ORIGINAL RESEARCH PAPER

General Surgery

STUDY OF SURGICAL SITE INFECTION FOLLOWING LAPAROTOMIES IN MMC

KEY WORDS:

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ABSTRACT

Surgical site infection (SSI) is the second most common complication following any surgical intervention.it occurs mainly due to bacterial entry with high virulence, change in wound microenvironment and altered host defense mechanisms. SS is the second common hospital acquired infection. It plays an important role in increasing the mortality and mortality of the patients and turns out to be a headache for the operating surgeon.

AIMS AND OBJECTIVES :

1. Determining the incidence of surgical site infection in surgical wards on Abdominal surgeries in MMC.
2. Identifying the common pathogen causing surgical site infection and sensitivity to antibiotics in MMC.

METHODOLOGY :

- age group between 15-55 years were included
- Both male and female were included
- 100 patients who underwent laparatomy from march 2019 to april 2019 were included in the study.
- Both elective and emergency cases were included.

RESULTS : Out of 100 cases, 26 cases developed surgical site infection, out of which 20 were emergency laparotomies. The most common organism causing surgical site infection was found to be klebsiella .

CONCLUSION : Surgical Site Infection were more common in emergency cases than elective cases and klebsiella is the most common organism.

INTRODUCTION :

Surgical site infection (SSI) is the second most common complication following any surgical intervention. It is mainly due to bacterial entry with high virulence, change in wound micro environment and altered host defense mechanisms.

SSI is the second common hospital acquired infection. Surgical site infection plays an important burden on both the surgeon and the patients.

After development of Anaesthesia by Morton in 1846, many number of surgeries were done. Because of high rate of infection and mortality surgical field did not progress well. After introducing antisepsis in Medicine practise by Ignaz Philipp Semmelweiss followed by Joseph Lister, the decrease in wound infection rate and death rate in operative patients was seen. The contribution of Pasteur, Koch and Holmes in disease causing infection and establishment of operating room and environment by Halsted proved the antiseptic technique is the most efficient way in preventing the surgical site infection.

With development of antibiotic therapy in 20th century, there is a reduction in surgical site infection and useful in prevention. But elimination of ssi is almost theoretical even today. Proper documentation and identifying the cause of ssi will help us to progress in this matter. Hence this study have been undertaken.

MATERIALS AND METHOD :

- 100 patients of age between 15 – 55 years of both the sexes , who underwent laparotomy from March 2019 To April 2019 were included in the study.
- All the patients were followed until they are discharged.
- Daily dressing were changed
- The operative wounds site was looked for the Signs/Symptoms of inflammation and presence of micro organisms (infection) in the site
- Patients examined also in the OPD after discharge.
- When surgical site infection was clinically raised, the area around the operative wound was Cleaned with 70% ethyl alcohol. The discharge was collected from the depth of the surgical site.
- Wound using 2 sterile cotton swabs, the material was aspirated in a container which is sterile or the swab is send whenever the previous one is failed .

TRANSPORT :

All the swab/pus collected was transported earlier to the lab for Next step of processing. The culture media is incubated at 37° C temperature.

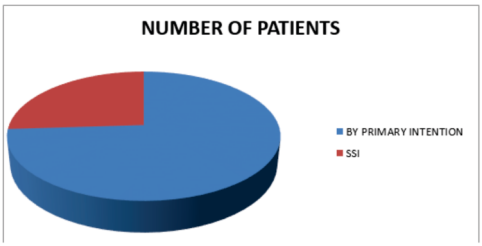
METHODS :

The collected samples pus material was processed as:

a. Identification of bacteria under direct microscopy by gram stained smear of collected materials.
b. Culture media were used to Inoculation of the samples for aerobic micro organisms
c. Initial identification of micro organisms
d. Culture and Antibiotic sensitivity

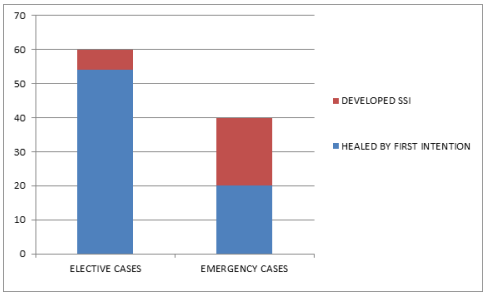
RESULTS :

Total no. of patients studied	100
Surgical wound healed by 1st intention	74
Surgical site infection present clinically	26
Incidence of surgical site infection	26%



Nature of surgery:
Out of 100 patients ,60 underwent elective procedures and 40 underwent emergency procedures.

60 Elective cases – 6 cases infected
40 Emergency cases – 20 cases infected



INCIDENCE OF SSI IN ELECTIVE CASES : 10%

INCIDENCE OF SSI IN EMERGENCY CASES : 50%

This implies 5 fold increase in the incidence of SSI in emergency Situation.

3.Type of Surgery performed in elective situation :

s. no.	Type of Surgery performed in elective situation	CASES	SSI
1.	Sub total /total gastrectomies	9	0
2.	Whipples procedure	1	1
3.	Cholecystectomy with CBD exploration	15	1
4.	Appendicectomy	20	2
5.	Surgeries involving small bowel	10	1
6.	Abdomino perineal resection	5	1

S. No	Name of the organism	Infected cases	Percentage %
1	Klebsiella sp.	10	38.5%
2	E.coli	8	30.7%
3	Pseudomonas	4	15.3%
4	Staphylococcus	3	11.5%
5	Actinobacter	1	3%

4.Type of Surgery performed in emergency situation :

S. No.	Type of Surgery performed in EMERGENCY situation	CASES	SSI
	• Appendicectomy	20	7
	• Perforated peritonitis	10	8
	• Intestinal obstruction	10	5

5.BACTERIOLOGICAL EVALUATION :
S. No Name of the organism Infected cases Percentage %
1Klebsiella sp. 1038.5%2E.coli 830.7%3Pseudomonas 415.3%4Staphylococcus 311.5%5Actinobacter 13%

Surgical site infection is one of the major challenges for the surgical team. In our study, we tried to identify **the incidence of surgical site infection in a cohort of patients without any co morbid illness and within the reproductive age group**. Also tried to identify the most common pathogens responsible.

Our study surgical site infection was done in the patient who underwent operation in **Institute of General Surgery, MadrasMedical college**. Totally we **studied 100 patients of abdominal surgeries out of which 60 caseselective and 40 were emergency.**

Out of which **26 surgical site infection** were confirmed by microbiological study, so the net infection rate **was 26%.**

Only **6 were infected** in 60 elective cases compared to **20 infected** in 40 emergency cases.The infection rate was higher in emergency cases when compared to elective cases which is due to delay in presentation to our hospital or taken treatment elsewhere and brought the patient to our hospital after established infection (Peritonitis) and sepsis.

In our study total number of elective cases studied were 60 ,highest is appendicectomy (20 cases) in which there was **2 surgical site infection.** 2 cases of surgical site infection were noted in hepatobiliary tract surgeries .

Total no of gastric and duodenal surgeries were 9 from which about 1 case was infected. In cases of large bowel surgeries ,studies conducted in 5cases showed infection in 1case .The infection rate was higher in gastric ,duodenal and intestinal surgeries .

In our study ,total no of emergency cases were 40 , among which 20 cases were appendicitis in which 7 cases were infected , 10 cases were perforative peritonitis in which 8 cases were infected,10 cases of intestinal obstruction ,5 were infected.Infection rate was higher in case of perforative peritoinits with infection rate of 80 %.The rate of infection was encountered in emergency cases due to delay in presentation to our hospital or taken treatment elsewhere and brought the patient to our hospital after established infection (Peritonitis) and few of them developed prenal hypotension.

Bacteriological study revealed that that out of 26 infected cases Klebseilla was most commonly isolated contributing 38.5%followed by E.coli 30.7%, Pseudomonas15.3, Staphylococcus 11.5% and Actinobacter 3% .

CONCLUSION :
Incidence of surgical site infection in our study is 26%. In our study among 26 infected cases, *Klebseilla* species were most commonly isolated. Next in order are *E.coli*, , *Pseudomonas* and then comes *Staphylococcus* and *acinetobacter.* Change in bacterial gram positive organisms to gram negative organisms due to frequent use of antibiotics.

The best way to decrease wound infection is by vigorous surveillance and reporting of wound infection rate.

Several methods is used to Prevent surgical site infection.
- good preoperative preparation of the operative site,
- good infection-control practice while performing surgery ,
- adherence to principles of preventive antibiotic therapy,
- modified surgical technique can decrease the risk of hematoma or seroma formation,
- reducing tissue injury and foreign bodies.

Enhanced oxygenation, better core body temperature control and vigorous blood sugar control in the surgical patients are new areas that have potential to even further reduce the rate of surgical site infection.

Although surgical wound infections cannot be totally eradicated a decrease in the number of infection to a low level can have enormous benefits by reducing post operative disease rate and death rate and wastage of hospital resources.

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