Thermal Imaging Device as an Aid to Determine Burn Wound Depth: a Case Series

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Background

Burn injury is considered as one of major problem because of high mortality and morbidity, not only due to improper treatment of burn resuscitation during the first 24 hours, but also the extent and depth of burns. The right depth of wound determines the next action whether the burn will be excised or not. Determining the depth of burns clinically is a learning curve and less accurate because it depends on the experience of the surgeon. A method is needed to make clinical assessment objectively in determining burn wound depth.

We did clinical and thermography assessment using Flir One® thermal imager to determine the conversion of burn depth of patient before & after the excision. Subsequently, temperature differences between the burn wound and healthy skin (ΔT) were measured and compared before and after the excision.

Methods

Results

Case 1.

Male, 48 y.o., PBD-2 (27 hours post burn injury).
Normal temp. 34.8°C, burn temp. 36.9°C (ΔT : 2.2°C). Epithelialization observed on PBD 7.

Case 2.

Female, 27 y.o., PBD-1 (8 hours post burn injury).
Before excision: Normal temp. 36.4°C, burn temp. 34.2°C (ΔT : -2.2°C).
After excision: Normal temp. 33.3°C, burn temp. 32.7°C (ΔT : -0.5°C).

Case 3.

Male, 25 y.o., PBD-4.
Before excision: Normal temp. 37.4°C, burn temp. 37.7°C (ΔT : 0.3°C).
After excision: Normal temp. 31.8°C, burn temp. 29.9°C (ΔT : -1.9°C).

Thermography assessment such as Flir One® thermal imager can be utilized to determine the depth of burns in addition to clinical assessment. It benefits not only for the functional purpose, but also affordable price and practically used. In the future it may be useful to help both experienced surgeons and novices.

Summary

References:

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