

# Skin Needling

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# Introduction

- Multitrepannic Collagen Actuation, (MCA)
- Dry Needling,
- Collagen Needling,
- Per Cutaneous Collagen Induction (PCI)
- Skin Needling

These are all names for the same treatment.

- This treatment has been successfully performed with a coil, a rotary machine, a hand tool and a tool called a roll-cit.

# Topics of Discussion

- The Beginning
- Background
- Principle
- Indications
- Advantages

# The Beginning

- In 1992 Dr. Adrianna Schreibner, a Beverly Hills Laser Specialist, was working with her lasers and turning them down very low to treat hypo pigmented scars. She suggested to Margot Schweifler, the nurse in her office doing permanent make up, that she could get the same results using a dry needle. Margot told Dr. Kristanne Matzke and she passed the info to Sheryle Taffolla. Sheryle got some fast results with her clients and a new procedure was born.

- Dr. Andre Camirand, a plastic surgeon, had an important publication in 1997, describing his experience with this method. On a number of his patients with facial hypo chromic scars, he tattooed the scars with a skin-color pigment. After 1-2 years, they noticed that even though the pigment was long gone, it was replaced by actual melanin, while the scars were immensely improved in texture, appearance and color. This gave the idea that trepanation (coming from the Greek word *Trepanon*: to bore) of scars with the tattoo gun was responsible for the improvement and the repigmentation of the scar. They came up with the idea that puncturing of the scar with a tattoo gun alone, without pigment, would in a way break down the scar collagen, cause realignment and stimulate melanogenesis. The results of repetitive sessions on scars were reported by Camirand, to be more than good and typically consistent, since all of his patients profited aesthetically from this type of treatment.

- In 1999 Dr. Des Fernandes of South Africa, presented his findings on needling at a conference in San Francisco. This presentation was instrumental in getting the information out to the medical community.
- I have been given permission By Dr. Fernandes to present any of his findings to all of us.

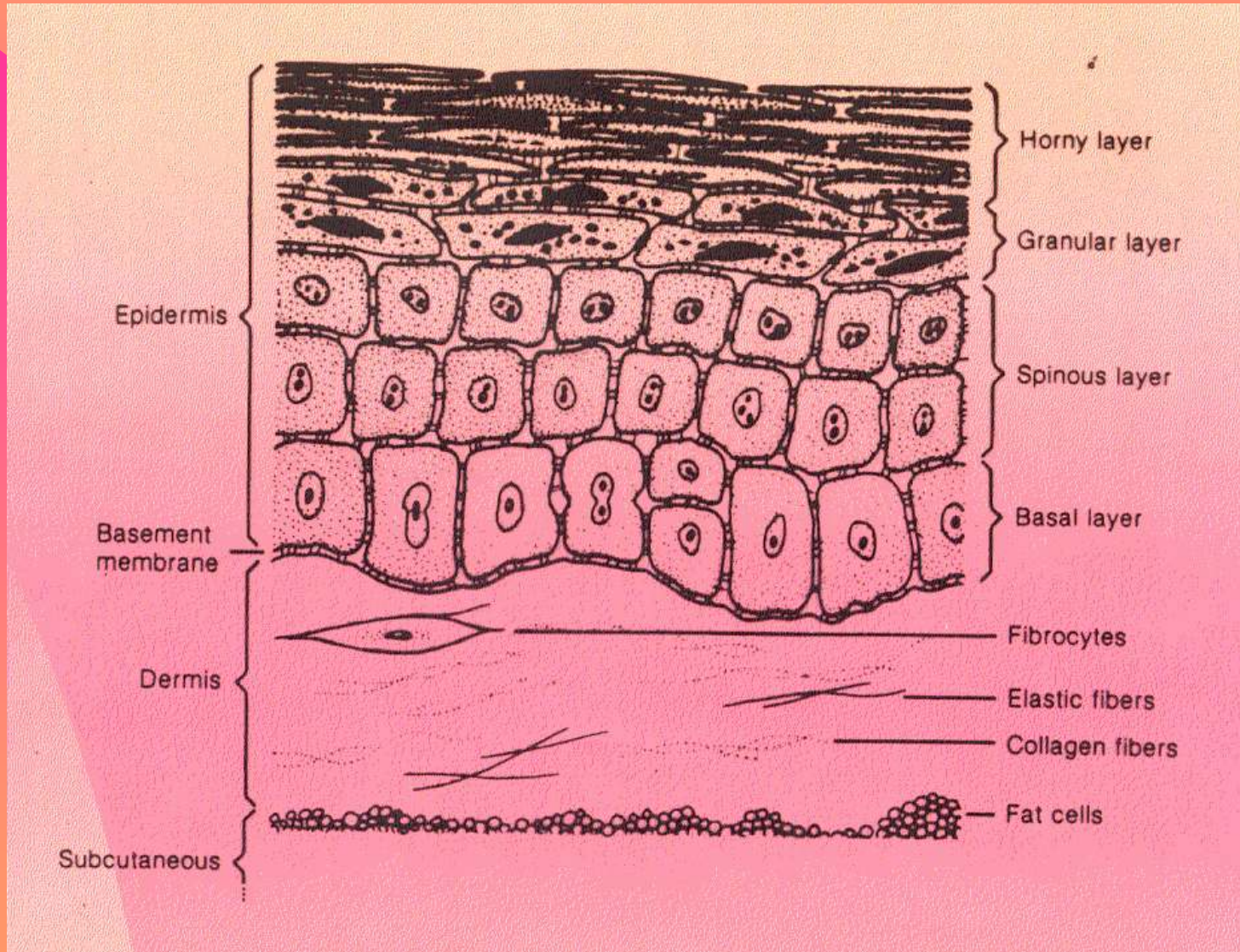
# Background

- Many Clinicians believe that laser resurfacing is the most successful way to rejuvenate facial skin. Why destroy the epidermis only so that the tissues of the papillary and reticular dermis can be destroyed and thereby instigate the normal post traumatic inflammatory reaction. The extensive damage eventually leads to the dense production of collagen and elastin with subsequent skin tightening. There is no doubt that laser has made a lot of people happy...in the beginning. It is now time to look for a more physiological way of inducing collagen and elastin.

The epidermis is a most complex highly specialized organ and while it is only 0.2mm thick, it is our only protection from the environment. We should never, ever damage the epidermis unless the risk of leaving the epidermis intact is greater than removing it.

To rejuvenate facial skin and look really young, we need a perfect epidermis.

We need the horny layer to be intact and compact (as in a young skin). The stratum corneum is our main defense against UV rays as well as being the barrier protecting us from harmful chemicals. A thick stratum spinosum will add protection from UV rays. Basal keratinocytes must be fresh and active as they can be with minimal depositon of excessive melanin.



We need a thick layer of collagen in the papillary and reticular dermis and functional elastin with a good blood supply.

If you look at any photo-damaged person under a microscope, you will see that each of these main points have been compromised by sun damage. Destruction of the epidermis is not a way to correct the problem. Topical applications of vitamin A and the antioxidant vitamins C, E, and carotenoids (*which are class of carotenes with a vitamin A molecule*) on the other hand are effective, safe and will largely restore the skin to a more youthful appearance.

Of course, the real problems of wrinkled and saggy skin lie in the dermis. The collagen has been damaged and the thick layer of collagen in the dermis has become thinner. Topical vitamin A will not produce dramatic changes in the in the elasticity of the dermis.

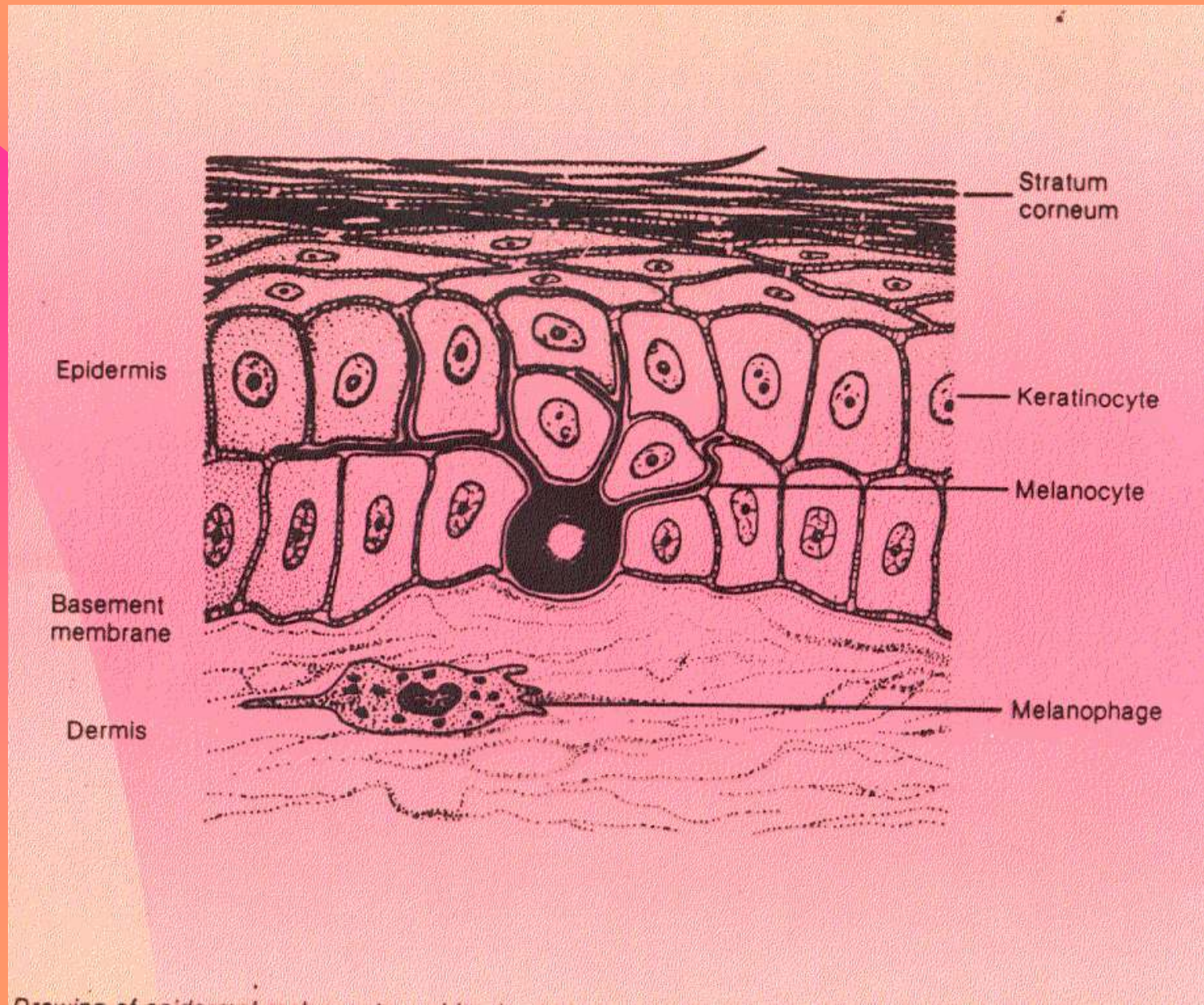
# Principle

- How does needling aka MCA, PCI (Per Cutaneous Collagen induction) work?
- The collagen results from the natural wounding of the skin, even though the wound is miniscule. Each tiny wound goes through three classic phases of wound healing:
  - 1. Inflammation
  - 2. Proliferation (tissue formation)
  - 3. Tissue remodeling
- The needle only penetrates through the epidermis and does not remove it, so the epidermis is only cleft and will heal. The injury, minute as it might seem, does cause some localized damage and bleeding.



- The needle pricks penetrate about 1.5 mm into the dermis and starts the inflammation phase. Tiny blood vessels are ruptured so blood cells and serum get into the surrounding tissue. A complex chemical cascade determines the formation of a clot, vascular permeability, the attraction for leucocytes and fibroblasts are recruited into the wounded area. Platelets cause clotting and release chemotactic factors like Platelet Derived Growth Factor (PDGF), transforming growth factor and Fibroblast growth factor (FGF) that initiate an invasion of other platelets, leucocytes and fibroblasts.

■ The leucocytes, particularly Neutrophils act on the damaged tissue, remove debris and kill bacteria. This reaction is automatic and produces a surge of activity that inevitably leads to the fibroblasts being “instructed” to produce more collagen and more elastin. Re-epithelialization occurs within a few hours after needling and is really due to keratinocyte migration rather than proliferation. When the keratinocytes have joined together, they start producing all the components to re-establish the basement membrane with laminin, and collagen types IV and VII. One or two days after the injury the keratinocytes start proliferating and thicken the epidermis. Fibroblasts migrate into the wound and produce collagen, proteoglycans, elastin and other matrix proteins. Initially after needle damage, the disruption of the blood vessels causes a moderate amount of hypoxia. The low oxygen tension stimulates the fibroblast to produce more TGF-β, PDGF, and endothelial growth factor (VEGF). Procollagen mRNA is also up regulated, but this cannot cause collagen formation because oxygen is required and that only occurs when re-vascularisation occurs.



- Prevascularisation occurs quite soon after needling. TGF- is a powerful chemotoxic agent for fibroblasts which migrate into the wound at about 48 hours after injury and starts producing collagen I and III, elastin, glycosaminoglycans and proteoglycans. Collagen type III is the dominant form of collagen in the early wound healing phase and becomes maximal by 5 to 7 days after injury. The collagen is laid down in the upper dermis just below the basal layer of the epidermis.

- Tissue remodeling continues for months after the injury and is mainly done by the fibroblast. By 5 days after injury, the fibronectin matrix is laid down along the axis in which fibroblasts are aligned, and along with collagen will also be laid down. TGF- and other growth factors play an important part into the formation of this matrix. Collagen type III is gradually replaced by Collagen I over a period of a year or more. This gives increased tensile strength. The metalloproteinases ( proteins which contain bound metal ions as part of their structure) are essential for the conversion process. If we are looking at a single needle prick through the skin, then this is an unimportant response. A completely different picture emerges when thousands of fine pricks are placed next to each other. The process can become virtually confluent, and a sheet of collagen will be laid down in the area just below the epidermis.

- Collagen slowly shortens after a few months and so the tightening of the skin is progressive over the next few months. The results can mimic those obtained with a laser, but without destroying the epidermis. That is the great advantage of the system. It is believed that the deeper the penetration into the dermis produces better collagen and elastin deposition.
- After all this is only a pin prick!

# Indications

- 1. To restore skin tightness in the early stages of aging. This is a relatively minor procedure and can safely be recommended. In some cases it has been found that patients who were worried about having a face-lift were satisfied with the result of a simple needling of the skin. Great results in the skin above the eyes have been achieved as the elevation of eyebrows is a natural result of healing. To avoid laser especially in people with thin skin who cannot have laser resurfacing with safety.
- 2. Acne scarring. Great success with needling for acne scars. The results are superior to dermabrasion.
- 3. For the reduction of fine lines
- 4. Scars are improved and if they are hypopigmented, they may return to a more natural color after needling.

# Advantages

- The first advantage is that this procedure does not permanently damage the skin. The skin actually becomes thicker.
- The healing phase is short and within 5 days the patients can go out in public.
- Topical numbing agents can be used to make the procedure comfortable. Very little discomfort post treatment.
- It is not as expensive as laser resurfacing.
- If the result after needling is not satisfactory, it can be repeated without any risk.

- Sun-sensitivity is a major and enduring problem in laser resurfacing, whereas after needling, of the skin, the horny layer rapidly returns to its original thickness and the skin is not sun sensitive.
- A major advantage is that needling can be performed on people who have had laser resurfacing or have thin skin.
- A change can occur in dilated blood vessels that may disappear.

- The other advantage is that this does not have to be performed by a plastic surgeon or dermatologist. The technique is easy to master and it does not require the artistic skill that are imperative to the PMU technician.

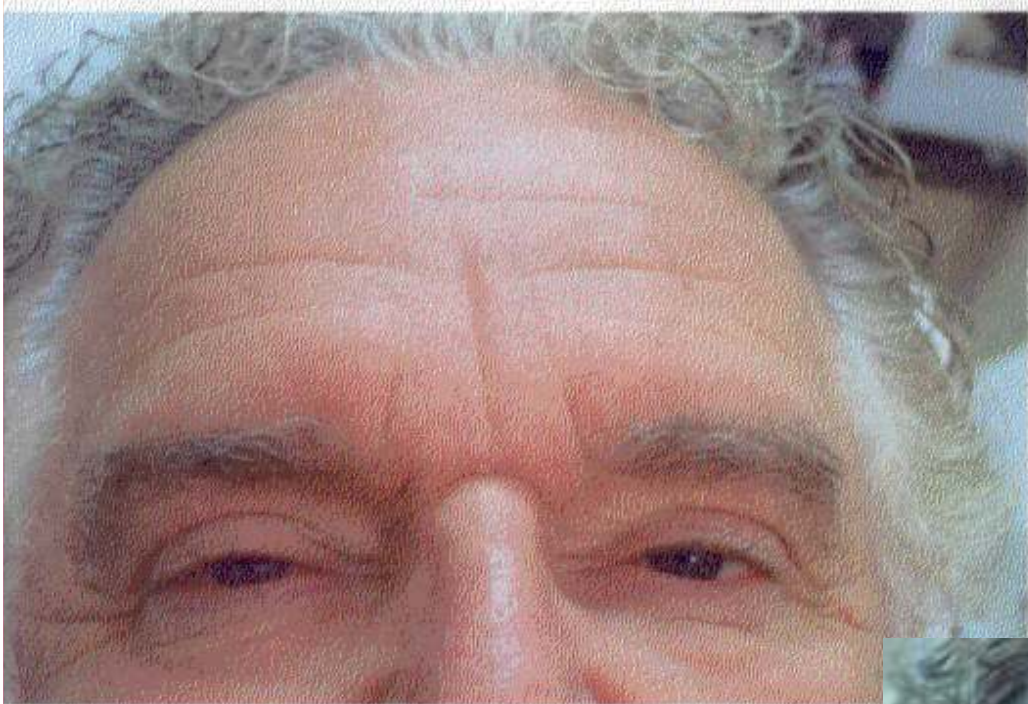
# Treating Wrinkles

- I usually use a # 3 needle. I use a depth of approximately 1.5 mm. I will treat each until I see a sufficient amount of blood serum. If I'm working around the eyes, sometimes I will use a flat needle configuration. I also keep my needles wet with sterile saline, just to keep the needles from getting clogged with tissue. After treatment care is to use A&D ointment.
- I will suggest no sun exposure during healing process. Also to use a good sun block.
- This will look red for the first 4 to 5 days, but can be covered with make up. This works especially well for perioral wrinkles.



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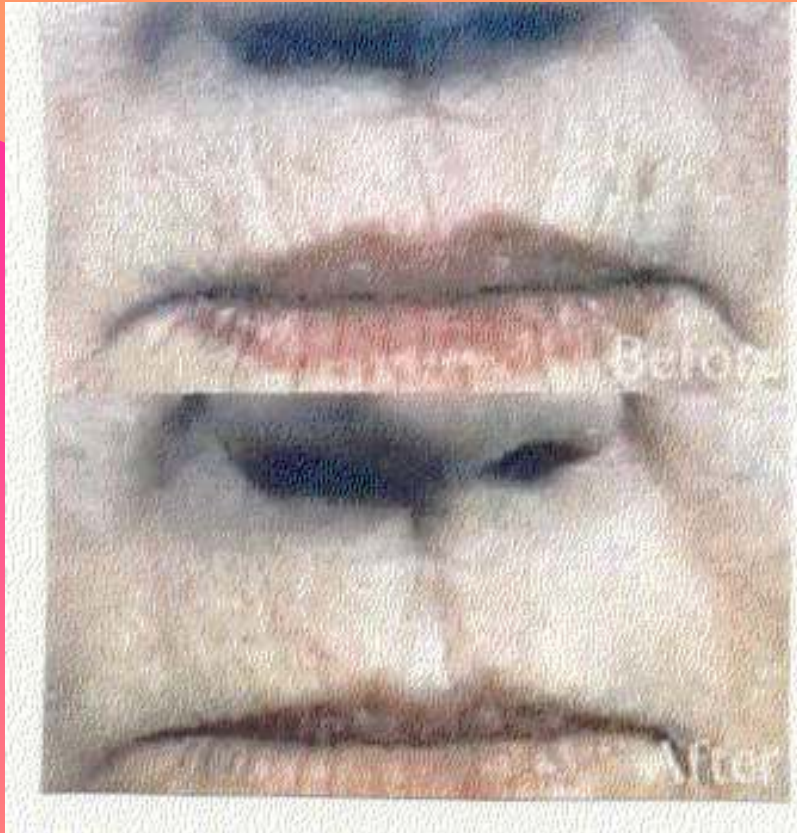


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# Treating Acne, Atrophic and Hypo-pigmented Scars

- I will also usually use a round needle configuration with acne, or any kind of atrophic scarring. I work within the scar or depression, in a circular motion until I see a good blood flow.
- With hypo-pigmented scar tissue I will have my client get 5 to 10 minutes of sun exposure at two weeks post treatment to stimulate melanogenesis.
- Again the skin will look red for 4 to 5 days and may be concealed with make up.
- Acne scarred clients are usually the most desperate to minimize their scar tissues.



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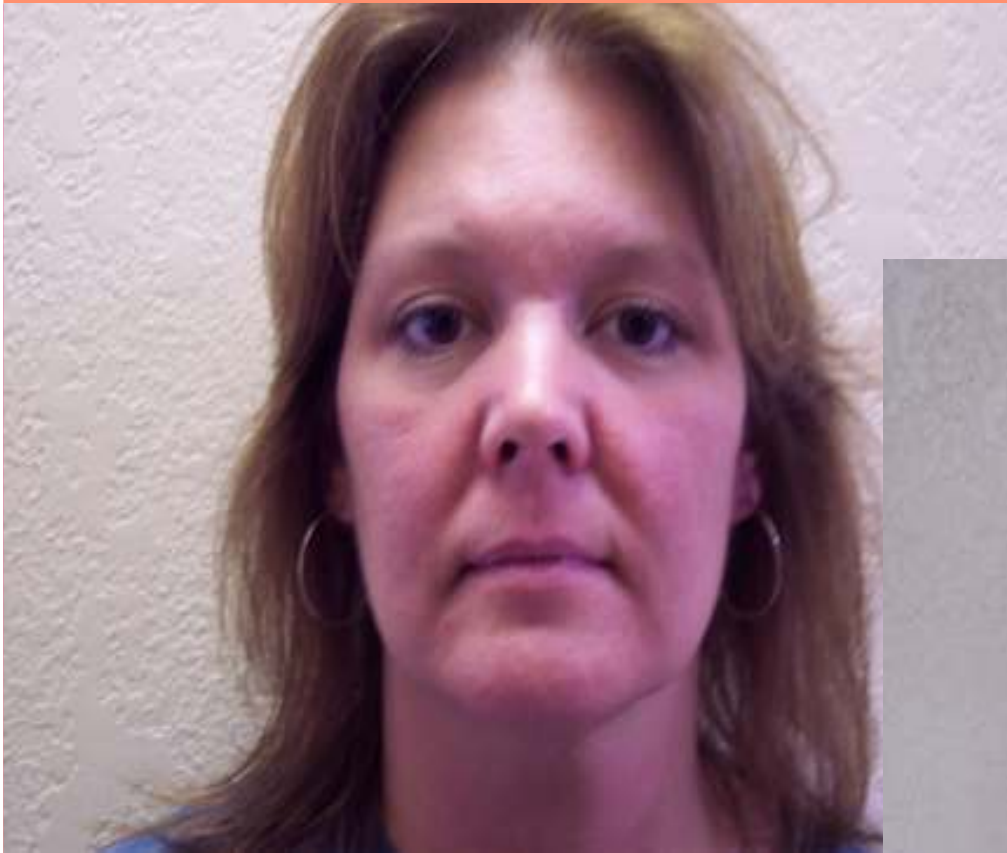
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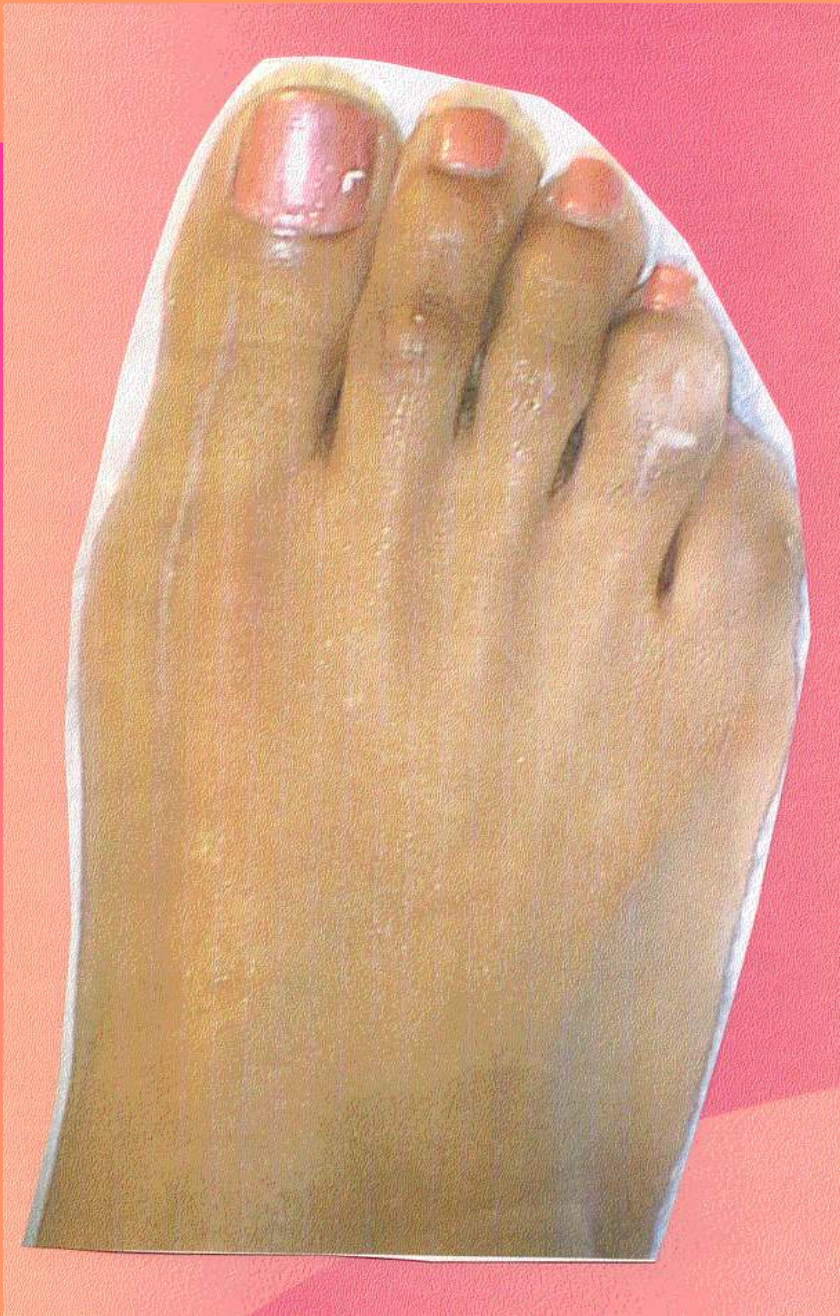


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# Hypertrophic Scars

- This can be used for flattening hypertrophic scar tissue. With this I use a large round needle configuration. This tissue is raised and harder than regular skin tissue. It has to be worked more aggressively to break through collagen and elastin fibers to get better blood flow into the area and to soften and flatten scar tissue. Usually several sessions will have to be scheduled for this.
- This works well on regular or cosmetic surgery scars.



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# Real Life

- People want to get rid of wrinkles and scarring. But I find it is the acne patients that are the most desperate. To the point of sticking pins in their skin to try to stimulate their own collagen production.
- There is a huge need for this treatment.

# What This Means

- This is a simple procedure to learn to make your clients feel better about themselves. I am trying to start a data base across the country of Technicians who perform this procedure. Contact me to be included in this.

# Next Steps

- Learn how to perform this procedure and add this to your list of services. You all know people right now that could benefit from this procedure. Check with your insurance company to make sure they cover this procedure.

# In Closing

From Ralph Waldo Emerson

“ Do not go where the path may  
lead...

Go instead where there is no  
path and leave a trail”