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"A Comparative Study of Subcutaneous Single Closed Suction Drain Versus Simple Closure in Emergency Midline Laparotomy Wounds"

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KEYWORDS

Subcutaneous single closed, Suction drain, Simple closure, Emergency midline laparotomy wounds

ABSTRACT:

Background: Wound healing after surgery is a big problem since it's connected to patient morbidity and quality of life. The term "surgical site infections" (SSIs) is most frequently used to characterise infections that arise in the wound left behind following an invasive surgical operation. Wound infections continue to be a major worry because of the potential impact they may have on the outcome of surgical procedures and the length of hospital stays. Infections at the surgical site and delayed wound healing are more common in patients who require emergency laparotomy treatments.

Materials & Methods: This study was conducted at private medical college and hospital over a period of 12 months from January 2023 to December 2023. It is a prospective study. Data collected from patients admitted in General surgery department from all patients undergoing emergency laparotomy procedure at hospital. A total sample of 100 patients, 50 in each in group.

Results: percentage of males (57%) and females (43%) within the total sample of 100 individuals. subcutaneous drain was present (53 cases) and where it was not (47 cases). wound complications were present (38 cases) and where they were not (62 cases). SSI was present (30 cases) and where it was not present (70 cases). In cases where there was a subcutaneous drain but no SSI, this represents 77% of the cases.Twenty-three percent of cases with SSI and no subcutaneous drain are in this category.

Conclusion: Our study found that age and sex had no significant impact on the outcomes when comparing the use of a subcutaneous single closed suction drain with a straightforward closure during emergency laparotomy procedures. significantly reduced the frequency of seroma, surgical site infection, and discomfort following surgery in individuals who had subcutaneous drains in comparison to two groups. When compared to patients who had no negative suction drain installation, subcutaneous single closed suction drains significantly reduce surgical site infection, seroma, and postoperative discomfort during emergency laparotomy procedures.

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INTRODUCTION:

Because wound healing is linked to patient morbidity and quality of life, it is a major concern following surgical procedures. Surgical site infections (SSIs) are most commonly used to describe infections that develop in the incision left behind after an invasive surgical procedure. Infections with wounds remain a serious concern in terms of how they affect surgical treatment results as well as hospital stay duration. Individuals who require emergency laparotomy procedures are more likely to experience delayed wound healing and surgical site infections.

After the pathology is corrected and peritoneal washings are performed, surgical site infections, wound dehiscence, burst abdomen, wound seroma, and wound hematoma can occur. These complications occur after the closure of the abdominal layers. Because wound closure typically results in respiratory impairment and hypoxia, wound dehiscence is challenging to control. The wound has a higher risk of nosocomial infection if it is left exposed. Many techniques have occasionally been employed to lessen these difficulties.

By eliminating dead space in the plane and removing serum or debris, negative suction in the subcutaneous plane reduces infection. In emergency laparotomy situations, this study compares the subcutaneous single closed suction drain with the traditional simple closure of skin and subcutaneous tissue.

We planned to Find out if the placement of a subcutaneous closed suction drain at the site of incision decreases the risk of surgical site infection after emergency laparotomy cases is the main goal of the research. Finding out how long hospital stays last when using a closed suction drain as opposed to a simple closure is the secondary goal.

METHODOLOGY:

This study was conducted at private medical college and hospital over a period of 12 months from January 2023 to December 2023. It is a prospective study. Data collected from patients admitted in General surgery department from all patients undergoing emergency laparotomy procedure at hospital. A total sample of 100 patients

Inclusion criteria: 1. Patient undergoing emergency laparotomy with midline incision 2. Patient aged between 20-59 years of both sex 3. Patients with BMI >31 4. Females and males **Exclusion criteria: 1.** Patients age60 years 2. Patients who are previously operated 3. Patient refusal 4. Patients who are immunocompromised 5. Patients with Diabetes mellitus, 6. Patients with jaundice 7. Patients with anaemic Hb

Ethical clearance was obtained from the Institutional Ethical Committee. Prior to conducting the study. Informed consent was obtained. A prospective comparison study using systemic random selection to divide patients into two groups prior to surgery.50 patients in Group A had closed suction drains placed subcutaneously. 50 patients in Group B without a drain Patients admitted to the emergency room. clinical diagnosis supported by a number of diagnostic techniques. Essential parameters are examined. When necessary, the first round of resuscitation is carried out using crystalloids and blood products. told written consent was obtained once the patient and their family members were told about the study protocol. A study group was chosen at random.

The collected data was entered in Microsoft Excel. Coding of the variables was done. Analysis was done using SPSS software (Version 27, IBM). Descriptive statistics was used. Association between categorical test. P value less than 0.5 was considered significant.

RESULT

The study was carried out from January 2023 to December 2023 at a private medical college and hospital throughout a 12-month period. It's a research project. Information gathered from all patients receiving an emergency laparotomy procedure at the hospital who were admitted to the general surgery department. a total of 100 patients.

Table 1: Age distribution of patient in the study

Variable	Frequency	Percentage
20 – 30 years	10	10%

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31 – 40 years	33	33%
41 – 50 years	29	29%
51 – 60 years	28	28%
Total	100	100%

This shows the frequency (number of individuals) and percentage of people in each age range: 20-30 years (10%), 31-40 years (33%), 41-50 years (29%), and 51-60 years (28%). The total sample size is 100 individuals.

Table 2: Gender distribution of patient in the study

Variable	Frequency	Percentage
Male	57	57%
Female	43	43%
Total	100	100%

It shows the frequency (number of individuals) and percentage of males (57%) and females (43%) within the total sample of 100 individuals.

Table 3: subcutaneous drain

Variable	Frequency	Percentage
No	47	47%
Yes	53	53%
Total	100	100%

The "Frequency" column indicates the number of cases where a subcutaneous drain was present (53 cases) and where it was not (47 cases). The "Percentage" column shows the proportion of cases for each category, with "Yes" representing 53% and "No" representing 47% of the total cases.

Table 4: Frequency of wound complication

Variable	Frequency	Percentage
No	62	62%
Yes	38	38%
Total	100	100%

Indicates the number of cases where wound complications were present (38 cases) and where they were not (62 cases).Demonstrates the proportion of cases for each category relative to the total number of cases. In this instance, cases without wound complications comprise 62% of the total, while cases with wound complications make up 38%.

Table 5: Frequency of intervention

Variable	Frequency	Percentage
No	67	67%
Yes	33	33%

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Total	100	100%

Indicates the number of cases where an intervention was performed (33 cases) and where no intervention was conducted (67 cases).Demonstrates the proportion of cases for each category relative to the total number of cases. In this scenario, cases without intervention account for 67% of the total, while cases with intervention make up 33%.

Table 5: Frequency of Seroma

Variable	Frequency	Percentage
No	81	81%
Yes	19	19%
Total	100	100%

Indicates the number of cases where seroma was observed (19 cases) and where it was not observed (81 cases). Demonstrates the proportion of cases for each category relative to the total number of cases. In this context, cases without seroma account for 81% of the total, while cases with seroma make up 19%.

Table 5: Frequency of SSI

Variable	Frequency	Percentage
No	70	70%
Yes	30	30%
Total	100	100%

Indicates the number of cases where SSI was present (30 cases) and where it was not present (70 cases). Demonstrates the proportion of cases for each category relative to the total number of cases. In this context, cases without SSI account for 70% of the total, while cases with SSI make up 30%.

Table 6: Association between SSI and Subcutaneous drain

Variables		**Subcutaneous drain**	
		Yes	**No**
SSI	**No**	**77%**	**88%**
	Yes	**23%**	**12%**

The table categorizes cases based on two variables: "SSI" (Surgical Site Infection) and "Subcutaneous drain" (presence or absence of a drain).The percentages within each cell represent the proportion of cases falling into specific combinations. For example:

Among cases where there was no SSI, but a subcutaneous drain was present, it accounts for 77% of such cases.Among cases where there was SSI and no subcutaneous drain, it accounts for 23% of such cases.

DISSCUSSION

Complications from any operation, even emergency procedures, are more common in patients with high body mass index. Seroma, hematoma, and surgical site infections are frequent consequences that raise the patient's morbidity. The Prolonged hospital stays result in financial burdens for patients due to treatment costs. Localised issues may cause a wound to dehisce or impede healing. The insertion of a subcutaneous drain to remove the accumulation is one of the methods used to decrease surgical site infection. The positioning of the drain

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facilitates wound healing by assisting in the drainage of serous fluid and blood accumulation beneath. This shortens hospital stays by facilitating the patients' early mobilisation.

After conducting a prospective analysis, Jyothi Bindal et al. found no statistically significant differences in post-operative fever, superficial SSIs, or age. notable variations in mean hospital stay, discomfort, and wound seroma.

The mean hospital stay without a drain was 9.4 days, while the mean hospital stay with a drain was 8.2 days. Of the two groups, 10% had seroma and 26% did not.

In the Poonam Gupta et al. study, there was a higher risk of SSIs in obese patients, with 24% of patients in the drain group and 50% of patients in the non-drain group having SSIs (P value-0.05). Our research revealed that there isn't notable disparity in gender and age. The study's sample group's mean age is around 41.64 years. Patients without drains have a mean body mass index of 32.87. Patients who have subcutaneous drains had a mean body mass index of 34.99.

In 21 patients, or 42% of the total, wound problems occurred without a subcutaneous drain; in 14 patients, or 7 instances, a subcutaneous drain was used. Each and every patient with a wound complication had followed intervention in the process of healing wounds. Nine patients in the group without a subcutaneous drain experienced seroma, accounting for 18% of cases. There are no cases of seroma recorded in the drain group. The p value (p=0.002) is statistically significant.

In other studies Surgical Site Infection occurred in 20 patients of total population. 14
patients without subcutaneous drain reported SSI (28%) and 6 patients in the drain group (12%).this is statistically significant P value 0.046. wound dressing can reduce the incidence of infection. Antibiotics based on culture and sensitivity reduces wound complications.

Conclusion:

Our investigation, which compared the use of a subcutaneous single closed suction drain with a simple closure during emergency laparotomy procedures, revealed that age and sex did not significantly affect the results. statistically significant in lowering the incidence of seroma, surgical site infection, and postoperative discomfort in patients with subcutaneous drain. between two groups. Subcutaneous single closed suction drains considerably lower postoperative discomfort, seroma, and surgical site infection in emergency laparotomy procedures when compared to patients in whom there was no negative suction drain installation

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