



Original Article

A Comprehensive Study of 100 Patients of SSI (Surgical Site Infections) in Patients Undergoing Abdominal Surgery, Elective/Emergency, in Our Hospital

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Abstract

Background: *Surgical site infections (SSIs) are any infections occurring in a surgical wound within 30 days. SSIs are real risks associated with significant burden in terms of patient morbidity and mortality, and costs to health services around the world. SSIs are known to be the commonest form of hospital acquired infections. In a busy medical college hospital where the work load is tremendous and majority of the patients belong to the low socio-economic conditions with poor hygiene and nutritional level, the incidence of SSI in emergency procedures is high causing great burden on the hospital where cost of dressing material, hospital stay, food and investigations are provided free of cost.*

Method: *We studied 100 patients who underwent abdominal surgeries for elective or emergency procedures in the last one year who developed SSI in the immediate post-operative period. The 50 patients had undergone emergency surgery and 50 were elective.*

Result: *In elective surgeries, 3 patient developed SSI. In Emergency Surgeries, 8 patients developed SSI. Infection with E.Coli and Staph Aureus were more common. The organisms were susceptible to Ceftriaxone, Cefaperazone-Sulbactam, Cefotaxime, Piperacillin-Tazobactam and Amikacin which were easily available in the hospital.*

Conclusion: *Certain simple and easy to follow protocols for pre-operative care to prevent SSI which helped to reduce the rate of SSI in elective surgery patients. Simple steps can bring down the incidence and reduce the economic burden on hospitals giving low cost or free treatment.*

Keyword: *SSI, Antibiotic sensitivity, Economic burden, Pre-operative protocol.*

Introduction

Surgical site infections (SSIs) are any infections occurring in a surgical wound within 30 days. SSIs are real risks associated with any surgical procedure and represent a significant burden in terms of patient morbidity and mortality, and costs

to health services around the world ⁽⁵⁾. SSIs are also known to be the commonest form of hospital acquired infections. In a busy medical college hospital such as ours where the work load is tremendous and majority of the patients belong to the low socio-economic conditions with poor

hygiene and nutritional level, the incidence of SSI in emergency procedures is high causing great burden on our hospital where cost of dressing material, hospital stay, food and investigations are provided free of cost.

Methods

100 patients were studied in the present study. 50 patients who underwent emergency surgical procedure and 50 patients had elective abdominal surgery. Patients included in the study were selected according to inclusion criteria. Exclusion criteria were those who had previous abdominal surgery, immune-compromised patients, and patients on chemotherapy, patients who came to emergency in a state of septic shock.

We followed certain criteria for pre-operative preparation for elective surgery patients regarding local care of surgical site. All 50 patients in elective group were strictly adhered to the criteria. The criteria decided by us were as follows-

Clean bath to the patient a day prior to surgery

Thorough cleaning of the surgical site with povidone-iodine the night prior to surgery with closure of the site by a sterile dressing.

No shaving of the surgical site pre-operatively and if necessary shaving to be done on operating table by attending resident.

Thorough scrubbing with beta-scrub for 1 minute by resident before painting and draping.

Painting of the surgical site for three times with application of povidone-iodine left on the site for one whole minute each time.

Post-operatively standard strictly aseptic wound care procedures were followed^(7,9). In infected abdomens, wound check was done on third and fifth post-operative day. In clean elective cases wound check was done on fifth post-operative day. Findings on both days were carefully noted. If discharge was seen, it was sent for culture and sensitivity testing. In cases of SSI, dressing was changed every day and findings were noted and photographed.

Result

Table 1

Elective cases	No
Open Appendectomy	14
Open Cholecystectomy	09
Inguinal Hernia Repair	12
Umbilical Hernia	12
Pseudocyst of Pancreas	1
Splenectomy	2

Table 1

Emergency Cases	No
Open Appendectomy	24
Peptic perforation Repair	07
Intestinal Obstruction	09
Stab Injury	1
Blunt trauma Abdomen	4
Enteric Perforation	2
Obstructed Inguinal Hernia	3

Out of 50 elective cases, 3 cases showed signs of SSI on the fifth post-operative day. 2 cases had frank pus discharge and needed suture removal with wound irrigation and dressing. All 2 needed secondary re-suturing. The remaining 1 case healed by daily dressing, removal of collected discharge and changing the antibiotic according to culture sensitivity report. The average stay of the patients with SSI ranged from 12 to 18 days.

Out of 50 emergency cases, 8 cases developed SSI with frank pus discharge in 6 cases. The frank pus discharge had associated intra-abdominal sepsis due to perforated viscus. All the cases with frank pus discharge needed re-suturing after 4 weeks. The average stay of patients with SSI was 25 to 45 days.

Discussion

Surgical site infections (SSIs) are any infections occurring in a surgical wound within 30 days⁽⁴⁾. Surgical-site infection (SSI) is the most common healthcare-associated infection (HCAI). Studies have shown an incidence between 5 and 10% of patients undergoing surgery are estimated to develop an SSI with an associated increased length of stay and increase in morbidity and mortality.^(2, 3) In our study the incidence of SSI for emergency cases was found to be 16% and that for elective procedures was 3%. It was found that

the low incidence in elective procedures was because of the simple pre-operative steps that we strictly followed in preparing the surgical site prior to surgery^(7,9). The data suggests that the SSI was more common in emergency procedures where the pre-operative skin preparation was not good.⁽⁹⁾ Also the nutritional status, co-morbidities such as Diabetes and presence of intra-peritoneal sepsis affected the rate of SSI.⁽⁵⁾

The microflora isolated from the infected surgical wounds were mostly commensals of the skin, the commonest being Staph. Aureus.^(5,6) In only one case Pseudomonas was isolated.⁽²⁾ The antibiotics used in our hospital were found to be sensitive to the micro-organisms isolated from infected wounds. The organisms were susceptible to Ceftriaxone, Cefaperazone-Sulbactam, Cefotaxime, Piperacillin-Tazobactam and Amikacin which were easily available in the hospital.⁽⁶⁾

Table 2

Organism	No
Staph Aureus	5
Enterococcus	3
E coli	2
Pseudomonas	1

Table 3

Type	Infection
Elective	6%
Emergency	16%

In our study, we found out that adhering to simple pre-operative steps to clean the skin can bring down the incidence of SSI to 3 %. In a busy medical college hospital such as ours visited by patients from low socio-economic conditions with poor skin hygiene, poor nutritional status and poorly controlled co-morbid conditions like Diabetes and hypertension, small precautions like the criteria we followed for elective procedures brings down the rate of SSI and thus the hospital stay, cost of dressing material, cost of re-surgery can be very economical for the hospital and adds value to the potential benefit of surgical interventions.^(3,7)

Table 4

Infection	No.
Elective	3
Emergency	8

Table 5

SSI Type	Elective	Emergency
I	3	3
II		4
III		1
IV		-

Conclusion

Surgical site infection is a major drain on hospitals catering to a high volume of patients. The post-operative infection increases the workload of the staff, cost of stay and dressing material used, not to mention the mental and physical agony of the patients. Simple steps to prepare the surgical site pre-operatively, increase the hygiene level of the patients and strict adherence to on-table painting technique can bring down the incidence and reduce the economic burden on hospitals giving low cost or free treatment, as in our hospital.⁽⁴⁾

Conflict of Interest- None

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