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FACTORS AFFECTING DONOR AREA HEALING

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Introduction

In the olden times the use of skin grafts was limited, so there was no specific management of donor areas. In 20th Century because of increased incidence of avulsion injuries, flame burns, for correction deformities and reconstruction in cancer surgery there is routine use of skin grafts.

In view of these facts an effort has been made to evaluate various local factors that influence the healing of split skin donor areas and if application of various agents can help in increasing the rate and quality of healing.

Materiol And Methods

The present study was under taken to evaluate 60 donor areas of split skin grafts in Plastic Surgery Department of S.M.S. Medical College Hospital, Jaipur.

To Study the influence of various local reagents on healing of donor sites, the cases were divided in two groups one consisted of donor area sites from which split skin graft of less than 0.3mm thickness was taken, while other group included-the cases in whom thickness wass 0.3mm or more.

In each group dressing was done by

1. An irritant antiseptic Mercurochrome
2. Sulphacetamide cream
3. Plain Vaseline gauze.

The rate and quality of healing of donor areas observed in all cases when bandage became loose or came off spontaneously.

Observations :

The study of 60 cases of split skin donor area healing was conducted and observations regarding various factors like depth of the wound, soakage, reagent used for dressing and quality of healing were made.

In 40 cases the depth of donor area was 0.3 mm or more while in 20 cases the depth was less than 0.3mm.

The soakage was observed only in 8 cases. Out of 8 cases 5 had one+SOAKAGE where as 3 cases had two+SOAKAGE. All the cases of one+soakage were managed by superbandaging. While two cases of two+soakage were superbandage and one case was managed by redressing.

Two cases had infection one each from one +soakage and these were managed by change of dressing as required and healed by hypertrophic area.

Results and Discussions

The healing of donor area is influenced by various factor Results of present study are discussed in the light of literature available.

Depth of Donor Areas

In the present series out of 60 donor areas, 20 were shallow less than 0.3mm deep areas,

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while 40 were 0.3mm or more deep areas. The earliest day of healing in shallow areas was 8th day and in deep area 13th day as compared to the series of Converse and Robbsmith (1944) and series of Sharma and Husain (1973) 6th day for shallow area and 14 days for deep area in each series. In the Converse and Robbsmith series the donor areas were on the back or abdomen as compared to present series it was mostly thigh or arm. So was in Sharma and Husain series. Abdomen and back have thick skin so healing is earlier because remnant in the dermis of the donor areas are richer.

Average day of healing for shallow (less than 0.3 mm deep donor areas) was 12.3 days and for the deep (0.3 mm or more) donor area 18.7 days. Healing was a day earlier in present series as compared to series of Converse and Robbsmith and series of Sharma and Husain. Latest day of healing was a few days later (3 days) as compared to Sharma and Husain and quite earlier (17 days) then the Converse and Robbsmith.

The earliest healing time in the present series was found to be 8 days. Epithelia regeneration is said to take 3-4 days and 4th to 7th day is time of blister fluid formation which leads to regeneration of lost dermis (Gillman et al) quality of the healing in the present series shallow areas had good healing while in deep areas out of 40 cases 7 healed with hypertrophic raised scars.

As Pars reticularis is more vascular than the pars parilaris more oozing is expected in deeper donor area, Soakage enhances invasion of bacteria resulting in infection.

In the present series incidence of soakage was found to be 13.33% which is negligible as compared to Husain and Sharma (1973) reported 66% soakage. No vasoconstricting agent was used in both series. Low incidence of soakage can be attributed to the better dressing technique and the maximum depth of wound measured in present series was 0.4 mm while in the series of Sharma et al, it was 0.76 mm.

Out of 13.33% showing soakage (8 cases), 5 cases had one soakage and all these 5 cases were managed by superbandaging. There cases had two+soakage of which 2 cases were managed by superbandaging and 1 case by redressing. The cases managed by superbandaging were 7 in number out of which 2 cases developed infection, while redressing was done only in one case which healed without infection, as compared to Sharma and Husain in redressed cases none had infection, while in superbandaged cases incidence of infection was 37.5%

Cole brook and Hood have demonstrated that bacteria specially the motile ones can pass through a soaked dressing within few hours., because of the above reason superbandaging does not eliminate the bacteria, that have already permeated the soaked dressing and therefore they will eventually reach the donor area while in redressing soaked dressing are discarded 50% (4) cases healed with multiple scattered areas of hypertrophic scars while 50% (4) cases healed with good even and pink scars.

In present study the over all incidence of infection was 3.7 % as compared to Sharma and Husain series and Converse and Robbsmith series 18 % and 5.7 %, the quality of healing in infected cases was much poorer with hypertrophic rough and contracted scar. Similar were the observations of Converse and Rabbsmith about quality of healing the infected cases.

Effects of Dressing Agents on Healing

In the present series three types of reagents were used out of 20 cases dressed with sterile vaseline one had infection. All the 19 cases dressed with antiseptic creams none had infection. The healing was good in the cases dressed with the anti-septic cream and sterile vaseline. Irritant agent led to hypertrophic scar healing in high percentage of cases as compared to other agents.

Average healing time required was 17, 18 and 19 days in the three groups. This is also supported by Sharma and Husain they also observed the same results.

Cannon and Bradford made comparative study of Boric Acid Oint, 5 % scarlet Red and 5 % Cibazol Vaseline ointment and came out to the same conclusions.

Jeffords and Haggerty made a comparative study of simple vascline and nitrofurazone dressing and concluded that the later was better as they gave 90.2 % epithelisation as against 80.3 % with the vaseline guaze. It is concluded that agents used for dressing to some extent affect the quality of healing not the average time of healing, because purpose of dressing is to protect the would during the process of healing. Rate of infection was zero

Table I

Day of Complete healing and Depth of donor area.

Day of Complet healping	6–7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Shallow area less than .3 mm		1			2	7	3	4	3						
Deep area .3 mm or more.							2	0	2	3	4	10	8	6	5
Time range of healing shallow area								—		8-15 days					
Deep area								—		13-41 days					
Peak incidence of healing-shallow area								—		12 days					
Deep area								—		18 days					
Average day of healing-shallow area								—		12.3 days					
Deep area								—		18.7 days					

Table II

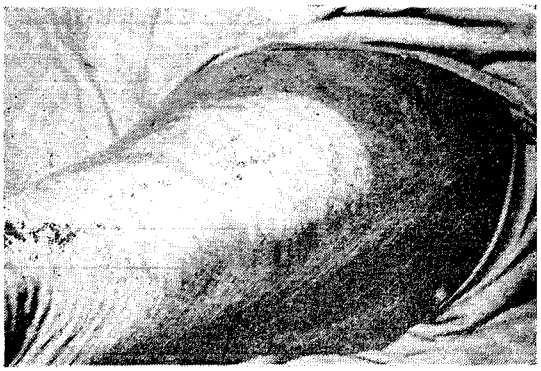
Quality of healing in relation to depth of donor area.

Depth of Donor area	No. of cases	Good healing	Healing with Hypertrophic area.
Less then .3 mm	20	20	—
0.3 mm or more	40	33	7

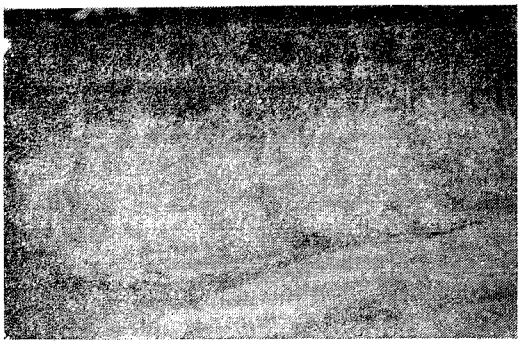
Table III

Relation of dressing agent to the healing of donor are and quality of healing.

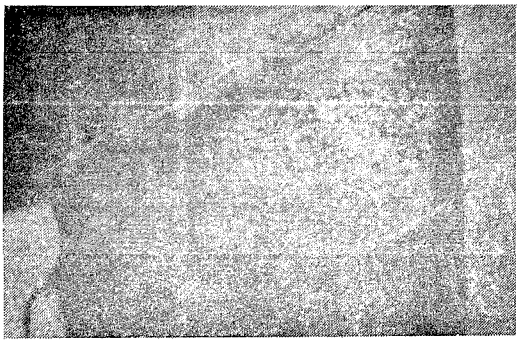
Dressing agent	No. of area	Earliest day of healing.	Latest day of healing.	Average day of healing.	No. of infected cases.	Healing good.	Hypertrophic.
Sterile Vaseline	21	8	28	17	1	20	1
Mercurochrome	20	12	41	19	1	17	1
Sulphacetamide cream.	19	12	21	18	–	18	1



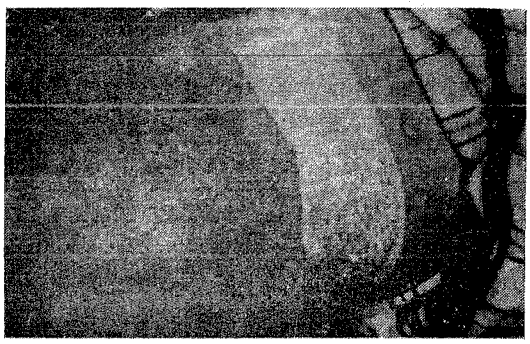
Photograph No. 1 Per operative photograph of donor areadepth of donor area wound 0.2 mm.



Photograph No. 2 Post operative photograph showing good healed area of same patient.



Photograph No. 3 Per Operative photograph of donor areadepth of donor area wound 0.3 mm.



Photograph No. 4 Post operativ photograph showing good healed area of same patient.

in cases of antiseptic group of dressing with sulphacetamide cream.

Summary

Split skin area healing was studied in 60 areas. The effect of various factors that influence healing were also observed in the series. Superficial area dressed with antiseptic cream have good quality healing. Deep donor area have more delayed healing with irregular areas of Hypertrophic scar.

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