IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 4 Ver. 12 (April. 2018), PP 13-16
www.iosrjournals.org

A Prospective Study of Surgical Site Infection from the Post-Discharge Patients Evidenced In Tertiary Care Hospital

Dr Anand Gupta[1], Dr Rishikant vashistha[2], Dr Sanjaydatey[3], Dr Siddharth Gurwani[4], Dr Roanak Gupta[5]

[1] *Senior Resident, Department Of Surgery, Shyam Shah Medical College Rewa, M.P India*
[2] *Associate Professor,, Department Of Surgery, Sri Aurobindo Medical College Indore, M.P India*
[3] *Professor, Department Of Surgery, Sri Aurobindo Medical College Indore, M.P India*
[4] *Junior Resident, Department Of Surgery, Sri Aurobindo Medical College Indore, M.P India*
[5] *Junior Resident, Department Of Surgery, Sri Aurobindo Medical College Indore, M.P India*
Corresponding Author: Dr Rishikant vashistha

Abstract:
Introduction*: Surgical site infection (SSI) is the third most frequently reported nosocomial infection that accounts for 14% to 16% of all nosocomial infections among hospitalized patients. Patients with SSIs are 2-11 times higher risk of death, compared with operative patients without SSI.*
Aims and Objectives: *This study aimed to determine the surgical site infection rate during hospitalization and also in post-discharge .*
Materials and Methodology: *A descriptive study was conducted, comparing surgical site infection rates during hospitalization and the impact of post discharge reports through different methods in tertiary care hospital Shri Aurbindo Institute of medical sciences, Indore.*
Results: *During patients' stay at Hospital , 2% of infections were detected before the 7th day after surgery. Regarding post-discharge detection, in hospital, the highest infection rates were found before the 14th day after surgery; 14%.*
Conclusion*: The reliable SSI rates can be observed by performing follow up during hospitalization and also after discharge which help in implication of preventive measures.*
Keywords*: Surgical site infections, Hospitalization, Post discharge patients, Surveillance, Nosocomial infections.*

Date of Submission: 04-04-2018 Date of acceptance: 19-04-2018

I. Introduction

Surgical site infection (SSI) is the third most frequently reported nosocomial infection that accounts for 14% to 16% of all nosocomial infections among hospitalized patients. [1]

Patients with SSIs are 2-11 times higher risk of death, compared with operative patients without SSI. [2 3] Seventy seven per cent of deaths among patients with SSIs are directly attributable to SSI. [4] Infection in any location along the surgical tract after a surgical procedure is known as surgical site infection (SSI).

SSIs are multi-factorial in causation, which depends on the patient factors. The surgical factors as operating room environment, surgeon, procedure, duration etc influence the occurence of SSIs.

Hence, epidemiologic surveillance is required for every patient, especially those who have high infection risks. Surveillance required to be done is by prospective methods as active, systemic and continuous search for infections. [(5-9)].

12 to 84% of the SSI appears after discharge is evident by previous studies. There by less reported rates occur after hospitalization. [(5-6, 8-12)].

There are several recommended post discharge surveillance methods for surgical patients. Therefore, it is necessary that each institution should use the methods that best suits them.

In view of this issue's epidemiological relevance and the importance of performing post discharge surgical patient surveillance, this study aimed to determine the surgical site infection rate during hospitalization and also in post-discharge.

II. Materials and Methodology

A descriptive study was conducted, comparing surgical site infection rates during hospitalization and the impact of post discharge reports through different methods in tertiary care hospital Sri Aurbindo Institute of

medical sciences, Indore. The patients admitted for surgery, and stayed overnight, undergone surgical procedures were eligible participants .

During hospitalization, nursing undergraduates performed daily active searches for surgical site infections in the patients included in the study and hospitalized in the surgery units. The students were previously trained and received appropriate supervision from the lead researcher. Data concerning patient identification were collected, such as gender and age, as well as information about the SSI, place of diagnosis (during hospitalization and after discharge), the interval between surgery and SSI report.

SSI was classified according to its location: superficial (affects only the skin or subcutaneous cell tissue), deep (involves deep structures of muscular wall, fascia and layer), and organ/cavity (involves anatomic structures, which were open or manipulated during surgery) .

Post-discharge surveillance was performed through telephone contact and return visits to the outpatient clinic.

Hospital determined that post-discharge follow-up would be performed through telephone calls, between the 7th and 14th day . Telephone calls were made using a specific printed guideline, which included the questions to be asked to the patient. At this moment, special care was taken to avoid answer induction.

The instrument used was founded on objective questions that yielded precise answers regarding the surgical incision. After the contact, each case was discussed among the study group and, when necessary, with the assistant team, with a view to obtaining homogeneous criteria to report cases or not.

Patients who, for some reason, were not home or were not located on the first call, were called again at a previously scheduled time, during the same week, so as to guarantee that the highest possible number of patient was reached.

Data analysis and statistical tests were performed using Statistical Products and Service Solutions (version 20.0: SPSS, Inc. Chicago, III). **Results**

The sample from Hospital consisted of 100 patients subjected to surgeries regarding the following procedures: hernioplasty, cholecystectomy, laparotomy, and appendectomy. Study participants were, on the average, 38 years old, ranging from 23 to 70 years. As to gender, 61% of the patients were men.

Regarding SSI diagnosed during hospitalization, our hospital presented a rate of 5% and SSI detected after discharge was 31%.

Table 1 - Distribution of patients subjected to surgeries, according to Surgical Site Infection (SSI) report – during hospitalization and post-discharge.

No. of patients	SSI% (Hospitalization)	SSI%(Post discharge)	Total SSI%
100	5%	31%	36%

Table 2- Distribution according to gender

Gender	Number	Percent
Male	61	61%
Female	39	39%

Table 3- SSI occurrence interval at hospital according to the diagnosis.

Post surgery intervals (days)	Hospitalization (Number)	Hospitalization (Percent)	Post discharge (Number)	Post discharge (Percent)
<7	2	2%	9	9%
7 to 14	2	2%	14	14%
14 to 21	0	0%	7	7%
21 to 30	1	1%	1	1%
Total	5	5%	31	31%

During patients' stay at Hospital , 2% of infections were detected before the 7th day after surgery. Regarding post-discharge detection, in hospital, the highest infection rates were found before the 14th day after surgery; 14%.

Table 3 - Distribution of surgical site infections at hospital according to classification and reported site.

Infection site	Hospitalization (Number)	Hospitalization (Percent)	Post discharge (Number)	Post discharge (Percent)
Superficial	3	3%	30	30%
Deep	2	2%	1%	1%
Organ	0	0%	0	0%
Total	5	5%	31	31%

Regarding infection classification, superficial infections prevailed 3% and 30%. The majority of infections were detected after discharge were superficial.

III. Discussion

It is revealed from various studies that 12 to 84% of all SSI become evident after hospital discharge. This confirms the importance and necessity of this type of systemized follow-up, emphasized by the current trend of shorter hospital stays. Moreover, it is mandatory to obtain accurate rates, thus permitting inter-hospital comparisons. [5-6,8, 11-12]

The SSI rate detected during hospitalization was lower than that referenced in other studies. The 13% average hospital infection rate in other studies [6, 14-15] translates a certain tranquility regarding the percentages found in this study. However, since it is acknowledged that most studies do not cover surgical patient follow-up after discharge, special care should be taken when interpreting the data. Surgical patient follow-up rates (outpatient clinic and telephone) reached 31%.

This is highly satisfactory, considering parameters from other studies, which reported that between 64 and 89% of patients returned for post-discharge visits [8, 12].

Regarding the methods used for post discharge surveillance, it is observed that outpatient clinic returns have been considered the reference method, whose main advantage is the fact that it proposes that every SSI should be notified, regardless of its location. This is determined based on the observed difficulty because, when physicians report SSI at their offices/outpatient clinics, superficial SSI go unnoticed and are not reported. This happens because superficial SSI usually do not require antimicrobial therapy, besides being simple and generally solved by applying local heat [5, 10, 16].

The telephone contacts performed in Hospital could be considered an easy, low cost method. It tends to be used when patients are not able to return to the hospital's outpatient clinic. The method's sensitivity could be a limitation, due to information bias. However, since contacts were made by a specific trained professional in this study, who asked objective clear questions, it is believed that the information bias has been minimized [16].

Several studies have stated that most SSI could be identified between the 15th and the 21st day, with averages above 80% before the 15th day6-8. In the present study, even the 7th day revealed a percentage of 3% of SSI diagnosed during patient hospitalization and. In addition, from hospital discharge to the 14th day after surgery, this percentage was higher, reaching 28%.

This finding, according to some authors, justifies that post-discharge follow up of surgical patients could be reduced to 15 days [8, 11-12].

Regarding specific SSI sites, the most frequent were the superficial, both intra-hospital and after discharge. As mentioned before, the vast majority of SSI diagnosed after discharge is superficial [8, 12], exactly due to the possibility of early discharge and shorter hospital stay.

IV. Conclusion

Post-discharge surveillance had more SSI rate, which performed patient follow-up through the telephone. The results showed prevalence for superficial SSI, both during hospitalization and after discharge was high.

Thus reliable SSI rates can be observed by performing follow up during hospitalization and also after discharge. It is evident by our study. Thus implementation of prevention and control measures is possible, as epidemiological comprehension requires knowledge regarding infection risks as well as determinant or associated factors.

References

[1] Emori TG, Gaynes RP. An overview of nosocomial infections, including the role of the microbiology laboratory.ClinMicrobiol Rev 1993;6(4):428-42.

[2] Engemann JJ, Carmeli Y, Cosgrove SE, et al. Adverse clinical and economic outcomes attributable to methicillin resistance among patients with Staphylococcus aureus surgical site infection. Clin Infect Dis 2003; 36:592-98.

[3] Kirkland KB, Briggs JP, Trivette SL, Wilkinson WE, Sexton DJ. The impact of surgical-site infections in the 1990s: attributable mortality, excess length of hospitalization, and extra costs. Infect Control Hosp Epidemiol 1999; 20:725-30.

[4] Wong ES. Surgical site infections. In: Mayhall CG, ed. Hospital Epidemiology and Infection Control. 3rd ed. Baltimore: Lippincott, Williams, and Wilkins; 2004:287–10.

[5] Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for prevention of surgical site infection. Infect Control Hosp Epidemiol 1999; 4(20):247-79.

[6] Ferraz EM, Ferraz AA, Bacelar TS, Albuquerque HST, Vasconcelos MDM, Leão CS. Controle de infecção em cirurgia geral - resultado de um estudo prospectivo de 23 anos e 42.274 cirurgias. Rev Colégio Bras Cir 2001;1(28):17-25.

[7] Ministério da Saúde (BR). Portaria número 2.616, de 12 de maio de 1998. Resolve expedir na forma de anexos I, II, III, IV e V,diretrizes e normas para a prevenção e o controle de infecções hospitalares, ficando revogada a Portaria 930. Diário Oficial da União, Brasília (DF),13 de maio de 1998.p.133-5.

[8] Oliveira AC, Soares JL, Garcia CA, Scatena PD, Osvaldo L, Ciosak SI. Seguimento pós-alta do paciente cirúrgico: uma análise da importância da sub-notificação da incidência da infecção do sítio cirúrgico. Rev Min Enfermagem 2003; 7(1):48-51.

[9] Oliveira AC, Ciosak SI. Infecção de sítio cirúrgico no seguimento pós-alta: impacto na incidência e avaliação dos métodos utilizados. Rev Esc Enfermagem USP 2004; 38:379-85.

[10] Oliveira AC, Martins MA, Martinho GH, Clemente WT, Lacerda RA. Estudo comparativo do diagnóstico da infecção do sítio cirúrgico durante e após a internação. Rev Saúde Pública 2002; 36(6):717-22.

[11] Rodriguez MD, Ortega AG, Arenas MS, Llorca J. Epidemiology of surgical-site infections diagnosed after hospital discharge: a prospective cohort study. Infect Control Hosp Epidemiol 2001; 22:24-30.
[12] Stockley JM, Allen RM, Thomlinson DF, Constantine CE. A district general hospital's method of post-operative infection surveillance including post-discharge follow-up, developed over a five-year period. J Hosp Infect 2001; 49:48-54.
[13] Whitby M, McLaws ML, Collopy B, Looke DFL, Doidge S, Henderson B et al. Post-discharge surveillance: can patients reliably diagnose surgical wound infections? J Hosp Infect 2002; 52:155-60.
[14] Poveda VB, Galvão MC, Hayashida M. Análise dos fatores de risco relacionados à incidência de infecção do sitio cirúrgico em gastrocirurgias. Rev Esc Enfermagem 2003; 37:81-9.
[15] Medeiros AC, Aires Neto T, Dantas Filho AM, Pinto Jr FEL, Uchôa RAC, Carvalho MR. Infecção hospitalar em pacientes cirúrgicos de hospital universitário. Acta Cir Bras 2003; 18(Suppl 1):15-8.
[16] Noy D, Creedy D. Post discharge surveillance of surgical site infections: a multi-method approach to data collection. Am J Infect Control 2002; 30:417-24

Dr Anand Gupta " A Prospective Study of Surgical Site Infection from the Post-Discharge Patients Evidenced In Tertiary Care Hospital "IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 4, 2018, pp 13-16.