

The Role of Alternative Therapy in the Management of Partial Thickness Burns of the Face—Experience with the Use of Moist Exposed Burn Ointment (MEBO) Compared with Silver Sulphadiazine

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Abstract

Introduction: Conventional management of partial thickness facial burn wounds includes the use of silver sulphadiazine dressings. Silver sulphadiazine forms an overlying slough that makes wound healing assessment difficult. Moist exposed burn ointment (MEBO) has been proposed as the ideal burn wound dressing both for burns of the face and other sites. Proponents of MEBO claim that it accelerates wound healing and results in scarless wound healing and at the same time reduce bacterial colonisation and the need for analgesics. We present here our experience with MEBO in the management of partial thickness burns of the face. **Materials and Methods:** One hundred and fifteen patients with partial thickness burns were randomly assigned to conventional treatment or MEBO. Out of this, 112 were analysed. Thirty-nine patients sustained facial burns; 17 received MEBO and 22 received silver sulphadiazine. Patients were followed up daily until the burn wounds were reduced by 75% of original body surface area (BSA). **Results:** In patients with facial burns, MEBO was similar to silver sulphadiazine therapy with respect to rate of wound healing. Minimal slough was present over the wounds in MEBO-treated wounds resulting in clearer assessment of healing progression. **Conclusions:** Advantages of MEBO as compared to silver sulphadiazine in the management of partial thickness burns of the face include convenient change of dressing and easier assessment of healing progression. This suggests that MEBO is a useful alternative therapy for partial thickness burns of the face.

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Key words: Burn ointment, Facial burn, Minimal slough, Traditional therapy, Simple application, Useful alternative

Introduction

Moist exposed burn ointment (MEBO) is an example of an alternative remedy proposed in the management of burn injuries. Developed in the late 1980s at the China National Science and Technology Centre in Beijing with its clinical use reported originally from China,¹ MEBO is a petrolatum-based ointment containing sesame oil, β -sitosterol, berberine and other plant ingredients. The precise mechanism of action is not fully understood but it is surmised that the oil-based ointment provides a moist environment encouraging epithelial regeneration; moreover, β -sitosterol provides some anti-inflammatory effects.² The absence of dermal irritation or sensitisation of MEBO when applied

cutaneously has been previously established.³

Proponents of MEBO claim that it encourages burn wounds regardless of depth or extent to heal and regenerate spontaneously without surgical intervention. This is in contrast to the current conventional approach that advocates early excision and grafting of deep burn wounds with the use of antibiotic creams like silver sulphadiazine and sulphamylon as local wound therapy.⁴ In addition, MEBO is claimed to have analgesic properties and an anti-bacterial effect, and prevent scarring and contractures even in unoperated deep dermal partial thickness burns.

We embarked on a single-centre prospective randomised controlled clinical trial to verify these claims with respect

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to MEBO as compared with our current Burn Centre management in patients with partial thickness burns. Parameters studied included the rate of wound healing, anti-bacterial effect, analgesic effect, subsequent scar development and the hospital resource costs. The results of this trial will be reported elsewhere. We present here our experience with MEBO in the management of partial thickness burns of the face.

Facial burns are common and account for up to a quarter of admissions to the Singapore National Burns Centre, either in isolation or as part of a more extensive burn injury. Deep facial burns result in scarring and contracture with deleterious effects on vital facial structures like the eyelids and lips. The majority of facial burns, however, are partial thickness in nature and respond to conservative management. The goal of this therapy is to provide an environment for healing of facial skin with limitation of zone of injury and bacterial infection, and with minimum scarring and pigmentation change. Ideally, the treatment should be pain free and easily administered by the nursing staff, and the progress of healing easily monitored.

Hitherto, the conservative management of facial burns includes application of aureomycin cream and spenco dressing for superficial partial thickness burns, with silver sulphadiazine cream for deeper partial thickness burns. Surgical excision and grafting are reserved for full thickness burns to prevent lid or lip ectropion. In this study, we report our experience with MEBO compared with silver sulphadiazine in the management of partial thickness facial burns.

Patients and Methods

Patients with partial thickness burns of up to 40% body surface area (BSA) admitted to the Burns Centre were eligible for the trial. The exceptions were patients in the extremes of ages (<6 years and >80 years) and those with chemical and electrical burns. The wounds were examined by one of the clinical coordinators to verify the eligibility of the patient for admission into the trial. The patient's consent to participate in the trial was obtained after a full explanation was given of the treatment options, and the manner of treatment allocation. Fluid resuscitation was carried out for patients with burns involving >15% BSA as per pre-existing Burn Centre protocol, as were analgesic use and antibiotic prescription.

After the initial assessment, patients were randomly assigned either to the conventional (C) group or MEBO group either by telephone to the NMRC Clinical Trials and Epidemiology Research Unit, Singapore during office hours or by sealed envelopes after office hours. Randomly alternating permuted sub-blocks of size 4 and 6, with equal numbers per treatment within each sub-block, were used to

obtain an overall block size of 10. In the C group, the burn wounds were cleansed with plain chlorhexidine 0.05% and silver sulphadiazine applied twice daily. In the MEBO group, following cleansing of the wounds, MEBO was smeared directly onto the wound at 1 mm in thickness at 4 hourly intervals with a sterile gloved finger. The extent of each facial burn was assessed and mapped using a Lund and Browder Burn Chart and photographed. The BSA chart and photographs of the burn area were repeated on the fifth day, thereafter every 3 days and upon discharge.

Healing times are summarised using the Kaplan-Meier estimate and compared between treatments using the log rank test. The Cox regression model was used to adjust the difference between treatments for age and gender differences.⁵

Results

Patient Distribution

Between 1 March 1997 and 24 October 1998, 115 patients with partial thickness burns were enrolled in the trial through the Singapore National Burns Centre at the Singapore General Hospital. Fifty-eight patients were randomised to the C group and 57 to the MEBO group. Data were not obtained from 3 patients randomised to the MEBO group due to various reasons and they were therefore excluded from the trial. One hundred and twelve patients were therefore available for analysis. Thirty-nine (35%) out of the 112 patients suffered face-burns with 17 on MEBO and 22 on conventional treatment (Table I). Two patients in the MEBO group were discharged early while there were 1 early discharged and 2 deaths in the conventional group. Two patients with facial burns managed with MEBO are illustrated (Figs. 1 & 2).

Healing Time

There was no difference in the number of days taken for the face-wound to heal between the two groups (Fig. 3). Face-burns in 14 patients in the MEBO group healed by day 10 (range 2 to 35 days) compared to 17 patients in the conventional group. None of the patients in either group required any reconstructive surgery to correct burn contractures of the face in the immediate post injury period up to 6 months.

TABLE I: THE MEAN BSA VALUES FOR BOTH TREATMENT GROUPS

	MEBO	Conventional
No. of subjects	17	22
Mean BSA (%)	2.16	1.56
Standard error	0.38	0.18
Range	0.13-6	0.5-3.5

BSA: body surface area; MEBO: moist exposed burn ointment

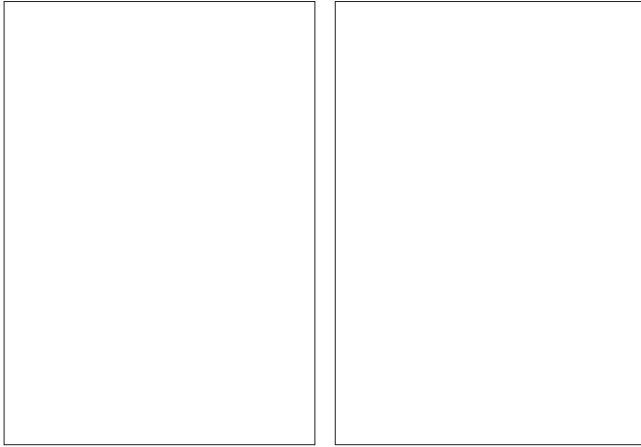


Fig. 1a. Partial thickness flame burns to the face and neck.
Fig. 1b. Healing after 2 weeks following application of MEBO.

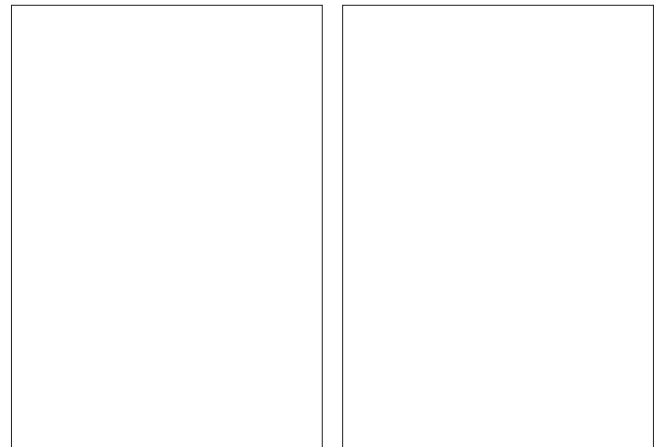


Fig. 2a. Deep dermal flame burns to entire face with singeing of hair and eyebrows.
Fig. 2b. Three weeks after burning injury with application of MEBO.

Discussion

Standard dressing for facial burns in our Burn Centre prior to the onset of this study consisted of Spenco “second skin” for superficial partial thickness burns, and silver sulphadiazine (Silvazine™, Smith and Nephew®) for mid-dermal and deeper partial thickness burns. The disadvantages with the use of silver sulphadiazine include retardation of wound healing, pain upon application and the presence of slough over the wound, which precludes accurate assessment of progression of the healing.

In this study, we found that MEBO resulted in similar healing rates as compared to silver sulphadiazine dressings in partial thickness burns of the face. Moreover, it was easier to assess the progress of healing with MEBO as the wound was not obscured by a layer of slough as is present with silver sulphadiazine-treated wounds. None of our patients in this series required any reconstructive surgery for burn contractures of the face at 6 months follow-up so we are unable to comment on the effectiveness of MEBO in obviating the need for reconstructive surgery for facial contractures beyond 6 months. In addition, the nurses preferred to use MEBO for facial burns as it is easier to apply than silver sulphadiazine due to the need to have bulky dressings in the latter technique.

MEBO was less expensive to use though this was offset by the longer dressing time required. This was due to the fact that MEBO was applied every 4 hourly as compared to silver sulphadiazine that was applied only twice a day. This disadvantage can possibly be minimised by educating patients or their relatives to apply MEBO themselves once their overall condition has stabilised.

Conclusion

The use of MEBO for partial thickness burns of the face resulted in similar healing rates compared to that achieved

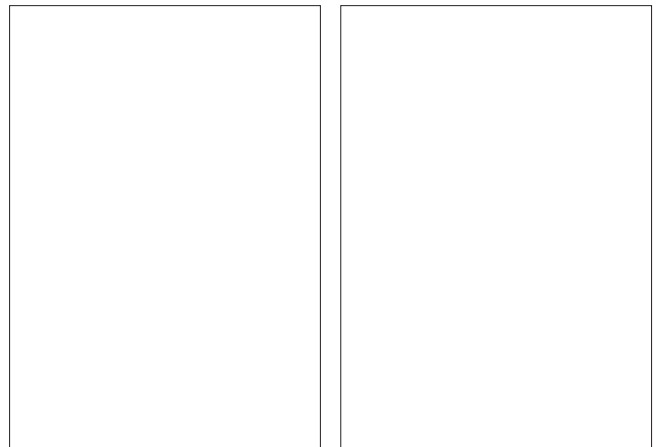


Fig. 2c. Four weeks after burning injury with application of MEBO.
Fig. 2d. Six weeks post-burns and full healing of entire face.

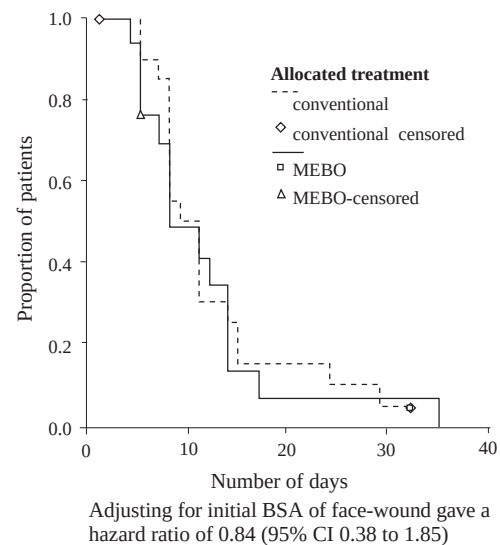


Fig.3. Time from randomisation to healing of face wound.

with silver sulphadiazine dressings. It is a cheaper alternative, both in terms of hospital costs and consumables, but required increased manpower time for dressing. It is easier to apply and allows better assessment of the progress of the underlying wound healing compared to silver sulphadiazine. This suggests that MEBO is a useful alternative modality in the management of partial thickness burns of the face.

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