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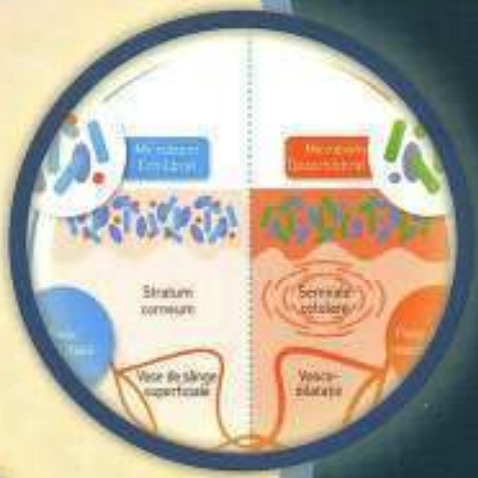

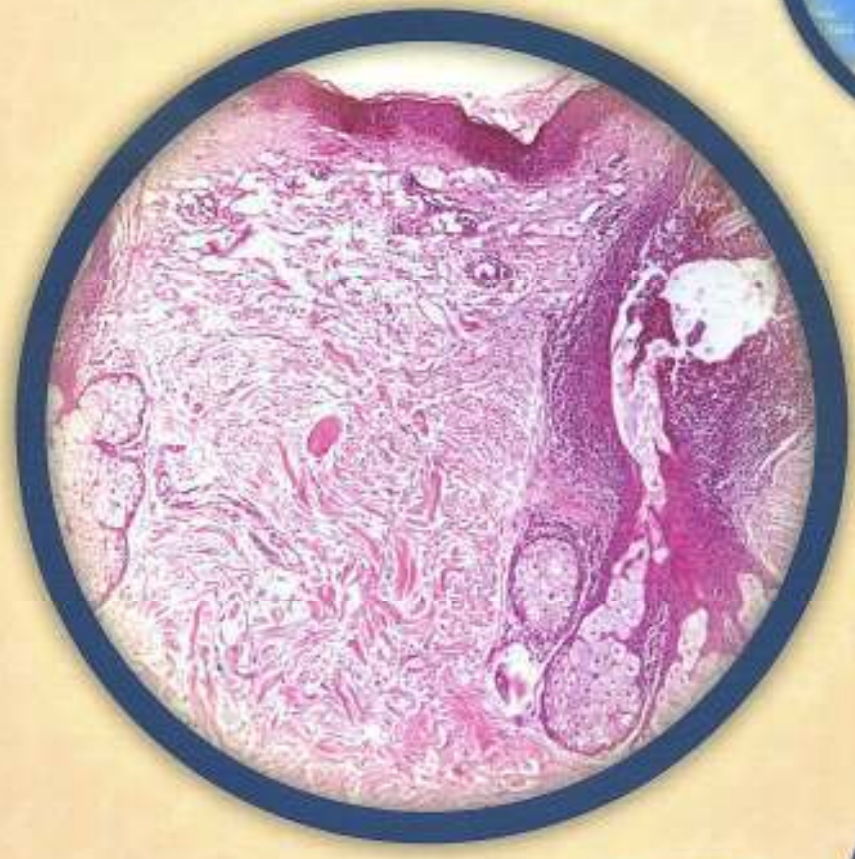

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NEW THERAPEUTIC PERSPECTIVES IN THE TREATMENT OF STRIAE ATROPHICAE

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Introduction

In the last decade the dermatology and esthetic medicine started to dedicate more attention to the stretch marks problem. In the past the reason for the onset of the stretch marks was mostly due to pregnancy. But today we see this problem hits also young girls already at the moment of menarche. Contemporaneously also adolescent boys are now suffering from stretch marks with an increasing diffusion in all Europe.

The exponential increase of this problem in European and American countries occurred probably with the change of alimentation of recent decades, and it is likely to interfere with the hormonal balance for the increased quantity of toxins in the biological tissue and for the metabolic alterations that cause reduction of oxygenation and damage the connective. Already in 1932 Cushing evidenced the close correlation between hormonal disorders and the onset of striae.

Some researchers estimate that there are about 200 million people suffering from this imperfection in the European Community alone, confirming as it is one of the most common aesthetic problem ever, enough to lead to an increasing social discomfort especially in women, usually affected by this problem on breasts, abdomen and buttocks, which are the symbols of her own feminity.

The more visible anti-aesthetic aspect is definitely the lack of color reactions of the stretch mark to exposure to ultraviolet rays, especially when it is white and old. Since 2006 we dedicated much energy to research into this aesthetic pathology, beginning with a thorough analysis of tissue physiology of stretch marks and structural deficits that characterize them. Only knowledge of these aspects may serve to identify a therapeutic strategy that allows you to interact with the skin tissue, trying to restore the best balance and regenerate existing stretch marks, effectively reducing the evidence.

Histology

By analyzing a biopsy of stria we noticed that the changes are more and more evident with the increase of the age of the imperfection: the corneal surface of a pearly white stretch mark tends to increase its thickness progressively, until reaching to be between 4 and 10 times thicker than normal layer. The normal skin atrophy of the stretch mark leads to an introflection of the stratum corneum, which is therefore in greater depth than the surrounding skin tissue, avoiding in fact the natural exfoliation that characterizes our skin every day. This abnormal thickness determines two distinct consequences on the stretch marks: a layer so high forming a cercine that makes the stretch marks evident to the touch.

At the same time this kind of corneum effectively prevents the physiological supply of oxygen for transpiration. The epidermis instead looks totally unstructured and the basal membrane tends to flatten progressively losing the characteristic villi. Therefore the alteration of the basal membrane causes the loss of melanocytes which will no longer be able to be activated by exposure to ultraviolet rays, thus causing a double reaction. The first reaction is functional, as with the alteration of the basal membrane skin no longer has a normal defense against sun exposure, the second is aesthetic, since the striae exposed to ultraviolet rays remain white.

The analysis of the dermis instead shows a marked atrophy of the tissue, with reduced cell mitosis and minor presence of collagen and elastic fibers of poor quality.

Biopsy of 15 years old stretch marks on gluteus - Archive A.

The treatment of Biodermogenesi® (on right Dr. A. Artigiani)

Matrix and toxins

The alterations of the dermis evidenced by the biopsies take place simultaneously to significant vascular reactions.

We know that the light passes through the dermis up to reflect on the red blood cells, giving to our skin normal color more or less intense; chromatic difference that characterizes the striae shows a dermal ischemia which becomes more obvious progressively with the years passing by. Consequently, ischemia causes a lower contribution of oxygen and nutritional factors in the dermal matrix.

At the same time, even the lymphatic microcirculation reduces its functionality, as evidenced by ever more opaque and pearly color of the stretch marks, obvious symptom of reduced ability to absorb the waste material from dermal cell metabolism. Therefore, the matrix is filled with toxins that, physically, constitutes an electrical insulation, as well a real mechanical obstacle to the normal ionic motility.

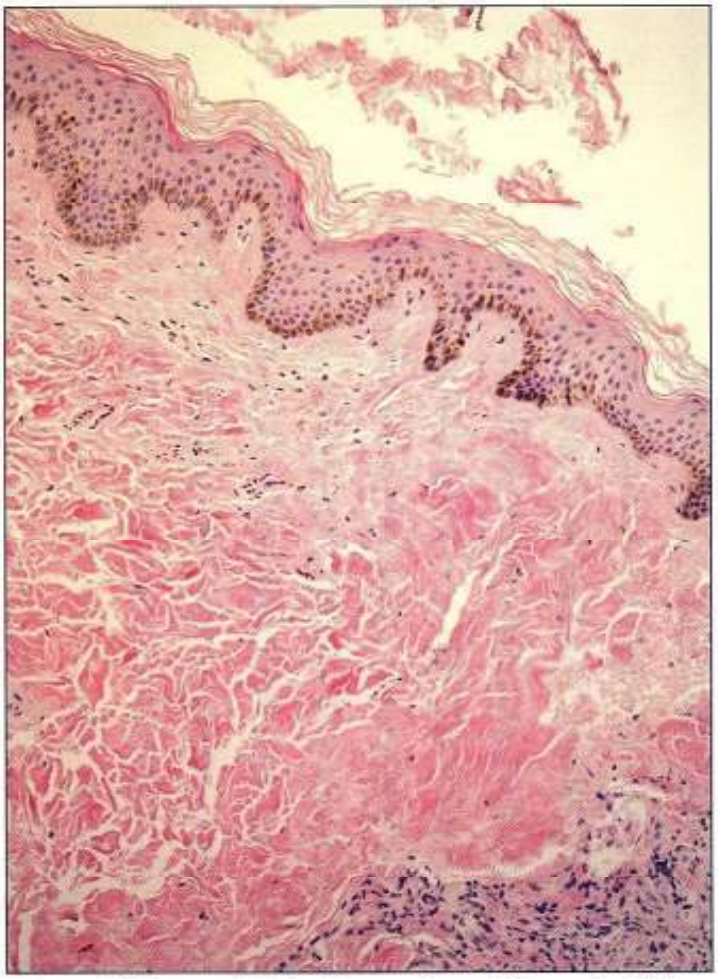
All these constitutes fundamental importance in understanding why the various methods proposed for the treatment of stretch marks, based mainly on a damage in order to facilitate the repair, gave various level of results with high difficulty to replicate them continuously.

The damage applied for example to wrinkle, which mechanically looks similar to stretch marks, provides generally good results, because it acts on skin tissue that is adequately vascularized (and therefore oxygenated) and rich in nutrients, such as to allow a significant activity on the part of fibroblast as a reaction to the same damage.

In the case of stretch marks we have instead a poor and not enough vascularized matrix, which the resistive charge increase from the physiological 100/200 Ohm to an absolutely higher value, in proportion to the increasing presence of toxins of cellular metabolism not adequately drained by the lymphatic system.

It is known that the normal electric intensity allows the activity of the sodium (Na +) and Potassium (K +) ions in the physiological permeation of cell membranes (pumping sodium and potassium) is equal to 1-10A. It is therefore a very bland intensity, for which even the minimum increase of the resistive charge leads to more than proportional reduction of the ionic activity.

The increase in the resistive charge of the matrix



Biopsy of 15 years old stretch marck on gluteus after 15 session of Biodermogenesi® ▫ Archive A. Artigiani

thus arrives to constitute an increasing obstacle to the activity of sodium and potassium pumping through the cell membranes and particularly against the fibroblast.

The modified quality of biophysics of the dermal matrix effectively impedes a significant and repetitive repair of tissue with stretch marks after a therapy based on a calibrated damage.

Consequently the therapeutic experience based on this kind of philosophy did not able to guarantee protocols that are replicable for all patients.

Biodermogenesi®

We have a lot of years of experience with a new non-invasive method called Biodermogenesi®.

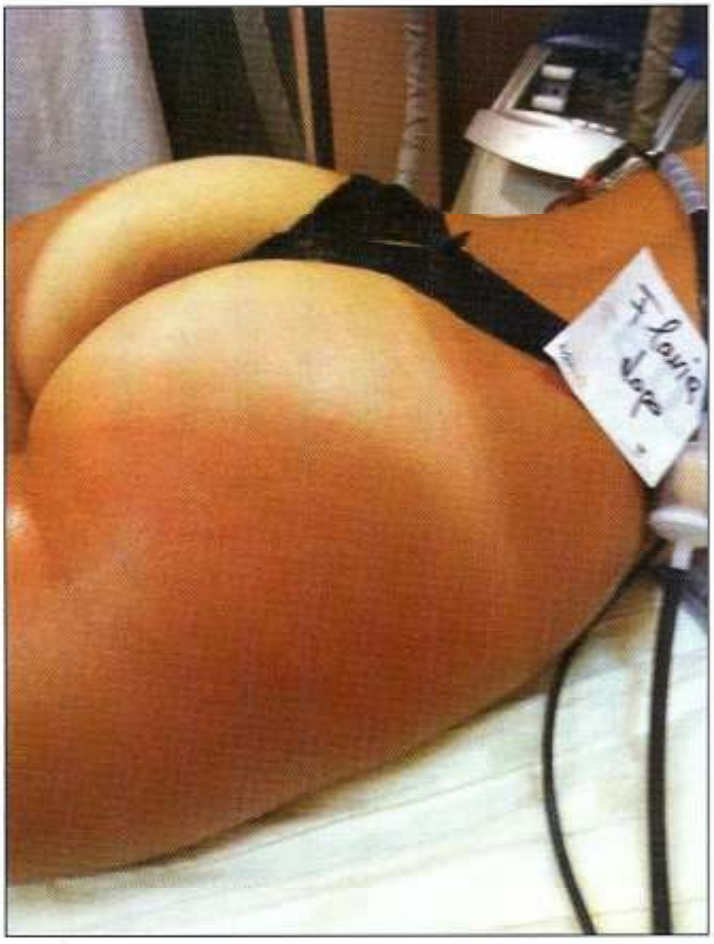
This method is based on a series of steps to be carried out in sequence, such as to deal successfully with the various structural deficits that characterize stretch marks.

We start with a peeling that is made with a disposable abrasive felt pad inserted in a bell shaped handpiece that creates a vacuuming action.

The biopsies show us that stria has a reduced elasticity respect to surrounding healthy skin; the vacuum lifts up the furrow of stretch marks brings closer its stratum corneum to the abrasive surface of the felt pad reducing the thickness.

Session after session, this first step permits to eliminate the superficial fibrosis given by the thickening of the stratum corneum and allows a renewed supply of oxygen for traspiration.

Stretch marks before treatment



Photograph taken after follow-up of 6 months after 20 session of Biodermogenesi®. During 6 months the patient was submitted to repeated exposure to the sun. On the picture we appreciate the filling and the perfect tanning of stretch marks - Archive P.A. Bacci - S. frappi

The second phase is based on a process of electroporation that conveys the nutritional elements capable of improving the quality of the dermis.

The third phase is the real heart of the Biodermogenesi® method and it is about a synergy between biocompatible electromagnetic field and vacuum. The electromagnetic field is the only form of the energy able to supply to sodium and potassium a calibrated energy that is higher than the increased electrical resistance of the dermal matrix of the stretch marks. Thanks to this form of energy it is possible to reactivate quickly the pumping of sodium and potassium towards the fibroblast, favoring the production of collagen and elastin. At the same time with the same action we increase the cell mitosis. The dosage of the electromagnetic field changes thanks to the action of feedback calibrated automatically by the unit by varying the frequency of the supply based on the response from the skin tissue. At the same time a calibrated vacuum action allows the stimulation of the arterial capillaries carrying blood rich in oxygen to the dermis and helps gradually to improve the quality of the matrix.

The treatment ends with another electroporation phase destined to restore the physiological defenses of the treated skin, eliminating the risks from bland action of mechanical peeling made in first session.

Clinical Results

The synergy given by Biodermogenesi® allowed to highlight a real restructuring of the dermis. From the studies we observed a clear increase in the quantity and quality of collagen and elastin and cell density. At the same time the action of vacuum abled to stabilize a greater vessel caliber, effectively restoring the physiology of stria like its surrounding intact tissue.

The analysis of the epidermis has eventually showed a perfect restructuring, starting from the reduced thickness of the stratum corneum until arriving to the basement membrane, which presents itself properly modulated and rich in neomelanocytes that will allow to reactivate the physiological protection towards exposure to ultraviolet rays and make possible to tan the furrow of stretch marks.

Results

The sum of our experiences has led to analyze several hundreds of cases treated at our clinics, at the clinics of colleagues as coordinators of some studies related to Biodermogenesi® and at Pisa University and Pavia University. We can therefore affirm that Biodermogenesi® allows to obtain a real restructuring of the stria regardless of its dating. Of course we obtain this result with different number of sessions determined by the patient's age and difficulty coefficient of the striae to be treated.

A cycle of Biodermogenesi® may vary from 15 to 20 sessions to be carried out every two, three times a week; on very large and dated striae there may need a second treatment cycle to be executed after a break of six months, during which the stretch marks continues to regenerate further.

One aspect that is very appreciated by the patients about Biodermogenesi® is the absolute absence of collateral effects or limitations to lifestyle.

Conclusions

Working in accordance with the protocols and making a correct anamnesis prior to the treatment permits to fill significantly striae, eliminate the feeling of the stretch marks to the touch and then encourage the normal pigmentation that attenuates progressively the visibility of the stretch marks, with stable results over the years.

Making a correct diagnosis of the stretch marks permits to avoid starting treatments of approximately 5% of patients for which you may get a lower result. These patients are characterized by factors that reduce the yield of the treatment, such as the presence of hormonal alterations in their stage of onset, recent posthumous of anorexia and bulimia, tissue completely lost its compactness for which it is necessary a plastic surgery (abdominoplasty, brachioplasty, etc.), while for vegetarians and vegans it is expected a greater number of sessions than usual.

Experiences gained by different researchers allowed us to make a follow-up of tens of patients at a distance of more than 5 years. The results were all collimating: treated stretch marks maintained the results obtained after the treatment and further reduced their evidence due to progressive exposure to ultraviolet rays that in many cases allowed a perfect uniformity with the surrounding intact tissue.

During the year 2014 the research has expanded the fields of application of Biodermogenesi® by starting to document comforting outcomes in the treatment of post-surgical scars and burn scars in Pavia University. This new experimentation effectively opens new perspectives in this non-invasive method.

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