

To study the rate of surgical site infections in relation to various surgical variables.

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Abstract

Background: Surgical site infections (SSI's) is one of the most common complications dealt with after surgery and depends on a wide variety of variables like the patient as well as the surgery related factors. The main concern is that due to emerging resistance among the micro-organisms we face difficulty in treating these infections. **Aim:** The study aimed to find the relationship between various surgical variables with the risk of development of surgical site infections. **Design:** Prospective study. **Material and Methods:** The study was carried out between January 2021 to January 2022 in the Post-Graduate Department of Surgery, Acharya Shri Chander College of Medical Sciences (ASCOMS), Jammu. Data were collected from 100 surgeries where there was a development of surgical site infections. The relevant history and investigation were performed after taking informed consent from the patient. **Results:** In our study 100 cases of SSI's were studied and it was found that 59 cases had a longitudinal incision, 86 cases had abdominal surgery and 68 cases were having a drain placed after surgery. 4-6 inches long incision was the most common length to be infected having 40 such cases while surgeries lasting for more than 1 hour had the most incidence of SSI's with 60 such cases. **Conclusion:** In conclusion, we found that surgical site infections are common after surgery with longitudinal incisions and the abdomen being the most common site. The duration of surgery and placement of drain has a direct impact on SSI, on the other hand, the smaller incisions are least probable to be infected and the medium ones are the most infected.

Keywords: Surgical, site, infection, incisions

INTRODUCTION:

Surgical site infection is one of the most common complication dealt with after surgery and depends on a wide variety of variables like the patient as well as the surgery related factors. The main concern is that due to emerging resistance among the micro-organisms we face difficulty in treating these infections. They are the most common health care associated infections with an incidence of 5-10%. The matter of concern is that most of them are preventable. [1] Depending on the site they can be classified as superficial, deep, or organ-space infections. Gram-positive organisms are reported to be the most common organisms isolated from these infections. There are a wide variety of risk factors other than the microbiological including age, sex, weight, comorbidities, immunity status among others. These infections not only pose a danger to the well-being of an individual but also place undue pressure on the healthcare systems and healthcare professionals. Hence, understanding and preventing these infections is pivotal in the development of the surgical field as a whole. Although a lot of data regarding SSI's are available but still the understanding of these relationships is lacking and this study tries to fill that void.

MATERIALS AND METHODS:

The study was carried out between January 2021 to January 2022 in the Post-Graduate Department of Surgery, Acharya Shri Chander College of Medical Sciences (ASCOMS), Jammu. Data were collected from 100 surgeries where there was a development of surgical site infections was reported. The relevant history and investigation were performed after taking informed consent from the patient. The data regarding the site, length, type of incision along with duration of that operation was collected. The wounds were serially examined and after diagnosing the infection clinically the swabs for confirmation were also collected. The data was collected and compiled using Microsoft Excel.

RESULTS:

Among the 100 cases of SSI's recorded in this study, most of them occurred with the longitudinal incision while the lowest occurrence was with the curvilinear incision. The data has been shown in table 1.

Table 1 Relation of SSI's with the type of incision used in the surgery.

Type of Incision	No.of cases
Longitudinal	59
Transverse	16
Oblique	22
Curvilinear	3
Total	100

The incidence of these infections was also recorded based on the site of the surgery. Abdominal operations being the most common to be performed in the surgery department comprised 86 such infections which were followed by 8 reported cases in the inguinoscrotal region while limbs and head & neck showed 4 and 2 such cases respectively. The data is shown in table 2.

Table 2 Relation of SSI's with the site of surgery.

Site of operation	No. of cases
Abdomen	86
Head and Neck	2
Limbs	4
Inguino-scrotal	8
Total	100

Length of incision data indicated that the incidence of SSI's was the most with 4-6 inch long incisions comprising 40 cases which were followed by 6-8 inch long incisions with reported cases 32 meanwhile, the rest of 28 cases were seen in 2-4 inch long incision. The data is shown in table 3.

Table 3 Relation of SSI's with the length of the incision.

Length of Incision	No. of cases
2-4 inch	28
4-6 inch	40
6-8 inch	32
Total	100

The data regarding the duration of these surgeries and whether the drain was kept after the surgery was also collected and it was found that the development of SSI's was most common in surgeries that took more than one hour while 68 cases of SSI's happened in the surgeries where the drain was kept with the maximum occurrence in those where it was kept for 3 days. The data regarding the duration of surgery and the presence and absence of drain is given in table 4 and table 5 respectively.

Table 4 Relation of SSI's with the duration of surgery.

Duration of Surgery	No. of cases
<40 minutes	14
40-60 minutes	26
>1 hour	60
Total	100

Duration of keeping drain(in days)	No. of patients
2	6
3	37
4	19
5	4
6	2
Drain not placed	32
Total	100

Table 5
Relation of SSI's
with the
placement of
drain after

surgery.

DISCUSSION

Surgical site infections are defined as infections that occur after surgery in the first 30 days. These infections not only brought increased suffering for the already suffering patient but also increase the burden on the already stressed health care system worldwide. The economic impact of these infections and their share in nosocomial infections has been studied intensively in many studies and all of them provide the same conclusion that they increase the economic burden on both the health care provider as well as the patient. [2-4] Many studies have been conducted in different settings that measure the incidence of SSI but the data regarding the relation of the site of infection have been meager we have tried to measure the incidence among different incision types whereas, other studies have measured the incidence in a different setting like post hysterectomy incisions or after mastectomy. [5-6] We found in our study that longitudinal incisions are most commonly associated with these infections, but one reason could also be that it is the most widely used incision in general surgery. On the other hand, abdominal surgeries were found to be the most associated with SSI reason being the variety of microbial flora that is found in our gastrointestinal tract. Some other studies have also reported that increased duration of surgery and drain placement after surgery have a bearing on the outcome and development of the surgery and their results are in concordance with what we have encountered in our study. [7-8] The length of surgery shows that medium-sized 4-6 inch long incisions had the most incidence followed closely by the 6-8 inch incision, one fact that it establishes is those small incisions are less prone to infections probably due to lesser healing time and better care of the surgical site. Many studies have been conducted with varied results some even on equine species to help establish the result of incision length. [9-10] The issue of surgical site infections is very large and is faced even by the most well-equipped centers as well. Although, we tried to explore every aspect of the surgery-related factors but still the study group was limited, and its results can't be extrapolated on a very large scale.

CONCLUSION

In conclusion, we found that surgical site infections are common after surgery with longitudinal incisions and the abdomen being the most common site. The duration of surgery and placement of drain has a direct impact on SSI's, on the other hand, the smaller incisions are least probable to be infected and medium ones are the most commonly infected.

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