A CLINICAL STUDY ON POSTOPERATIVE WOUND INFECTIONS IN RIMS, KADAPA- 3 YEARS EXPERIENCE

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ABSTRACT

BACKGROUND

Surgical wound infections continue to consume a considerable portion of healthcare finance. Even though, the complete elimination of wound infections is not possible, a reduction of the observed wound infection rate to a minimum level could have marked benefits in terms of both patient comfort and resources used.[1]

MATERIALS AND METHODS

The clinical study of postoperative wound infection conducted at RIMS General Hospital, Kadapa, during the period of 2013 to 2016.

RESULTS

In this clinical study, 150 patients were clinically diagnosed of having SSIs out of 925 patients who underwent major surgeries in Department of General Surgery, an incidence of 16.2%. Dirty type of surgeries have high incidence of SSI at 63.6%. SSI occurred more in patients who didn't receive preoperative antibiotic within 2 hrs. prior to surgery, i.e. 32.1%. Most of the patients presented with discharge through the wound (81.3%). The most common type of discharge was purulent (52.5%).

CONCLUSION

Preoperative preparation <24 hrs., preoperative bathing and preoperative antibiotic within 2 hrs. before surgery help in reducing surgical site infections. Early diagnosis of SSI and prompt management by isolation of organism causing SSI using sensitive antibiotics and regular dressing help in reducing morbidity for the patients.

KEYWORDS

Surgical Site Infections, Deep Space Infection, Purulent Discharge, E. Coli, Coagulase-Negative Staphylococcus, Linezolid.

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BACKGROUND

Surgical wound infections continue to consume a considerable portion of healthcare finance. Even though, the complete elimination of wound infections is not possible, a reduction of the observed wound infection rate to a minimum level could have marked benefits in terms of both patient comfort and resources used.[1] With the introduction of antibiotic therapy in the middle of the 20th century, a new adjunctive method to treat and prevent surgical infections was fostered. The present generation of surgeons has seen increasing numbers of serious infections related to a complex combination of factors including the performance of more complicated and longer operations, an increase in the number of geriatric patients with accompanying chronic or debilitating diseases and increased use of diagnostic and treatment modalities that cause greater bacterial exposures.[1,2] The modern surgeon should have the knowledge of the appropriate use of aseptic and antiseptic technique, proper use of prophylactic and therapeutic antibiotics.[1]

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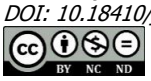

AIMS AND OBJECTIVES

1. To study the incidence of surgical site infections in various surgeries.
2. To study relation of emergency and elective surgery to postoperative wound infection.
3. To study efficacy of different modes of preoperative preparation on postoperative wound infection.
4. To study distribution of postoperative wound infection among different surgeries based on bacterial contamination such as clean, clean contaminated, contaminated and dirty.
5. To study role of antibiotic prophylaxis in surgical site infections.
6. To study management of surgical site infections.
7. To study most common organisms encountered and their sensitivity and resistance to antibiotics in postoperative wound infection.

Inclusion Criteria

Only those cases, which are operated in Department of General Surgery, RIMS General Hospital, Kadapa, are taken into consideration.

Exclusion Criteria

1. Wound site, which is previously infected.
2. Minor wound area infection/stitch abscess/surrounding inflammation without microorganisms.
3. Vaginal operations, burns and circumcision.
4. Patients with associated diseases such as diabetes, HIV, steroid medications.

RESULTS

In this study, 150 patients were clinically diagnosed of having SSI out of 925 patients who underwent major surgeries in Department of General Surgery, an incidence of 16.2%. In the present series, out of 525 elective surgeries, SSI were diagnosed in 72 cases, an incidence of 13.7% and of 420 emergency surgeries, 78 cases had SSI, an incidence of 18.5%.

Figure 1. Infected Appendectomy Wound

Figure 2. Infected Cholecystectomy Wound

Type of Surgery	Number of Surgeries	SSI Diagnosed	Percentage
Elective	525	72	13.7%
Emergency	420	78	18.5%
Total	**925**	**150**	**16.2%**
Table 1			

Out of 390 patients who underwent clean surgery, 44 patients developed SSI; out of 400 clean contaminated surgeries, 60 patients had SSI; out of 77 contaminated surgeries, 10 developed SSI and out of 58 dirty surgeries, 36 patients developed SSI (63%). 530 cases received preoperative antibiotics within 2 hrs. before surgery, out of which 23 developed SSI (4.3%). Out of 150 patients who developed SSIs, 44 cases (29.3%) had taken preoperative bath. Maximum patient's hair removal was done by shaving (80%). Most of the affected cases were prepared >24 hrs. before surgery, i.e. 88 cases (58.7%). In this study, majority of patients belonged to the age group between 31-40 years. Youngest patient was 11 years old and oldest was 84 years. Out of 150 cases, 78 cases were male and 72 female cases. The percentage in present series is 52% for males and 48% for females.

Surgery Type	Number of Surgeries	SSI Diagnosed	Percentage
Clean	390	44	11.3%
Clean contaminated	400	60	15%
Contaminated	77	10	12.9%
Dirty	58	36	63.6%
Table 2			

Out of 150 patients who developed SSIs, 77 cases (51.3%) had deep space infection, 49 cases (32.6%) had superficial infection and 24 cases (16%) had organ space infection.

Figure 3. Infection in Dirty Wound

Type of Infection	Number of Cases	Percentage
Superficial infection	49	32.6%
Deep space infection	77	51.3%
Organ space infection	24	16%
Table 3		

The most common presentation in present series is discharge. Total 122 cases presented with discharge through the wound. The most common type of discharge was 'purulent' type with percentage of 52.5%. Other symptoms are fever and erythema. The most common microorganism encountered in the present series is E. coli, i.e. in 48 cases (32%). The least common microorganism is proteus (2%). The most sensitive antibiotic in present series is amikacin. Other common sensitive antibiotics are gentamycin,

levofloxacin, vancomycin, cefoperazone + sulbactam, piperacillin + tazobactam. The most resistant antibiotics are ceftriaxone. Other common resistant antibiotics are amoxicillin + clavulanic acid, cefotaxime, cotrimoxazole.

DISCUSSION

Surgical wound infections continue to consume a considerable portion of healthcare finance. The early Egyptians used some primitive remedies such as the use of pulverised malachite or honey in wounds may have been extremely effective as noted by the modern day experiments of Majno. The Greeks and Romans employed a variety of remedies that included the use of red wine, poultices of herbs and other compounds that may have had antibacterial properties.

The clinical study on surgical site infections was conducted in RIMS General Hospital, Kadapa. This is cross-sectional type of study. After fulfilling the inclusion and exclusion criteria all the cases, which were operated in the time period were followed. In the present study, the incidence of surgical site infection is 16.2%.[6] Bacteriological studies have shown that SSIs are universal and the aetiological agents involved may vary with geographical location, between various procedures, between surgeons, from hospital to hospital or even in different wards of the same hospital.[3] In the present study, patients were divided in six age groups. The rate of SSI was highest (24%) in age group 31-40 years.[4] In our study, more surgical site infections occurred in cases that were operated in emergency.[5]

The wound infection rate for clean, clean contaminated, contaminated and dirty cases is 11.3%, 15%, 12.9% and 63.6% (Figure 3), respectively.[6,7] The reason for this increasing rate of wound infection is probably increasing contamination during surgery.[8] Most common organism encountered in postoperative wound infection in this study is E. coli, the second common organism in this study is Klebsiella.[9] The least common organism was Acinetobacter and Proteus. In our study, the common sensitive antibiotics are amikacin, gentamycin, levofloxacin, cefoperazone + sulbactam, piperacillin + tazobactam, vancomycin. The common resistant antibiotics are ceftriaxone, amoxicillin + clavulanic acid, cefotaxime, cotrimoxazole.[10]

CONCLUSION

In this study, out of 150 patients were clinically diagnosed of having SSIs in 925 operations, an incidence of 16.2%. Emergency surgeries accounted for more SSI. Dirty type of surgeries has high incidence of SSI. SSI occurred more in patients who didn't receive preoperative antibiotic within 2 hrs. prior to surgery. Most of the affected cases were prepared >24 hrs. before surgery. Majority of the patients belonged to age group of 31-40 years. The wound infection was more common in males. The commonest surgery for SSIs is hollow viscous perforation followed by appendectomy (Figure 1). The commonest type of surgical site infection is deep space infection. Most of the patients presented with discharge through the wound. The most common type of discharge was purulent. E. coli was the most common microorganism found on culture. More sensitive antibiotics are amikacin, gentamycin, levofloxacin, cefoperazone + sulbactam, piperacillin + tazobactam, vancomycin. The resistant antibiotics are ceftriaxone, amoxicillin + clavulanic acid, cefotaxime, cotrimoxazole. Preoperative preparation <24 hrs., preoperative bathing and preoperative antibiotic within 2 hrs. before surgery help in reducing surgical site infections. Early diagnosis of SSI and prompt management by isolation of organism causing SSI, using sensitive antibiotics and regular dressing help in reducing morbidity for the patients.

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