

"BIOLOGICAL DRESSINGS"

(A Comparative Study of Human Skin & Amniotic Membrane)

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Conclusion

Hundred cases of infected wound were studied. Fifty cases were dressed with homografts and 50 cases with amniotic membrane. Their antimicrobial effect was observed by periodic bacterial counts. In cases of homografts infection cleared off earlier as compared to amniotic membrane.

Introduction

An antimicrobial effect of biological dressings was recorded by Eade in 1953 in human autograft experiments and could be demonstrated with nonviable skin as well. The effect depends partly on the host activity. Antimicrobial effect in animal experiments were also seen by Moris, Bondae and Burke (1966) and Burleson and Eismen (1971). Homograft served not only to protect and improve the wound but also effects physiological improvement in the recipient.

Biological dressing, especially used in the burn cases, has advantages. They virtually eliminate all pain and discomfort from the raw area.

Amniotic membrane was first used by E. Troensegarrd Hansen (1950) as temporary biological dressing in the laboratory and in patients with injury.

In the present study antimicrobial activity of various biological dressings is compared. The study has been conducted in the Plastic Surgery Department, of SMS Medical College Hospital.

Material Method

Hundred cases of infected wounds were studied. The cases were divided into two groups.

Group 'A'

Homografts were used to dress the infected wounds of 50 cases on every alternate day. The skin was obtained from the dead body within 8 hours of death and split skin grafts were taken with all appropriate precautions, and were preserved at 4° C in refrigerator.

Group 'B'

Amniotic membrane was used for dressing in 50 cases of infected wounds on every alternate day. The amniotic membrane was obtained from a recently delivered placenta, in which premature rupture and cervicitis was absent. The amniotic membrane was washed with savlon and saline and preserved in vaseline gauge at 4° C.

To know the bacterial counts culture was taken from the infected wound on 1,7,13, 19,25,31 and more days with help of 3 mm. wire loop from the wound and inoculated on culture plate of Blood agar, Macconkey media and colonies were counted. Bacterial counts were more than 1 lac is significant. Each group was of 50 cases without discrimination. Every alternate case admitted was put in another group in this clinical study. Results were compared.

Observation

Male	73
Female	27

Age of the patients ranging from 20-48 years.

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Etiological Factor

Post traumatic	30
Post Burn	66
Infective Cellulitis	4

mostly cases were of post burn infective area or post avulsion injury.

Type of Organism :

Staphylococci	66
E.Coli	50
Pseudomonas Pyocynaeous	16
Klebsella	12
Streptococcus	10

46 patients showed mixed infection.

Time required for converting the infected wounds into clean wound (Ready for grafting).

Duration (In days)

Clinical Group	Less than 7	7-12	13-18	19-24	25-30	More than 30
Group A	—	2	5	14	27	47
Group B	—	1	3	9	18	40

Bacterial Counts

	Group A	Group B
Ist Day		
(i) Sterile or Insignificant	—	—
(ii) 1,00,000—1,75,000	2	1
(iii) 1,75,000 and more	48	49
7th day		
(i) Sterile or insignificant	2	1
(ii) 1,00,000 to 1,75,000	12	8
(iii) 1,75,000 and more	36	40
18th day		
(i) Sterile or insignificant	5	3
(ii) 1,00,000 to 1,75,000	25	25
(iii) 1,75,000 and more	20	22
19th day		
(i) Sterile or insignificant	14	9
(ii) 1,00,000 to 1,75,000	27	25
(iii) 1,75,000 and more	9	16
25th day		
(i) Sterile or insignificant	27	18
(ii) 1,00,000 to 1,75,000	20	24
(iii) 1,75,000 and more	3	8
31st day		
(i) Sterile or insignificant	47	40
(ii) 1,00,000 to 1,75,000	3	10
(iii) 1,75,000 and more	—	—

Subjective relief of pain was also observed. It was minimal in the group 'B' patients who were dressed with the amniotic membrane.

Discussions

In the present study 100 cases were studied. In group A & B in which most of the wounds were ready by the end of 1 month, in group A 94% and in group B 80% of cases were ready for autografts.

In present series reduction was noticed in both gram negative as well as in gram positive organism. It was seen that weekly culture showed progressive decline in the bacterial counts. No systemic antibiotics was given in both groups. Similar observation were obtained by Brandberg et al. (1977). In three cases biological dressing was used. They found it effective in reducing the degree of bacterial growth and found it superior to the saline dressing. Martin et al. (1973) also found similar effect of antimicrobial effect with skin homograft and amniotic membrane as compared to control dressing.

The reduction in the bacterial counts were seen. The first day culture showed in each group Bacterial count ranging between 1,00,000—1,75,000 and more. By the end of 31st day the count in group A & B was 94% and 80% respectively. Such study have not been conducted till now still some experiments in the animals had been conducted. Martin et al (1973) had reported that 29% experimental animals showed reduction with Homografts 50% of animals showed reduction with amniotic membrane. No break through phenomenon was seen. It may be because of zero contamination while dressing the wound.

In the present series the organism remained the same on each culture although mixed culture were present. The time required to get infection cleared in group A & B was less. Morris in 1960 and Sawhney (1972)

observed similar observation. In their clinical experience with 18 patients they found impressive results. The antimicrobial effect may occur because an intimate biological closure of an infected wound is achieved

with skin allografts which allow the host defence mechanism to deal more effectively with the surface infection. Homografts showed better antibacterial effect than the amniotic membrane.

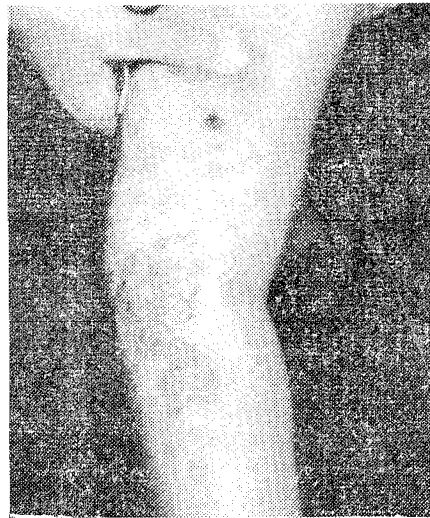
Photographs (Case one)



Photograph 1
Shows infected wound post burn.



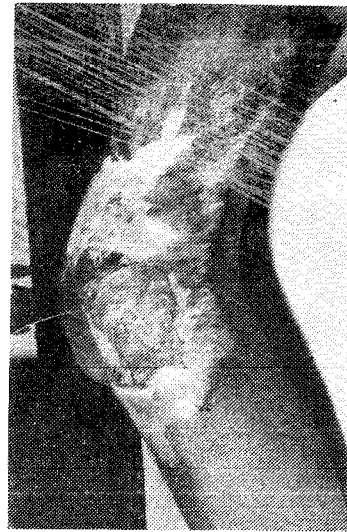
Photograph 2
Shows wound dressed with amniotic membrane.



Photograph 3
Shows healing of wound from all side after dressing with amniotic membrane, and wound was ready for grafting on 31st day.

Photographs (Case Two)*Photograph 4*

Showing infected wound before
applying Homografts
(Biological Dressing)

*Photograph 5*

Showing infected wound after
application of homograft.

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