



THE COMPARATIVE STUDY OF OPEN VERSUS CLOSED MANAGEMENT OF BURN WOUNDS

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ABSTRACT Over the period of 2 year, 100 cases with burns were studied with 50 in group of closed dressing and other 50 in open dressing for the management. The study included 61 males and 39 females with mean age of 32 yrs in closed group and 35 yrs in open group. The complications were 2 % in closed group while 20% in open group. 66% cases were discharged with satisfactory wound healing. The length of stay was 21 days in closed group while 29.5 days in open group. Overall, in our study, closed method gave better outcomes than open method in the management of burns wound.

KEYWORDS : Burns, Open dressing, closed dressing, Burn dressing, Silver sulphadiazine.

INTRODUCTION

In the developing countries, burn comprises significant portion of burden of injuries.¹ There are multiple factors responsible for outcome of patients which include the effective resuscitation, care of the wound, adequate analgesics and prevention and control of the infections.

The other factors like nutrition, physical, psychological and occupational treatment, and rehabilitation play a major role in the outcome.² The various studies have reported that the women have higher risk of severe burns and death in many countries including India.³

The mortality increases with the age, total body surface area (TBSA), the interval between injury and treatment and other co-morbidities. There are also regional variations in the mechanisms of injury, like burns by scalding fluids are more common in Africa while by flame is more common in Indian subcontinent.⁴

The outcome in the number of studies has shown that infection is found to correlate significantly with the overall outcome. The morbidities associated include chronicity, scarring, contractures, dichromic changes and malignant transformation.⁵

There are many methods to manage burn wounds but commonly preferred are open (exposure), closed technique with or without topical antibiotics. In the open method, various topical agents including silver sulphadiazine (SSD) are used on the wet surfaces without covering dressing. This method is well suited for face/ perineum⁶. In closed method, it is initial cleaning followed by coverage of wound with sterile dressing which may be changed subsequently.⁷

The ideal burn dressing product is beyond the affordability of the economically constrained society as many of the patients involved with burn injury belong to lower socio economic class. The goal of the burn management is to achieve rapid wound healing, pain relief, minimal scars and optimal functional ability.⁸

The aim of our study is to compare open and closed methods of burn management, to see the outcome, advantages and limitations of both the methods and utility of both methods in general population.

METHOD AND MATERIALS

The study was conducted in the Department of Plastic Surgery of SSIMS and RC, Davanagere over a period of 2 year i.e. from January 2015 to December 2016. The sample size was 100.

All the burns patients were received in the emergency department of the hospital. The resuscitative measures were started and simultaneously history was taken regarding source of burn, time since incident and examination was conducted to calculate the percentage of burns according to rule of 9.

The patients fulfilling the inclusion criteria were taken in the study and

then according to the affordability and patients consent regarding the choice of treatment they were categorized into either closed group or open group.

The closed wound management included washing of the burnt area with normal saline and then application of SSD cream and closing wound with Vaseline gauze. The dressing was changed daily till it healed. In open method, the wound was washed with normal saline and then SSD was applied over the wound and it was kept open. Both the groups were treated with i.v fluids antibiotics, analgesics and sedatives for pain relief.

The patients were observed over a period of time and any complications related to wound, time required to heal completely, any surgical procedures required and length of hospital stay was studied and compared in both the groups.

INCLUSION CRITERIA

- Only adults were included in the study
- Burns up to 40 % TBSA
- Only thermal burns
- Burns occurred within 48 hours
- 1st degree and superficial and deep 2nd degree of burns

EXCLUSION CRITERIA

- Burns in children
- Associated comorbidities or medical illness
- Patients with burns occurred beyond 48 hours
- Electrical and chemical burns
- Burns beyond 3rd degree in depth and more than 40% of TBSA.

RESULTS

Of the total 100 patients, 50 were included in closed dressing group and rest 50 in open dressing group. The total number of males were 61 and females 39. The division in both group is shown in table 1.

Table 1: Sex predilection of burns.

SEX	OPEN	CLOSED
Males	30	31
Females	20	19
Total	50	50

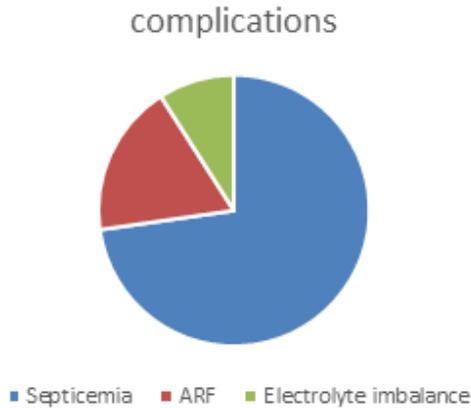
The age group varied between 19 to 62 yrs with mean age of 32 yrs in open group and 35 yrs in closed group. The mean TBSA was same in both the group which was 30% as in table 2.

Table 2: Various factors in burns.

	OPEN	CLOSED
Mean age in years	32	35
Mean TBSA	30 %	30%
Complications	20 %	2 %
Surgery	8 %	30 %
Death	8 %	2%

The complication rate was higher in the open wounds which was due to infection and caused septicaemia. The complications were seen in 2 cases in closed wounds both of which succumbed to the injuries later due to septicaemia causing multi organ failure and death as in graph 1. The complications were septicaemia in 16 % cases. 80% cases among ARF had hypovolemia and 2 cases had electrolyte imbalance. The surgical procedures included wound debridement, split skin grafting which was done in 38 % cases, which was seen lesser in open group due to lack of affordability of the cost of procedure.

GRAPH 1



Out of 100 cases, 14 were treated on outpatient basis after primary inpatient care (all healed well), 66 of the inpatients were discharged with satisfactory wound healing. 10 cases requested early discharge due to financial difficulties. In case of deep 2nd degree burns treated with closed method were observed to develop healthy granulation tissue at end of 2nd week hence covered with split skin graft. As compared to open method which took 3 to 4 weeks for granulation to become healthy.

The mean Length of stay was 29.5 days in open group while 21 days in closed group.

DISCUSSION-

Multiple factors come into action while selecting dressing for the burn wounds. These are the cause of the burns, site, depth, extent of burn wounds, cost and the time between the incidence and the first report. Management of burns in low socio economic status is challenging.

Many people in lower economic status have burden of poverty, ignorance and other co morbidities which adversely affect the result. Most of the patients have no insurance and hence are unable to pay for their health care needs. Also lack of transportation and illiteracy add to their misery.²

The mean length of stay for closed wound was less in our study than open wound, which did not correlate with many studies as our hospital is a tertiary centre and thus many cases are treated at primary centres or home and then referred after already infected, so they needed treatment for longer duration.

It is rightly said by Kavanagh and De Jong that the access to the costly wound products is not an option in many settings.¹⁰ Similarly in our study, it is almost difficult for majority of the patients with burns to afford even traditional occlusive dressing, so open method was preferred in them.

With the introduction of collagen sheets and other biological dressing products for the burn wound management the results of treatment has improved with less complications rate but they are beyond the budget of general population.

CONCLUSION

In our study, we had better results in closed wound dressing with less complications rate and less length of stay than open burn wounds. But, considering the cost effectiveness, open wound management can also be considered strong option especially in the low socio economic class.

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