



MICRO NEEDLING- FACTS AND FICTIONS

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ABSTRACT

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Micro needling or what is more commonly known as the derma-rolling is a new minimally-invasive avatar of an age old procedure. Micro needling has recently attained popularity as it is cheap, effective and can be used safely with minimal training. The basic principle is to create a controlled injury, thereby inducing the body to respond by producing more collagen in the treated area. Microneedling can be combined with other scar treatments for better results. Although it may not do justice to all the indications claimed by a plethora of manufacturers, if used judiciously it can prove to be a wonderful addition to the armamentarium of a dermatologist.

"The micro-needling is a minimally invasive procedure which can be used for a plethora of conditions ranging from acne scars to alopecia areata and also for increasing the transdermal delivery of a drug, which happens to be its original use!"

Keywords: Micro needling, Dermaroller, Percutaneous collagen induction therapy.

INTRODUCTION

Micro needling or what is more commonly known as the derma-rolling is new kid on the 'minimally-invasive cosmetic procedure' block, and its claims and methods are perceived as simple, exciting, tempting and scary at the same time. Dermaroller has recently attained popularity because of media coverage and the fact that it can be used safely with minimal training.

THE BACKGROUND

The earliest form of micro needling, acupuncture, can trace its roots to the Chinese centuries ago. In the Nineties Camirand, a Canadian surgeon¹ used tattoo-guns to treat operation scars after plastic surgery. His intention was to perforate scars to take off their tension. This post-operative microneedling technique soon disappeared from the operation rooms because of being tedious. Nappage, a French skin rejuvenation technique, is another form of micro needling where micro incisions are made into the skin placing a drop of vitamins, minerals and anti-oxidants. In the 1990's Orentreich² advocated the "subcision" with a needle to treat wrinkles near the lip lines.

The German inventor Prof Horst Liebl sought a new and considerable faster way of microneedling. He integrated nearly 200 non-traumatic microneedles of medical grade into a drum shaped device. Now the previous "static" needling was transformed into a "dynamic" microneedling process to treat larger skin areas in lesser time. He called his invention Dermaroller and patented and trademarked it in the year 2000. Another similar product is The Roll-CIT from Environ marketed for the treatment of Medical Skin Needling, creation of Dr Des Fernandes³, a South African Plastic Surgeon.

THE INSTRUMENT

The standard medical dermaroller used for acne scars is a drum-shaped roller studded with 192 fine microneedles in eight rows, 0.5-1.5 mm in length and 0.1 mm in diameter. The microneedles are

mostly medical-grade stainless steel. The instrument is presterilized by gamma irradiation. Medical dermarollers are for single use only.

Home-Care dermarollers as the name suggests are used by the patients themselves they are of lesser needle length and are available for transdermal delivery of substances like lipopeptides and other anti-ageing products. They can be used twice a week for up to one hundred times. After use, the rollers have to be cleaned in hot tap water and shaken dry.

Miniature versions of the dermaroller called *derma-stamps* have been developed. They are also disposable but are used for localized scars, eg. varicella scars and their needles are 2 mm in length with a diameter of only 0.12 mm. The procedure with the derma-stamp can be performed even faster than the roller.

THE PRINCIPLE

The idea is to create a controlled injury, thereby inducing the body to respond by producing more collagen in the treated area. The needles create microconduits without damaging the epidermis. It has been shown that rolling with a standard dermaroller over an area for 15 times will result in approximately 250 holes/ cm². Histological findings of skin tissue that was microneedled with 0.5 to 1.5 mm long needles revealed that they stimulated massive growth of elastin and collagen fibres and Neovascularisation. Most studies were done on patients primed with topical Vit A and Vit C creams.^{4,5,6} The procedure is therefore also called "percutaneous collagen induction therapy".

THE PROCEDURE

Microneedling is a simple office-based procedure. The area to be treated is anesthetized with topical anesthesia (EMLA) for 45 minutes to one hour. After preparation of the area, rolling is done 15-20 times in horizontal, vertical, and oblique directions. Pin-Pin-point bleeding which occurs is easily

controllable.

After treatment, the area is wetted with saline or ice packs can be used to reduce discomfort. The entire procedure lasts for 10 to 20 minutes, depending on the extent of the area to be treated.

A minimum of six weeks is recommended between two treatments as it takes that long for new natural collagen to form. Three to four treatments may be needed for moderate acne scars.

SIDE-EFFECTS AND POST PROCEDURE CARE

Microneedling is generally well tolerated but erythema may be seen after treatment, lasting for 2-3 days. Skin may also feel warm, tight and itchy for a short while, this normally resolves in 12 - 48 hours. Photoprotection is advised for a week and local antibiotic creams may be prescribed.

The pricking channels close within 60 to 90 minutes and therefore infections are unlikely. The procedure is well tolerated and well accepted by the patients, is cost-effective, can be done on all skin types and on areas not suitable for peeling or laser resurfacing, such as near eyes. Microneedling with dermaroller can be combined with other acne scar treatments like subcision, chemical peels, microdermabrasion, fractional resurfacing thus maximizing the benefits to the patients.

However, it is not suitable for use by those persons with active acne, eczema, rosacea, psoriasis or warts.

TALL CLAIMS

The claims of the manufacturers are really amusing. They claim to benefit everything from acne scars, burn scars, keloids, melasma, photoaging⁵, to alopecia. Not surprisingly cellulite⁶ is also claimed to be one indication. There are not enough studies to support most of these indications. Some studies

Figure 1: Before and after microneedling



have found that micro needling increased collagen deposition even more than intense pulse light (IPL), and therefore might be more effective than IPL for scar treatment⁷. However in most of the indications it works only by increasing the transdermal delivery of the drug used along with it.

Interestingly the title of the patent filed by Prof Horst liebl is "device and method for applying an active ingredient to the skin" which now lies in the shadow of its own success.

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