Autologous Epidermal Graft Using Suction Blister in Leg Ulcers

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Regardless of the any cause leg ulcers are painful and inconvenient to patients and present clinical and economic problems due to their chronicity. Conventional skin grafts, cultured allogenic epidermis, and cultured autologous epidermis have been used for the treatment of leg ulcers. In a twenty-year-old woman with leg ulcers, autologous pure epidermal sheets were obtained from the lower chest by means of suction blisters and grafted to the leg ulcers. All lesions were healed completely in 20 days after grafting. The donor sites showed slight postinflammatory hyperpigmentations without scars. The autologous epidermal graft using suction blisters appears to be a useful method for the treatment of leg ulcers, with no immunologic rejection, no need for cultivation and anesthesia, no desiccation, and no scars on the donor sites.


Key Words: Epidermal graft, Leg ulcer, Suction blister

Leg ulcers may be caused by venous stasis, hypertensive ischemia, hematopoietic disease (such as sickle cell anemia, thalassemia, polycythemia vera), collagen vascular disease, malignant tumor, metabolic disease, burn, and infection. In Korea, Chun et al. reported that the incidence of leg ulcers was 0.41% of the yearly total of outpatients. Leprosy was most common and followed by sporotrichosis, stasis dermatitis, and burns. Regardless of the cause such ulcers are painful and require prolonged hospitalization. Conventional skin grafting may be used in patients with leg ulcers and cultured epithelial autografts have been used to cover larger burns, leg ulcers, and junctional epidermolysis bullosa, since O’Connor, et al. reported in 1981 on the treatment of two patients with third degree burns. Pinch grafts are also used in leg ulcers. Park et al. treated a case of leg ulcer in systemic scleroderma using pinch grafts. Since Blank and Miller first described a method for suction blistering the human skin obtained at autopsy in 1950, and Falabella first performed epidermal grafting with suction blister in the achromatic and granulating area in 1971, the suction blister has been used to obtain the autologous epidermis for the treatment of patients with various types of leukoderma, such as vitiligo, idiopathic guttate hypomelanosis, postinflammatory leukoderma, and piebaldism. Hentzer and Kobayasi performed suction blister transplantation in 12 patients with leg ulcers and observed excellent epithelialization and no rejection in 10 of them.

We herein report on leg ulcers in a patient whose lesions were successfully covered with autologous epidermis prepared from the roof of suction blisters.

REPORT OF A CASE

The patient was a twenty-year-old woman with multiple round punched out ulcers present on the lower third of both lower legs (Fig. 1). She insisted
Fig. 1. Multiple round punched out ulcers were present on the lower third of both lower legs.

Fig. 2. On histopathologic examination, vascular proliferation, thickening of their walls and massive lymphohistiocytic infiltrations were observed on the entire dermis (H&E stain, ×100).

Fig. 3. Five weeks after systemic antibiotic therapy and dressing: the size of the ulcers was reduced and the ulcer bed became clean and well-vascularized.

Fig. 4. Large unilocular bullae, 3 cm in diameter created in 3 hours of suction.

Fig. 5. 20 days after grafting: the ulcers were healed completely.

that these ulcers developed 3 months ago from scratching the sites of insect bites. On histopathologic examination, vascular proliferation, thickening of their walls and massive lymphohistiocytic infiltrations were observed throughout the entire dermis (Fig. 2). Staphylococcus aureus grew from the culture of ulcer bed. Cefazolin sodium 1.5 g/day intravenously and gentamicin 160 mg/day intramuscularly were given for 5 weeks, and dressing with debridement was done daily. Consequently, the size of the ulcers were reduced and the ulcer bed became clean and well-vascularized (Fig. 3). However, the rate of healing was progressively slowing down and the period of hospitalization was prolonged. Thus, an autologous epidermal graft was performed.

Suction blisters were used to obtain the pure epidermal sheets. The left lower chest was select-