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Effect of CO_2 Laser, Ultherapy, and Nanofat Graft Combination on Burn Scars: A New Approach

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In this article, we present our new approach in the treatment of hypertrophic scars due to burns. Burn scars cause morbidity in patients. More than 91% of burn scars are hypertrophic scars; many treatment methods have been tried, and new treatment modalities have emerged.[1] Although nanofat injections combined with CO_2 laser therapy have been used to treat burn scars in recent years, the use of Ulthera (microfocused ultrasound with visualization) has not been reported in the literature.[2,3]

An 18-year-old woman presented with a hypertrophic scar on the superolateral side of the breast, resulting from a flame burn (Fig. 1). Under general anesthesia, the existing scar was ultrasonically scanned with the Ulthera device (Ulthera Inc.; Mesa, Ariz.). A total of 25 shots were applied to the scar area with a depth of 4.5 mm and 1.20 joules of energy. Afterward, a CO_2 fractional laser device (Syneron-Candela, Wayland, Mass.) was applied in fusion mode with an energy of 215 joules/cm^2. After applying standard tumescence to the abdominal area, fat grafts were taken from the abdominal area with a 2.4 × 20 mm Tonnard Harvester cannula (Tulip Medical Products, San Diego, Calif.) with sharp-edged holes of 1 mm. Two 10 cm^3 injectors were connected with a 2.4 mm Tulip transverse unit (Tulip Medical Products, San Diego, Calif.). The fat grafts were emulsified mechanically between 2 injectors until they turned milky white. A nanofat graft was injected under the scar. This combined treatment was applied to the patient twice, with an interval of 4 months. A dramatic reduction in scar hardness, swelling, and itching was observed in the first postoperative year, and the patient was satisfied with the result (Fig. 2).

Microfocused ultrasound with visualization (MFU-V) delivers ultrasound energy to a predetermined area and allows simultaneous visualization.[4] It performs thermal coagulation at 65°C without damaging the skin and is generally used in facial cosmetic applications. MFU-V is a noninvasive method often used in upper and lower face and neck sculpting and lifting.[4] By targeting the superficial musculoaponeurotic system, MFU-V denatures thermal collagen, and increases neocollagenesis.[4] The skin temperature increases within physiological limits in the early period after treatment but returns to normal on the third day because it creates thermal coagulation at a depth of 4 mm to certain predefined points.[4]

Silicone gels, steroid therapy, and many other treatment methods are used in the treatment of burn scars. Although laser and nanofat applications are advantageous methods in terms of scarring, new treatment modalities are always being investigated.[2,3] Ulthera is generally used in facial cosmetic surgery for tightening

Fig. 1. Preoperative view of the scar.

Fig. 2. The appearance of the scar after 2 sessions of the treatment.

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and lifting. Increasing collagen synthesis underlies our hypothesis that Ulthera reduces burn scars. In the case described here, the combined treatment of the burn scar with two sessions of Ulthera CO_2 laser + nanofat graft at 4-month intervals reduced the scar and scar-related itching. We think that our letter will enlighten future studies.

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DISCLOSURE

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REFERENCES

1. Willows BM, Ilyas M, Sharma A. Laser in the management of burn scars. *Burns*. 2017;43:1379–1389.
2. Uyulmaz S, Sanchez Macedo N, Rezaeian F, et al. Nanofat grafting for scar treatment and skin quality improvement. *Aesthet Surg J*. 2018;38:421–428.
3. Jeffery S. *Fractional CO_2 Laser Therapy: A Paradigm Shift in Managing Burns and Scarring*. London, England: SAGE Publications; 2015.
4. Kerscher M, Nurrisyanti AT, Eiben-Nielson C, et al. Skin physiology and safety of microfocused ultrasound with visualization for improving skin laxity. *Clin Cosmet Investig Dermatol*. 2019;12:71–79.