



## CLINICAL STUDY ON SURGICAL SITE INFECTIONS IN ABDOMINAL SURGERIES

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**ABSTRACT**

**Introduction :** Surgical operations or a component of a surgical intervention might cause infections. Even while it is impossible to completely eradicate wound infections, the patient will clearly benefit from a decrease in wound infection rates to an acceptable minimum level. The introduction of more modern treatment approaches has made surgical site infection (SSI) both efficiently preventable and controllable. Studying the prevalence of surgical site infections in both elective and urgent surgeries during the postoperative period is the goal. **Methods :** A total number of 150 cases were involved in the prospective observational study conducted in Department of General surgery at our hospital that is scheduled for abdominal surgeries. Including all abdominal surgeries both elective and emergency. Preoperative findings which include skin preparation, type and time of preparation, preoperative antibiotics use were regarded. Operative findings which include, type of incision, wound contamination. **Results :** In this study the rate of SSI in abdominal surgery was done in 150 patients, among which surgical site infections were clinically diagnosed in 26 patients with an occurrence of 17% out of 150 cases, 5 cases with SSI were diagnosed among 79 elective surgeries and 21 cases with SSI were diagnosed among 71 emergency surgeries. . Incidence of SSI among males is 12.5%; whereas of infection among females is 22.8% majority of patients belonged to age group between 51-60years. Out of 150 cases, 33 underwent clean surgery among which 2 developed SSI, out of 63 clean contaminated cases 6 developed SSI, out of 19 cases 7 developed SSI out of 38 cases 12 developed SSI. **Conclusion :** Emergency surgeries accounted for more SSI i.e. 29%. Dirty type of surgeries has high incidence of SSI at 32.43%. Majority of the patients belonged to age group of 51-60 years which account for 29%. The wound infection was more common in females (22.5%) than males (12.8%). 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 :****Introduction**

Surgical operations or a component of a surgical intervention might cause infections. It is linked to higher morbidity, death, and higher medical care costs (1). Even while it is impossible to completely eradicate wound infections, the patient will clearly benefit from a decrease in wound infection rates to an acceptable minimum level (2). The introduction of more modern treatment approaches has made surgical site infection (SSI) both efficiently preventable and controllable (3)

It is shocking to see that SSI still causes morbidity and mortality among hospitalized patients despite recent advancements. The development of bacteria resistant to antibiotics and the rise in procedures on older patients with a range of chronic, incapacitating, or immune-compromising underlying conditions may be to blame. An infected wound can lengthen hospital stays by 5 to 20 days, which raises medical costs (4). By completing a research at US acute care hospitals, the National Nosocomial Infection Surveillance System (NNIS) revealed the trends of nosocomial infections in 1970. According to this data, Surgical Site Infections (SSI's), which account for 14% to 16% of hospitalized patients, are the most often reported nosocomial infections (5). Studying the prevalence of surgical site infections in both elective and urgent surgeries during the postoperative period is the goal.

**Aim of the study :** To study incidence of surgical site infection in elective and emergency surgeries in postoperative period.

**Objectives :**

- To study the Incidence of surgical site infections in various abdominal surgeries in different age groups & both sexes.
- To study incidence of surgical site infection in elective and emergency surgeries in postoperative abdominal wound.
- To study distribution of postoperative wound infection among different surgeries based on bacterial contamination such as clean, clean contaminated, contaminated and dirty.

**Methods**

A total number of 150 cases were involved in the prospective

observational study conducted in Department of General surgery at our hospital that is scheduled for abdominal surgeries.

**INCLUSION CRITERIA:** All Abdominal surgeries both elective and emergency surgeries.

**EXCLUSION CRITERIA:** Concurrent abdominal wall infection

The data of patients posted for abdominal surgeries in terms of date of admission, history, clinical features of wound infection, type of surgery, emergency or elective, preoperative preparation and postoperative management was done till the patient is discharged from hospital, and then followed up the patient on OPD basis for any signs of wound infection. In history, presenting complaints, duration, associated diseases, coexistent infections at a remote body site, personal history including diet, smoking, and alcoholism were noted. Preoperative findings which include skin preparation, type and time of preparation, preoperative antibiotics use were regarded. Operative findings which include, type of incision, wound contamination.

**Results**

In this study the rate of SSI in abdominal surgery was done in 150 patients, among which surgical site infections were clinically diagnosed in 26 patients with an occurrence of 17%.

**TABLE 1: INCIDENCE OF ABDOMINAL SURGICAL SITE INFECTIONS.**

Total no. of cases	No. of infected cases	Percentage
150	26	17%

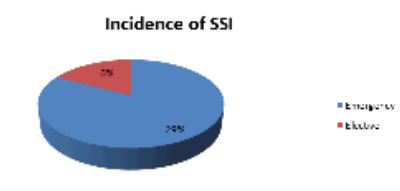
**SSI IN RELATION TO TYPE OF SURGERY:**

In the present study, out of 150 cases, 5 cases with SSI were diagnosed among 79 elective surgeries with an incidence of 6% and 21 cases with SSI were diagnosed among 71 emergency surgeries with an incidence of 29% as shown in the table 2.

**TABLE2: INCIDENCE IN RELATION TO TYPE OF OPERATION**

Type of surgery	No. of surgery	SSI diagnosed	Percentage
Elective	79	5	6%
Emergency	71	21	29%
Total	150	26	

**GRAPH 1: PIE DIAGRAM SHOWING INCIDENCE OF SSI IN ELECTIVE AND EMERGENCY SURGERY**

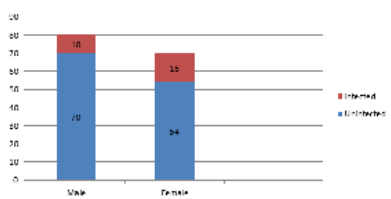


**INCIDENCE IN RELATION TO SEX :** Out of 150 cases 80 cases were male and 70 cases were female. Incidence of SSI among males is 12.5%; whereas of infection among females is 22.8%

**TABLE3: INCIDENCE IN RELATION TO SEX**

Gender	No. of cases	No. of patients uninfected	No. of patients infected at SSI	Percentage
Male	80	70	10	12.5%
Female	70	54	16	22.8%

**GRAPH 2: SHOWING INCIDENCE OF SSI IN RELATION TO SEX**



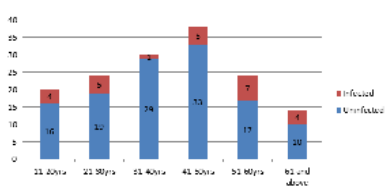
**INCIDENCE IN RELATION TO AGE GROUP**

In the study majority of patients belonged to age group between 51-60 years youngest patient age was 10 yrs. old and oldest were 79 years.

**Table 4: showing age wise distribution**

Age	No. of cases	Normal patients	Infected cases	Percentage
11-20	20	16	4	20%
21-30	24	19	5	20.8%
31-40	30	29	1	3.33%
41-50	38	33	5	13.1%
51-60	24	17	7	29%
61 and above	14	10	4	28.5%
Total	150	124	26	

**GRAPH 3: SHOWING AGE-WISE DISTRIBUTION OF SSI**

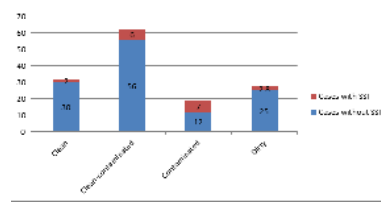


**INCIDENCE BASED ON TYPE OF SURGERY:** out of 150 cases, 33 underwent clean surgery among which 2 developed SSI, out of 63 clean contaminated cases 6 developed SSI, out of 19 cases 7 developed SSI out of 38 cases 12 developed SSI.

**TABLE 5: TYPE OF SURGERY**

Type of surgery	No. of cases	No. of uninfected cases	No. of infected cases	Percentage
Clean	32	30	2	6.25%
Clean-contaminated	62	56	6	9.67%
Contaminated	19	12	7	36.84%
Dirty	37	25	12	32.43%
Total	150	124	26	

**GRAPH 4: SHOWING SSI BASED ON TYPE OF SURGERY**



**Diagnosis wise distribution:** In the present study the most common diagnosis of affected cases was hollow viscus perforation. The total number of cases are 29, in which infected cases are 11 giving percentage of 37.5%.

**Discussion**

The Clinical Study on Surgical Site Infections was conducted in our hospital. This is prospective study. After fulfilling the inclusion and exclusion criteria all the cases which were operated in the time period were followed.

**Incidence:**

The incidence of SSI in present study was 17.3%. similarly, Patel Sachin Met al (6) reported an incidence of 16% in their study and Vikrant Negi et al (7) reported an incidence of 17.8% study and Anand Saxena et al (8) incidence is 14.3%. All these studies correlate with the present study with regard to incidence of SSI is given in (Table -11). All these studies we are comparing are Indian studies, so the results are similar. Bacteriological studies have shown that SSIs are universal and the etiological 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.

**Table 11: showing incidence of SSI**

S.no	Year of study	Authors	% of SSI
1.	2012	Patel Sachin M et al (100)	16%
2.	2013	Vikrant Negi et al	17.8%
3.	2015	Anand Saxena et al (104)	14.3%
4.	2022	Our study	17%

**Incidence by age:** In the present study SSI was reported to be highest (29%) in age group 51-60 years. Patel Sachin M. et al (6) reported an incidence of 32% in age group 55 years which well correlates with the present study. Incidence among older age group is due to poor immune response, existing Co-morbidities and reduced compliance with treatment. In our study more surgical site infections were found to be more in emergency i.e. 29% in comparison to elective surgeries i.e. 6%. Patel Sachin M et al (6) and Anand Saxena et al (8) reported 24.14% and 16.48% respectively in their studies [Table :12]. The incidence of SSI during emergency surgery is much higher than elective surgery in our study contrary to other studies.

**Table 12: Table showing incidence of SSI in relation to elective and emergency**

S.no	Authors	Study year	Emergency SSI	Elective SSI
1.	Patel Sachin Met al	2012	24.1%	12.68%
2.	Anand Saxena et al	2013	16.4%	8%
3.	Our study	2022	29%	6%

In the present study, the wound infection rate for clean-6%, clean contaminated 9.5%, contaminated-36%, and dirty-31.6%, in the present study. The reason for this increasing rate of wound infection was probably due to increased contamination.

Curse and Foord 103, shows that the wound infection rate for clean, clean contaminated, contaminated and dirty cases is 1.87%, 8.9%, 21.5% and 38.3% respectively. Anand Saxena et al 104., shows that the wound infection rate for clean, clean, contaminated, contaminated and dirty cases-12.1%, 15.2%, 13.04% and 75% respectively. Patel Sachin Met al (6), shows that wound infection rate for clean, clean contaminated contaminated and dirty cases is 3%, 11.4%, 20% and 40.9% respectively.

**Conclusion**

In this study out of 150 patients, clinically diagnosed of having SSIs in

26 operations, an incidence of 17%. Emergency surgeries accounted for more SSI i.e. 29%. Dirty type of surgeries has high incidence of SSI at 32.43%. Majority of the patients belonged to age group of 51-60 years which account for 29%. The wound infection was more common in females (22.5%) than males (12.8%). 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.

### Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

### REFERENCES

1. Robert G Sawyer and Timothy L Pruett. Wound infection. Surgical Clinics of North America 1994; 74: 519-536.
2. Courtney M. Townsend. 'Sabiston Textbook of Surgery'. Chapter 12. In Courtney M. Townsend, JR, Philip S. Barie, Surgical Infections and Antibiotics use. 19th edition, Vol. 1, W.B. Saunders, 2012: 240-280.
3. David L Dunn. History repeats itself. Arch Surgery 1994; 129:21-23
4. Text book of microbiology, 9th edition, R. Ananthanarayan, C K Jayaram Panikar, orient Longman Chapter 1, "Historical introduction", 1-6.
5. Horan TC, Gaynes RP, Martone WJ. CDC definitions of surgical site infection 1992: A modification of CDC definitions of surgical wound infections. Am J Infect Control 1992; 20: 271-274.
6. Patel Sachin et al. Surgical Site Infections: Incidence And Risk Factors In A Tertiary Care Hospital, Western India. National Journal of Community Medicine Vol 3 Issue 2 April-June 2012; 193-6.
7. Vikrant Negi et al. Bacteriological Profile of Surgical Site Infections and Their Antibigram: A Study From Resource Constrained Rural Setting of Uttarakhand State, India National Journal of Laboratory Medicine. 2015 Oct, Vol 4(4): 31-35
8. Anand Saxena et al.: Surgical site Infection among postoperative patients of tertiary care centre in Central India - A prospective study: Asian Journal of Biomedical and Pharmaceutical Sciences 3(17) 2013, 41-44.