A Beginner's Guide to Microdermabrasion

The popularity of microdermabrasion is growing. Could this new modality represent the best way for you to get started in cosmetic dermatology?

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Dermatologists and dermatologic surgeons always look for new ways to improve patients' appearances. Over the course of the past 10 years or so, the goal of cosmetic procedures has been to achieve these results with minimum patient downtime or discomfort. We have observed changes recently in all areas of cosmetic dermatology—from topical care to chemical peeling to laser resurfacing and dermabrasion—that attempt to make this goal a reality. Microdermabrasion continues to grow in popularity, but some dermatologists still have only a broad understanding of the procedure. The following is a review of microdermabrasion in the clinical setting.

A BRIEF HISTORY OF REJUVENATION

The dermatology community learned in 1988 that topical tretinoin cream, in concentrations of 0.1%, could positively affect the photoaging process. Because many patients could not "tolerate" this percentage cream, lower strengths of the product and newer delivery systems for skin penetration were created. Other skin care products, including the glycolic acids and other fruit acids, emerged to provide like effects with less skin irritation.

Chemical peeling has been around for many decades and dermatologists have been at the forefront of the many changes associated with this discipline. The original phenol peel gave way to trichloroacetic acid (TCA) peels. TCA peeling changed further through variation of the concentration of the acid applied to the skin. TCA peels could be applied for deep peeling (50 percent), medium-depth skin peeling (20 to 50 percent), or superficial (light) skin peeling (less than 20 percent). Throughout the past 10 years, more patients have accepted the concept of superficial skin peeling, opting for repeated lighter peels to achieve results comparable to those of deeper peeling with less patient discomfort or downtime. Newer peeling agents, including the glycolic fruit acid peels and salicylic acid peels, have come into vogue with this same promise of less patient discomfort and less patient downtime with positive results over a period of time.

Dermabrasion, using either wire brushes or diamond fraises, requires the clinician to use a power-driven machine to completely abrade the epidermis and cause alterations in the dermis. Results from skilled practitioners have shown us that we can remove (or dramatically improve) scars and other textural abnormalities of the skin. Because the entire epidermis and
some of the dermis is removed, the process requires wound healing. Re-epithelialization is usually complete in seven to 10 days and erythema subsides in approximately 30 days.5

To counter all of the "down-time" associated with dermabrasion, the carbon dioxide (CO₂) laser systems were introduced and were later followed by the introduction of the Erbium:YAG laser. Most dermatologic surgeons realized early that treatment with the CO₂ laser yielded the same downtime as dermabrasion did. The Er:YAG laser was developed to produce less downtime, while achieving similar results when compared to the CO₂ laser. Most laser surgeons agree that superficial skin problems respond well to the Er:YAG laser while deeper problems respond best to the CO₂. A combination CO₂/Er:YAG system is available to theoretically provide the benefits of both systems along with Er:YAG healing capabilities.6

Newer, non-invasive laser systems have been developed in an attempt to achieve dermal remodeling while leaving the epidermis intact. Various devices, including a 1320nm Nd:YAG laser system7 as well as an intense pulsed light device8 (500-1200nm) claim to treat a variety of skin conditions, from fine lines and wrinkles to superficial scars to dyschromia, with minimal patient downtime or discomfort.

THE CASE FOR MICRODERMABRASION
The release of the Nd:YAG and IPL systems set the stage for other modalities that could alter the skin in a positive manner yet cause minimal interruptions to patients' daily routines by requiring little or no downtime. We must reserve more invasive procedures for deeper skin concerns and be very truthful with our patients about what superficial procedures can and cannot accomplish.

The latest offering in the set of superficial procedures producing virtually no downtime for the patient and very little discomfort is the process now known as "microdermabrasion." Some prefer the terms microabrasion, dermpeeling, or skin polishing, but the phrase "microdermabrasion" is the public relations choice word for this new procedure. A variety of machines in different price ranges are now available for practitioners and you should research options fully before purchasing one of these devices. You should only buy a medical device from a reputable company—one committed to dermatology, and one who will be available for technical support and advice when needed.

MICRODERMABRASION BASICS
Microdermabrasion devices cost between 10 and 25 thousand dollars—expensive to the physician just entering the cosmetic treatment market but inexpensive to the cosmetic surgeon who uses laser technology and is looking for alternative methods to increase patient satisfaction and enhance income. Trained ancillary personnel—either nurses or clinical estheticians—can perform this procedure. State regulations determine who can use the device in each region.

The concept of microderm-
Microdermabrasion is quite simple. A machine-driven power source delivers aluminum oxide crystals to the skin surface to gently abrade or remove the top layers of the skin. A suction/vacuum device returns the used aluminum oxide crystals to the machine along with the sloughed epidermal skin cells, which are later discarded. A variety of bells and whistles can be put on the machines to make slight enhancements, but the machines are all quite similar.

Over the past several years, the microdermabrasion process has been used to treat skin conditions similar to those which otherwise would have been treated with superficial chemical peels. (Table I) Most experts contend that microdermabrasion is a useful modality for comedonal acne vulgaris. Inflammatory acne vulgaris responds somewhat less favorably to this process. Most companies list acne scarring among conditions amenable to treatment with microdermabrasion, but the majority of cosmetic dermatologists would argue that only very superficial scarring of any kind will respond to these superficial modalities and warn against promising too much to your patients regarding effective scar treatment.

EFFECTS OF MICRODERMABRASION
Microdermabrasion has been shown highly effective in changing the skin texture of individuals being treated. Patients notice a smoother and rosier complexion following microdermabrasion. It has also been shown useful in treating superficial fine lines and wrinkles, photo-damaged skin, and skin dyschromias of a superficial type. Skin dyschromias, such as melasma, can respond to microdermabrasion if the process is strictly epidermal. Deeper-seeded melasma and skin dyschromias may show less of a response with this procedure. Some of the microdermabrasion companies have stated success in removing stretch marks with this procedure. Additional well-defined research may substantiate these small antidotal claims in a peer-reviewed setting.

WHAT PATIENTS CAN EXPECT
Patients consistently question clinicians about microdermabrasion to see if they are appropriate candidates for the procedure. If the patient fits into one of the categories already described, you should review the microdermabrasion process with him or her. Explain that microdermabrasion is a procedure which shows its results over time and that a "series" of treatments will be planned and that a maintenance program will likely be needed. Patients are instructed that most series consist of four to six microdermabrasion treatments, spaced at intervals of one to two weeks.

Each treatment lasts approximately 30 minutes and consists first of a thorough skin cleansing and degreasing prior to application of the microdermabrasion device. Patients are placed in a comfortable chair for the procedure, usually in an aesthetician chair, which is more comfortable than a standard medical exam table. Once the patient is ready, the device's handpiece is applied to the patient's skin and the aluminum oxide crystals are delivered to the skin's surface.

Various techniques exist for abrading the skin. Most clinicians perform this procedure just as they would perform chemical peels, laser resurfacing, or full dermabrasion. Cosmetic facial units are treated one at a time, usually beginning in the mid-forehead and working out towards the temple regions. Next come the cheeks, perioral region, and chin, ending with the nose. The number of "passes" over the skin and the power settings of the machine (which will vary for every machine) determines the depth of abrasion. Companies will recommend power settings and appropriate numbers of passes. Your staff will modify the procedure modified based on experience. In performing passes over the skin, both horizontal and vertical passes are used. Feathering (as with other procedures) is useful to provide an even abrasion.
During the procedure, remnants of the aluminum oxide crystals will remain on the skin surface along with the sloughed epidermis. Some microdermabrasion machines offer vacuum-controlled pick-up of these materials. Otherwise, the materials will need to be removed manually. Once the procedure is finished, the majority of patients are set to go back to their normal routine. They experience no downtime, and their skin looks and feels better. Some patients—less than 10 percent on average—have some residual erythema from the procedure that requires from 30 minutes up to one hour to resolve. Again, these patients all say their skin looks and feels better than it did before the procedure.

It is important for patients to realize that, although we are treating several medical conditions with microdermabrasion, this is a cosmetic procedure that requires payment at the time of service. The price per treatment or per series of treatments varies based on which section of the country your practice is in. Prices usually range from 100 to 200 dollars per session with some discount if the patient pays at the first visit for a series of four or six treatments.

**ADDITIONAL CONSIDERATIONS**

It’s important for patients to be on a good skin care routine as an adjunct to the microdermabrasion procedure. Some of the microdermabrasion companies sell skin care products which you can make available to your patients. You can also have a variety of your own skin care products or cosmeceutical products (distributed from your office), which serve your patients with acne vulgaris, fine lines and wrinkles, or skin dyschromias. Your patients usually want to use skin care products you recommend or endorse and, if handled professionally and ethically, are beneficial to both you and your patient.11

So far, microdermabrasion sounds wonderful. And for the most part, it is. Adverse reactions associated with the procedure are rarely described or reported. Erythema occurs in a small amount of patients. It should be expected, and patients should be aware of this possibility before beginning their first microdermabrasion procedure. Other problems, including the potential risk for scarring, are not yet known to clinicians but obviously should be kept in mind with more aggressive treatments (more power and more passes). If you use trained and skilled personnel, you can expect minimal adverse reactions.

Another problem to be addressed is the effect of aluminum oxide crystals on the general health of the patient and that of the microdermabrasion operator. The newer machines use a closed system with vacuum devices to take up aluminum oxide remnants. They allow very little aluminum oxide to remain behind, thus virtually eliminating any dangers the aluminum oxide might pose to one’s health. Long-term studies by these device companies will also help delineate any concerns. Studies show no danger to date.13,14

**CATCHING THE BUZZ**

Microdermabrasion is a big buzzword in the new millennium. A variety of microdermabrasion devices exist, and you should decide which one (and which company) best suits your practice. Your patients will enjoy the cosmetic benefits associated with microdermabrasion and enjoy the idea of a cosmetic procedure with no downtime. You may enjoy this new modality, whether it serves as an introduction into cosmetic dermatology or as a further expansion of your cosmetic dermatology practice.

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