



**“A COMPARATIVE PROSPECTIVE STUDY OF PERCENTAGE OF THE GRAFT UPTAKE OF SPLIT THICKNESS SKIN GRAFTING IN RELATIONSHIP WITH THE FIRST POSTOPERATIVE DRESSING DONE ON THIRD DAY VERSUS FIFTH DAY”**

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**ABSTRACT** **BACKGROUND** The skin grafting offers the surgeon a method of regaining skin continuity with the advantage of reduced healing time and length of hospital stay along with the minimal donor site morbidity. Their ease of harvesting, application and resilience makes them a reliable alternative for soft tissue coverage. The postoperative care is as important as the technique of application of the graft for successful vascularization of the graft. The most common causes of skin graft failure are hematoma or seroma, infections and movements. These factors affect the graft uptake maximally in the initial postoperative period by impairing the graft adherence to the wound bed and subsequent revascularization.

**KEYWORDS** : Split thickness skin grafting, Graft uptake, Postoperative day

**INTRODUCTION**

- The skin is the largest organ of the body by virtue of its surface area. It is in direct communication with the outside environment, its biological and mechanical properties serve to protect and maintain the delicate homeostasis of the human body. In dealing with problems in wound healing, skin grafting offers the surgeon a method of regaining skin continuity. With the advantages of reduced healing time and length of hospital stay along with the minimal donor site morbidity, it is an effective method of managing large ulcers of varied etiology.<sup>1</sup>
- Hence skin grafting is the most commonly done operative procedure under surgical care. Following skin graft, the graft will survive based on a defined sequence of events that culminates in vascular independence. These events are (1) serum imbibition—in first 24 to 48 hours; (2) inosculation—in next 24 to 72 hours; and (3) angiogenesis—that starts after 72 hours. Factors that interrupt this process such as fluid collection under the graft or mechanical shear forces will compromise the graft uptake.<sup>2</sup>
- Dressings are used to cover the grafted site or the recipient site in the postoperative period to enhance the healing process and improve the uptake. Dressings encourage epithelization from graft into the wound and granulation of the wound itself.
- Several studies have been performed investigating the factors involved in the uptake of split-thickness skin graft. The most common causes of skin graft failure are hematoma, seroma, infections, movement (shear) at recipient area.<sup>3</sup>
- These factors affect the graft uptake maximally in the initial postoperative period by impairing the graft adherence to the wound bed and subsequent revascularization. Dressing stabilizes the graft against shear forces, provides moist, sterile environment and prevent the accumulation of fluid under the graft. The success of a graft depends primarily on the extent and speed at which vascular perfusion is restored to this parasite, ischemic tissue.
- Therefore, dressing is a very important postoperative component for ensuring successful graft take. Hematoma, seroma and clots under the graft in the immediate postoperative period 1-3 days impairs the graft adherence and precludes revascularization. Hence inspection and first postoperative dressing done during this period will help in evacuating the hematoma, seroma, clots and also graft can be reapplied in case it has been disrupted, thereby it improves revascularization and graft survival rate. Even the risk of infection can be minimized by early inspection of grafts applied to contaminated beds.<sup>4</sup>
- Studies concerning this issue, especially the impact of first postoperative dressing on the graft uptake and survival are lacking. Hence the present study is to determine the factor like first postoperative dressing done on 3rd day and 5th day have any effect on the graft uptake, early and late complications associated with grafting in patients undergoing split thickness skin grafting.

**AIMS AND OBJECTIVES**

To evaluate and estimate the percentage of graft uptake of split-thickness skin grafting in relationship with first postoperative dressing done on third day versus fifth day.

**MATERIAL AND METHODS**

This was a comparative prospective study comprising of 70 patients undergoing split thickness skin grafting.

**Inclusion Criteria**

All in-patients aged from 15-60 years and of both genders undergoing split thickness skin grafting for the treatment of ulcers.

**Exclusion Criteria**

- Patients aged 60 years.
- Patients who require a combination of grafts i.e., split thickness and full thickness grafts.
- The need for a change of dressing secondary to other causes like wound contamination.

**OBSERVATIONS AND RESULTS:****Table No 1. Number of study participants:**

Days when observations were made	Number	Percentage
3rd day	35	50
5th day	35	50
Total	70	100

The study included 70 patients, with equal distribution between two groups selected alternatively for doing first postoperative dressing on 3rd day and 5th postoperative day.

**Table No 2. First Dressing Day Graft uptake values of the participants studied on 3rd and 5th postoperative day**

Day when postoperative dressing was done	Mean first dressing day graft uptake values (%)	Standard deviation	P value†
3rd DAY	86.3	9.3	0.080
5th DAY	79.3	14.3	

†Unpaired t test

The mean graft uptake of first dressing day in 3rd day group (3rd postoperative day) was 86.3% whereas in 5th day group was 79.3%. There was no significant association (P value of 0.080) between first dressing day and graft uptake.

**Table No 3. Comparison of presence of infection (growth in culture) in postoperative period (first dressing day) among 3rd and 5th day group.**

Post operative wound infection (growth in culture media)	Day when post operative dressing was done				Total	P value*
	3rd day group		5th day group			
	N	%	N	%	N	
Absent	3	8.6	1	2.9	4	0.614
Present	32	91.4	34	97.1	66	
Total	35	100.0	35	100.0	70	

\*Fisher's exact

Among 3rd day group, three (8.6 %) patients showed no growth from the swab taken pre-operatively and rest had infections, whereas in 5th day group one (2.9 %) cases showed no growth. There was no statistically significant association (P value of 0.614) between presence of infections and graft uptake.

**Table No 4. Hematoma found on the first dressing day among the participants studied on 3rd and 5th postoperative day.**

Group	Hematoma		Total	P value
	Present, n (%)	Absent, n (%)		
3rd Day	25(71.4)	10(28.6)	35(100)	0.016
5th Day	15(42.9)	20(57.1)	35(100)	
Total	40(57.1)	30(42.9)	70(100)	

Chi Square test

Among 3rd day group, 25 (71.4%) patients had hematoma and in 5th day group, 15(42.9 %) patients had hematoma. There was statistically significant (P value of 0.016) association found between presence of hematoma and graft uptake.

**Table No 5. Seroma found on the first dressing day among the participants studied on 3rd and 5th postoperative day**

Group	Seroma		Total
	Present, n (%)	Absent, n (%)	
3rd Day	35(100)	0(0)	35(100)
5th Day	35(100)	0(0)	35(100)
Total	70(100)	0(0)	70(100)

All cases shows seroma in their graft bed of varies sizes.

**Table No 6. Vancouver score of the participants studied on 3rd and 5th postoperative day:**

Day when post operative dressing was done	Median Vancouver scar score	Inter quartile range	P value*
3rd day	3	2.0-6.0	<0.001
5th day	7	4.5-8.0	

\* Mann Whitney U test

The median Vancouver scar scale among 3rd day group was three whereas it was 7 in 5th day group. There was statistically significant (P value of <0.001) association found between two groups with first postoperative dressing and cosmetic long-term outcome.

## DISCUSSION

The postoperative care is as important as the technique of application of the graft for the successful vascularization of graft.<sup>5</sup> Wide ranges of factors are believed to adversely influence the uptake of the skin graft. The most common cause of skin graft failure are hematoma, seroma, infections and shearing movements.<sup>3</sup> The dressing can prevent some impediments to graft uptake.

The postoperative dressing is typically left in place for 3 days before removal<sup>6,7</sup> at which time the graft is inspected and redressed. However early inspection and first postoperative dressing done during immediate postoperative period<sup>8</sup> will helps in evacuating seroma, hematoma and clots and also graft can be reapplied in case it has been disrupted, thereby it improves revascularization and graft survival rate.<sup>6</sup> No studies are available regarding the role of first postoperative dressing on graft uptake and survival.

Hence, this prospective study is done to compare the impact of first postoperative dressing done on third postoperative day versus conventional fifth postoperative day on final uptake of split thickness skin graft and survival. Our study analyzed 70 patients who underwent split thickness skin grafting for the treatment of ulcers of varied aetiology. The study participants were distributed equally between two groups by allotting alternately on 3rd and 5th postoperative day for doing first dressing after split thickness skin grafting.

## CONCLUSION

Our study emphasizes on the role of first postoperative dressing done on third day versus fifth day following split thickness skin grafting on final graft uptake. It showed that First postoperative dressing done on third post-op day following skin grafting significantly increases the final uptake of the skin grafting.

Seroma/hematoma being the most common local factors affecting the graft failure, and their immediate evacuation in early postoperative

period i.e., on third postoperative day will restore the vascular perfusion, hence graft can be salvaged and graft uptake can be increased.

First postoperative dressing done on third post-op day following skin grafting reduces the financial burden of the patient by reducing the postoperative hospital stay.

First postoperative dressing done on third post-op day following skin grafting improves the overall cosmetic appearance of grafted wounds in long-term period.

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