

INCIDENCE, BACTERIOLOGICAL SPECTRUM AND DETERMINANTS OF SURGICAL SITE INFECTION AFTER ELECTIVE GENERAL SURGERY: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Surgical site infection (SSI) continues to be an important postoperative problem even with improvements in asepsis and perioperative care.¹⁻³ Methods: This prospective observational study included 120 patients who underwent elective general surgical procedures at a tertiary care teaching hospital. Patient-related and operative variables were examined for their relationship with SSI. Results: SSI was documented in 17 patients (14.2%). Low serum albumin ($p=0.003$), operative time of 60 minutes or more ($p=0.018$), and greater intraoperative blood loss ($p=0.022$) were significantly linked with SSI. Staphylococcus aureus was the commonest organism isolated from infected wounds. Conclusion: Careful preoperative nutritional optimization and better control of operative factors may help lower the burden of SSI in elective surgery.

INTRODUCTION

Surgical site infection is a frequent healthcare-associated infection and is associated with delayed recovery, prolonged admission, increased antibiotic exposure, and higher treatment costs.^[1,2] Reported rates differ across settings because they are influenced by patient characteristics, type of operation, and the quality of perioperative infection prevention practices.^[3-5] In elective surgery, many risk factors can be recognized and corrected before the procedure, making this group especially suitable for preventive interventions.^[6]

MATERIALS AND METHODS

This prospective observational study was carried out from September 2022 to December 2023 in a tertiary care teaching hospital. A total of 120 adult patients

undergoing elective clean or clean-contaminated general surgical procedures were enrolled. Surgical site infection was identified using CDC criteria.¹ Associations between SSI and selected clinical or operative variables were assessed with the chi-square test. A p-value below 0.05 was taken as statistically significant.

RESULTS

Among 120 patients, 17 developed SSI, giving an overall incidence of 14.2%. Most infections were superficial (76.5%). The mean postoperative hospital stay was longer in patients with SSI (7.82 ± 2.61 days) than in those without infection (3.39 ± 1.95 days). Development of SSI showed significant associations with hypoalbuminemia, longer duration of surgery, and greater intraoperative blood loss.

Table 1: Relationship of Selected Variables with Surgical Site Infection

Variable	SSI (%)	No SSI (%)	p-value
Serum albumin <3.5 g/dL	64.7	22.3	0.003
Operative time ≥ 60 min	41.2	16.5	0.018
Blood loss ≥ 100 mL	70.6	36.9	0.022

Table 2: Bacteriological Profile of SSI Cases (n=17)

Organism	Number	Percentage
Staphylococcus aureus	9	52.9
Escherichia coli	5	29.4
Others	3	17.7

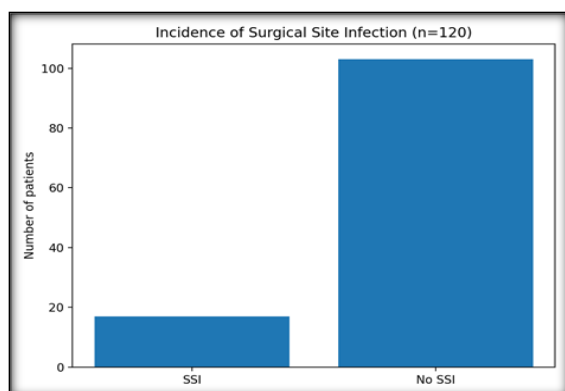


Figure 1: Overall incidence of surgical site infection

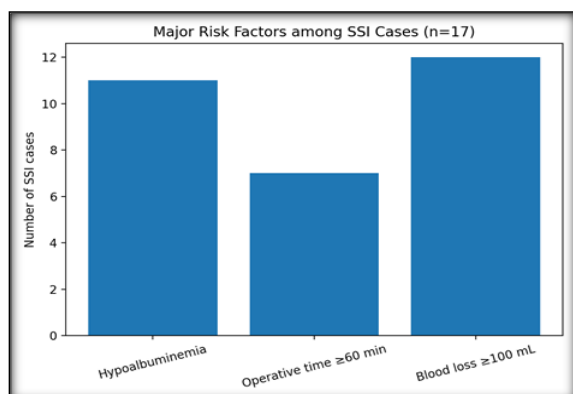


Figure 2: Principal risk factors among SSI cases

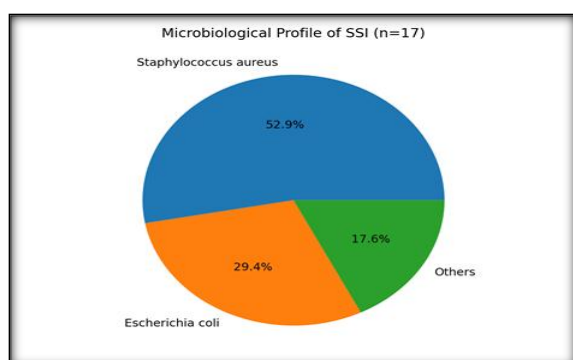


Figure 3: Distribution of microorganisms isolated from SSI cases

DISCUSSION

The observed SSI incidence of 14.2% is within the range described in comparable tertiary care studies

from resource-constrained settings.^[3-5] Hypoalbuminemia showed the strongest association with infection, underscoring the importance of adequate nutritional status for tissue repair and immune response.^[7] Longer operations and increased blood loss were also significantly related to SSI, which is consistent with earlier reports.^[1,8] The predominance of *Staphylococcus aureus* points toward the role of endogenous skin flora and reinforces the need for proper skin preparation and strict aseptic precautions.^[9] Taken together, these findings favor a perioperative prevention approach that combines nutritional assessment with attention to operative efficiency and infection-control practices.

CONCLUSION

Surgical site infection remains an important postoperative complication in elective general surgery. Improving preoperative nutritional status, reducing unnecessary operative delay and blood loss, and maintaining strict infection-prevention measures are key steps for lowering SSI rates.

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