Fast Healing after Laser Skin Resurfacing
The Minimal Mechanical Trauma Technique

LAURENCE DAVID, MD
JAVIER RUIZ-ESPARZA, MD

BACKGROUND. Laser resurfacing is rapidly becoming a widely used method of skin ablation for cosmetic improvement. The technique with which the instrument is used can make the difference between obtaining the desired result with a benign postoperative period and one with unnecessary complications.

OBJECTIVE. This paper describes a technique that maximizes the benefits while minimizing the risks in using this highly advanced instrument.

METHODS. We have limited the areas where multiple passes are done to areas that have rhytides; for the rest of the skin a single pass is done and the final carbonized eschar is not removed.

RESULTS. Faster healing and less complications. Shorter operative and anesthesia times. Greater patient acceptance and satisfactory cosmetic results.

CONCLUSIONS. This technique provides a safer, faster, and satisfactory cosmetic results with a much smaller possibility of the complications seen with conventional methods. © 1997 by the American Society for Dermatologic Surgery, Inc. Dermatol Surg 1997;23:359-361.

Carbon dioxide laser skin ablation is a predictable and reproducible method of ablating the skin and should have equally predictable outcomes. To accomplish this, laser resurfacing must be the result of highly precise optical-thermal coagulation only. Unfortunately, few operators keep this basic premise in mind and the technique is often contaminated by varying degrees of mechanical dermabrasion rather than pure laser ablation. Persisting erythema, textural changes in the skin, and outright visible scarring may then be seen. These undesirable results were commonly associated with mechanical dermabrasion and are also possible after laser resurfacing if part of the skin ablation carried out in these patients is also mechanical. We propose in this paper to reflect on key aspects of the technique that will maximize the promised advantages of using this novel, luminic, noncontact, highly predictable ablation instrument.

Materials and Methods

In our patients, chronic actinic damage, rhytides, and acne scarring were the most common reason for resurfacing. This technique was used in all patients regardless of age or sex. Patients were directed to wash their face with an antibacterial soap the day before and the morning of the procedure. In contrast to other published articles, no other skin preparation on the part of the patient was required. Tretinoin was avoided. Laser resurfacing was carried out under IV sedation. An Ultrapulse laser (5000c; Coherent, Inc., Palo Alto, CA) was used. Rhytides and/or scars were treated first using the 3-mm collimated handpiece. On rhytides, the shoulders are lasered with one to three passes while the valleys receive only one pass. Carbonized material is carefully removed with a cotton applicator soaked in normal saline or hydrogen peroxide after each pass. This is very important since carbonized material heats up quickly and does lose heat slowly. That can be a source of unwanted thermal damage to the dermis. The walls and the floor of acne scars are treated similarly with two to three passes for the walls and one pass for the floor. When the operator is happy with the amount of sculpting and leveling of the wrinkles and scars being treated, then he treats the intervening skin, which has only shallow, diffuse actinic damage, with one pass only, using the computerized pattern generator (CPG) at 300 ml with a density of 1-2 for eyelids and 3-4 for the rest of facial skin. The resulting whitish carbonized tissue is not removed since only one pass is needed here. A dressing is then applied.

Results

We observed that healing time is considerably shorter when the skin heals after laser injury alone, than if healing from friction and shearing caused by indiscriminate rubbing has to take place. Our results compared favorably with those published by other authors since rhytides and scars are treated much in the same way (Figures 1-3). We feel that potential complications such as scarring, textural changes, prolonged erythema, and inordinate pain can also be diminished by this technique since much of the nonspecific mechanical damage to tissue is eliminated.

Discussion

Chemical ablation of the skin has many variables: manufacturer of the chemical, shelf-life and age of com-
Figure 1. A) Preoperative view of lips treated with MMTT; B) 10 months post-op.

Figure 2. A) A lateral view of a patient before undergoing MMTT; B) 1 month later.

The gauze used for rubbing and carries with it the inherent potential complications of conventional dermabrasion. The advantage of the high-tech instrument is then defeated. When treating the skin between the rhytides we must remember that the actinic damage is limited to the epidermis and upper papillary dermis, and one pass will suffice to create thermal necrosis and sloughing of a shallow layer but one that will include the tissue we are trying to ablate.
We found that avoiding the use of Tretinoin pre- and postoperatively decreases the length of postoperative erythema to 1–2 weeks in the majority of cases. We are in agreement with other authors in that the degree of erythema directly correlates with the number of passes done on a specific area.

To perform several passes may also increase the risk of scarring. Doing only one pass over the entire face minimizes postoperative erythema. Another point that we found helpful in our patients and differs from other authors is to deal with the rhytides first, before any passes are done. By removing the undesired surface irregularities in wrinkles and/or scars first, the contour and full tridimensional elevation and shape is not altered as it would be if a general all-inclusive pass or several passes are done first. Hydroquinone is recommended after 1 week in patients with freckling and in patients with Fitzpatrick’s skin types III to V, and is to be continued for at least 6 months along with a wide-spectrum sunscreen with a high SPF. Preoperatively, Acyclovir for 1 day and 4 days after the procedure is given to prevent an unwanted herpetic episode.

Conclusions

Resurfacing by laser offers distinct advantages as a precise instrument of tissue ablation. In order to realize such advantages, an effort should be made to avoid the abrasive action of gauze scrubbing between laser passes.

References
