



A COMPARTIVE STUDY BETWEEN COLLAGEN SHEET DRESSING AND PARAFFIN GAUZE DRESSING IN MANAGEMENT OF SKIN GRAFTED DONOR SITE WOUNDS

General Surgery

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ABSTRACT

Introduction : Skin is the largest organ in the human body, accounting for about 16% of total body weight. Restoring an intact barrier is essential and can be accomplished in a number of ways, including grafting. Skin graft donor sites should be treated to encourage healing while reducing the chance of subjecting an already wounded patient to additional discomfort and consequences. Patients with collagen dressings are seen to experience only mild to moderate discomfort during the entire post-operative period, particularly during the first dressing and during the patient's early mobilisation. **Material & Method** : Prospective comparative study was conducted among patients attending the OPD & IPD of General Surgery Department, AVMC, between December 2020 to September 2022. Both male and female patients with age group above 18 years with donor sites of split skin graft and with haemoglobin at minimum 10gm% were included. These patients were broadly divided into two groups of 52 patients each by convenience sampling technique. Blood haemoglobin, blood sugar and urea, serum protein and creatinine, blood group, wound swab for culture and sensitivity were done and entered in data collection proforma. Closed dressing with Sterile Paraffin gauze and dressing with Collagen Sheet are applied to different subsets of patients like Group 1 and Group 2 at the donor site following harvesting of split skin graft. Patients were followed up to monitor their progress. Data were collected, analyzed and tabulated using SPSS Ver.20. **Results** : In present study sample of 104 patients with split skin graft in the wards and outpatient department were included. In the collagen dressing group, median pain score of 2 compared to score of 5 in closed conventional dressing with Paraffin gauze. Patients were ambulant from post operative day one in collagen dressing group as compared to 3rd day onwards post operatively in patients with paraffin gauze dressing & complete epithelization was observed in almost all the cases. **Conclusion** : Collagen sheet application over donor site has the advantages of less pain over the donor site compared to the conventional closed dressing and early ambulation due to reduced pain and reepithelisation in most patients. A comfortable dressing with decreased bulk of dressing allows ease of wearing of garments.

KEYWORDS

Collagen sheet dressing, Paraffin Gauze dressing, Split skin graft, Epithelization

I. INTRODUCTION

With a weight of almost 16% of the entire body, skin is the biggest organ in the human body. Skin has significant metabolic roles in the metabolism of protein and vitamin D, in addition to the well-known functions of protection and thermoregulation. The epidermal layer of the skin is where the body makes the most vitamin D¹. Skin serves as an active immune organ with special antigenic features that play a crucial role in particular with regard to composite tissue allotransplantation, in addition to acting as a physical barrier to harmful organisms².

To cover large wound regions or wounds that could leave scars, skin grafts are employed. Split thickness skin grafts (STSG) continue to play a significant role in many aspects of plastic surgery, despite more recent developments. The STSG donor site typically receives little care and is frequently the cause of a prolonged healing process that causes the patient a great deal of pain and discomfort. Therefore, it is usual for patients to express greater pain at the donor site than at the surgical site in their complaints.

A partial thickness injury can become a full thickness loss, however, because the eschar is unable to stop tissue desiccation and infection at the donor site. The residual epithelial cell layer at the donor site's periphery and reserve cells in the remaining hair follicles, sebaceous glands, and sweat glands proliferate after the harvest of STSG to form the new epidermis. This is the initial stage of a donor site's healing process. Following the process of cell proliferation, the cells move outward until the wound is reepithelialized. Complete reepithelialization takes 10 to 14 days, though the rate may vary depending on the graft thickness used³. Reepithelialization aids in the wound healing process at the donor site.

The type 1 and type 3 bovine collagen used in collagen dressings is comparable to human collagen and prevents rejection. It is simple to

use because it is readily available commercially in a sterile pack. Collagen has demonstrated that it takes about the same amount of time as other dressing materials to completely reepithelialize donor sites⁴. Collagen prevents exudation from the bare area and serves as a framework for epithelial regeneration^{5,6}. When reepithelialization is complete, the coagulated blood and /overlying film separate on their own. As a result, taking off the dressing is simple and painless.

The present study was conducted to compare the outcome of dressing donor site wound with collagen sheet with paraffin gauze dressing.

II. MATERIAL AND METHODS

The prospective comparative study was carried out in the Department of General Surgery, Aarupadai Veedu Medical College and Hospital, Puducherry. This is a comparative study in which 104 patients were studied in two groups after obtaining written informed consent. Patients with age group above 18 years, all donor sites of split skin graft, Patients with hemoglobin minimum at 10gm% are included in the study. Patients with diabetes mellitus, hypoproteinemia, anemia & donor sites after harvesting of thin split skin were excluded from study. Complete history, laboratory investigations, examination will be obtained and entered in data collection proforma. 52 patients are treated by Closed dressing with Sterile Paraffin gauze and 52 patients by dressing with Collagen Sheet at the donor site following harvesting of split skin graft. Patient is shifted to the post operative ward only after adequate drying of the collagen sheet. Extra care taken to prevent displacement of collagen sheet during the shifting maneuver. Comparison of Pain at the donor site, Ambulation, reepithelisation of donor site wounds after 2 weeks was done. Post op wound healing after 21 days is compared and assessed. Data analysis was done by SPSS Ver.20. Categorical data was described in form of number and percentage. The Chi-Square test was used to find the association between risk factor and the outcome variable. P value less than 0.05 was considered as statistically significant.

III. Statistical Analysis :

Data analysis was done by SPSS Ver.20. Categorical data was described in the form of number and percentage. The Chi- Square test was used to find the association between risk factor and the outcome variables. P value less than 0.05 was considered as statistical significance.

IV. RESULTS :

In present study, total of 104 patients fulfilling inclusion criteria were included.

Table 1: comparison of mean pain score between two groups

Pain Score	Group 1 N(%)	Group 2 N(%)	Total N(%)	P Value
1	0	6(11.5%)	6(5.8%)	0.001
2	0	29(55.8%)	29(27.9%)	
3	2(3.8%)	13(25.0%)	15(14.4%)	
4	22(42.3%)	4(7.7%)	26(25.0%)	
5	24(46.1%)	0	24(23.0%)	
6	4(7.7%)	0	4(3.8%)	
Total	52	52	104	

Table 1 shows comparison of mean pain score between 2 groups and p value is 0.001

Table 2: comparison of ambulation post operatively in two groups

Ambulation (days)	Group 1 N(%)	Group 2 N(%)	Total N(%)	P Value
1	0	28(53.8%)	28(26.9%)	0.0001
2	10(19.2%)	22(42.3%)	32(30.8%)	
3	22(42.3%)	2(3.8%)	24(23.0%)	
4	20(38.5%)	0	20(19.2%)	
Total	52	52	104	

Table 2 shows comparison of ambulation post operatively in two groups and p value is 0.001

Table 3- Comparison Of Reepithelization Between Two Groups

Reepithelisation (days)	Group 1 N(%)	Group 2 N(%)	Total N(%)	P value
15	0	19(36.5%)	19(18.3%)	0.0001
16	0	20(38.5%)	20(19.2%)	
17	0	11(21.2%)	11(10.6%)	
20	33(63.5%)	1(1.9%)	34(32.7%)	
21	12(23.0%)	0	12(11.5%)	
23	0	1(1.9%)	1(0.9%)	
29	2(3.8%)	0	2(1.9%)	
30	4(7.7%)	0	4(3.9%)	
31	1(1.9%)	0	1(0.9%)	
Total	52	52	104	

Table 3 shows Comparison of reepithelization between two groups and p value is 0.001

V. DISCUSSION AND CONCLUSION

Although split-thickness skin grafting (STSG) is a common reconstructive method, there are some variances in actual practise. The optimal dressing for the treatment of STSG donor sites was determined by Rakel et al. (1998) in their study of the literature to be a transparent film.

Dressings that retain moisture have been made using hydrocolloids, foams, and translucent thin films, either alone or in combination with absorbent materials like alginates, hydrofibers, or gauze. The required absorbency is provided by hydrocolloids and foams, but because these must be removed each time a wound needs to be checked, therapy costs increase and there is a danger that the wound site will be traumatised. Thin film dressings typically fail to stop the drainage for longer than 24 hours, even when worn in addition to additional absorbent dressings (which also negates the benefit of transparency). TegadermTM, Absorbent Clear Acrylic Dressing is a moisture-retentive, absorbent dressing that combines the transparency of thin film dressings with the advantages of highly absorbent dressings like hydrocolloids, foams, alginates, and hydrofibers. Recent research has shown that this dressing has great success with skin donor sites^{7,8}

Winter^[9] shown that moist wounds healed more quickly than wounds let to dry out in 1962. This discovery has caused the traditional dry gauze dressings for skin transplant donor sites to be replaced by semi-

occlusive or occlusive dressings. Despite the fact that these occlusive dressings create moist environments for wound healing, there has been worry that occluding wounds could exacerbate infection^[10-12]. Hutchinson and McGuckin^[13], however, Infection rates were 2.7% in 594 occluded wounds compared to 6.4% in 360 traditionally treated wounds in a review of 29 donor site studies. 30 burn patients with skin graft donor sites were randomly assigned to receive either an occlusive (DUODERM) or traditional gauze dressing on their wounds in a recent study on donor site wound healing^[14]. Both groups wounds had bacterial colonisation, but only those with standard dressings developed an infection

Additionally, since there is no soakage of the dressing owing to wound exudate, it does not require a bulky dressing once applied, which would hinder mobilisation, or a change of dressing. Patient comfort was the survey question that was given the most weight. The transparent dressing was once the gold standard for measuring other dressings, however calcium alginate has now fallen short in comparison to silicone-coated polyamide net.

In our study, pain score was decreased in collagen dressing compared to the conventional closed dressing group. Patients were ambulant from postoperative day 1 with the collagen dressing, while patients with the bulky closed dressing were ambulant from the third postoperative day. In our study cost factor analysis increased expenditure towards collagen dressing, but the above advantages help in rapid turnover of patients with minimal donor site morbidity which is the need of the hour in recent treatment protocols in management of raw areas. The advantage of direct review of the donor site wound in the collagen group helps in early identification of problems and also manage the wounds properly and salvage them from becoming full thickness wounds which will increase donor site morbidity.

Collagen sheet application for donor site has many advantages. There will be less pain over the donor site compared to the conventional closed dressing with Vaseline gauze. Early ambulation due to reduced pain after the application of collagen sheet to the donor site. Reepithelisation is complete for most patients and time of reepithelisation is similar to the standard expensive dressings for the donor site. Inspection of the donor site wound can be done easily and complications can be recognized early. A comfortable Dressing due to the decreased bulk of dressing and ease to wear the garments over the dressing. The complications are less with collagen dressing as compared to the conventional closed dressing.

VI. REFERENCES

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