

COSMECEUTICAL CRITIQUE

Stretch Marks

Stretch marks, or striae distensae, are scar tissue in the skin's dermal layer that result from rapid growth or weight gain. These lesions, which can be found crisscrossing the breasts, abdomen, hips, thighs, buttocks, and arms, occur in females and males, particularly as a result of adolescent growth spurts, pregnancy, obesity, rapid muscle growth (from weight lifting, for example), and prolonged use of topical steroids.

In these instances or periods of growth, collagen and elastin are not produced fast enough to accommodate the expansion of other cutaneous layers, rendering the normally elastic dermis less flexible and manifesting in visible epidermal marks.

Initially, these dermal alterations present as pink, red, or purple lesions, known as striae rubra. If the lesions are untreated, they become white (striae alba) and the texture of the lesion may change from swollen to flattened or moderately depressed. A high proportion of teenage girls and pregnant women are beset with striae distensae.

Dermatologists now have a number of options to tackle this cosmetically stressful condition, including novel laser treatments for striae alba, but the primary focus here is on topical and cosmeceutical options.

Prevention

There is no surefire method to prevent stretch marks per se, but avoidance of a rapid gain or loss of weight improves one's chances of not developing these lesions.

Several topical agents have demonstrated efficacy in high-risk patients. For individuals who are pregnant or experiencing adolescent hormonal changes, moisturizing three or four times daily is recommended. Skin becomes more pliant and elastic when it is well hydrated. Moisturizers that contain cocoa butter, shea butter, or *Centella asiatica* (also known as gotu kola) as a prime ingredient are the best. To increase their efficacy, massage such formulations deeply into the affected areas. I recommend Belli Elasticity Belly Oil, which contains healthy amounts of both cocoa butter and *C. asiatica*, to my patients.

Treatment

Identifying striae distensae early is crucial. Patients should be advised to seek treatment when stretch marks are still red or purple because the lesions are most likely to respond to at-home products and in-office peels at this stage. Once stretch marks are white, treatment becomes more difficult and less successful.

Striae rubra may respond to the glycolic acid in various over-the-counter (OTC) lotions, most likely through the alpha-hydroxy acid's capacity to stimulate collagen synthesis. I recommend brands with the highest concentration of glycolic acid, such as MD Forté Glycare I and NeoStrata Ultra Smoothing Lotion.

Topical vitamin C, if formulated prop-

erly, also has the capacity to promote collagen synthesis. It can be used individually or in combination with glycolic acid. I recommend SkinCeuticals C E Ferulic and La Roche-Posay Active C. Supplementation with oral vitamin C 500 mg twice daily may also confer some benefit.

Relastin, marketed as an eye cream and a face cream, is touted by its manufacturer for its ability to increase elastic tissue, which may ameliorate stretch marks. Its efficacy is unconfirmed at this point.

Retinoids

In an early study of retinoids for the treatment of striae distensae, 16 of 20 patients with stretch marks from various causes completed the study, 15 of whom exhibited significant clinical improvement (J. Dermatol. Surg. Oncol. 1990;16:267-70).

Retinoids promote the production of collagen and elastin. When retinoids are massaged nightly into striae rubra, the appearance and texture of the lesions can improve significantly. In fact, the use of 0.1% tretinoin for the treatment of striae rubra has been established as effective for more than a decade (Dermatol. Surg. 1998;24:849-56). Retinoids are not as effective for the treatment of striae alba, however, and are contraindicated in pregnant and breastfeeding women.

In a study evaluating commercial topical products for the treatment of striae alba, investigators tested two regimens on 10 patients who had abdominal striae alba with skin types ranging from I to V. Patients applied 20% glycolic acid (MD Forté) to the whole treatment area on a daily basis for 12 weeks. Patients also were directed to apply 0.05% tretinoin emollient cream (Renova) to half of the treatment area, and 10% L-ascorbic acid, 2% zinc sulfate, and 0.5% tyrosine cream to the other half.

Improvement in the appearance of stretch marks, assessed at 4 and 12 weeks, was documented for both regimens. In addition, a comparison of treated striae alba with untreated lesions revealed that both regimens were effective in decreasing papillary dermal thickness and increasing epidermal thickness (Dermatol. Surg. 1998;24:849-56).

In another study evaluating the effects of a retinoid, 20 women applied tretinoin cream 0.1% to abdominal striae induced by pregnancy. In this open-label, multicenter, prospective study, researchers observed marked improvement in all striae after 3 months, compared with baseline, with an average 20% reduction in the length of the target lesion. Despite the emergence in 11 patients of erythema and scaling, topically applied tretinoin significantly ameliorated pregnancy-induced striae distensae (Adv. Ther. 2001;18:181-6).

I recommend OTC retinol products such as Philosophy Help Me and Neutrogena Healthy Skin to my patients. Of course, prescription retinoids such as Retin-A, Tazorac, and Differin are stronger

and, therefore, may be more effective than retinol. I also suggest retinoic acid peels, such as the Ultra Peel Exfoliating Treatment or the Esthetic Peel.

In-Office Treatment

Glycolic acid can be administered in the office at higher doses than those contained in OTC products. After three or four visits, patients usually notice a slight change in the length, width, and intensity of striae rubra. In-office glycolic peels are safe for all skin types, although lower concentrations should be used for people with darker skin tones. As suggested above, the combination of glycolic acid and a retinoid can be effective. In fact, various prescription-strength retinoids are often applied as a preparation for a glycolic acid peel.

Lasers

Since vascular lasers are designed to treat dilated blood vessels, which are characteristic of striae rubra, they present a potent treatment option. These instruments are associated with epidermal turnover as well as increased collagen production and elastic remodeling. I prefer the Dornier 940-nm laser for stretch marks, but some physicians use the 585-nm or 595-nm laser.

In a recent study, investigators treated 20 patients with striae rubra using the 1,064-nm long-pulsed Nd:YAG laser, which has been successfully used to foster dermal collagen synthesis. Subjective evaluations were made by patients (with 55% rating the results as excellent), and the investigators used before-and-after photos to assess treatment efficacy. Forty percent of the doctors considered the results to be excellent. Overall, the investigators found this laser to be an effective option for treating striae rubra, with minimal side effects (Dermatol. Surg. 2008;34:686-91).

In another study, researchers evaluated the efficacy of the Thermo Cool TC (Thermage Inc.), in combination with a 585-nm pulsed dye laser, for the treatment of striae distensae in people with darker skin types. Overall improvement was termed "good and very good" by 89% of the participants in the subjective evaluation. Skin biopsies of nine patients also revealed that the level of collagen fibers in each sample increased (Dermatol. Surg. 2007;33:29-34).

In a previous study of patients with dark skin types (IV-VI), researchers studied the effects of a nonablative 1,450-nm diode laser on striae distensae. Eleven Asian patients were treated with the laser with cryogen cooling spray on half of the body; the untreated half served as the control. The investigators concluded that, for patients with skin types IV-VI, the nonablative 1,450-nm diode laser is not a viable option for treating stretch marks (Lasers Surg. Med. 2006;38:196-9).

Intense Pulsed Light

In research on the efficacy of intense pulsed light (IPL), investigators treated 15 women with abdominal striae distensae. Their study was based on the reported efficacy of IPL in fostering the synthesis of

collagen and the ordering of elastic fibers. Before-and-after photos and skin biopsies of all 15 patients exhibited significant clinical and microscopic improvements, including differences in dermal thickness (Dermatol. Surg. 2002;28:1124-30).

A more recent examination of an IPL infrared device, the NovaPlus, which attains high fluences with high-frequency stacked pulses, was conducted on 10 patients who had striae distensae. Review of before-and-after photographs and three-dimensional skin surface analysis yielded an equal outcome, and few subjects observed improvement, but histologic assessment revealed improvement in epidermal and dermal condition. The researchers concluded that additional treatment sessions might afford better chances for desired cosmetic results, given the absence of side effects (Aesthetic Plast. Surg. 2008;32:523-30).

Fractional Photothermolysis

Despite the enhancements in overall treatment of striae distensae, few modalities have provided promise in significantly improving the appearance of striae alba.

Perhaps until now. In a recent study of the safety and efficacy of fractional photothermolysis for the treatment of stretch marks in Asian skin, researchers irradiated the striae distensae on the right buttocks of six female volunteers aged 20-35 years using a 1,550-nm fractional photothermolysis laser.

Patients were followed for 2 months. Fleeting mild pain and hyperpigmentation were the adverse events reported. Overall, significant amelioration in the appearance of the stretch marks was observed 2 months after treatment. Histologic examination revealed a substantial increase in epidermal thickness as well as collagen and elastic fiber deposition. Investigators also noted that skin elasticity had become somewhat normalized (Am. J. Clin. Dermatol. 2008;9:33-7).

Conclusions

Although preventive measures can be used to reduce the likelihood of developing stretch marks, prevention is a challenge.

Treatment options are continually expanding. Glycolic acid and retinoids have demonstrated efficacy in in-office procedures and OTC products. Vitamin C may also impart some benefit. In addition, lasers are emerging as viable treatment options. The vascular laser is recommended for striae rubra and the Fraxel laser for striae alba.

Patients are advised to begin at-home treatment for stretch marks upon first noticing them and to schedule a dermatologic visit. ■

DR. BAUMANN is director of cosmetic dermatology at the University of Miami. She has received funding for clinical grants from Allergan Inc., Avon Products Inc., Galderma Laboratories, Medicis Pharmaceuticals Corp., Stiefel Laboratories, and Unilever PLC. To respond to this column, or to suggest topics for future columns, write to Dr. Baumann at our editorial offices via e-mail at sknews@elsevier.com.



BY LESLIE S. BAUMANN, M.D.