INFRARED THERMAL IMAGING UTILIZATION IN DETERMINING TISSUE VIABILITY IN ELECTRICAL BURN INJURY AFTER FASCIOTOMY

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OBJECTIVES

Electrical burn injury is one of the major cause of disability and mortality. Early fasciotomy is the first choice of limb salvage. After fasciotomy, rapid assessment is needed in order to salvage the viable tissue and remove the devitalized tissue. FLIR might be beneficial to the cause by assessing blood flow via temperature.

METHODS

Patient with electrical burn injury, had undergone fasciotomy, from January - June 2019. Evaluated with FLIR and clinical picture in the OR. Tissues that were visualized similar as body temperature considered viable; non-viable tissue were removed by debridement or amputations. 1 month follow up for further surgery needed.

CONCLUSIONS

FLIR is one of the tools that will help surgeons in determining viability of tissue after fasciotomy in burn injuries, in order to decide whether to salvage extremities or perform amputations. In the future, it may become a standard tool in burn injury assessment.

Assessing blood flow via temperature of emitted infrared by the tissue. User friendly; no need special technique

Forward looking infrared camera; portable handheld thermography; easy to use, compatible with mobile phones

RESULTS

3 days post fasciotomy immediate post-op day 10 day 30

Male, 47 yo, electrical burn injury during work. Fasciotomy was performed 3 hours post injury, evaluation was done 3 days after fasciotomy. We performed debridement and skin grafting. On the 30th day evaluation, no further surgery was needed.

2 days post fasciotomy immediate post op day 25

Male, 25 yo, work related electrical burn injury. fasciotomy was performed 12-hour after the injury. 2 days post fasciotomy, evaluation was done with FLIR; 10 degrees different to the body temperature; considered non vital. Proximal transradial amputation was performed. No re-amputation was needed after 1 month follow up.

3 days post fasciotomy immediate post op day 30

Male, 51 yo, high voltage electrical burn injury resulting in extensive lower extremity burn injury. Fasciotomy was done 8 hours after the injury. On the third day post fasciotomy we evaluated the wound with FLIR, devitalized tissue were debrided. Although some of the wound became chronic on the 30-day follow ups, we managed to salvage the limb.

Source:

1. Xue EY, et al. Use of FLIR ONE smartphone thermography in burn wound assessment. Ann Plast Surg. 2018; 00: p1-3
2. Wardhana A, et al. The epidemiology of burns in Indonesia's national referral burn center from 2013-2015. Burns Open. Oct 2017; Issue 2: p67-73