



TO DETERMINE THE INCIDENCE OF POST-OPERATIVE SUPERFICIAL SURGICAL SITE INFECTIONS, THEIR BACTERIOLOGICAL PROFILE AND ANTIBIOTIC SENSITIVITY IN A TERTIARY CARE CENTRE.

General Surgery

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ABSTRACT

Surgical site infection (SSI) are important cause of morbidity in surgical patients. Therefore, early identification and appropriate antibiotic use are beneficial and helps reduce emergence of multidrug resistance organisms in hospital. After surgery, the patients were monitored for any signs of SSI till discharge and were followed for 30 days after surgery. Any discharge from the surgical site was collected and immediately transported to the Microbiology laboratory for culture & sensitivity profiling. In our study, out of 405 cases who underwent abdominal surgeries, 80 patients developed SSI. *Escherichia Coli* was most commonly isolated bacteria (32) followed by *Staphylococcus Aureus* (14). Most of the gram negative bacteria were sensitive to Amikacin and Gentamycin and most of the gram positive bacteria were sensitive to Linezolid and Clindamycin. Precipitating factors for SSIs included various factors like drains, history of alcohol intake, smoking and steroid intake. Other associated factors were Diabetes, Hypertension, CKD, COPD, Malignancy and asthma. Incidence of surgical site infections highlights the need of consideration of three main factors (host, surgical and microbiological) before any surgery. Modifiable host factors needs to be tackled preoperatively and early identification of SSI and judicious use of antibiotics can lead to decreased incidence and less morbidity to patients.

KEYWORDS

SSI, bacteria, antibiotics.

INTRODUCTION

Post-operative wounds infections (POWIs) is defined as an infection occurring within 30 days after a surgical operation or within 1 year if an implant is left in place after procedure and affecting either incision or deep tissues at the operation site. [1]

The Centers for Disease Control and Prevention (CDC) has classified Surgical site infections (SSI) into superficial, deep, or organ/space SSIs. Superficial incisional SSI involves only skin and subcutaneous tissue, deep incisional SSI involves deep tissues such as fascial and muscle layers and organ/space which was opened or manipulated during operation. [1]

Surgical site infections are important cause of morbidity in surgical patients as they increase hospital stay, re-operation, readmission, limitation of quality of life, and loss of daily wages, which, in turn, leads to financial and social catastrophe for the families.

Therefore, identification of a microbe and determining susceptibility pattern are beneficial to the patient to avoid emergence of multidrug resistance organisms in hospital.

Aims And Objectives

1. To determine the incidence of post-operative superficial surgical site infections in a Tertiary care center.
2. To determine the bacteriological profile and antibiotic sensitivity of post-operative superficial surgical site.

Materials And Methodology

This prospective cross sectional study was conducted on all patients who underwent abdominal surgeries in the department of General Surgery at a Tertiary Care Centre from a period of December 2018 to May 2020.

After surgery, the patients were monitored for any signs of SSIs as per the CDC (Centre for Disease Control and Prevention) definition. The patients were monitored for any sign of superficial surgical site infection till discharge from the hospital and were followed for 30 days from the date of operation.

Any pus or discharge from the surgical site was collected from these patients and immediately transported to the Microbiology laboratory for culture & sensitivity.

Inclusion Criteria

1. Abdominal surgeries operated in our hospital in Surgery

Department.

2. Patients with superficially infected surgical wound post operatively.
3. Age > 18 years.

Exclusion Criteria

1. Patients undergoing vaginal/LSCS surgeries.
2. Patient undergoing laparoscopic abdominal surgeries.
3. Cases operated outside our hospital.
4. Age < 18 years.
5. Infection occurring after 30 days of operation.
6. Patient undergoing surgery with implant.
7. Burn injuries and donor sites of split skin grafts.
8. Patients with pre-existing infection.
9. Refusal to give consent for participating in the study.

RESULTS

- In our study, out of 405 cases who underwent abdominal surgeries, 80 patients developed superficial surgical site infection. Out of 405 cases, 192 were elective and 213 were emergency cases.
- Out of 192 patients who underwent elective abdominal surgeries, 30 patients developed SSI. Out of 213 patients who underwent emergency abdominal surgeries, 50 patients developed SSI.
- The mean age of the study population was 41.43 ± 15.51 (18-75) years with 49 males and 31 females. Drain was associated with 70 patients of SSIs. 41 patients were showing features of Septicaemia.
- 17 patients of SSI were only smokers, 1 patient had history of alcohol intake, whereas 9 patients were both smokers and had associated history of alcohol intake.
- History of steroid intake was seen in 7 patients of SSI.
- Among co-morbidities, Diabetes was the most common seen in 14 patients, followed by Hypertension in 12 patients, CKD in 4 patients, COPD in 2 patients, Malignancy in 2 patients and Bronchial asthma in 1 patient.
- 2 patients with clean wound, 27 patients with Clean contaminated wound, 14 patients with Contaminated wound and 37 patients with Dirty wound developed SSI after abdominal surgery.
- The duration of hospital stay was >5 days in 75 patients of SSIs and ≤5 days in 5 patients.
- *Escherichia Coli* was most commonly isolated bacteria (32) followed by *Staphylococcus Aureus* (14), *Acinetobacter Baumannii* (8) and *Klebsiella Pneumoniae* among (6) patients.
- Most of the gram negative bacteria were sensitive to Amikacin and Gentamycin and most of the gram positive bacteria were sensitive to Linezolid and Clindamycin.

DISCUSSION

In our study, *Escherichia Coli* was most commonly isolated (40.0%) micro-organism followed by *Staphylococcus Aureus* (17.5%).

Infection with *Escherichia Coli* is most likely associated with endogenous source as it is a member of intestinal normal flora and this might explain the finding of this pathogen in most of operations related to the digestive system. Infection with *Staphylococcus Aureus* is most likely associated with endogenous source as it is a member of the skin and nasal flora and also exogenous source with contamination from environment, surgical instruments or from hands of health workers .

In our study, *Escherichia Coli* was sensitive to Amikacin, Gentamycin, Cefipime, Cefoparazone + Sulbactam, Colistin, Dorepenam, Imepenam, Meropenam, Pipracillin + Tazobactam, Clavulanic Acid, Tigicycline and Trimethoprim/ Sulfamethoxazole. However, resistance was shown to the commonly prescribed antibiotics like Ampicillin in 100% isolates, Ceftazidime and Ciprofloxacin resistance in 87.5% isolates, Levofloxacin resistance in 81.2% isolates. Ceftriaxone and Cefuroxime resistance was seen in 75.0% isolates. This is probably due to selective pressure resulting from uncontrolled, extensive incorrect and misuse of these antibacterial agents in hospitals as well as in the country as a whole.

CONCLUSION

Based on our observations, we conclude that:

1. The incidence of SSI in our hospital among patients of abdominal surgeries is 19.8%.
2. The incidence of SSI among elective cases is 15.6% and among emergency cases is 23.5%.
3. *Escherichia Coli* was the most common isolate seen in patients of SSI.
4. Among gram negative *Escherichia Coli* was the most common and *Staphylococcus Aureus* was the most common gram positive bacterial isolate in patients of SSI.
5. Most of the gram negative bacteria were sensitive to Amikacin and Gentamycin and most of the gram positive bacteria were sensitive to Linezolid and Clindamycin.

REFERENCES

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