ORIGINAL RESEARCH PAPER

General Surgery

ASSESSING THE SUPERFICIAL SURGICAL SITE INFECTIONS IN LAPAROTOMY INCISIONS IN COIMBATORE MEDICAL COLLEGE & HOSPITAL

KEY WORDS:

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ABSTRACT

AIM: To compare the incidence of superficial surgical site infections and factors affecting it, in elective and emergency laparotomies done in a tertiary care hospital.

MATERIALS AND METHODS: 100 patients who underwent midline laparotomy (50 patients each in elective and emergency laparotomy groups) were followed up for a period of one month for the incidence of surgical site infections and effect of surgical risk factors were analysed.

RESULTS: The incidence of superficial surgical site infections was 24% with a higher incidence in those who underwent emergency laparotomy and also who underwent prolonged surgeries. Higher incidence of superficial SSI was noticed in those with contaminated and dirty laparatomy.

INTRODUCTION:

Post operative surgical site infections after laparatomies increases both surgical morbidity and mortality and as a result increases the duration of hospital stay of the patients and also the overall medical expense. In this study, we studied the role of factors like the duration of surgery and level of microbial contamination in predicting the incidence of superficial surgical site infection.

OBJECTIVE:

- To compare the incidence of superficial surgical site infections following elective and emergency laparotomy
- To study the significance of factors like duration of surgery and level of microbial contamination in predicting the incidence of superficial surgical site infections.

MATERIALS AND METHODS:

This was a prospective observational study conducted at a tertiary care hospital at Coimbatore Medical College & Hospital over a period of three months from August 2019 to October2019. Here 100 patients who underwent midline laparatomies in the age group of 18 – 60years for a duration of three months was incorporated into the study.

INCLUSION CRITERIA:

1. Age group 18 – 60 years
2. Those willing for the study.

EXCLUSION CRITERIA:

1. Those not willing for the study
2. Those that developed deep space infections and fistulas.
3. Those that expired before the completion of the study.

In this study, from among the 100 subjects, 50 patients that underwent laparotomy as an elective procedure and the other 50 that underwent laparotomy as an emergency were chosen. The patients were examined postoperatively on day 1, day7, day 15 and day30 for the presence of superficial surgical site infections. Surgical site infection was diagnosed based on criteria laid down by Centre for disease control (CDC). Data was recorded in a questionnaire was analysed for effect of factors like duration of surgery and level of microbial contamination.

RESULTS:

In our study, the patients were divided into two groups, one that underwent laparatomy as an emergency and the other that underwent laparatomy on an elective basis. Each group was separated based on sex group and the age group of the patients. The mean age was 44 in those that underwent emergency procedure with males being the predominant sex and in the elective group, the mean age was 51 and males being the more common sex.

The incidence of SSI in our study was 24% (24 out of 100 patients). Out of this 24 patients, 15 was from the emergency group (30%) and 9 from the elective group (18%).

TABLE 1: Showing the incidence of SSI in both the study groups.

Study Group	Developed Ssi	Not Develop Ssi	Percentage
Elective Group	9	41	18%
Emergency Group	15	35	30%

Table 2: Showing the incidence of SSI according to the duration of surgery

	Emergency		Elective		All Cases	
Operating Time	Upto 2 hours	More than 2 hours	Upto 2 hours	More than 2 hours	Upto 2 hours	More than 2 hours
SSI +	5(22.72%)	10(35.71%)	3 (9.67%)	6 (31.57%)	8 (15.09%)	16 (34.04%)
SSI -	22	28	31	19	53	47

The incidence of SSI was much higher in those laparatomies that exceeded more than 2 hours (34.04%) as compared to those that lasted less than 2 hours (15.09%) both in emergency and elective cases.

Table 3: Incidence of surgical site infections according to level of contamination.

Level of microbial contamination	Incidence of superficial surgical site infection
Clean	2 (8.33%)
Clean contaminated	5 (20.83%)
Contaminated	7 (29.17%)
Dirty	10 (41.67%)
Total	24

Incidense of Surgical Site Infections increased with incre asing contamination of the wound. The dirty wound showed maximum incidence of surgical site infections.

DISCUSSION:

Surgical Site infections is an age old problem that has been

documented since 4000 – 5000 years ago.[1]

An understanding of the infection and its cause came in the nineteenth century with the advent of microscope as microbes were seen. The introduction of antibiotics showed a change in the dictum of management of surgical site infections and the morbidity and mortality has slowed down drastically. Surgical site infections, according to Center for Disease Control and prevention (CDC)[2] have divided them into superficial incisional, deep incisional and organ space infections. In this study we have included only the superficial type of infectioin. Superficial incisional SSI is the infection involving only skin and subcutaneous tissue of the incision. It is characterized by:

- Occuring within 30 days after operation
- Involves only t he skin and subcutaneous tissue
- Includes at least one of the following: (a) Purulent drainage is present (b) organisms are isolated from the fluid/tissue of the superficial incision. (c) at least one sign of inflammation (eg. Pain or tenderness, induration, erythema, local warmth of the wound) is present. (d) the wound is deliberately opened by the surgeon. (e) the surgeon or clinician declares the wound infected.

In our study, the rate of SSI was 24% of the total study population. Worldwide, the surgical site infection (SSI) have varied from 0.5% to 15%, with Indian studies showing consistently higher rates ranging from 23% to 38%. It could be due to prevalence of more contaminated wounds in our country or practise of lesser sterile techniques due to overload of patients. The SSI incidence was higher in those group that underwent emergency laparatomy (30%) as compared to those that underwent elective laparatomy (18%). Study by Kumar A et al[3] showed that SSI was associated with 17.7% of emergency surgeries as compared to 12.5% of elective surgeries. The incidence of SSI was much higher in emergency laparatomy in our study as compared to study by Kumar et al. Hang cheng et al[4] in his study concluded that extended operative times across wide range of procedures almost doubled the risk of surgical site infections. In our study, the incidence of SSI was more than double in prolonged laparatomies (34.04%) (more than 2 hours duration) as compared to less prolonged laparatomies (15.09%).

Study by Lilani SP et al[5] demonstrated a statistically significant increase in surgical site infections between clean and clean contaminated surgeries in general surgical procedures. In our study showed higher incidence of surgical site infections in contaminated (29.17%) and dirty (41.67%) laparatomy wounds. In overseas, Ortega Et Al[6] demonstrated decreased incidence of superficial surgical site infection across clean (1.8%) clean contaminated (3.9%) contaminated (4.8%) and dirty(5.2%) wound classifications.

CONCLUSION:

Emergency laparatomies had higher incidence of surgical site infections as compared to elective laparatomies. It could be attributed to well prepared patients both nutritionally and preoperative preparations. Those laparatomies that exceeded 2 hours (prolonged cases) had much higher incidence as compared to those laparatomies that were of shorter duration. In Dirty and contaminated cases the incidence was much more higher, attributing the level of microbial infection as one of the single most important pred ictor in surgical site infections. Use of proper preoperative antibiotics and stringent aseptic precautions can be imple mented to overcome this factor.

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