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Original Research

Assessment of clinical profile of patients with surgical site infection following emergency laparotomy

Tushar Mohan

Assistant Professor, Department of General Surgery, TS Misra medical College, Lucknow, Uttar Pradesh, India

ABSTRACT:

Background:SSIs are the most frequent nosocomial infection among surgical patients. The present study was conducted to assessclinical profile of patients with surgical site infection following emergency laparotomy. **Materials & Methods:**156 patients who underwent emergency laparotomies of both genders were selected. Parameters such as wound class: clean, clean-contaminated, contaminated and dirty/infected; and ASA index classified into ASA II, III and IV/V, duration of operation, length of hospital stay etc. were recorded. **Results:** Out of 156 patients, males were 86 and females were 70. SSI was present in 42 and absent in 114 patients. Type of SSI was superficial in 28 and deep in 14. Surgical wound was clean in 114, clean- contaminated in 5, contaminated in 11 and dirty in 26 cases. Operative time was <2hours in 90 and >2hours in 66 patients. Hospital stay was <4 days in 94 and >4days in 62 patients. The difference was significant (P< 0.05). **Conclusion:** Authors found that potentially modifiable independent risk factors for SSI after abdominal surgery include open surgical approach, contaminated wound class and emergency surgery.

Key words: Surgical site infections,clean- contaminated, emergency laparotomy.

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Corresponding author: Tushar Mohan, Assistant Professor, Department of General Surgery, TS Misra medical College, Lucknow, Uttar Pradesh, India

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INTRODUCTION

Surgical site infections (SSIs) are defined as infections that damage the incision or deep tissue at the operation site and can develop up to 30 days following surgery (or up to a year after surgery in patients receiving implants).[1] SSIs are the most frequent nosocomial infection among surgical patients, and research has indicated that they are the main contributor to adverse events associated to the operation.[2]

Studies have shown that individuals with SSI require longer hospital stays and incur more costs when compared to non-infected patients undergoing comparable surgical procedures.[3] SSIs continue to pose a serious clinical challenge despite advancements in prevention because they are linked to high rates of morbidity and mortality and place a heavy burden on healthcare resources.[4]The incidence of SSIs can be as high as 20% depending on the surgical procedure, the surveillance criteria used, and the quality of data collection. In many SSIs, the responsible pathogens originate from the patient's endogenous flora.[5]

Multiple risk factors for SSI have been identified can be compiled within three major determinants of SSI: bacterial factors, localwound factors, and patient factors.Bacterial factors - virulence and bacterial load in the surgical site.[6]Local wound factors such as the invasiveness of an operation, specific surgeon's practices and surgical technique and patient-related factors such as age, immune suppression, steroids, malignancy, obesity, perioperative transfusions, cigarette smoking, diabetes, other pre-existing illness, and malnutrition.[7]The present study was conducted to assessclinical profile of patients with surgical site infection following emergency laparotomy.

MATERIALS & METHODS

The present study consisted of 156 patients who underwent emergency laparotomiesof both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Parameters such as wound class: clean, clean-contaminated, contaminated and dirty/infected; and ASA index classified into ASA II, III and IV/V, duration of operation, length of hospital stay etc. were recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 156		
Gender	**Male**	**Female**
Number	86	70

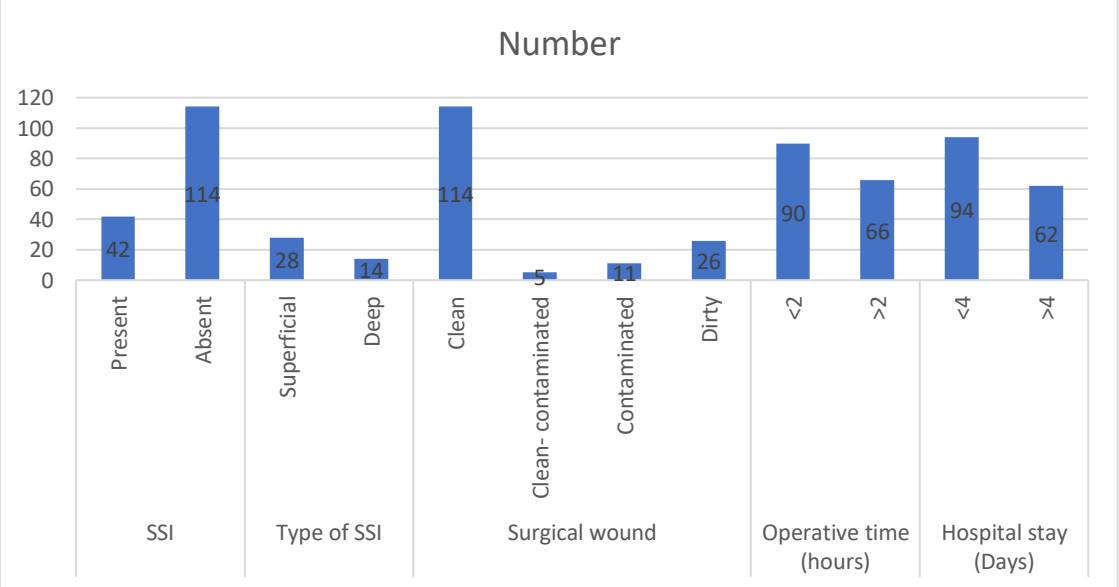
Table I shows that out of 156 patients, males were 86 and females were70.

Table II Assessment of parameters

Parameters	Variables	Number	P value
SSI	Present	42	0.01
	Absent	114	
Type of SSI	Superficial	28	0.02
	Deep	14	
Surgical wound	Clean	114	0.04
	Clean- contaminated	5	
	Contaminated	11	
	Dirty	26	
Operative time (hours)	<2	90	0.03
	>2	66	
Hospital stay (Days)	<4	94	0.05
	>4	62	

Table II, graph I show that SSI was present in 42 and absent in 114 patients. Type of SSI was superficial in 28 and deep in 14. Surgical wound was clean in 114, clean- contaminated in 5, contaminated in 11 and dirty in 26 cases. Operative time was <2hoursin 90 and >2hoursin 66 patients. Hospital stay was <4 daysin 94 and >4 daysin 62patients. The difference was significant (P< 0.05).

Graph I Assessment of parameters



DISCUSSION

Surgical site preparation is animportant measure in preventing SSI.[8]It has been recommended to use chlorhexidine showers, the importance of good patient preparation, aseptic practice, and attention to surgical technique, particularlyin patients who have been in the hospital for a few daysand in those in whom an SSI will cause significant morbidity(cardiac, vascular, and prosthetic procedures).[9,10]Skinpreparation of the surgical site is done with a germicidalantiseptic such as tincture of iodine, povidone-iodine, orchlorhexidine.[11,12]The present study was conducted to assessclinical profile of patients with surgical site infection following emergency laparotomy.

We found that out of 156 patients, males were 86 and females were 70. Aroub Alkaaki et al[13] evaluated risk factors associated with SSI in patients undergoing abdominal surgery. A total of 337 patients were included. The overall incidence of SSI was 16.3% (55/337); 5 patients (9%) had deep infections, and 25 (45%) had combined superficial and deep infections. The incidence of SSI in open versus laparoscopic operations was 35% versus 4%. The bacteria most commonly isolated were extended-spectrum β-lactamase-producing Escherichia coli, followed by Enterococcus species. Only 23% of cultured bacteria were sensitive to the prophylactic antibiotic given preoperatively. The independent predictors of SSI were open surgical approach, emergency operation, longed operation duration and male sex.

We observed that SSI was present in 42 and absent in 114 patients. The type of SSI was superficial in 28 and deep in 14. Saroj Golia et al[14]assessed the incidence of surgical site infection, risk factors associated with it and the antibiotic susceptibility pattern of the pathogens. The overall surgical site infection rate in our hospital during the study period is 4.3%. Staphylococcus aureus (S. aureus) was the most common isolate obtained followed by Escherichia coli (E. coli) and coagulase-negative Staphylococcus (CONS). Other organisms isolated were Pseudomonas aeruginosa, Enterococcus, Klebsiella pneumoniae and Proteus mirabilis. Among them, 88.8% of S. aureus and 50% of CONS isolates were methicillin-resistant strains. 80% of E. coli and 100% of Klebsiella species were ESBL producers. 50% of Enterococci were Vancomycin resistant.

We found that surgical wound was clean in 114, clean- contaminated in 5, contaminated in 11 and dirty in 26 cases. Operative time was <2hours in 90 and >2hours in 66 patients. Hospital stay was <4 days in 94 and >4 days in 62 patients.Satyanarayana V. et al[15] determined the incidence of SSI in the abdominal surgeries and to identify risk factors associated with the development of SSI over a period of 18 months. The overall surgical wound infection rate was 13.7%. The infection rate was more with emergency surgery (25.2%) when compared to elective surgery (7.6%). The surgical site infection rate increased as the risk index score increased from 0 to 3. SSI was more with early operative and post-operative prophylaxis. There was definite correlation between the wound infection rate and the timing of prophylaxis. They concluded that a pre-existing medical illness, prolonged operating time, the wound class, emergency surgeries and wound contamination strongly predispose to wound infection.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that potentially modifiable independent risk factors for SSI after abdominal surgery include open surgical approach, contaminated wound class and emergency surgery.

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