

EFFECT OF HUMAN AMNIOTIC MEMBRANE AND SALINE SOAKED GAUZE DRESSINGS ON QUANTITATIVE SURFACE BACTERIAL COUNT IN GRANULATING BURN WOUNDS

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SUMMARY

In a comparative study carried out in 10 major burn patients with granulating wounds, it was found that amniotic membrane is in no way superior to simple saline soaked gauze dressings in either decreasing the bacterial count or preparing the granulating raw area for autografting.

Introduction

Amniotic membrane has been found to be very useful in the management of burn wounds. A clinical study has been carried out to evaluate the effects of amniotic membrane and the conventional saline soaked gauze dressings in reducing quantitative surface bacterial count in granulating burn wounds and also to observe their effects on subsequent take of the autograft.

Material and Methods

Ten patients with major burns were selected for the study. Two different anatomical regions of the same patient have been used as control and study areas simultaneously to avoid variables. Control area was dressed daily with saline gauze dressings and the study area with amniotic membrane.

Quantitative surface bacterial cultures were studied from both areas, as described by Levine et al. (1976) at every dressing.

Subsequently, both areas were autografted simultaneously.

Results

The organisms cultured were *Staph. aureus*, *Pseudo. aeruginosa*, *Proteus mirabilis* and *E. coli*.

In areas covered with amniotic membrane, as well as in control areas, there was significant decrease in bacterial count after 24 hours except in one case of the study group which showed an increase by 8.3%.

After 48 hours of application, there was further decrease in bacterial count which was statistically significant (Table 1).

Table 1. Percentage decrease in bacterial count

Percentage	No. of patients Control group		No. of patients in study group	
	24 hr.	48 hr.	*24 hr.	48 hr.
> 50	0	3	2	3
40—50	2	3	1	4
30—40	4	2	3	1
20—30	1	1	1	1
10—20	2	1	2	1
< 10	1	0	0	0
p value	< 0.05	< 0.01	< 0.05	< 0.01

*one patient showed 8.3% increase in bacterial count at 24 hours with amniotic membrane dressings.

Discussion

There was significant decrease in bacterial count in study area after 24 hours. Mean percentage decrease was 36.5%. There was further

reduction in count after 48 hours (mean % decrease was 43.2%).

The role of amniotic membrane in reducing surface bacterial count was observed in experimental as well as in clinical studies (Robson & Krizek, 1973; Robson et al., 1973). The antibacterial property of amniotic membrane remains controversial but is well accepted (Fleming, 1932; Morris, 1966 and Robson & Krizek, 1973).

In control area there was 29.2% decrease in bacterial count after 24 hours and 43.5% mean decrease in count after 48 hours. This decrease too is statistically significant.

Frequently changed saline gauze dressings is a common method for preparation of granulating areas for autografting with the hope

of reducing bacterial population (MacMillan & Lang, 1978).

In both the groups there was a significant decrease in the bacterial count. The comparative decrease of bacterial count was more with saline gauze in five patients and in rest 5 it was more with amniotic membrane. Hence the effectiveness of amniotic membrane is in no way superior to saline gauze dressings.

It seems undue emphasis has been laid down on the role of amniotic membrane. Quinby et al. (1982) showed that amniotic membrane dressings in granulating wounds, apart from maintaining low bacterial counts, help in successful autografting. However, we didn't find any difference in graft take in two areas.

REFERENCES

1. FLEMING, A.: Lysozyme. *Proc. Roy. Soc. Med.* 1932, 26: 71.
2. LEVINE, N. S., LINDBERG, ROBERT, B., MASON, A. D. JR. et al.: The quantitative swab culture and smear: A quick simple method for determining the number of viable aerobic bacteria on open wounds. *J. Trauma*, 1976; 16(2): 89.
3. MACMILLAN, B. G. and LANG, D.: 'Burns a Team Approach' by Arz, Moncrief and Pruitt. W. B. Saunders, 1979; 411.
4. MORRIS, P. J., BONDOC, C. and BURKE, J. F.: The use of frequently changed skin allografts to promote healing in the non-healing infected ulcers. *Surgery*, 1966; 60: 13.
5. QUINBY, W. C., HOOVER, H. C., and SCHEFLAN, M.: Clinical trials of amniotic membranes in burn wound care. *Plast. Reconstruct. Surg.* 1982; 70(6): 711.

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