New treatment regimen for hypertrophic scars

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In his 1st century opus on medicine, Celsus described treatments for diminishing the scars of soldiers. These regimens have changed little over the subsequent millennia. Surgical scar excision and primary or local flap closure remain the standards for treating hypertrophic scarring. However, scars in proximity to characterizing facial features may pose challenges to obtaining a favorable outcome. Hypertrophic and keloid scars are particularly difficult to treat, and they can recur.

As cosmetic surgery evolves, patients have become accustomed to the benefits of less invasive approaches. As a result, newer products such as light-based devices, fillers, and neuromodulators have been incorporated into treatment regimens. The results of combinations of 5-fluorouracil (5-FU), triamcinolone, and laser treatments have been promising.2,3

Over the past 4 years, the senior author (S.H.D.) has been using a combination of 5-FU, triamcinolone, and a botulinum neuromodulator for the treatment of hypertrophic and keloid scarring. The success of this technique is illustrated in the case of a 33-year-old man who presented 12 months after a vehicular accident in which he sustained trauma to the forehead. His lacerations had been sutured in an emergency department; there was no report of any foreign body embedded or difficulty with the repair. Over the ensuing 6 months, hypertrophic scarring occurred.

Upon examination in the senior author’s practice, the patient exhibited two large, vertically oriented hypertrophic scars (figure, A). The medial scar was located over the middle of the left eyebrow, and it measured approximately 4 × 1 cm. The lateral scar was located approximately 2 cm away, and it measured 3 × 1 cm. The closeness of the two scars prompted a decision to perform a staged excision. However, because the patient wanted both scars treated, we recommended medical injections for the lateral lesion.

The medial scar was surgically excised via a W-plasty excision of the medial scar and the combination treatment of the lateral scar, the cosmetic result is satisfactory.
excision. Six weeks postoperatively, the incision line was treated with diamond-bur dermabrasion. The lateral scar was treated with a series of monthly intralesional injections of 0.2 to 0.4 ml of a mixture containing 30 mg of 5-FU (50 mg/ml), 2 mg of triamcinolone (10 mg/ml), and 3 U of onabotulinumtoxinA (30 U/ml); the mixture was delivered via a 1-ml tuberculin syringe.

Nine months later, the results of the two scar treatments were similar, suggesting that a nonsurgical treatment can be as efficacious as surgery in this regard. At 22 months post-treatment, the patient exhibited no signs of recurrence (figure, B). Based on the results of this case and others, our primary treatment for hypertrophic and keloid scars became the injection regimen, and surgery was relegated to status as a second-line, and often unnecessary, option.

Triamcinolone works by inhibiting glycosaminoglycan synthesis, fibroblast proliferation, and maturation. Furthermore, triamcinolone exerts anti-inflammatory effects by altering vascular permeability, thereby effecting the delivery of oxygen, nutrients, and proinflammatory cytokines. However, it has been our experience that scars treated with triamcinolone alone often recur. The addition of 5-FU, which is an antineoplastic agent, has been known to prevent scar recurrence because it targets rapidly proliferating fibroblasts in the “S phase,” which are responsible for excessive collagen production. Botulinum neuromodulators aid this process by paralyzing the areas near the scar and eliminating the repetitive tensile forces on the scar, leading to a reduction in fibroblast proliferation. Specifically, the senior author has used onabotulinumtoxinA ever since efficacy with hypertrophic scarring was previously demonstrated.

When combined, 5-FU, triamcinolone, and onabotulinumtoxinA target different pathologies of scar development to produce superior results. Our regimen includes a series of monthly injections of 0.2 to 0.6 ml of a mixture of 30 mg of 5-FU, 2 mg of triamcinolone, and 3 U of onabotulinumtoxinA. Injections are administered intratrabecularly every 4 weeks until the appearance of the scar is aesthetically acceptable.

Although this particular report is anecdotal, we have used this combination on 48 patients over the past 4 years and, to date, no recurrences have been observed.

References