

Analysis of abdominal surgical site infections in a tertiary care centre, Government Rajaji hospital Madurai.

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Abstract: Surgical site infections (SSIs) are the most important post operative complication. SSIs are infection of tissues, organs or spaces exposed by surgeon during performance of an invasive procedure. SSIs are classified as being Incisional or Organ/space. In spite of advances in infection control practice and availability of antimicrobial prophylaxis, SSIs remains a substantial cause of morbidity and mortality among hospitalized patients. Therefore the main aim of this study is to determine the risk factors and the incidence. Different risk factors include age, sex, type of wound, prophylactic antibiotics, operation type, time of shaving, pre operative bed stay. A total of 200 patients were included in this study and various factors are studied during the period May 2011-May 2012.

The incidence is found to be higher than the previous literatures and particularly in large and small bowel surgery.

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I. Introduction

Before the mid 19th century, surgical patients commonly developed post operative Fever followed by purulent discharge from their incisions, overwhelming sepsis and often death. In 1846, Ignaz Semmelweis reduced the mortality in puerperal fever from 10% to 2% by advocating the practice of rinsing of hands in chlorine water before examining next patient. 1860s was the time when Joseph Lister introduced the principle of antiseptics. Among surgical patients, SSI were the most common nosocomial infection accounting for 38%. Of all such infections two thirds were confined to the incision and one third involved organ or spaces. In a patient who had an appendectomy and subsequently developed an intra abdominal abscess and not draining through the incision, the infection would be reported as an organ/space SSI at the Intra abdominal site. The surgical wound classification system includes four categories: I- Clean, II- Clean Contaminated, III- Contaminated, IV- Dirty or Infected. Organisms associated with SSIs vary with the type of procedures and anatomic location of operation. Staph aureus, Enterococcus, and E.coli are the most frequent organisms isolated from SSIs.

II. Materials and Methods

This prospective study was carried out on patients of Department of general Surgery at Government Rajaji Hospital, Madurai, Tamil Nadu from May 2011-May 2012. A total 200 adult subjects (both male and females) of aged ≥ 18 , years were for in this study.

Study design: A prospective open label observational study

Study place: This was a tertiary care teaching hospital based study done in Department of General Surgery at Government Rajaji Hospital, Madurai, Tamil Nadu.

Study duration: 1 year.

Study size: A total 200 adult subjects (both male and females) of aged ≥ 18 , years were for in this study.

Procedure methodology:

After written informed consent was obtained, a well-designed questionnaire was used to collect the data of the recruited patients retrospectively.

The dependent variable in this study was abdominal surgical site infection, defined as redness, swelling, pain, temperature above 38°C, during the 30 days after operation. The independent variables were: age, sex, site operated, time of shaving, administration of prophylactic antibiotics in j.cefotaxime 1gm 1/2hr before surgery only elective surgeries, type of surgical operation, duration of operation, duration of preoperative bed stay and accompanying comorbid conditions.

III. Results

Of the 200 patients who had undergone abdominal surgery 40 cases(20%) were suffering from SSI in this study. No infection were observed in the other 160 cases (80%). The wound types were, clean wound 32 cases (16%), clean contaminated wound 49 cases (24.5%) contaminated wound in 101 cases (50.5%) Dirty infected in 18 cases (9%).

I found no significant correlation between SSI incidence and sex, time of shaving. However, SSI correlation with duration of operation, duration of pre operating bed stay, electiveness of surgery, increases age, type of wound and type of surgery, prophylactic antibiotic administration and accompanying comorbid condition like diabetes.

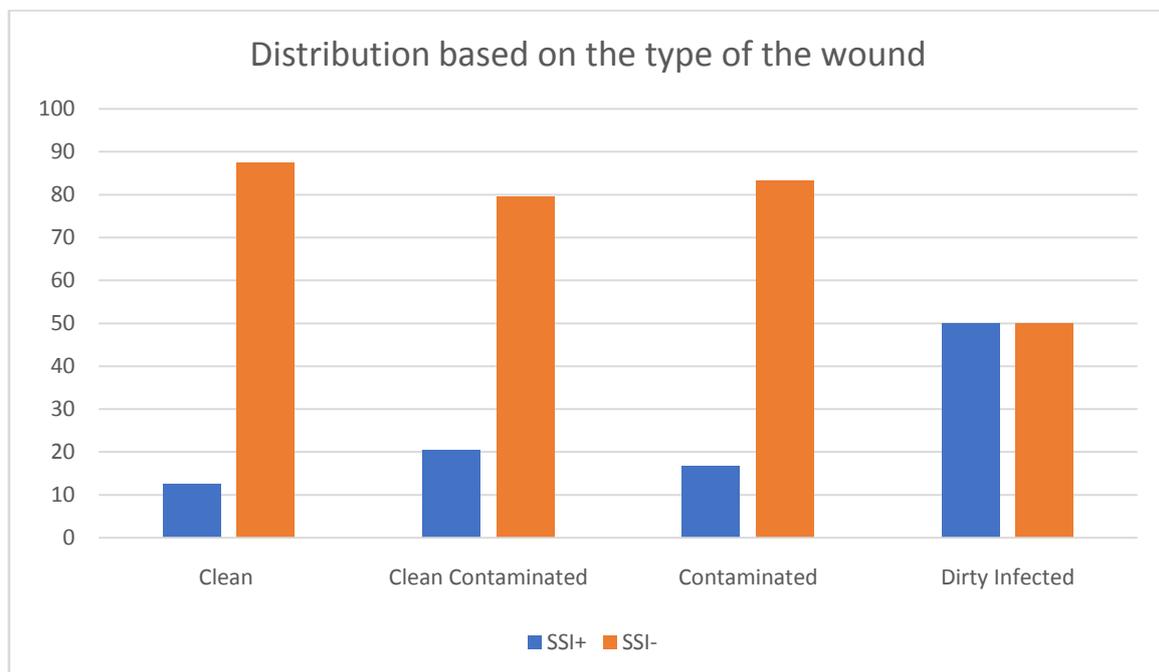
1.SSI and Type of operation :

Particularly high SSI observed in colon cancer surgery about 50% compared with other studies, which was lower incidence (58.3%) (1). Next high incidence observed in cases of small bowel surgery 40% compared with previous study 20% (1), followed by stomach cancer surgery 23.08% compared with other studies 20% (4) 39-7% (1),Which was comparable to other studies. Lower incidence observed in the cases of laparoscopic surgery 4.55% compared with previous study incidence 0 to 4%.

In the cases of emergency surgery high incidence observed in ileal perforation closure surgery about 75% compared with other studies 60%(1) followed by large bowel perforation closure surgery about 66.66% compared with previous study66.7%(1).

2.SSI and Type of wound :

According to the type of wound SSI observed in clean cases 12.5% (previous study 4.6% (1)), clean contaminated 20.4% (previous study4.2%), contaminated wound 16.83% (previous study 31.3%), dirty wound50% (previous study 8.9%). This findings shows increase bacterial loadmore prone for SSI. This finding also correlated with current literature andprevious studies (1,5).

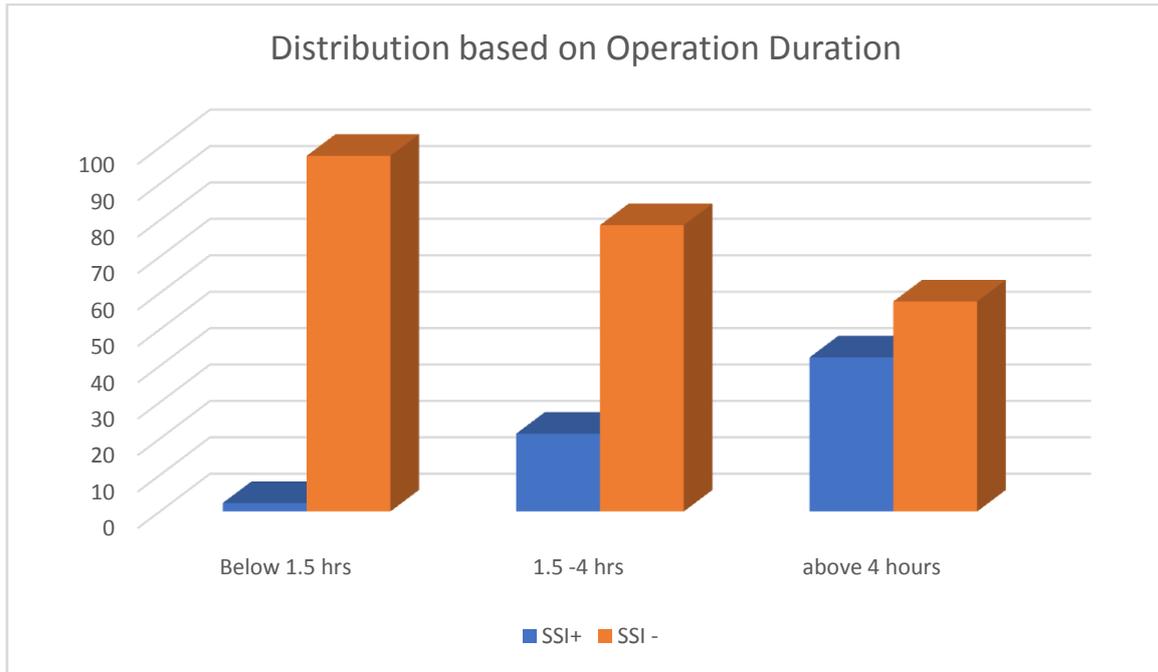


3.SSI and Electiveness of surgery:

According to the type of operation elective surgery had 13.51%(14.9% (1)). Emergency had 28.09% (18.1%(1)). So emergency surgery hadhigher incidence of SSI. This finding also correlated with current literatureand previous studies (1,5).

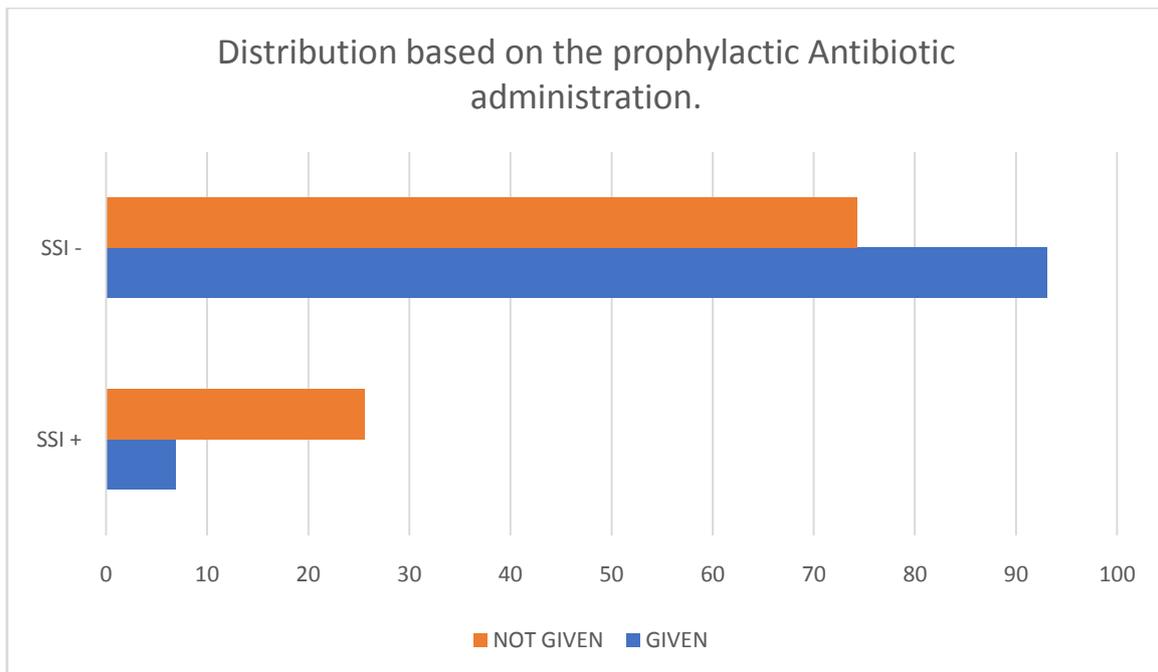
4.SSI and Duration of surgery:

Duration of surgery more than 4 hours SSI incidence about 42.31%, below 1.5 hours incidence about 2.33%. So prolonged duration of surgeryhad higher incidence of SSI. This finding supported by current literature andprevious studies (1,10).



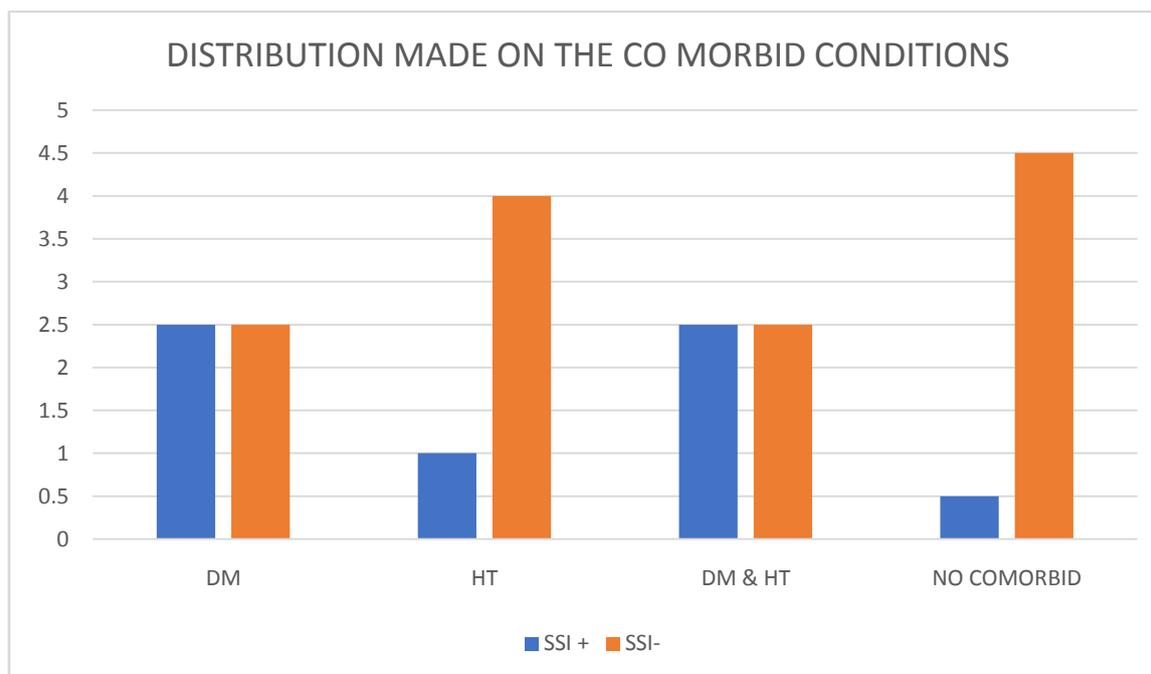
5.SSI and prophylactic Antibiotic Administration:

In my study prophylactic antibiotic administration cases SSI incidence about 6.94%, those without antibiotic cases SSI incidence about 25.64% .This finding supported by current literature and previous studies (1,10).



6.SSI and Co morbid conditions:

Diabetic patients had higher incidence of SSI about 50% but hypertensive patients had 20%. So only DM risk factor for SSI not HT. Other such factors quoted in the literature as the conditions of the operating theater, personal hygiene, immunological disorders, smoking, techniques of surgery, BMI, the surgeon’s expertise, duration of surgical scrub, preoperative skin preparation, poor hemostasis, failure to obliterate dead space, tissue trauma, and inadequate sterilization of instruments, which were not included in this study might be considered as confounding factors. (P = 0.0001)



IV. Conclusion

Considering the relatively higher rate of SSI in this study 20%, 14-16% in the other studies (1,4) especially in cases such as colon cancers and small bowel surgery, where the rate is considerably higher. In general, we should try our best to reduce the average operation duration to less than 4 hours and the average preoperative bed stay to less than 15 days, to treat the comorbidity condition preoperatively and finally the administration of prophylactic antibiotics.

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