

Prevalence of Nosocomial Wound Infection Among Postoperative Patients and Its related risk factors in a Tertiary Level Teaching Hospital in Goa

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Introduction

- Hospital acquired infections also called nosocomial infections are defined as infections developing in the patients 48 hours after admission to hospital, which were neither present nor in incubation at the time of hospitalization.
- Healthcare-associated infections (HAIs) include central line-associated bloodstream infections, catheter-associated urinary tract infections, and ventilator-associated pneumonia and as surgical site infections
- POWIs have a major impact on the patient's quality of life since they are associated with considerable morbidity, occasional mortality, extended hospital stays and financial burden on the patient and the health care provider
- This study had undertaken to evaluate the current pattern of infection and validate the hospital-based surveillance programme and forwarding suitable recommendations for the same

Aims and Objectives

- To estimate the prevalence, risk factors, and pattern of nosocomial post operative wound infection infections in surgical wards of GMCH.

Methodology

- Study setting** : General Surgery wards (female wards 106 and 109, male wards 107, 110 and 111)
- Study design** : Prospective (Descriptive) study
- Study duration** : 10 months
- Study population** : All patients who are admitted for more than 48 hrs.
- Sample size** : Calculated by using formula $\frac{Z^2 \alpha^2 p q}{d^2}$

$$z \alpha = 1.96 \quad p = 20\%^4$$

$$\text{Relative precision (d)} = 20\% \text{ of } p = 4$$

$$\text{Sample size} = 378$$

- Prospective Descriptive (Follow Up) study conducted for 378 patients. Each patient was followed up on daily basis for the occurrence of Nosocomial infection until patient discharged or transferred out from the ward, or died in the ward. The data analysed using the SPSS 21
- Associated factors were analysed in univariate analysis and by calculating the odds ratio. Chi square test is employed for detecting significance at 95% confidence (p < 0.05)

References

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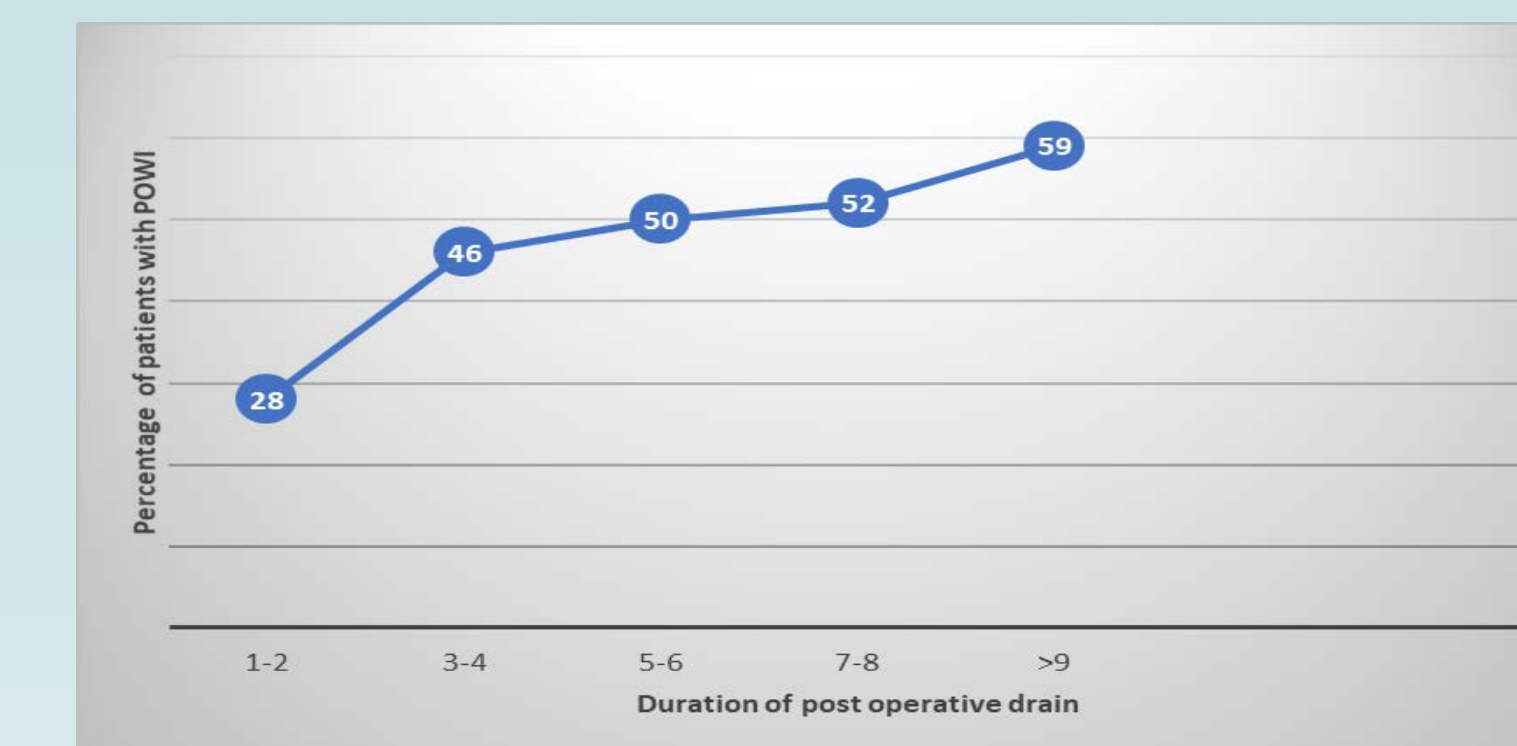
Results

- POWI by post operative drain ($\chi^2 = 14.448$ df=1 $p=0.0014$)
- POWI with type of operation ($\chi^2 = 3.18$ df=1 $p=0.05$)

| Post operative drain | Total number | POWI Present | | POWI absent | |
|----------------------|--------------|--------------|------------|-------------|------------|
| | | Number | Percentage | Number | Percentage |
| Yes | 56 | 32 | 57 | 24 | 42.85 |
| NO | 322 | 16 | 49.68 | 306 | 95.03 |
| Total | 378 | 48 | 12.69 | 330 | 87.3 |

| Operation theatre | Total | POWI present | POWI absent |
|-------------------|-------|--------------|-------------|
| Emergency | 260 | 38(14.6%) | 222(85.38%) |
| Elective | 118 | 10(8.4%) | 108(91.5%) |
| Total | 378 | 48(12.6%) | 330(87.4%) |

- POWI according to the duration of postoperative drain



- POWI by duration of post operative stay ($\chi^2 = 18.703$ df=4 $p=0.009$)
- POWI with site of incision ($\chi^2 = 48.864$ df=6 $p=0.0000$)

| Duration in days | Total number | POWI present | POWI absent |
|------------------|--------------|--------------|-------------|
| 1-5 | 118 | 12(10%) | 106(89.83%) |
| 6-10 | 110 | 18(16%) | 92(84%) |
| 11-15 | 93 | 5(5.3%) | 88(94.7%) |
| 16-20 | 45 | 7(15.5%) | 38(84.5%) |
| >20 | 12 | 6(50%) | 50(50%) |
| total | 378 | 48(12.69%) | 330(87.32%) |

| Site of incision | Total number | POWI present | POWI absent |
|------------------|--------------|--------------|-------------|
| Abdominal | 91 | 12(13.3%) | 79(86.7%) |
| Thoracic | 32 | 4(12.5%) | 28(87.45%) |
| Perineal | 45 | 8(17.7%) | 37(82.3%) |
| Back | 40 | 8(20%) | 32(80%) |
| H&N | 28 | 2(7.1%) | 26(92.9%) |
| Limbs | 142 | 14(9.8%) | 128(90.14%) |
| total | 378 | 48(12.69%) | 330(87.31%) |

Conclusion

- Of the 378 people enrolled in the study during the study period 48 developed nosocomial wound infections yielding an overall infection percentage of **12.69 %** (9.1-15.6 at 95% confidence interval).
- It is noted that **57%** patients who had post-operative drain developed POWI with p value < 0.05 and is statistically significant. And It was surprised to note that incidence of POWI is directly proportional to no of days drains has put
- It was obvious that as post-operative days increases chance of getting POWI also increased and is statistically significant (p < 0.05)
- It was noted that perineal surgery and surgery on back had maximum incidence of POWI. Then comes abdominal and Thoracic surgeries. Most of the surgery happened on the back side were infected Sebaceous cyst or Carbuncle. This may be the reason for increased infection rate happened in this site than perineal site. Perineal site and abdominal site are always more prone for infection. Most of the surgery happened in limbs were amputation surgeries and in that out of 142, 14 developed POWI (9.8%).
- patients who underwent clean-contaminated (3 times) or contaminated wound (5 times) are more prone for contracting infections post operatively than patients who are operated with clean wounds. Risk of infection is lowest in clean wounds (3.8%) and highest in clean contaminated wound (10.83%) and in contaminated wound (17.7%). This relation is statistically significant with p < 0.05 (OR for clean contaminated = **3.03** and 95% CI = 0.836-11.03, OR for contaminated wound = **5.40** and 95% CI = 1.603-18.229)
- Depending on the type of operation, procedures were classified as Emergency and Elective. Compared to Elective procedures (8.4%), Emergency (14.6%) procedures had increased chance of getting affected by POWI which is around **1.8 times** greater. This is relation is statistically significant with p value < 0.05 (OR = 1.8, 95% CI = 0.888-3.850).