

Section **General Surgery**

**Original** Article

## A Prospective Study on Role of Prophylactic Antibiotics and Incidence of Postoperative Wound Infection in Surgery IPD

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### ABSTRACT

**Background:** In the advancement of surgery, post-operative wound infection has been the greatest obstacle from down the centuries. For safe surgery, Lister introduced antiseptic methods. The initiation of antibiotics did raise the hope of a permanent solution to post-operative infection but later it has become the nightmare of the surgeon.

**Methods:** Two groups were included in this study. Each group had 200 cases. This study conducted by department of Surgery in Ananta Institute of Medical Sciences and Research Centre, Rajsamand. The duration of the study over a period of one and half year.

**Results:** In our study, two groups were included, each group has 200 cases. In group A we had found 7% cases infected out of 200 cases, while in Group B had 34% infected cases out of total number of cases. Out of all cases we were found maximum infected cases from 41-50 ages in both groups.

**Conclusions:** This study concludes that, to prevent surgical-site infections, it is essential for the surgeons to take appropriate steps to avoid local microbial factors.

**Keywords:** SSIs, elective surgeries, emergency surgeries, wound infections

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### INTRODUCTION

Postoperative wound infections are one of the major preventable problem. It plays an important role in morbidity, mortality. It also affects the health care costs.<sup>1</sup> on the basis of depth of infection, it can be classified into three types: superficial incisional, deep incisional and organ/space. The symptoms of infection should be presented within 30 days postoperative.<sup>2</sup> Prevention of surgical site infection is primary consideration throughout the whole phases of surgery.<sup>3,4</sup>

In the advancement of surgery, post-operative wound infection has been the greatest obstacle from down the centuries. For safe surgery, Lister introduced antiseptic methods. The initiation of antibiotics did raise the hope of a

permanent solution to post-operative infection but later it has become the nightmare of the surgeon. Though, many considered antibiotic could cover their lapses in surgical technique and asepsis. Extensive and often indiscriminate use of antibiotics led to development of resistance by various organisms and resulting the problem of hospital infection.<sup>5</sup> it has been reported that the administration of antibacterial agents within three hours after contamination of wound, it has no influence on the infection rate of the operative wounds. Infection can be adequately prevented, if the body already has adequate antibiotic concentration at the time of contamination.<sup>6</sup>

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The concept of pre-operative antibiotic was introduced by Stranchan in 1977. He compared a single preoperative dose of Cefazolin with a regime of Cefazolin given for a period of 5 days post operatively. It has been observed that the infection rate seen in single dose was 3% and in multiple postoperative dose was 5%.<sup>7</sup> Prophylactic antibiotic therapy is clearly more effective where began preoperatively and continued through the intra operative period, with the aim of achieving therapeutic blood levels throughout the operative period.<sup>8</sup> In this study, the main emphasize on the risk factors that increase the SSI and role of prophylactic antibiotic administration to clean surgical cases in this institution.

## METHODS

**Study Population:-** Two groups were included in this study. Each group had 200 cases.

**Study Area:-** This study conducted by department of Surgery in Department of General Surgery, Ananta Institute of Medical Sciences and Research Centre, Rajsamand

**Study Duration:-** The duration of the study over a period of one and half year.

**Data Collection:-** This study involved elective and emergency surgeries. Pregnant women and very elderly (>60 yr) were excluded. The group was split into group A and group B of 200 cases each. Group A comprised of patients who received a pre-operative single dose of Ceftriaxone. Group B received no such type of prophylactic antibiotic. The groups were split into two, taking consideration the type of surgeries, the age of the patient, the presence or absence of risk factors for development of SSI, and associated medical conditions, all of which were represented in both the groups almost equally and a comparative clinical study was made.

**Data Analysis:-**Data were analyzed by using Microsoft excel.

## RESULTS

In our study, two groups were included, each group has 200 cases. In group A we had found 7% cases infected out of 200 cases, while in Group B had 34% infected cases out of total number of cases. In this study, we were included 10-50 age group of cases. Out of all cases we were found maximum infected cases from 41-50 ages in both groups. The incidence of risk factor also suggestive in this study in group A as well as in group B, which is showed in table no. 3.

**Table 1: Distribution of groups according to infected cases**

	Total no. of cases	Infected cases	Percentage
Group A	200	14	7%
Group B	200	68	34%

**Table 2: Distribution of groups according to age group**

Age group	Group A	Number of infected cases	Group B	Number of infected cases
10-20	10	0	15	0
21-30	50	2	54	9
31-40	100	2	83	21
41-50	40	10	48	38

**Table 3: Distribution of groups according to risk factor**

Risk factor	Group A	Group B
Anemia	4	22
Prolonged duration of surgery	4	18
Diabetes mellitus	4	20
Obesity	2	8

## DISCUSSION

For a prophylactic regimen to be effective, it should be directed against the most likely organisms. An Infection can be prevented only when the effective concentration of the drug is present in the blood and the tissues. Thus, antibiotic prophylaxis should begin just before the operation. Rao et al, observed in their study that SSI, incidence are doubled in the older age group 50- 70 yrs and severe complication following is increased in both extremes of ages i.e., < 10 yrs and > 60 yrs. Funary AP et al. found in their study that during the preoperative period blood glucose level were kept strictly below 200 mg/dl by continuous intravenous infusion of insulin reduced the incidence of SSI from 24% to 6.06% which was significant statistically. Some studies have revealed in their studies that diabetes mellitus is related with poor wound healing and high infection rates. Diabetes and the resultant hyperglycaemia lead to decreased function of leucocytes, especially phagocytosis. In the present study, 24 patients were diabetic.<sup>9,10</sup>

In the mid-1950s, the effectiveness of preoperative antibiotic prophylaxis is first shown in animals by Miles. If penicillin was given before guinea-pigs inoculation intradermal with *Staphylococcus aureus*, infection did not occur.<sup>11</sup>

Preoperative antibiotic prophylaxis was prescribed to prevent postoperative wound infection. On the other hand postoperative antibiotic for long duration has no effect in changing incidence of wound infection.<sup>12</sup>

## CONCLUSION

To prevent surgical-site infections, it is essential for the surgeons to take appropriate steps to avoid local microbial factors. Simultaneously, it is also important to practice meticulous surgical techniques and unnecessary delay in the procedure. Prophylactic Antibiotics played a major role in reducing the post-operative wound infections.

## REFERENCES

1. Bagheri Nejad S, Allegranzi B, Syed SB, Ellis B, Pittet D. Health-care-associated infection in Africa: a systematic review. *Bulletin of the World Health Organization*. 2011;89(10):757-65.
2. Nathens AB, Cook CH, Machiedo G, Moore EE, Namias N, Nwariaku F. Defining the research agenda for surgical infection: a consensus of experts using the Delphi approach. *Surg Infect (Larchmt)* 2006; 7(2):101-110.
3. Gerard M, Sean J, Carlos A. Preoperative care. *Current surgical diagnosis and treatment*.fourteenth edition; McGraw-Hill2015: 15-21.
4. H.L. Leuva, J R Khambholja, K K Nayak, RC Shah. Role of Antibiotics in Clean Surgeries: Prophylaxis V/S. Conventional. *Gujarat medical journal / august -2014 Vol. 69 No. 2*.
5. Jone et al. Antibiotic prophylaxis of 1036 patients undergoing elective surgical procedures. *Am, J. of Surg*, 1987, 153: 343 – 345.
6. Annie Wong, Beringer et al. Influence of Timing of Antibiotic Administration of Tissue concentration During

- Surgeryll, The American Journal of Surgery, April 1995: Vol. 169: 379 – 381.
7. Mangram AJ, Horan TC. Pearson ML, et al. Guideline for prevention of surgical site
  8. infection, 1999. Hospital Infection Control Practices Advisory Committee. Infect.
  9. Control. Hosp. Epidemiol. (1999; 20: 250-78)
  10. Hedrick TL, Smith PW, Gazoni LM, et al. The appropriate use of antibiotics in surgery:
  11. A review of surgical infections. Curr. Probl. Surg. (2007; 44:635-75)
  12. Rao AS, Harsha M. Post-operative wound infection. J India Med Assoc (1975; 44: 90-3)
  13. Funary AP, Aerr KJ, Grunkemeier GC, Starr A. Continuous intravenous insulin infusion
  14. reduces the incidence of deep sterna wound infection in diabetic patients after cardiac
  15. surgical procedures. Ann Thorac Surg (1999; 67: 352-60)
  16. Burke JE. The effective period of preventive antibiotic action in experimental incisions and dermal lesions. Surgery 1961; 50: 161-8.
  17. WHO Guidelines for the Prevention of Surgical Site Infection. WHO Library Cataloguing-in-Publication Data Global.I.World Health Organization. (<http://www.who.int>) 2013. ISBN 978 92 4 14988.

