11] which is 25%-30%.In our study out of 57 patients operated for acute non perforated appendicitis,35 patients are male and 20 patients are female,a ratio of 1.7:1,comparable with S Bramhachari et al study found male and female ratio 1.27:1[12] In our study majority of cases are of between 20-30 years of age, comparable with Subhajeet et al study show age range of 09-57years and mean age was 25.8 years which is similar to our study[13].In our study out of 122

patients with appendicular pathology, 32 patients are diagnosed to be having appendicular perforation either on USG or intraoperatively, constituting 26% of cases which is comparable with Cueto et al study, stating 28%-30% [14]. Negative appendectomy rate in our study is less compared with other studies. It is 4% in our study where as 13% in Subhajeet et al study. In our study 22% of patients in antibiotic group and 23% of patients in non-antibiotic group are infected, which shows no statistically significant difference regarding rate of SSIs in both the groups and further 4 patients from antibiotic group developed diarrhea post operatively which is managed with probiotics.

V. Conclusion

In the present study, we found that postoperative antibiotics did not reduce the rate of SSIs in non-perforated appendicitis. Our findings suggest that there is no clinical benefit to the use of postoperative antibiotics in patients who have undergone appendectomy for non-perforated appendicitis. Incidence of appendicitis is more in males than in females and age of incidence is between 21-30 years of age. Our results shown that MRSA and E.Coli are commonest bacteria that are causing wound infection postoperatively. Further, the use of postoperative antibiotics in these patients may increase their risk for antibiotic-related complications, add to bacterial antibiotic resistance, and increase the cost of care. Our study findings were coinciding with majority of other studies.

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