



A Case of Low-Temperature Full-Thickness Burn after Suction Blister Harvesting in a Patient with Vitiligo

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Dear Editor:

Suction blister epidermal grafting (SBEG) is a convenient, effective surgical method to treat stable vitiligo that is refractory to conventional treatment¹. SBEG is achieved by separating epidermis from dermis using negative pressure syringes, and transplanting the blisters from donor to recipient sites. The major disadvantage of SBEG is the time required for blister formation (2~3 hours under a negative pressure of 200 mmHg)². To speed the process, heat is often applied to increase the donor skin surface temperature³. Rare complications of SBEG include infection, post-inflammatory hyperpigmentation, and scarring².

A 23-year-old Korean female presented with a 10-year history of segmental vitiligo on her left inner thigh. She had no medical history of diabetes mellitus, hypertension or vascular diseases, and had no sign of nutritional deficiency. She denied the use of alcohol and cigarettes. Two years of phototherapy caused no significant improvement; thus, SBEG was planned. Three 20-ml syringes were placed under a negative pressure of 400 mmHg to produce blisters on the right inner thigh donor site. An infrared heater (placed 70 cm away for 40 minutes) was applied broadly to the donor site skin covering both the suction and non-suction sites to raise the temperature, and accelerated blister formation; the patient

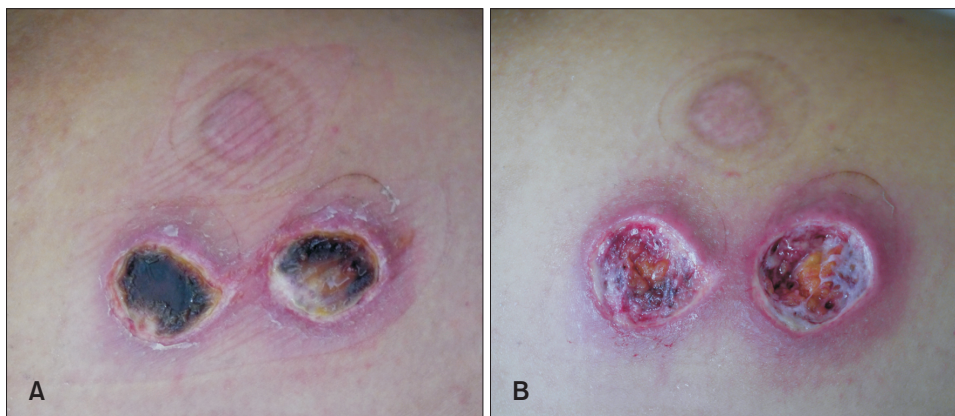


Fig. 1. (A) Eschars with granulation tissue were observed 1 week after surgery on 2 of 3 donor sites. (B) Removing them revealed skin defects, diagnosed as full-thickness burns. We received the patient's consent form about publishing all photographic materials.

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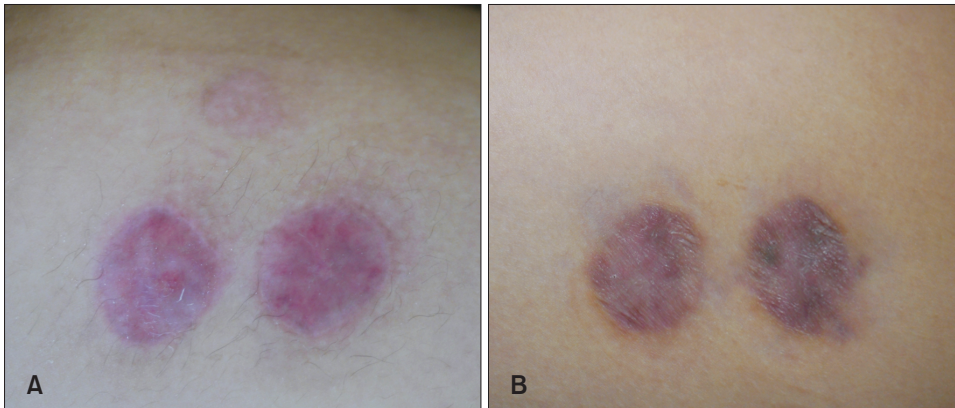


Fig. 2. (A) Recovery was observed after 2 months of secondary intention healing. (B) Further improvement was seen after 1 year.

did not complain of a hot sensation or pain other than a little warmth. The epidermal grafts were applied to the recipient site, which had been prepared using an erbium YAG laser. No complication arose at the donor site after surgery, but oozing, crusts, and granulation tissue were observed 1 week later. A full-thickness burn with the destruction of the epidermis and dermis was observed at 2 weeks and diagnosed as a low-temperature burn (Fig. 1). Wound healing by secondary intention took 2 months (Fig. 2).

The relationship between a burn injury and the temperature and duration of heat exposure is understood. For superficial burns (epidermis), trans-epidermal necrosis may occur following exposure to 44°C for more than 6 hours. Between 44°C and 51°C, the time required to burn is reduced by half with every 1°C rise in temperature, and a burn is induced in less than a minute above 70°C⁴. Second and third degree burns (epidermis and dermis) are assumed to follow a similar course. Our patient was exposed to an infrared heater with a constant temperature and distance, but she did not feel heat or pain. The threshold temperature for pain perception is 42°C but the patient was unaware of a thermal sensation, probably because of the gradual temperature increase in the skin or anesthesia⁵. However, excessive heat could have accumulated over time in the suction device, which makes a closed space above the skin and blocks heat dissipation. Physicians should be cautious; a low-temperature burn can cause permanent scarring. In conclusion, although SBEG is considered safe, prolonged heat application should be avoided to prevent burning.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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