

ORIGINAL ARTICLE

An Observational Study of the Surgical Site Wound Infection

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Abstract

Background: Surgical site infection is an infection of the tissues of the incision and surgical site. These infections have been responsible for the increase of the cost, morbidity and sometimes mortality of the operations and can be a major problem even in hospitals with all modern facilities. This study was done to assess the surgical site wound infections. **Methods:** The study group consisted of the patient's undergone elective and emergency surgical procedures in the hospital. The study was conducted over a period of 8 months and included of patients with surgical site wounds. The results were statistically analyzed using IBM SPSS statistics version 16. **Results:** Total of 159 patients were included in the study. Out of these, 39 (24.52%) patients had developed surgical site infections. The infections rate was more in the age group of 46 to 55 years (34.14%). The surgical site infection rate was found higher in the emergency surgeries as compared to the elective surgeries. In the various surgeries, the highest infection rate was seen in the patients with abdominal laparotomy patients followed by the other surgeries. **Conclusion:** Surgical site infections are still a major problem for the patients who undergo operative procedures.

Keywords: Surgical site infections, Post-operative wound infection, Wound infection

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Received on:24/11/2017 Revised:03/12/2017 Accepted : 11/12/2017

Introduction

Most authors accept that surgical site infection is one of the worst complications that a patient can experience after an intervention.¹ The infection of a wound can be defined as the invasion of organisms through tissues following a breakdown of local and systemic host defenses, leading to cellulitis, lymphangitis, abscess, and bacteraemia.² Surgical Site Infections, previously called post-operative wound infections, result from bacterial contamination during or after a surgical procedure.² Factors which increase an individual's risk to surgical site infections include malnutrition, lengthy preoperative stay, diabetes, use of steroids and poor skin preparation. Additionally, conditions surrounding the surgery may account for added risk like the length of surgery, wound site contamination, infection among the surgical staff and instrument contamination.³

Total quality management in hospitals is gaining emphasis these days. Control of postoperative complications is an essential component of total quality management. In this context, it becomes important to determine the prevalence of surgical site infections and assess the magnitude of the problem.^{4,5} Hence the present study had been undertaken.

Materials and Methods

The study group consisted of the patient undergone elective and emergency surgical procedures in the hospital. The study was conducted over a period of 8 months and included of patients with surgical site wounds. Informed consent was taken from all the participant patients and approval of the ethical committee was also taken. Detailed case history of the patients was recorded. The results were statistically analyzed using IBM SPSS statistics version 16.

Results

A total of 159 patients were included in the study. Out of these, 39 (24.52%) patients had developed surgical site infections. The infections rate was more in the age group of 46 to 55 years (34.14%). (Table 1)

The duration of the surgery had found to have an influence on the incidence of the surgical site infections. The infection was seen a maximum in cases in which duration of the surgery was

more than 120 minutes and minimum when the duration was 60 to 80 minutes. (Table 2)

The surgical site infection rate was found higher in the emergency surgeries as compared to the elective surgeries. (Table 3)

In the various surgeries, the highest infection rate was seen in the patients with abdominal laparotomy patients followed by the other surgeries. (Graph 1)

Table 1: Distribution of patients according to age

| Age group (Years) | No. of cases | Surgical site infection present | Percentage |
|-------------------|--------------|---------------------------------|--------------|
| 16-25 | 19 | 4 | 21.05 |
| 26-35 | 25 | 6 | 24.0 |
| 36-45 | 29 | 6 | 20.68 |
| 46-55 | 41 | 14 | 34.14 |
| 56-65 | 27 | 5 | 18.51 |
| >66 | 18 | 4 | 22.22 |
| Total | 159 | 39 | 24.52 |

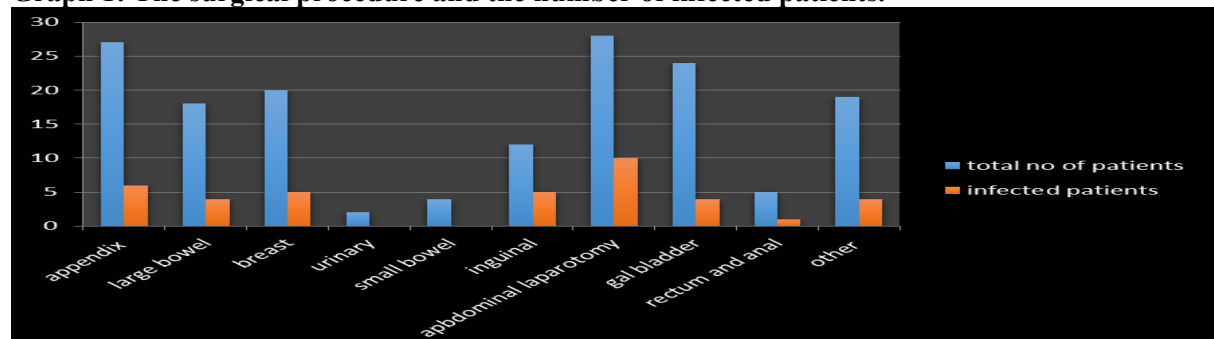
Table 2: Duration of the surgery and the number of infected patients

| Duration in minutes | Total no. of patients | Surgical site infection present | Percentage |
|---------------------|-----------------------|---------------------------------|--------------|
| 20-40 | 24 | 5 | 20.83 |
| 40-60 | 21 | 5 | 23.80 |
| 60-80 | 19 | 2 | 10.52 |
| 80-100 | 26 | 6 | 23.07 |
| 100-120 | 23 | 6 | 26.08 |
| >120 | 46 | 15 | 32.60 |
| Total | 159 | 39 | 24.52 |

Table 3: Type of surgery and the infected patients

| Type of surgery | No of patients | Surgical site infection present | Percentage |
|-----------------|----------------|---------------------------------|--------------|
| Emergency | 92 | 26 | 28.26 |
| Elective | 67 | 13 | 19.40 |
| Total | 159 | 39 | 24.52 |

Graph 1: The surgical procedure and the number of infected patients.



Discussion

The surgical site infection has been pointed as the type of highest prevalence among

infections associated with avoidable health care. It is also the second or third most common infection in the world among patients undergoing surgeries.⁶ In the past few years,

important advances have been achieved in the field that may have had an impact on the reduction of these infections. These include more effective surgical sterilization procedures, laminar flow, high-efficiency particulate absorbing filters, ultraviolet radiation, air renewal, humidity control, differential temperature and air pressure, particle count, surface colony count and antibiotic prophylaxis. However, other factors, such as decreased length of hospital stay, and more aggressive interventions performed on patients with worse clinical conditions, probably contribute to an increased incidence.¹ An extensive surveillance program can reduce the rates of surgical site infections in 30 to 40%, and for its effectiveness, the real incidence of these infections and associated risk factors must be studied.⁶ These infections are a dangerous condition; a heavy burden on the patient as such infections lengthens bed stays for an average of seven days. Probable sources of infection are the hospital environment, other patients, staff, infected surgical instruments, dressings, and even drugs and injections. The present study found surgical site infection rate of 24.52 %. Razavi SM et al;⁷ reported rate 17.4%, Jamulitrat S et al;⁸ reported 6.5% rate, where as Damani NN et al;⁹ described a 30% incidence of surgical site infections. The present study found that percentage of wound infection increased with the duration of the operation. The results are in consistent with a study carried by Chowdhury M et al;¹⁰ who reported that infection rates were 26.1% for durations >120 minutes. CDC classifies SSIs in three categories: superficial incisional, deep incisional and organ/space SSI.¹¹ The recommendations for the decrease of the incidence of the surgical site wound infections are the development of the surveillance mechanisms, development of the institutional antibiotic policy, quality control exercises and training of nursing staff, technicians in postoperative wards.¹²

Conclusion

In spite of the advances in the operative techniques and a better understanding of the pathogenesis of the wound infections, surgical site infections are still a major problem for the

patients who undergo operative procedures. Thus, the incidence of post-operative wound infection should be minimized by taking into consideration the hygiene of the patient and the disinfection of the hospital environment including the wards and the operation theatre.

Conflict of Interest: None declared

Source of Support: Nil

Ethical Permission: Obtained

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