

## A Better Wound Care Assessment on Burn Patients

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**Backgrounds:** Burn, a damage and tissue loss caused by heat with a high morbidity and mortality, have a many variation and complex problem that require special management. After a period of shock, there were infections that threaten the burn patients. These hazards aggravate the wound to become wider, and it affects the mortality and the length of stay. That is why to reduce mortality rate and length of stay, we need a proper wound care.

**Methods:** A retrospective descriptive studies was perform on 2b degree burn patients (20-25%) that treated with tangential excision and mebo or tangential excision and stsg. Data was taken from burns unit Cipto Mangunkusumo hospital in period of January to December 2011.

**Results:** There were 30 patients (73.2%) that have been treat with tangential excision and mebo, and 11 patients (26.8%) that have been treat with tangential excision and stsg. The average length of stay for the tangential excision and mebo is 22.47  $\approx$  23 days (SD 4.361), whereas patients with tangential excision and stsg is 15.82  $\approx$  16 days (SD 2.089). There were 8 patients (26.7%) with tangential excision and mebo that die, whereas patients with tangential excision and stsg were 2 patients (18.2%) that die. There were significant difference in the average length of stay ( $p = 0.018$ ), but there was no difference in the proportion of patients dying status ( $P = 0.611$ ).

**Conclusion:** Wound care by tangential excision and stsg on 2b degree burn patient (20-25%), have a better outcome than patients treated by tangential excision and mebo.

**Keywords:** burns, tangential excision, mebo, stsg.

**Latar Belakang:** Luka bakar merupakan kerusakan dan kehilangan jaringan pada kulit disebabkan oleh suhu panas yang memiliki tingkat morbiditas dan mortalitas tinggi serta memiliki masalah yang sangat kompleks dan bervariasi sehingga membutuhkan penanganan khusus untuk merawatnya. Setelah periode shock terlewati, masih terdapat ancaman masalah berupa infeksi. Masalah tersebut merangsang perluasan dari luka bakar sehingga mempengaruhi angka mortalitas dan waktu perawatan. Oleh Karena itu, untuk menurunkan angka mortalitas dan lama perawatan dibutuhkan penanganan luka bakar yang lebih baik.

**Metode:** Studi retrospektif di lakukan pada pasien dengan luka bakar derajat 2b (20-25%) yang di terapi dengan tangensial eksisi dan mebo serta tangensial eksisi dan stsg. Data diambil dari unit luka bakar Rs. Cipto Mangunkusumo sejak januari hingga Desember 2011

**Hasil:** Terdapat 30 pasien (73.2%) yang diterapi dengan tangensial eksisi dan mebo, sedangkan yang diterapi dengan tangensial eksisi dan stsg terdapat 11 pasien (26.8%). Rata - rata lama perawatan pada pasien yang dirawat menggunakan tangensial eksisi dan mebo adalah 22.47  $\approx$  23 days (SD 4.361), sedangkan pasien yang dirawat dengan tangensial eksisi and stsg 15.82  $\approx$  16 days (SD 2.089). Terdapat 8 pasien (26.7%) dengan tangensial eksisi dan mebo yang meninggal, sedangkan yang mendapat tangensial eksisi dan stsg, terdapat 2 pasien (18.2%) yang meninggal. Terdapat perbedaan yang bermakna ( $p = 0.018$ ) dalam lama perawatan pada kedua tehnik tersebut, namun tidak terdapat perbedaan bermakna bila dibandingkan berdasarkan jumlah pasien yang meninggal. ( $P = 0.611$ )

**Kesimpulan:** Tatalaksana luka bakar derajat 2b (20-25%) dengan tangensial eksisi dan stsg memberikan hasil yang lebih baik dibandingkan perawatan dengan tangensial eksisi dan mebo.

**Kata Kunci:** luka bakar, eksisi tangensial, mebo, stsg

**B**urn, tissue damage or loss caused by heat with a high morbidity and mortality, are a severe form of trauma with many variations and complex problems that require special management. Burn injury represents a

significant problem worldwide. Over 1.2 million people are burned in the United States every year, but most of which are minor and treated in the outpatient clinic. However, approximately 60,000 burns in the USA are

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moderate to severe and require hospitalisation for appropriate treatment. It is estimated that 5,000 people die each year from complications related to the burn.

In Indonesia, Burn is still a serious problem. The treatment and rehabilitation are complicated. Even after successful treatment, many patients develop significant scar or contracture that require intense rehabilitative efforts that often culminate in operations for releasing scar to return the function. Scar was a problem both functionally and aesthetically.

With improvement in technology and scientific findings, current methods of burns treatment have been significantly progress. The new method is expected to prevent and solve the problem mentioned above. That is why we want to find a better treatment of a burn wound that can reduce the length of stay and mortality rate in the burn unit Cipto Mangunkusumo hospital. We conducted a retrospective descriptive study of wound care in the form of tangential excision and mebo or tangential excision and STSG.

**METHODS**

This is a retrospective descriptive study to assess the length of stay and mortality rate in burn patients with extensive 2b degree (20-25%) of wound that treat by tangential excision and mebo or tangential excision and stsg. Data was taken from burn patients that admitted to burns unit Cipto Mangunkusumo hospital from January to December 2011 and data was analysed by SPSS 16.0.

After carried out by tangential excision, the wound was applied with Mebo and then wrapped with gauze and elastic bandage. Maintenance and evaluation of Mebo are done every three days, with observation of epithelialisation process that will eventually resemble the skin tissue. Whereas the tangential excision that followed with wound closure using STSG, are observe and evaluate after five days.

**RESULT**

They were 41 patients with the mean age of 32.34  $\approx$  33 years with a level of confidence 95% (CI: 28.95 - 35.73) and standard deviation of 10.735. The age was varied from the youngest 17 years and the oldest 64 years. Of the interval estimation can be concluded that 95% believed the average age of the patient is at intervals between 28.95 - 35.73 years (Table 1).

From 41 patients there were 30 patients (73.2%) that treat with tangential excision and mebo and there were 11 patients (26.8%) that treat with tangential excision and STSG (Table 2) (Figure 1).

Figure length of stay mean value for the tangential excise and Mebo is 22.47  $\approx$  23 days, with a standard deviation of 4.361, Whereas, patients with tangential excision and STSG has mean value 15.82  $\approx$  16 days with a standard deviation of 2.089. The p value was 0.018, that means with the 5% of alpha value there was significant difference in the average length of stay among patients who were given a tangential excision and Mebo with tangential excision and STSG (Table. 3).

**Table.1** Distribution of the Burn Patients degree 2b (20-25%) by Age in the Burn Unit January-December 2011.

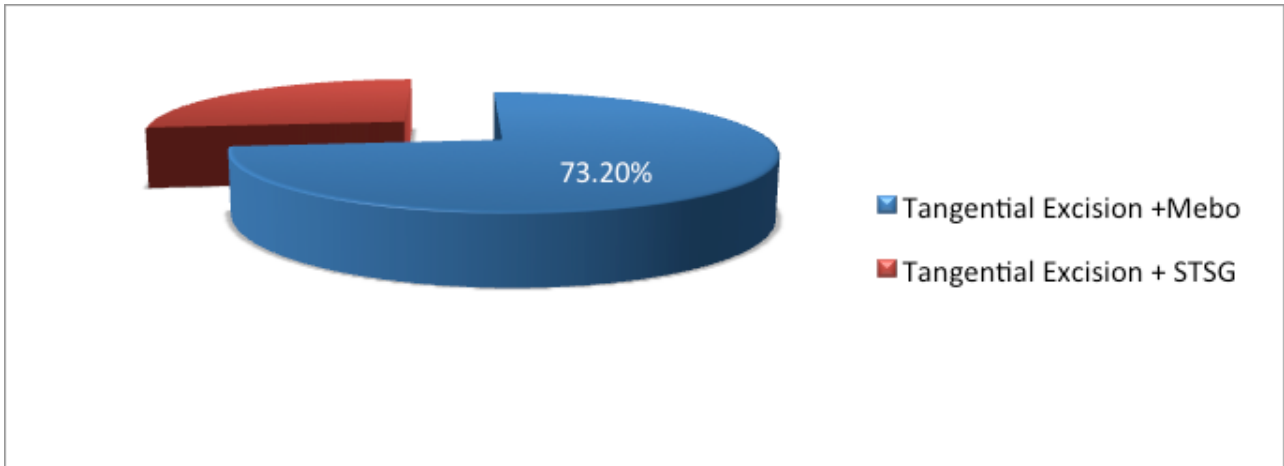
Variabel	Mean	SD	Min - Max	95% CI
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**Table.2** Treatment of 2b degree burn patient.

Therapy	Patient	Percentage (%)
Tangential Excision + Mebo	30	73,2
Tangential Excision + STSG	11	26,8
Total	41	100



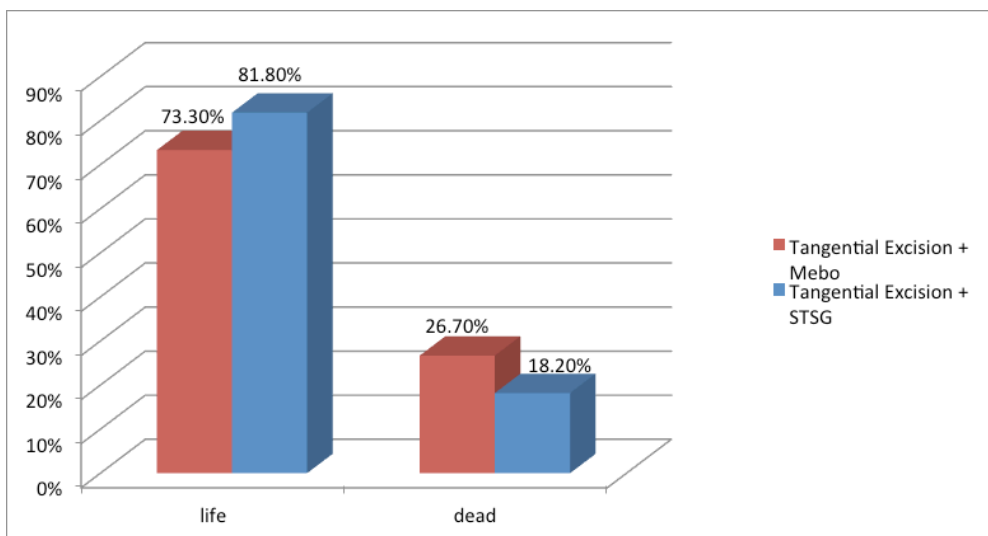
**Figure 1.** Diagram treatment of 2b degree burn patient



**Table 4.** Mortality Rate discrepancy between two procedure of wound care.

Therapy	Mortality				Total		OR (95%CI)	P-Value
	Life		Dead		N	%		
	N	%	N	%				
Tangential Excision + Mebo	22	73,3	8	26,7	30	100	0,611	700
Tangential Excision + STSG	9	81,8	2	18,2	11	100	0,108-3,456	
Total	31	75,6	10	21,4	41	100		

**Figure 2.** Diagram Mortality Rate discrepancy between two procedure of wound care.



There were 8 patients (26.7%) with tangential excision and Mebo who died, while patients with tangential excision and stsg were 2 patients (18.2%). The p-value was 0.611, it can be concluded that there was no difference in the proportion of patients mortality rate due to management of a burn wound.

## DISCUSSION

Burn is a good medium for the growth of microorganisms, usually will cause an infection within 24-48 hours. In severe conditions bacteremia or septicemia was occurred and then spread the infection to other places. Bacteremia is the commonest cause of death in burns from the first 24 hours. *Streptococcus B-haemolyticus* and *pseudomonas* produce protease enzymes that prevent the attachment of the skin graft. Non-invasive mild infections are characterized by a scab which easily detached with a lot of pus while the invasive infection was characterized by a scab which initially dries with tissue changes at the edge of the scab. It will become necrotic and resulting in first, two to three degrees burn. Bacterial infection caused vasculitis of the capillaries and cause thrombosis.

Tangential excision is a technique that excised injured tissue, layer by layer until the surface is bleed (endpoint). Tangential excision is performed in less than 7 days (usually 5-7 days) after injury. It will promote faster healing process. With the removal of necrotic tissue, debris and eschar, the inflammatory process will last no longer and soon will resume the fibroplasia process. In the burn area, edema generally occurs. This will impede the arteries blood flow, which can lead to ischemia of the tissue or inhibit the wound healing process. The longer the eschar release the longer the time to heal. Breaking the chain of inflammatory processes can lead to complications such as SIRS. It is due to necrosis tissue that releases the "burn toxic" (lipid-protein complex) that induced inflammatory mediator's release. The longer the excision delayed the more increase the process of angiogenesis and vasodilatation occur around the wound. This resulted in the amount of blood carried out during surgery. In

addition, delay excision would increase the risk of microorganism's colonization that would hinder the recovery of pathogens graft and softening eschar will also makes the action more difficult.

Skin grafting is a simple method of wound closure. The purposes of these methods are to prevent evaporation heat, and ensure the healing process occurs eventually.

Skin grafting should be performed immediately after excision. We can use either synthetic, processed skin, or from other patient body part (autograft).

STSG are much more versatile. Since a skin graft does not have its own blood supply, any condition that impairs the graft nourishment and oxygenation may threaten graft take. Not only does this include infection and poor vascularization in the recipient bed, but also any condition that prevents firm adherence of the skin graft to the recipient bed.

Mebo is a broad spectrum herbal ointment consist of natural and chemical substances, where the toxicological and adverse effects have never been found. It consists of: 1. Components of treatment such as beta-sitosterol, bacailin, berberine which has the effect of analgesic, anti-inflammatory, anti-infection burns and reduces scarring. 2. Components nutritional such as amino acid, fatty acid and amylase, which provide nutrients for skin regeneration and repair of skin defect. Mebo giving the effect of relieving pain, preventing the expansion of necrosis, removing necrotic tissue, and moisturizing the wound that required for skin tissue repairing. It control infection by modified the environment to become unsuitable for germ to grow. It also stimulated the growth of PRCS (potential regenerative cells) and stem cell to heal the wound and reduce scar. The principle treatment of mebo is the sooner the mebo given, the better the results.

## CONCLUSION

Wound care by tangential excision and stsg on 2b degree burn patients, have a better outcome than patients treated by tangential excision and mebo. Wound closure with Tangential excision and stsg in earlier burns can prevented the occurrence of infection and

shorter the length of stay and lower the mortality rate. Skin grafting should be performed immediately after excision in burns patients.

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