A CLINICAL TRIAL WITH BURN SHIELD FOR BURN WOUND DRESSING

AUTHOR : DR. S.P. BAJAJ, DR. RAJENDER MITTAL

Introduction

Local management of burn wound has shown hardly any change since the days of Hippocrates and Sushruta. In essence it consists of application of non-adhesive material in one or another form and preventing wound to get contaminated and infected. Today's dressings more or less fall in the same category. Beneficial effects of cooling were well known to the early physicians. Sushruta puts lot of emphasis on cooling of burnt part. A medicinal plant Malaleuca Alt was used by Australian natives in the treatment of burns. This fact was discovered by Joseph Banks during a sea voyage with captain Cook. The same medicine is now available in the form of **Burn Shield** manufactured by a South African company. Burn Shield dressing is made up of a soft, elastic playform sheet saturated with hydrogel consisting of 96 percent water, Melaleuca Alt, emulsifiers and having pH of 5.5 to 7.0. This product has specific property of quickly reducing the temperature by absorbing the heat.

A study was undertaken to determine the utility of this as a dressing material in burn in terms of -

1. First aid material
2. Its effect on pain relief
3. Its effect on preventing wound infection
4. Its effect on healing of wound

Materials and Methods

Cases coming to burn casuality of Safdarjang Hospital were the subject of this study. This study was done between Nov. 1999 to Jun. 2000. Cases were divided in three groups. Group one received conventional treatment of dressing with Silver Sulphadiazine followed by sterile gauze pad dressing. Second group received dressing with burn shield. Third group consists of the cases who had bilaterally symmetrical burn. In this group one side received dressing with Silver Sulphadiazine and other side received dressing with burn shield. Patients having burns less than 40 percent were selected for this study. Patients with Chemical or Electrical burns were not included in this study. Pregnant women or patients having any previous history of allergy or medical illness were also excluded from the study.

Following observations were made at the time of first dressing

1. Pain relief in the scale of 1-10
2. Comfort of dressing
3. Ease of application

Each case was followed up for three weeks or till the wound healed. During follow up following parameters were noted

- Soakage of dressing
- Any rise of body Temperature
- Requirement of antibiotics
- Time taken for wound healing or till wound is ready for grafting

Dressings were changed depending upon the soakage or clinical signs of infection or septicemia.

Observations

Total 30 patients were included in the present study. Each group had 10 patients. Patient having burns <10% of body surface area were managed on the out patient basis while the others were admitted irrespective of the group to which the patient falls.

In group 1 and 2 approximately 50 percent of the patients were treated on out patient basis while in group three 9 out of 10 patients were treated as inpatient (table 1).

By and large in all patients dressing was taken as part of first aid procedure. Group 2 and group 3 where burn shield was applied received good acceptability by nursing staff because of ease and simplicity of procedure.

Pain relief was a subjective study and was recorded on the scale of 1 to 10. In group one 9 patients scored less than 6 on pain relief scale of 1-10 where as in group 2, 7 patients scored more than 6 on the same scale. In group 3 patients showed pain relief much more on burn shield dressed side (table 2). This clearly shows that burn shield that has an edge on conventional dressing as far as pain relief is concerned.

Number of dressings were much less on burn shield treated side irrespective of the percentage of burns. In group 1, 9 out of 10 patients required more than three dressings where as in group 2 seven out of ten required less than 3 dressings (table 3). Average number of dressings required were 12 in group 1 and 2.5 in group 2. It was 18 on conventionally treated side of group 3 and 3 on burn shield treated side.

Healing time : This was the most difficult observation to be made as dressing was not changed every day. In group 1 only two cases healed in two weeks of time and 5 cases required more than 4 weeks. In group 2 seven cases healed in 2 weeks of time and only one case took 26 days to heal. In group 3 eight out of ten cases required more than 4 weeks for healing on conventionally treated side where as on burn shield treated parts most of wounds healed in 3 weeks. (Table 4 & 5)

Table 1 : Distribution According to Percentage

Percentage of Burns	Group 1	Group 2	Group 3
< 10%	5	4	1
10-20%	3	3	3
21-30%	2	3	3
31-40%	-	-	3
Total	10	10	10

Table 2 : Pain Relief Scoring

Pain relief Score	Group 1	Group 2	Group 3	
			Conventional Side	Burn Shield Side
1-3	5	-	5	-
4-6	4	3	4	2
7-9	1	7	1	8
10	-	-	-	-
	10	10	10	10

Table 3 : No. of dressings required till healing

No. of Dressings	Group 1	Group 2	Group 3	
			Conventional Side	Burn Shield Side
1-3	1	7	-	5
4-10	4	3	2	5
11-17	3	-	4	-
17-23	2	-	4	-

Table 4 : Healing Time (days)

Days	Group 1	Group 2	Group 3	
			Conventional Side	Burn Shield Side
<7	-	-	-	-
8-15	2	7	-	5
16-23	3	2	2	3
24-31	3	1	4	2
32-39	2	-	4	-

Table 5
Wound Healing time in days

Group	Healing time in days
Group-1	25
Group-2	15
Group-3(c)	30
Group-3(B.S.)	20

Number of Dressings required till Healing

Group	No. of dressing
Group-1	12
Group-2	2.5
Group-3 (conventional)	18
Group-3 (Burn Shield)	3.0

Four patients developed symptoms and signs of septicemia in group 1 and only one patient had rise of temperature plus bowel disturbances in group 2. In group 3, five patients developed rise of temperature with bowel disturbances or change in sensorium.

Results

Pain relief – Pain relief was seen in phasic manner. First relief was instant after the application of dressing and second was noticed a few hours after the dressing which lasted for longer time. In group one-there was pain relief which on the scale of 1-10 fell on an average of 3. In case of group two there was significant difference and pain relief was about 6 on the same scale. When it was seen in group three, a similar type of finding was noticed on the two sides, i.e. score 3 on conventional dressing side and score 8 on burn shield treated side. The difference was more marked in the later phase. In burn shield treated side it scored around 8-9 while in conventional treated side it scored 4.

Patients were more comfortable where burn shield was applied. This was basically because of less bulky nature of burn shield dressing. However the patients felt further comfort as the dressing remained dry and there was no foun smell.

On an average burn shield treated patients (group 2) and burn shield treated side in group 3 required only two changes of dressing during the whole healing process while about twelve dressings were required on conventionally treated side.

WOUND INFECTION - In burn shield treated group 4 cases required antibiotic cover which was basically because of strong suspicion of invasive sepsis. Basis of invasive sepsis were following

1. Rise of temperature
2. Change in sensorium
3. Bowel disturbances (diarrohea or vomiting with normal electrolytes)
4. Neo eschar formation

Whenever there was combination of any of the above mentioned two features appropriate antibiotic were given. In group one four patients were regarded as clinically septicemic and required antibiotics whereas in group two only one patient was given antibiotic therapy. In group three five patients received antibiotics mainly conventionally treated side got infected. From this it appears that either burn shield have some bacterial resistant property or as it adheres to the burn site so prevents infection.

Wound healing – On an average would healing time in group 1 was 25 days while in group 2 it was 15 days. Almost similar finding was there in two sides of group 3.

Grafting – Four cases in group 1 needed grafting and only two cases were grafted in group 2. Five patients required grafting in group 3. Moreover in this group conventionally dressed side required grafting at 10 sites and burn shield treated needed grafting at 4 sites. Further area was much cleaner and ready for grafting where as on conventionally treated side wound hads to be prepared for grafting.

Conclusion

It appears that burn shield helps in reducing the depth of burn injury. It helps in reducing the infection and promotes epithelisation of raw area.

Author

DR. S.P. BAJAJ
Deptt. of Burns & Plastic Surgery,
Safdarjang Hospital, New Delhi.

DR. RAJENDER MITTAL
Senior resident
Safdarjang Hospital, New Delhi

Address for correspondence,
Dr. S.P. Bajaj
Deptt. of Burns & Plastic Surgery,
New Delhi.