Original Research Paper

Volume -10 | Issue - 5 | May - 2020 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

General Surgery

SINGLE DOSE PREOPERATIVE ANTIBIOTIC ON CLEAN CASES

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ABSTRACT

BACKGROUND: To study the efficacy of single-dose preoperative antibiotic on clean cases.
PATIENTS AND METHODS: Study included 100 patients who underwent clean surgical procedures with monitoring for surgical site infection in the post-operative period.
RESULTS: In this study performed, among 50 patients in the study group 3 developed surgical site infection. Among 50 patients of the control group 6 developed surgical site infection.
CONCLUSION: To conclude, postoperative antibiotic is not needed for clean surgical cases. A single-dose preoperative antibiotic is sufficient

KEYWORDS : Clean case, Preoperative, Infection, Surgical

INTRODUCTION:

One of the most common hospital-acquired infections is surgical site infections, which constitute 38% of surgical infections. Increasing hospital stay by 7-10 days, it creates a significant burden to the patients Basis of antimicrobial prophylaxis:

The basis of prophylaxis is to obtain appropriate levels of the drugs in serum and tissues that exceed the Minimum Inhibitory Concentrations (MIC) for the likely micro o rganisms causing a specific surgical infection.

It is considered optimal if the antibiotic is administered 30 minutes before putting a skin incision or at the time of induction of anaesthesia. Usually, a single dosage of antimicrobial agent is optimal for a surgical procedure unless it prolongs for more than three hours. It is not advisable to use the antibiotics for a prolonged period due to multidrug-resistant strains emergence.

Undue fear in surgeons' minds:
Surgical-site infection (SSI) rate in clean surgeries and clean-contaminated surgeries are 2% to 5% and up to 20% respectively. Appropriate usage of antibiotics gains paramount importance due to the emergence of multidrug-resistant strains.

METHODS:

100 patients are selected who are admitted in Maharajahs Institute of Medical Sciences, VZM to undergo elective surgery over a period of 1 year. The patients were evaluated with routine investigations for anaesthetic fitness purposes. The patients were assessed for the planned surgical procedure and were posted for elective surgical procedure.

For 50 patients (the study group), cefotaxime 2grams IV stat will be given half-hour before the surgery. No postoperative antibiotic was given. If they have signs of infection (redness, increased local rise temperature, tenderness or discharge from the wound), an empirical antibiotic will be started. Swab for culture and sensitivity also would be taken and sent.

For 50 patients (the control group), cefotaxime 1gram IV will be given half an hour before surgery and followed by postoperative antibiotic of cefotaxime 1gram IV BD. The wound will be inspected for signs of infection (redness, increased local rise temperature, tenderness or discharge from the wound).

Patients 15 to 70 years without comorbidities undergoing clean case procedures such as hemi or total thyroidectomy, herniorraphy and breast procedures (lump excisions or MRM) were included in the study. Immunocompromised patients or those with any comorbidities were excluded from the study.

RESULTS:

This study was undertaken from January 2019 to January 2020 in the department of general surgery, Maharajahs Institute of Medical Sciences, VZM

The Observations of our study were as follows:

Total number of patients – 100

All patients were operated in an elective surgical setup; a single dose of cefotaxime 2 g rams IV was given in 50 patients.

The patients were followed up in the postoperative period, and the status of the wound was observed and documented with the use of tables.

Total male patients – 60
Total female patients – 40

Table 1: Age and Gender distribution of cases

AgeGroup	StudyGroup	ControlGroup
<20	2	2
20-40	30	30
>40	18	18

Out of 100 patients, the total number of patients receiving single-dose preoperative antibiotic is 50 (50% of the total study population). Out of 50 patients, the total number of male patients was 60, and the total number of female patients was 40.

9 patients developed surgical site infection in the postoperative period.

Table 2: Postoperative surgical site infection in the study group

Age Distribution	Surgical site infection present	Surgical site infection absent
<20	-	2
20-40	1	29
>40	2	16

The total outcome in patients who received single-dose preoperative antibiotic, out of 50 patients, 3 patients (6% of the total study group) were found to have surgical site infection, 47 patients (94% of the total study group) were discharged without postoperative surgical site infection. It was observed that of the 3 patients that developed surgical site infection, in 2 cases the isolates organism was S. Aureus and in 1 case it was E. Coli.

Table 3. Post operative surgical site infection in the control group

Age Distribution	Surgical site infection present	Surgical site infection absent
<20	-	2
20-40	2	28
>40	4	14

The total outcome in patients who received preoperative and postoperative antibiotics, out of 50 patients, 6 patients (12% of the total study group) were found to have surgical site infection, 47 patients (88% of the total study group) were discharged without postoperative surgical site infection. It was observed that of the 6 patients that developed surgical site infection, in 3 cases the isolates organism was S. Aureus, in 3 case it was E. Coli and in 1 case it was Klebsiella.

DISCUSSION:

Clean surgery is a term described as a procedure wherein a sterile technique is strictly adopted, and none of the tracts like GIT, respiratory and genitor-urinary tracts is not entered.

Apart from the factors like the operating team and the risk factors of the patient which contributes to the risk of infection, the operating atmosphere and the sterility of the instruments and the effort which is taken to maintain asepsis also interferes with the rate of surgical infection.

It is rather not fair for a surgeon to prescribe an antibiotic when there is any breach in the technique of asepsis as it is never a substitute to asepsis. In a clean surgery, the infection is almost always entered the operative field from an exogenous source like the skin of the patient or the nostrils of the operating team.

As per the literature, the rate of infection after clean surgery is 1.5% and is hardly more than 4%.

This study performed in our institution among 50 patients in the study group 3 developed surgical site infection. Among 50 patients of the control group 6 developed surgical site infection.

CONCLUSION:

A significant number of surgeons still use postoperative antibiotics in clean procedures as there is an undue fear of infection. This study concludes that a single dose of preoperative antibiotic prophylaxis is effective in decreasing postoperative wound infection in clean surgeries. It will help in decreasing healthcare cost, and it will help in reducing antibiotic-related morbidity, such as drug toxicity, antibiotics related diarrhoea, super infection. It will also help in decreasing resistant strains of bacteria due to overuse of antibiotics.

By avoiding postoperative antibiotic in clean surgical cases, we can avoid bacterial resistance, reduce patient discomfort and complications, reduce health care cost, conserve human resources and preserve national resources.

To conclude postoperative antibiotic is not needed for clean surgical cases. A single-dose preoperative antibiotic is sufficient.

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