



# STRIAE

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Stretch marks, the medical term for which is striae (striae distensae; striae atrophicus), are common skin findings which typically develop in the first half of life. They are usually benign but may be a source of cosmetic concern to patients. Infrequently, striae may indicate the presence of a more concerning medical condition such as Cushing disease or overuse of **systemic or topical corticosteroids**.

Clinically striae appear initially as asymmetric, raised, red linear streaks (striae rubrae) that tend to flatten and lighten over time. They are typically found on the hips, thighs, abdomen and buttocks in patients who are adolescents, overweight, pregnant women or anyone whom experiences a phase of rapid development or weight gain. Females have a predisposition to develop them in the breasts while males have a tendency for striae in the low back, axilla and upper arms. They typically develop during puberty and periods of rapid weight gain, more commonly in Caucasians with a female to male ratio of 2:1 with a familial predilection. Diagnosis is based upon clinical presentation and lab abnormalities are found only if a concomitant condition is present.

It is theorized striae are caused by rapid expansion of connective tissue with damage resulting in dermal tissue atrophy and overlying epidermal thinning. There appears to be a hormonal component as striae only develop in situations when hormonal changes occur and not from basic physical stress such as with tissue expanders. Under the microscope, the tissue closely resembles that of a scar with changes in collagen fiber arrangement from the normal wavy pattern to a more horizontal stacked pattern.

The treatment of stretch marks can be challenging as many modalities only produce minimal improvement. The lack of sufficient evidence allows many anecdotal theories to exist regarding treatment of striae both correct and incorrect. No one treatment is considered gold standard, however several have shown some efficacy, ranging from topical therapies to laser treatment.

The first step is prevention, which consists of thorough skin moisturization, proper medication use and avoidance of excessive weight gain, though rapid growth during puberty and pregnancy may be unavoidable. For years, pregnant women have been instructed to use topical moisturizers liberally in order to prevent the development of stretch marks. In this case the facts are still not entirely clear though it has been shown the extra moisture and the act of massaging the skin may allow the skin to stretch and acclimate as the mother's belly expands and potentially minimize striae formation. Moisturizers containing cocoa butter and shea butter are commonly recommended though neither have strong evidence to prove their efficacy. Other ingredients with anecdotal evidence or small studies which claim to be efficacious include vitamin E, gotu kola extract (a plant indigenous to Asia and South Africa), hyaluronic acid, elastin, egg oil (an ingredient from chicken egg yolks used in Japan) and wheat germ oil (high in Vitamin E). Innumerable other claims can be found when searching for preventative measures however the unifying factor appears to be keeping the skin well hydrated; however ultimately genetic factors play the pivotal role in determining pathogenesis.

Basic topical therapies which have been shown to be most efficacious in early stretch marks during the inflammatory phase include: **retinoids**, vitamin C, and  $\alpha$ -hydroxy acids, a group of natural acids found in common foods which include glycolic, lactic, citric, tartaric, and malic acids. Combinations of the aforementioned topical ingredients exist in multiple formulations, depending on the provider preferences while weaker versions are available in over the counter treatments. Retinoids work by increasing cellular turnover and collagen production however should not be used during pregnancy due to fetal risks. Vitamin C and the alpha hydroxy acids, the most commonly used of which is glycolic acid and lactic acid due to high bioavailability, are also proposed to increase the production of collagen. Other commonly employed topical treatments include chemical peels such as trichloroacetic acid (TCA) and microdermabrasion, which work by exfoliating the top layer of skin and helping to promote new healthy skin production.

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**Laser therapy** has shown some improvement for striae in the early, red, inflammatory phase, particularly PDL (pulse dye laser) which is used commonly at dermatology offices. Laser therapy works by targeting the vasculature and thereby reducing redness and to some extent progression of lesions. Laser treatment for atrophic white striae typically utilizes fractionated, excimer, and IPL lasers, however is less effective but may help to reduce the appearance of lesions by bolstering collagen production and resurfacing the lesions to blend with surrounding skin. There are many types of lasers with numerous uses and treatment is patient specific depending on skin color and texture. Finally, a more definitive but invasive option is plastic surgery, such as a "tummy tuck" or abdominoplasty, in order to remove resistant or extensive striae.

As you can see, there is a plethora of information regarding the treatment of stretch marks and the bottom line is that many claims most likely do not have sufficient evidence to support their validity. It is important to speak with your dermatologist about goals of treatment, extent and phase of the lesions and to have realistic expectations about the outcome in order to find a treatment method that works well for you.

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