



## A COMPARATIVE STUDY OF SUBCUTANEOUS SINGLE CLOSED SUCTION DRAIN VERSUS SIMPLE CLOSURE IN EMERGENCY MIDLINE LAPAROTOMY WOUNDS

<b>Dr. Vijayalakshmi</b>	M.S Associate professor, Dept of general surgery, government Stanley medical college
<b>Dr. R. Karthick*</b>	MS Assistant surgeon, dept of general surgery, government karur medical college *Corresponding Author
<b>Dr. T. Jeyalakshmi</b>	MS Assistant professor, Dept of general surgery, government Stanley medical college

**ABSTRACT** Wound healing is major concern after surgical procedure, because of its association with quality of life and morbidity of patients. Infections that occur in the wound created by an invasive surgical procedure are generally referred to as Surgical Site Infections (SSIs).. Patients requiring Emergency laparotomy procedure has increased risk of surgical site infection and delayed wound healing. Complications following the closure of abdominal layers after correcting the pathology and peritoneal washings are surgical site infections, wound dehiscence, burst abdomen, wound seroma and wound hematoma. Negative suction in the subcutaneous plane decreases infection by removal of serum or debris and by elimination of dead space in the plane. This study is to compare the subcutaneous single closed suction drain and conventional simple closure of skin and subcutaneous tissue in emergency laparotomy cases.

**KEYWORDS :** subcutaneous drain, emergency laparotomy

### AIM AND OBJECTIVES OF THE STUDY:

The primary outcome of study is to determine whether the insertion of a subcutaneous closed suction drain at incisional site reduces the incidence of post operative surgical site infection in emergency laparotomy cases.

The secondary outcome is to find the effect of closed suction drain in reducing the duration of hospital stay when compared to simple closure.

### MATERIALS AND METHODS

**STUDY CENTRE:** The study was conducted in the General surgery department of Government Vellore Medical College & hospital, Vellore after obtaining Institutional Ethics Committee approval.

**STUDY PERIOD:** May 2018 – July 2019

**SOURCE OF DATA:** All patients undergoing emergency laparotomy procedure at Government Vellore Medical College, Vellore.

**SAMPLE SIZE:** 100 patients, 50 in each group

**STUDY DESIGN:** A randomized control study

**STUDY POPULATION:** All patients undergoing emergency laparotomy procedure, who fulfilled the inclusion criteria were selected for the study. The procedure was explained to them in detail and written consent was obtained.

### INCLUSION CRITERIA:

Patient undergoing emergency laparotomy with midline incision  
Patient aged between 20-59 years of both sex

### EXCLUSION CRITERIA:

Patients age <20 and >60 years  
Patients who are previously operated  
Patient refusal  
Patients who are immunocompromised  
Patients with Diabetes mellitus,  
Patients with jaundice,  
Patients with anaemic Hb <10 gms,  
Patients on steroid intake, radio therapy,  
Patients with hepatic and renal insufficiency  
Pregnant and lactating mother.

### PROCEDURE

A prospective comparative study in which patients were randomized before surgery into two groups by systemic random sampling.

Group A 50 patients with subcutaneous closed suction drain,  
Group B 50 patients without drain

In operation theatre, surgical site was cleaned with povidone iodine and alcohol. Sterile draping done. Abdomen opened by midline incision using scalpel. After surgical procedure, thorough peritoneal wash given. Rectus sheath closed by non absorbable suture material. A suction drain (mini-vac 8f) was positioned with its tip lying over the subcutaneous layer and brought out through healthy skin by separate stab incision away from the wound and connected to a closed suction drain. For all patients, incision line was closed using polyamide 2.0 mattress sutures and dressed.

### METHODOLOGY

Quantity of drainage from mini vac 8f drain was noted after every 24hrs. Sterile dressing done every day  
If collection present on the surgical site, it will be evaluated for culture/sensitivity.

Sensitive antibiotics was started.

Amount of drainage was recorded daily.

Drain was removed when the output is less than 5ml(24hr)

Sutures were removed (alternate on 8th & 10th day) before discharge from hospital. Patients discharged only after the removal of drain.

### RESULTS

Total study population is 100 patients.

Age wise distribution from 21-30 years was 15 patients. 30 patients between 31-40 years. 35 patients in the age group of 41-50 years. 20 patients in 51-60 years.

Among 100 patients in the study population, 66% were male patients and 34% were female patient. Study was done in obese patients with study population of 100 cases. Among this 75 patients have BMI <35 and 25 patients with BMI >= 35.

Among 100 patients, Wound complication was encountered in 28% of patients and remaining 72% had wound healing without complications. 28% required intervention for wound healing.

20% of patients had surgical site infection

17% patients had pain

9% of patients had seroma as wound complication

3% of patients had hematoma among 100 patients.

Wound complication without subcutaneous drain is 42% and with drain is 14%. This is statistically significant ( $P < 0.05$ ) using chi-square test. Majority of patients with BMI <35 had no drain. But nearly all patients with BMI >=35 had drain and this is statistically significant ( $P < 0.05$ ). Intervention done among no subcutaneous drain patients was 42% and 58% did not require any intervention. Among subcutaneous drain patients 86% did

not require any intervention and 14% needs intervention and this is significant statistically as  $P < 0.05$ .

Mean duration of hospital stay of the patients with subcutaneous drain was  $7.70 \pm 1.44$  days and mean duration of hospital stay of patients without subcutaneous drain was  $9.12 \pm 2.51$  days. There is significant decrease in the length of hospital stay in the patients with subcutaneous drain. P value  $< 0.001$ .

## CONCLUSION

In emergency laparotomy procedures, subcutaneous single closed suction drain reduces postoperative surgical site infection, seroma, postoperative pain and the duration of hospital stay significantly compared to patients in whom negative suction drain was not placed.

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