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ORIGINAL ARTICLE

How to prevent Surgical Site Infection (SSI) in a Tertiary Care Hospital, Sialkot

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ABSTRACT

Objectives: This study was conducted, to evaluate the prevention of Surgical Site Infection (SSI) in Imran Idrees Teaching Hospital, Sialkot.

Methodology: A Prospective, observational, multicenter cross-sectional study was conducted at Imran Idrees Teaching Hospital, Sialkot/ Tertiary Care Hospital. Total 250 patients aged from 5 to 80 years were included in this study. A questionnaire was prepared. The consented surgeons were interviewed and data was collected accordingly.

Results: By evaluating the data it was found that 63.2 percent of patients were female and 37.8 percent were male. Aged below 18 years were 29.6 percent, 18 to 40 years were 33.6 percent and above 40 years were 36.8 percent. Some of the patients (34.8) were diabetic which is a main cause of surgical site infection. Mostly prewash, nail cleaning and antisepsis of hands with brush was performed before surgeries. Alcohol rub method was used in 63% cases and aqueous scrub was used in almost 37% of cases. As the duration of time for scrub is a main factor in minimizing and maximizing the surgical site infection, in most of the cases surgical scrub time was more than 5 minutes. Antiseptic agent used for the antisepsis process was alcohol in 24% of cases, iodine in 49% of cases, chlorohexidine was used in 15% of cases and hexachlorphene was used in 12% of cases. Mostly surgeons were familiar with the methods and protocol of antisepsis. Mostly surgical site infection acquires due to ignorance by the patients.

Conclusion: This concludes proper hand antisepsis with a suitable antiseptic agent can prevent surgical site infection. Mostly hand antisepsis is followed by the surgeons while the surgical site infection is caused by the poor hygiene of patients.

Keywords;

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Introduction

Surgical hand antisepsis refers to the removal of all of the infective material and organisms from hands by using any chemical or physical method to prevent any kind of infection. Surgical site infection is the infection usually seen after the surgical procedure due to the poor sterilization standards.

Surgeons usually carry out the surgical hand antisepsis before surgical procedures to combat microorganisms and reduce growth of microorganisms.Hand Antisepsis

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done by Surgeons reduces the risk of SSI in patients.

SSI results in slowing down wound healing, increased stays at hospitals and increased use of antibiotics, unnecessary pain and in extreme cases death.

SSI remains a significant problem to both patients and healthcare system. Proper care and quality measures tend to promote improvement in Surgical asepsis.

Surgeons usually perform antisepsis by alcohol rub or aqueous scrub method using different antiseptic agents such as chlorhexidine, alcohol, iodine, hexachloro-phene e.t.c.

The ideal characteristics identified by CDC are

1. Fast acting
2. Persistent
3. Commulative
4. Having broad spectrum of activity
5. Safe to use.[1]

The recommended time duration for surgical hand antisepsis is 2 to 5 minutes. ACORN 2012 recommends the first scrub of the day should last 5 minutes while subsequent scrubs should last about 3 minutes.[2]

Ethics approval:

Before Initiating the study ethical approval was necessary. It was approved from the Institutional Review Board and Ethical Committee of Sialkot Medical College, Sialkot.

Methodology:

The study design was Prospective, Descriptive and Open labeled survey conducted using specifically design questionnaire. It was conducted in Imran Idrees teaching Hospital, Allama Iqbal hospital Sialkot. The study included data of 250 patients and 8 surgeons .To reach at a specific conclusion that how surgical hand antisepsis plays role in prevention of surgical site infection In Sialkot at a tertiary care hospital was completed.

Inclusion Criteria; Patients of either sex with age 05 to 80 years.

Exclusion Criteria; Patients suffering from Cancer.

According to this criterion eight (8) surgeons were selected. A brief questionnaire was designed specifically for the study. It included demographical details, patient's name, age, sex, objective findings, diabetes status of patient, subjective findings, type of antiseptic agent used, prewash of hands, severity of surgical site infection etc. The data was collected and details were noted on the questionnaire. The patients and surgeons were interviewed, the details of procedures were noted down. On the completion of study, questionnaires were analyzed to obtain the result.

Results:

All of the collected data was transferred to Microsoft Excel/ SPSS and their results were finalized with the help of Pie Charts and graphs.

The various parameters analyzed are as follows:

Gender Distribution:

Total 250 patients where 158 (63.2%) were female while 92 (36.8%) patients were male as shown in Fig.1

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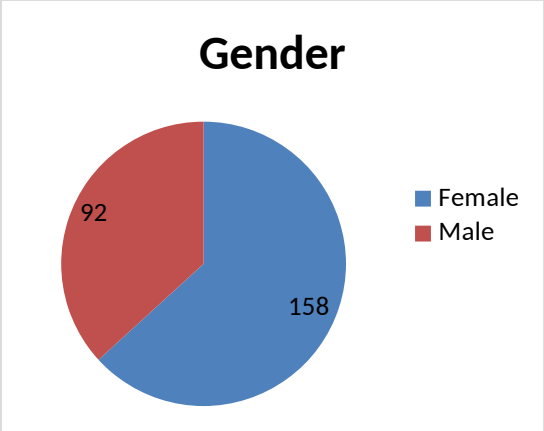

Figure 1; Gender Distribution: Total no of Patient were = 250. In these there were 158 female patients and 92 were male patients.

Age Distribution: Out of 250 patients 74 (29.6%) were below 18 years, 84 (33.6%) were between 18 years to 40 years and 92 (36.8%) were above 40 years of age as shown in Fig. 2.

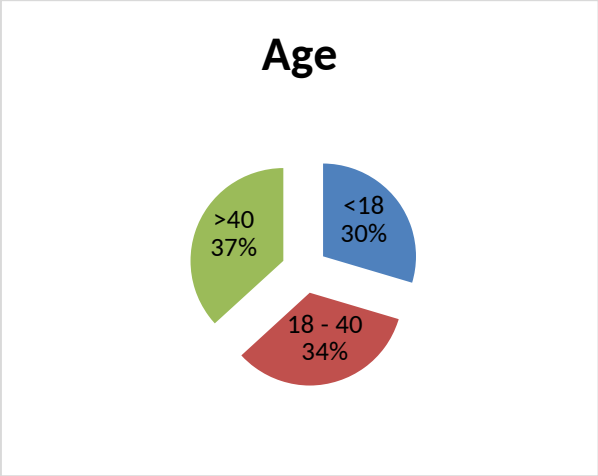

Figure 2;

Was the patient diabetic?

As diabetes has a major role in surgical site infection so it was necessary to consider this point in the research.

Out of 250 patients 87 (34.8%) were diabetic as shown in Fig. 3.

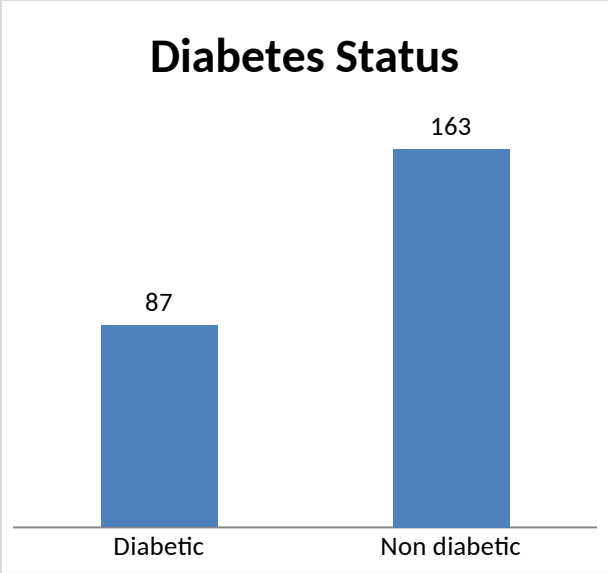

Figure 3;

Hand Antisepsis information:

Out of 250 cases 74 were performed without prewash and 176 were performed after prewash.

Out of 250 cases in 93 (37%) cases aqueous scrub method was used for antisepsis and in 157 (63%) alcohol rub antisepsis was performed.

In 153 cases nail cleaning with a pick was performed and 97 were done without nail cleaning.

In 219 cases hand antisepsis with brush was done before surgery and 31 cases were performed without hand antisepsis with brush the data is compiled in Fig. 4 and Fig.5

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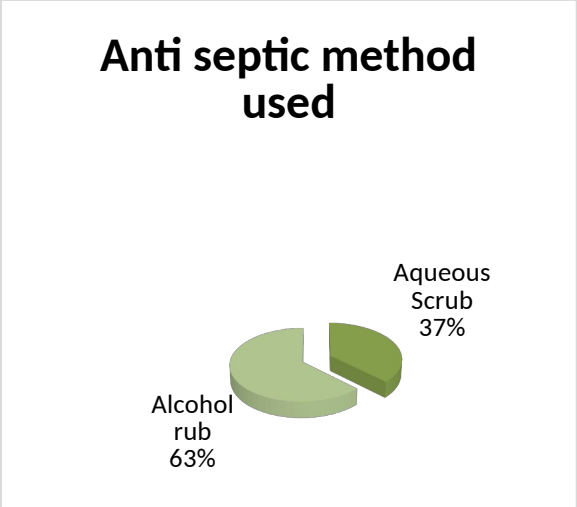

Figure 4;

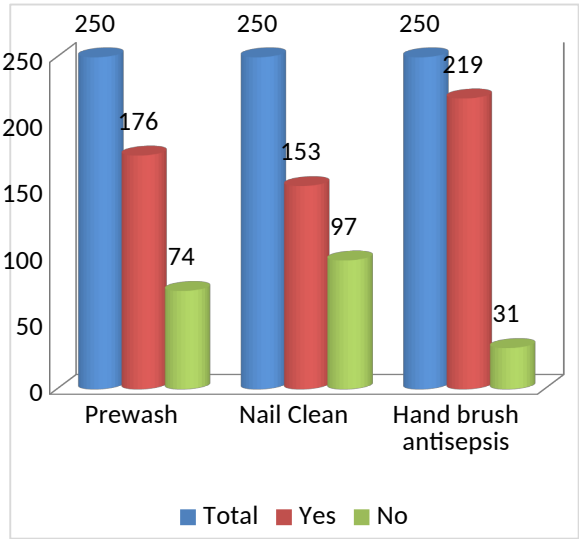

Figure 5;

Scrub Duration and type of antiseptic agent used: The duration of scrub plays an important role for surgical site infection. The agent used for antisepsis also plays a key role in this procedure because a strong antiseptic agent will provide more protection from surgical site infection. It cannot be ignored that certain infective organisms show resistance to specific antiseptic agent.

During our data collection in 46 cases scrub lasted for less than 2 minutes, in 73 cases scrub lasted between 2 to 5 minutes and in 131 cases scrub duration was more than 5 minutes.

Out of 250 cases alcohol was used as an antiseptic agent in 59 cases, iodine was used in 122 cases, chlorohexane was used in 38 cases while hexachlorophene was used in 31 cases for antiseptic purpose. As shown in Fig. 6.

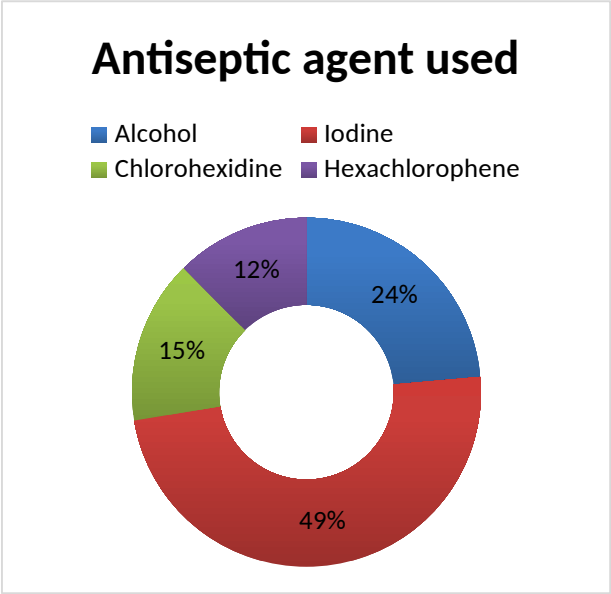

Figure 6;

AFPP recommendation for surgical hand antisepsis:

The Association for Perioperative Practice (AFPP) describes some basic parameters for hand antisepsis prior to the surgical procedures which reduces the chances of getting surgical site infection as washing should encompass all areas of hands and arms up to the elbows etc.

In our data when asked from the surgeons we came to know that out of 250 cases 193 cases were done by following the AFPP antisepsis regime while 57 were performed without considering it.

In some cases specific additional measures were also taken to ensure SSI and the prevention from diseases like hepatitis B & C patient where double layer of surgical

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gloves was used by the surgeons. OT was also seized for few days after antisepsis to prevent transmission of hepatitis. Out of 250 cases in 29 cases additional measures were taken as shown in Fig. 7.

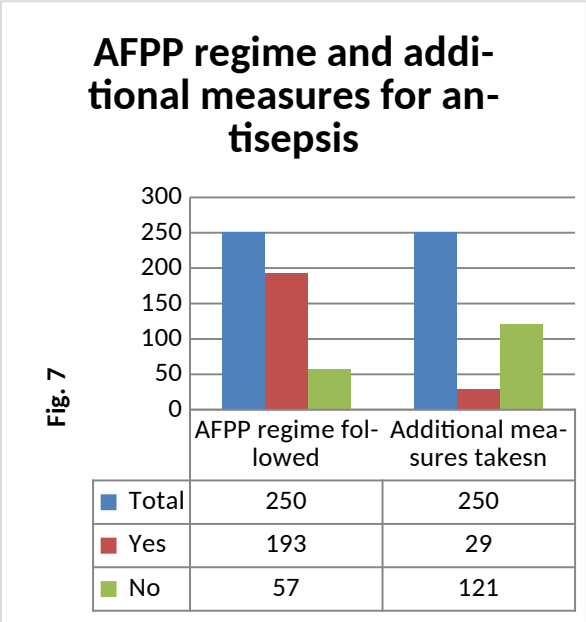

Fig. 7

Figure 7;

Rate and severity of surgical site infection: Hospital data was collected on the basis of patient revisit to the surgeon and interviewing the surgeon which showed that out of 250 cases 21 patients acquired surgical site infection while rest 229 were safe from any kind of surgical site infection.

Severity of the infection was as out of 21 patients, 12 patients got mild infection, 6 patients got moderate infection and 3 patients acquired severe surgical site infection.

According to the Southampton wound grading system/ Southampton Classification for SSI or Asepsis Scoring System[3] as shown in Fig. 8.

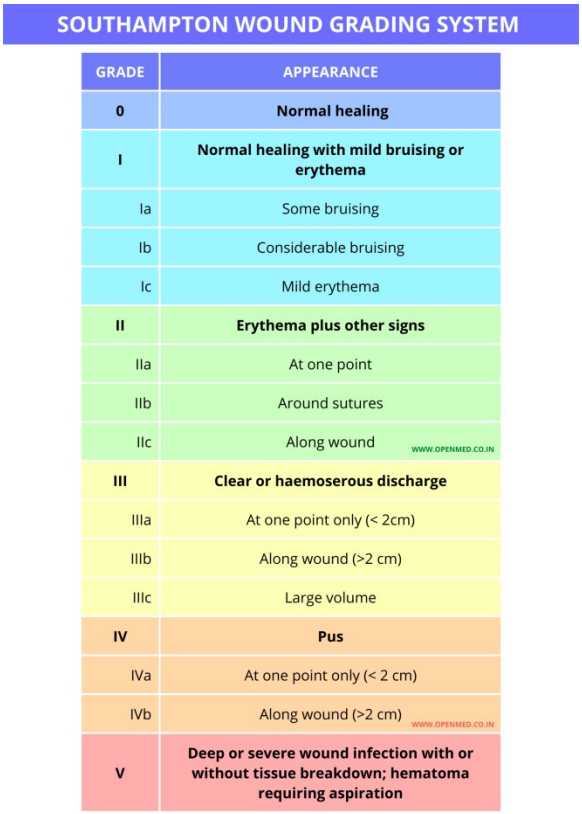

Fig-8

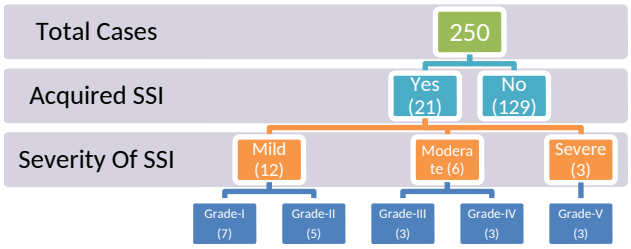

Fig-9

Data about the knowledge of antisepsis Surgeons;

According to the data collected by surgeons mostly SSI is acquired due to poor hygienic conduction of the patient. Some other factors which contributing in spreading SSI were as, environmental pollution, sweating, not taking bath, dressing on wound was not changed timely, antibiotics were not used properly and diabetes as disease.

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When the surgeon were asked about how often they practice the correct technique for antisepsis and washing the operation theatre the answer was almost every time from their side.

All the surgeons interviewed were satisfied with their knowledge about hygiene and were aware of other techniques proposed by WHO and CDC.

All the surgeons accepted that they were taught about hand washing and antisepsis at their medical institutions and hospitals during training.

Discussion:

Our Findings revealed that in 176 out of the 250 cases prewash was performed while in rest of the cases prewash was not done. While 37% of the surgeons used aqueous scrub method of antisepsis while in 63% of the cases alcohol rub method of antisepsis was used. It was found that the duration of antisepsis procedure along with the agent being used also had a significant impact on SSIs. Our findings revealed that out of 250 cases 21 patients acquired SSI. Out of these 21, only 12 acquired mild infection, 6 acquired moderate and 3 acquired severe infection.

All these stats verify the previous studies done in various setups. We compared our study with international researches and the findings were similar. Our study revealed that properly followed routine of hand antisepsis would reduce the risk of SSI. We found the same results as revealed by Chris Kamel.[4]

The improvement in protocol compliance and proper knowledge about hand antisepsis influences the risk of getting infections. A study conducted by Brad S Oriel expressed the same findings.[5]

Our study showed that diabetics exhibit a greater risk of infections than nondiabetics which is consistent with previous research conducted by Chunyan He.[6]

The AFPP recommended time duration for surgical hand antisepsis is 2 to 5 minutes. The results showed that in more than 80% of the cases this recommended time period was followed.

A study conducted by Tanner J in 2016 revealed that a 3 min hand scrub reduces the risk of SSI which coincides with our study which conferred that the increased duration of SSI contributes to reduce risk of infections.[7]

Conclusion

Proper hand antisepsis with a suitable antiseptic agent for proper duration can prevent SSIs. Significant difference was found in between doing prewash or not doing prewash prior to surgery on surgical site infections.

SSI can be prevented if all the staff members follow the instructions properly regarding antiseptic measures.

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Conflict of Interest: None
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