



CURRENT TREND IN SURGICAL SITE INFECTION IN DEPARTMENT OF SURGERY IN PMCH, PATNA

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ABSTRACT

Surgical site infections continue to be a problem in surgical wards. In spite of advances made in the field of asepsis, intra-operative antiseptic technique and the use of prophylactic antibiotics, the incidence of surgical site infections has not declined. The present study was done to evaluate the problem of post-operative wound infection with the reference to its magnitude, the contributory factors, spectrum of infective micro-organism and present antibiotic sensitivity pattern. A total of 202 patients admitted under surgical unit of Patna Medical college Hospital from June 2017 to November 2018 were included in this study. Of 202 patients studied 92 were operated in routine and 110 in emergency operation theater. 38 cases developed wound infection (18.89%). Of 38 infected cases, 29 were of those operated on emergency basis (76.31%), whereas only 9 (23.68%) cases operated on routine basis developed wound infection. The commonest pathogen involved were gram positive as well as gram negative species. Of which *Staphylococcus aureus* followed by *E.coli* and *Klebsiella* were most common.

KEYWORDS :

INTRODUCTION:

Surgical site infections continue to be a problem in surgical wards. In spite of advances made in the field of asepsis, intra-operative antiseptic technique and the use of prophylactic antibiotics, the incidence of surgical site infections has not declined. It is the cause of economic burden on the patient's family, prolonged convalescence leading to prolonged post-operative hospital stay. Further it is an increased burden on the hospital resources. Morbidity leads to undesirable loss of working days on the part of patients. Mortality cannot be excluded as consequences of wound infection. The most important steps in prevention of infection at surgical sites were empirical antibiotic prior operative procedures and preoperative practices.

The present study was done to evaluate the problem of post-operative wound infection with the reference to its magnitude, the contributory factors, spectrum of infective micro-organism and present antibiotic sensitivity pattern in Patna medical college & hospital, Patna.

MATERIALS AND METHODS:

A total of 202 patients admitted under outdoor and emergency basis in surgical unit of Patna medical college Hospital, Patna from June 2017 to November 2018 were included in this study. Clinical observations of surgical infection were made and the finding were recorded. Cases operated for infection were excluded from the study. Clean cases operated in emergency were also included in the study. Surgical site infections was suspected on clinical grounds, swab from the wound discharge taken for culture and antibiotics sensitivity test.

RESULTS AND DISCUSSION:

Of 202 patients studied 92 were operated as routine basis and 110 in emergency operation theater. 38 cases developed wound infection (18.81%). Of 32 infected cases, 29 were of those operated on emergency basis (76.31%), whereas only 9 (23.68%) cases operated on routine basis developed wound infection. Various research workers have reported the wound infection incidences in their literature between 9.2% to 55.6%. In the present series the incidence was 18.81%. It depends upon many factors related to hospital and patient. Patient operated on emergency basis had

higher (76.31%) infection rate than those operated as planned surgery (23.68%). Our patients in this medical college mostly belongs to lower socioeconomic group which are anemic and malnourished leading to low resistance to infection. They are most likely to be infectious especially when operated on emergency basis without proper preoperative investigation and preparations. Youngest patient was 9 years old and the oldest was 78 years. Higher incidence was found in the older patients followed by middle aged then children. Adults and adolescent were least infected similar features were found by Khan et al (1985). Higher incidence was found in exploratory laparotomy (mostly emergency exploratory laparotomy) similar were the findings of Christoph Justinger et al (2009) followed by prostatectomy. Contributory factors may be malnutrition and age. 56 (27.7%) patients of present series were anemic and 62% of them developed wound infection. 3 out of 4 patients having remote infective foci developed post-operative wound infection. Wound of 20 out of 25 cases of uncontrolled diabetes became infected. Fuyuki Hirashima et al (2012) similar as findings of Males (16.9%) were infected more frequently than females (12.9%). These observations are similar to those of Krizek and Davis (1966). The commonest pathogen involved was *Staphylococcus aureus* followed by *E.coli* and *Klebsiella*. 15% of them had mixed infections. Agarwal (1972), Kumar and Mittal (1976) and S.F. Mishriki et al (1990) reported similar findings.

The antibiotics sensitivity pattern in the present series showed some special features. Single antibiotic uses relatively ineffective in most infections. This may be due to wide spread indiscriminate use of antibiotics at all levels. Combined antibiotic therapy like cephalosporin class, aminoglycosides class like amikacin, gentamicin etc. with nitroimidazole class (metronidazole) has positive results in treating gram positive as well as gram negative infection in our study.

SUMMARY AND CONCLUSION:

Post-operative wound infection continues to be significant in surgical wards. Patients operated on emergency basis and those with anemia, malnutrition and neoplastic disease are more likely to get their wound infected. Most of the isolated micro-organisms are resistant to routinely used antibiotics, so use of antibiotics should be judicious and should be based on hospital based data till the

patient's culture reports are available.

REFERENCES:

1. Christina MB, Ochsner GM Jr, Lord A, Senkowski CK. Improving Surgical Site Infections: Using National Surgical Quality Improvement Program Data to Institute Surgical Care Improvement Project Protocols in Improving Surgical Outcomes. *American College of Surgeons* 210 (2010) 737747.
2. Fry DE. A Systems Approach to the Prevention of Surgical Infections. *Surgical Clinics of North America* 89 (2009) 521537
3. Anderson DJ. Surgical site infections. *Infectious Diseases Clinics of North America*. 25 (2011) 135-153 Salkind AR. Antibiotic prophylaxis to prevent surgical site infections.
4. American Family Physician. 83 (2011) 585-590 de Lissovoy G, Fraeman K, et al. Surgical site infection: incidence and impact on hospital utilization and treatment costs.
5. American Journal of Infection Control 37 (2009) 387397 Spear M. Risk factors for surgical site infections. *Plastic Surgical Nursing* 28 (2008) 201-204 Weigelt JA. Surgical site infections: Causative pathogens and associated outcomes.
7. American Journal of Infection Control 38 (2010) 112-120 Alexander JW. Updated recommendations for control of surgical site infections. 253 (2011) 1082-1093 Owens CD.
8. Surgical Site Infections: epidemiology, microbiology and prevention. *Journal of Hospital Infections* 70 (2008) 3-10 10. Patel NP, Malangoni MA. Antimicrobial agents for surgical infections. *Surgical Clinics of North America*. 89 (2009) 327-347.
9. Gottrup F. Prevention of surgical-wound infections. *New England Journal of Medicine* 342 (2000) 202-204
10. National Nosocomial Infections Surveillance (NNIS) System Report. *American Journal of Infection Control* 32 (2004) 470485 13.
11. Matthaiou DK, Peppas G, Falagas ME. Meta-analysis of Surgical Infections. *Infectious Diseases Clinics of North America* 23 (2009) 405-430
12. Giacometti A, Cirioni O, Schimizzi AM, et al. Epidemiology and microbiology of surgical wound infections. *Journal of Clinical Microbiology* 38 (2000) 918-922
13. Kao LS. Peri-operative glyceemic control regimens for preventing surgical site infections. *Cochrane Database Syst Review*. January 2009 Cd006806
14. Metchock BG, Nolte FS, Wallace RJ Jr. *Mycobacterium*. In Murray PR, Baron EJ, Pfaller MA, et al., eds. *Manual of Clinical Microbiology*. ASM Press, 1999
15. Engelhardt E, Feldmann R, Skaria A, et al. Postoperative infection with *Mycobacterium chelonae*. *Hautarzt* 47 (1996) 863-866
16. Overdyk FJ. Bridging the gap to reduce surgical site infections. *Anesthesia & Analgesia* 111 (2010) 836-837
17. Mangram AJ, Horan TC, Pearson ML, et al. Guidelines for prevention of surgical site infections. *Infection Control Hospital Epidemiology*. (1999) 250-278 20. Myat RT, Langley S. Changes in infection control practice to reduce MRSA infection. *British Journal of Nursing*, London. 12 (2003) 675
19. Horan TC, Gaynes RP, Martone WJ, et al. Definitions of nosocomial surgical site infections; 1992: a modification of CDC definitions of surgical wound infections. *Infection Control Hospital Epidemiology*. 13 (1992) 606-608
20. Centre for Disease Control. <http://www.cdc.gov/H>
21. Christopher Justinger, MD et al *Surgery*, Volume 146, Issue 3, September 2009, Page 468
22. Fuyuki hirasima MD et al *Journal of Vascular Surgery* Volume 56, Issue 2, August 2012, Pages 396-402.e4
23. S.F. Mishriki, et al *Journal of Hospital Infection* Volume 16, Issue 3, October 1990, Pages 223-230
24. Agarwal S.L. 1972 *J.Surg.* 34: 314-320
25. Cohen L.S. et al 1964. *Ann. Surg.* 159: 321-314
26. Kumar and mittal K.K. 1976 *Ind. J. Surg.* 38: 16-20
27. Khan et al: 1985 *Ind. j. Surg* , 6: 383-386