



## A STUDY OF COMPLICATIONS AFTER A MESHED SPLIT THICKNESS SKIN GRAFT BY PROCURING GRAFT BY OSCILLATING ELECTRIC DERMATOME.

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### ABSTRACT

incidence of chronic ulcer is much high in Indian population and efficient treatment is needed for wound management. These facts lead us to conduct a study in our hospital, of complications using oscillating dermatome as a device for harvesting split skin graft for treatment of ulcers. **Methodology:** A total of 33 patients who were admitted in surgery as cases of ulcers for skin grafting between February 2021 to November 2022 were selected for the study. **Observation And Results:** Most common aetiology found was infection (81.8%) followed by trauma (12.1%). Most common early complication was pain (42%) followed by seroma formation (9%) and hematoma (6%). 21% of patients had no early complications. No donor site complications were observed in 67% of the study population. Most common complication encountered was infection (18%) followed by hyperpigmentation (15%).

**KEYWORDS :** Chronic ulcer, meshed split skin graft, oscillating dermatome

### INTRODUCTION:

Skin grafting originated with the Hindu Tilemaker Caste, approximately 2500 to 3000 years ago. These early surgeons used free skin grafts taken from the gluteal region to replace noses amputated as punishment for theft and adultery. The western world remained ignorant of skin grafting procedures until the nineteenth century, when Reverdin's account of pinch grafting (1869), Ollier and Thiersch's accounts of thin split thickness skin grafting (1872 and 1886, respectively), and Wolfe and Krause's accounts of full-thickness skin grafting (1875 and 1893, respectively) were published. (1,2,3,4).

Although nineteenth century surgeons applied skin grafting techniques only to the most difficult problems of surgical management, skin grafting has evolved over the last century into a reconstructive option that is routinely and sometimes preferentially used during soft tissue reconstruction.

However, the treatment of open wounds has progressed little through ages, with few changes in therapy even in this century. Management of raw wounds accounts for substantial portion of any health budget and much of this is made up of the cost of time and material for repeated dressings. Chronic cutaneous ulcer whether decubitus, venous, ischemic or neuropathic represent a class of open wounds of the skin which are particularly resistant to treatment.

In one study it was noted that, as increased life expectancy brings with it the inevitable increase in chronic diseases predisposing to the development of dermal ulcers, the difficult question of how to treat such ulcers arises with greater efficacy. (5)

Considering the fact that incidence of chronic ulcer is much high in Indian population and efficient treatment is needed for wound management, it is essential to find better, more advanced treatment strategy. Newer techniques are needed to be studied.

These facts lead us to conduct a study in our hospital, of complications using oscillating dermatome as a device for harvesting split skin graft for treatment of ulcers.

### MATERIALS AND METHODS

In a tertiary hospital in Central India, the general surgery department conducted this retrospective observational study. A total of 33 patients who were admitted in surgery as cases of ulcers for skin grafting between February 2021 to November 2022 and who satisfied the following criteria were selected for the study:

#### Inclusion Criteria:

1. Raw area more 10% of skin loss
2. Presence of good healthy granulation tissue
3. Hb > 10 gm%
4. Age of 22 years and above

#### Exclusion Criteria:

1. Raw area less than 9% of skin loss
2. Seropurulent discharge, infected wound and hypertrophic scar
3. Exposed bone without periosteum, cartilage without perichondrium, tendon without paratendon or nerve structures
4. Hb less than 9% Statistical analysis was done using Microsoft excel and appropriate statistical tests were applied.

### OBSERVATION AND RESULTS:

During the period of 22 months between February 2021 to November 2022, 33 patients who satisfy the inclusion and exclusion criteria were enrolled in our prospective observational study after obtaining informed, written, valid consent.

Majority of the patients in our study population were in 6th and 7th decade followed by 5th decade. Median age was 56 years

with standard deviation of 15.40 years. We observed that 6th and 7th decade patients were having infection as the aetiology and were associated with co-morbidities. Patients of young age group has trauma as the most common etiological factor.

Male: female sex ratio is 3.7:1. Male were most commonly associated with flesh eating infection due to their outdoor activity and negligence to self-health care.

Most common site of grafting was done on right lower limb (42.4%) followed by left lower limb (36.4%).

All patients required debridement before the procedure. Mean requirement was 3.60 times with standard deviation of 1.17 times.

Aetiology of ulcer in our study population were analysed. Most common aetiology found was infection (81.8%) followed by trauma (12.1%). As patients were in class of low economic status, neglecting self-health care, infection rate was higher.

Most common early complication was pain (42%) followed by seroma formation (9%) and hematoma (6%). 21% of patients had no early complications. No donor site complications were observed in 67% of the study population. Most common complication encountered was infection (18%) followed by hyperpigmentation (15%).

On follow-up, most patients had developed skin discolouration (64%), 24% had developed uneven skin surface and 3% had developed contracture. Only one patient among 33, had no complication at all.

Average duration to return to work after surgery was 30.1515 days with standard deviation of 7.55 days.

**DISCUSSION:**

Split thickness skin grafts (STSGs) are used to repair acute and chronic skin defects when direct closure cannot be accomplished, and a STSG is considered preferable to a surgical flap or closure by secondary intention. Although flap is more desirable as it gives more colour, texture, volume match. However it is technically more challenging and depends on host of other factors.

In this study the mean age group of patients was found to be 52 yrs. Median age was 56 years with standard deviation of 15.40 years. It was similar to a study done by Swaminathan SP et al.,(6) who reported mean age as 50.8 years. On the contrary, Cornwall JV et al., found in their study that 70% of the patients were over the age of 70 years.

In the present study, the male to female ratio was 3.7:1 which was similar to Narwade P et al. (7) However, it was higher than concluded in the study by Gireboinwad S et al.(8) (2: 1), Turissini JD et al. (9) (1.6:1), and Kim SW Sang et al. (10) (1.3:1). This might be because most of the females were housewife with mostly indoor work and with resultant restriction of outdoor activity, thereby less exposure for trauma.

In this study it was observed that most common site was lower limbs with infection as the most common cause for raw area. Lower limbs are more prone for trivial trauma and ascending infection. Cellulitis progress in short duration which required debridement. The study also found no significant association between the site of ulcer and percentage of graft acceptance, and was similar to the findings by Swaminathan SP et al., and Gireboinwad S et al., [6,8].

Mean number of debridements were 3.6 with maximum number of debridements done was 8. Removal of septic and devitalized tissue is necessary. As large raw was considered

for this study, the number debridements were found to be more.

Most common early complication was pain (42%) followed by seroma formation (9%) and hematoma (6%). Patients with seroma formation were later subjected to regrafting. And it was considered as cause for graft failure in this study.

Patients were followed up on outpatient department(OPD) basis. Most patients had developed skin discolouration (64%), 24% had developed uneven skin surface and 3% had developed contracture. Only one patient among 33, had no complication at all.

Number of days required to return to work after surgery were less as these patients had recovery rate much greater than study conducted by Gireboinwad S et al.(8) Average duration to return to work after surgery was 30.1515 days with standard deviation of 7.55 days.

We have found the electric dermatome to be superior for harvesting STSGs and plan to use it routinely in our department for years. We understand that the cost of a device and consumables must be considered when purchasing a dermatome.

**CONCLUSION:**

We have found the electric dermatome to be superior for harvesting STSGs and plan to use it routinely in our department for years. We understand that the cost of a device and consumables must be considered when purchasing a dermatome.

**Table 1 showing demographic and clinical profile of the patients (n=33)**

Characteristic	Value
Age	
Mean age	52.21
S.D.	15.4
Gender	
Males	26 (78.8%)
Females	7 (21.2%)
Site of ulcer	
Left lower limb	12 (36.4%)
Right lower limb	14 (42.4%)
Left upper limb, right upper limb, abdomen and left inguinal region, abdomen and right inguinal region, back, right inguinal region and perineum and right thigh	1 each (3% each)
No. of debridement	
Mean age	3.6061
S.D.	1.17
Etiology	
Infection	27 (81.8%)
Trauma	4 (12.1%)
Both	2 (6.1%)

**Table 2 Showing complications in the patients (n=33)**

Characteristic	Value
Early complications	
Pain	14 (42.4%)
Seroma	9 (27.3%)
Hematoma	2 (6.1%)
Impaired vascularity	1 (3%)
None	7 (21.2%)
Donor site complications	
Infection	6 (18.2%)
Hyperpigmentation	5 (15.2%)
None	22 (66.7%)

Late complications on follow up	
Skin Discoloration	21 (63.6%)
Uneven skin surface	8 (24.2%)
Contracture	3 (9.1%)
None	1 (3%)
Return to work after surgery (in days)	
Mean days	30.15
S.D.	7.55

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