

A COMPARATIVE STUDY BETWEEN COLLAGEN & SIMPLE PARAFFIN DRESSING APPLIED ON SKIN GRAFT DONOR SITE WITH SPECIAL EMPHASIS ON VANCOUVER SCAR SCALE AND PATIENT & OBSERVER SCAR ASSESSMENT SCALE (POSAS)

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ABSTRACT

BACKGROUND

Split skin grafting (SSG) is a commonly performed surgical procedure. Ideal donor site scar should be soft, supple, and flat with normal pigmentation. Collagen sheets have been used as a donor site dressing which comes close to being called an ideal donor site dressing.

The objective of the study was to compare effect of collagen and simple paraffin dressing on wound healing and scar formation on skin graft donor site.

MATERIALS AND METHODS

This is a comparative study, based on inclusion and exclusion criteria with a sample size of 30 patients, study carried out in patients posted for skin grafting in Department of Surgery, M.G.M Medical College and M.Y. Hospital, Indore, by dividing the donor site wound into medial half and lateral half by doing half dressing with collagen and other half by simple liquid paraffin and assess the scar at 21st day and compare the scar healing by Vancouver Scar Scale and Patient and Observer Scar Assessment Scale (POSAS).

RESULTS

Wound healing is better with collagen when compared to simple paraffin dressing as a material for donor site wound. Significant reduction in pain (p-value= 0.007) and pruritus (p-value= 0.001) in patients with collagen dressing was noted on post op day 21.

CONCLUSION

Collagen application to donor site wound (DSW) is better than simple paraffin dressing in relation to early wound healing with better scar results and patient comfort.

KEYWORDS

Donor Site Wound (DSW), Vancouver Scar Scale (VSS), Patient and Observer Scar Scale (POSAS).

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BACKGROUND

Split skin grafting (SSG) is a commonly performed surgical procedure. It is simple and better reconstruction procedure, but it can lead to poor aesthetic results due to mismatch of thickness, texture and scar contraction.¹ Common sites for harvesting SSG are thighs, legs, buttocks and back. Once

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SSG is harvested, the donor site is covered with paraffin gauze and multiple layers of pads. It usually takes 14-21 days for the wound to epithelialize. Ideal donor site scar should be soft, supple, and flat with normal pigmentation.

With a wide range of dressings to choose from dressing selection is a significant challenge for wound care clinicians. Ideal dressing should achieve rapid healing at reasonable cost with minimal inconvenience to the patient. An ideal STSG donor site dressing should have antibacterial, haemostatic, and promoting epidermal healing properties with formation of perfect scar.

Collagen sheets have been used as a donor site dressing which comes close to being called an ideal donor site dressing.

Several modalities have been devised to quantify scars for the purposes of determining response to treatment and for evaluating outcomes. The ideal scar assessment tool should contain the following parameters: non-invasiveness, painlessness, easiness of work and reliability. The objective measurement parameters to evaluate the scar include colour, thickness, surface texture, suppleness, and surface area.² The objective measurement apparatus like computerized image capture systems and digital colour analysis methods require complex equipment and experienced operators, which may limit its use in a busy clinical setting. Hence, although objective measurements for scar evaluation are essential, there is a need for subjective assessment of scars.

Assessment of quality of donor scar can be done by Vancouver scar scale (VSS) and Patient and Observer scar assessment scale (POSAS). VSS has only objective component, whereas, POSAS has both objective and subjective components for scar assessment. POSAS was designed to evaluate various types of scar subjectively.^{3, 4} It is easy to use, proving to be more advantageous than other tools. It was used to evaluate burn scars³ and linear surgical scars,⁴ which showed reliable and valid results for scar evaluation.

MATERIALS AND METHODS

A cross sectional observational comparative study, based on inclusion and exclusion criteria with a sample size of 30 patients, study carried out in patients posted for skin grafting in Department of Surgery, M.G.M. Medical College and M.Y Hospital, Indore, by dividing the donor site wound into medial half and lateral half by doing half dressing with collagen and other half by simple liquid paraffin and assess the scar at 21st day and compare the scar healing by Vancouver Scar scale and Patient and Observer scar assessment scale (POSAS).



Figure 1. Collagen Sheet Applied to Graft Donor Site



Figure 2. Graft Donor Site Scar After 21 Days

RESULTS

Group	Collagen Site (N=30)		Simple Paraffin Site (N=30)		Result	
	Mean	S.D.	Mean	S.D.	T Value	P value
VSS Score	5.73	1.51	6.77	1.59	2.58 DF=58	0.012

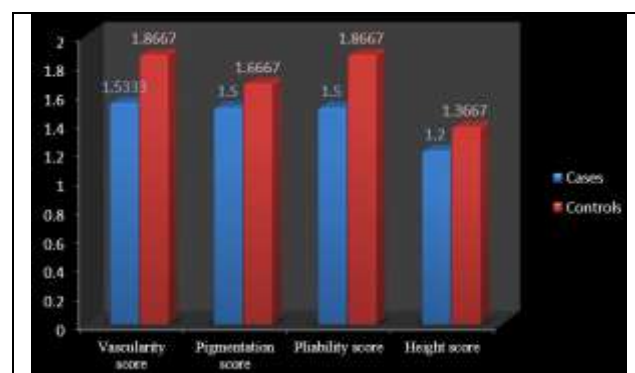
Table 1. Comparison of Mean VSS Score Between Collagen and Simple Paraffin Dressing Site

The difference of mean VSS score of collagen and simple paraffin dressing site was found to be significant (p-value= 0.012). The mean total score for VSS Score of simple paraffin site is significantly higher (6.77) as compared to that of collagen dressing site (5.73).

VSS	Correlation	P Value	Result
Collagen and simple paraffin dressing	r = 0.390	0.033	Significant Positive Correlation

Table 2. Correlation Between VSS Scar Value of Collagen and Simple Paraffin Dressing Site

The above table shows the Significant Positive Correlation between VSS SCAR values of collagen and simple paraffin dressing site.



Graph 1. Representing Patient Vascularity Score, Pigmentation Score, Pliability Score, Height Score Amongst Collagen and Simple Paraffin Dressing Site

Cases: Collagen dressing site

Control: Simple paraffin dressing site

Group	Cases (N=30)		Control (N=30)		Result	
	Mean	S.D.	Mean	S.D.	T Value	p Value
VSS Score	80.10	8.66	85.80	10.50	2.31, DF=58	0.024

Table 3. Comparison of Mean POSAS Score between Collagen and Simple Paraffin Dressing Site

The above table shows the Comparison of Mean POSAS score of collagen and simple paraffin dressing site.

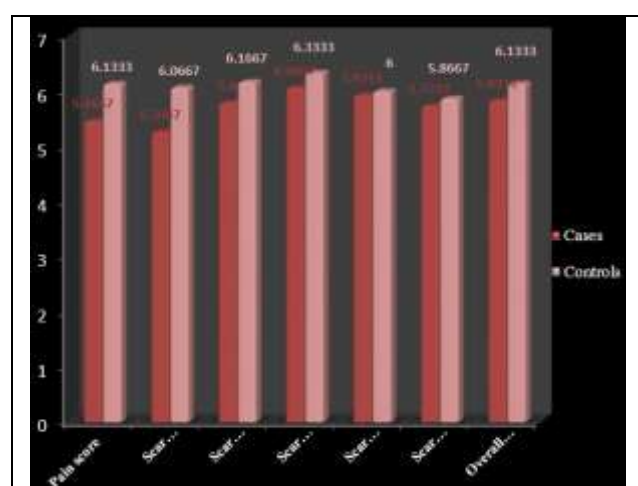
The difference of mean POSAS score between collagen and simple paraffin dressing site was found to be significant ($p < .05$).

The mean total score for POSAS Score simple paraffin site is significantly higher (85.80) as compared to that of collagen dressing site (80.10).

POSAS	Correlation	p Value	Result
Collagen and Simple Paraffin Dressing Site	$r = 0.465$	0.010	Significant Positive Correlation

Table 4. Correlation Between POSAS Scar Value of Collagen and Simple Paraffin Dressing Site

The above table shows the Significant Positive Correlation between POSAS SCAR values of collagen and simple paraffin dressing site.



Graph 2. Representing Patient Pain Score, Scar Itch Score, Scar Colour Score, Scar Stiffness Score, Scar Thickness Score, Scar Irregularity Score, Opinion Score amongst Collagen and Simple Paraffin Dressing

Cases: Collagen dressing site

Control: Simple paraffin dressing site

Dressing Material	Good VSS Score	Bad VSS Score	p Value
Collagen	21	9	0.037*
Simple Paraffin	13	17	
Total	34	26	

Table 5. Comparison of Collagen and Simple Paraffin Dressing Based on The Number of Participants with Good and Bad VSS Score in Each Group

	Good POSAS Score	Bad POSAS Score	p Value
Collagen	20	10	0.038*
Simple Paraffin	12	18	
Total	32	28	

Table 6. Comparison of Collagen and Simple Paraffin Dressing Based on The Number of Participants with Good and Bad POSAS Score in Each Group

Pearson Chi-Square = 4.286, DF = 1

*p value < 0.05 was considered statistically significant.

Statistical Parameters	VSS	POSAS
Relative Risk of Developing Bad Scar in Collagen Group	0.3	0.33
Relative Risk of Developing Bad Scar in Simple Paraffin Group	0.56	0.6
Risk Ratio	0.55	0.33
Odds Ratio for Bad Scar in Collagen Group	0.42	0.5
Odds Ratio for Bad Scar in Simple Paraffin Group	1.3	1.5

Table 7. Comparison of Relative Risk, Risk Ratio and Odds Ratio for Bad Scar in VSS and POSAS

Risk ratio value < 1 indicates protective effect of collagen on developing scar.

DISCUSSION

Wound healing is better with collagen when compared to simple paraffin dressing as a material for donor site wound. Significant reduction in pain (p -value=0.007) and pruritus (p -value=0.001) in patients with collagen dressing was noted on post op day 21.

In our study, assessing graft donor site scar by dividing into good and bad scores by both Vancouver scar scale (VSS) (p -value=0.037) and Patient and Observer scar assessment scale (POSAS) (p -value=0.038), we came to a conclusion that overall wound healing of skin graft donor site by application of collagen is better than simple paraffin dressing.

Ideal dressing should be immunologically tolerated and should result in better quality of healed skin with minimal scarring and collagen is immunologically tolerated as well as provides good scar results with minimal pain, itching and good pliability in scar (Halankar et al)^{5,6}

Our study suggests that pain perception pruritus at the donor site scar with collagen as a dressing material is significantly lesser when compared to simple liquid paraffin dressing and these results are consistent with previous studies.^{7,8}

CONCLUSION

Collagen application to donor site wound (DSW) is better than simple paraffin dressing in relation to early wound healing with better scar results and patient comfort.

Collagen helps in:

- promoting early healing with good vascularity and pliability of developing scar.
- Reducing severity of pain at the donor site wound.
- Reducing incidence of pruritus.

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