Introduction

Facial rejuvenation has been surrounded with great Interest for centuries, as the use of topical agents such as soured milk, vegetable extracts, and mud packs has been documented in ancient civilizations. In spite of this great interest, only in the last decade has rejuvenation been approached from a scientific basis. The use of retinoic acid, alpha-hydroxy acids, and antioxidants in conjunction with sunscreens and sunblocks has been investigated to prevent or reverse the antiaging process. Although these agents may have significant benefit, they generally do not offer a good clinical expectations for those using them as a primary rejuvenation treatment (Goldman and Fitzpatrick, 1999).

The desire for attaining cosmetic facial enhancement with minimal risk and rapid recovery has inspired the field of nonsurgical skin rejuvenation (Ross et al., 1997). Over the past decade, advances in laser technology have helped cosmetic surgeons to diminish the appearance of scars and wrinkles using both ablative and nonablative lasers. Until recently, surgeons relied on chemical peeling, dermabrasion, surgical scar revision, electrosurgical planing, and dermal/subdermal filler substances (eg, collagen implantation, silicone injection, autologous fat transplantation) for the correction of scars and wrinkles. Today, physicians use 3 types of laser modalities for skin resurfacing:

1. **Ablative laser resurfacing, including**:

- Scanned carbon dioxide laser
- Pulsed carbon dioxide laser
- Pulsed Er:YAG laser
- Fractional Er:YAG laser resurfacing
- Combination carbon dioxide and Er:YAG lasers

All of these treatments depends on the principles of selective photothermolysis in order to selectively target water-containing tissue and affect controlled tissue vaporization (Bader, 2007).

Cutaneous laser resurfacing has gained popularity among laser surgeons and also the public (Meduri, 2007). The presence of thermal damage, however, results in postoperative morbidity and increases the risk of complications. In addition to the prolonged 2-week recovery time and small but significant complication risk, all of this encouraged the development of non-ablative and, more recently, fractional resurfacing in order to minimize risk and shorten recovery times (Alexiades-Armenakas et al., 2008).

2. Nonblative laser resurfacing

The action of nonablative resurfacing relies on the production of dermal thermal injury to improve rhytides and photodamage while preserving the epidermis (Nikolaou et al., 2005). This type of laser allows for safe skin resurfacing in all skin types, anatomic locations. However, nonablative technologies have been generally disappointing for true resurfacing and are better suited to address superficial benign pigmented and vascular lesions (Narurkar, 2007).

3. Fractional laser resurfacing

Fractional laser resurfacing acts through the production of microscopic columns of thermal ablation in the epidermal and dermal tissue of regularly spaced arrays over a fraction of the skin surface. This intermediate approach increases efficacy as compared to nonablative resurfacing, and also with faster recovery as compared to ablative resurfacing. But actually neither nonablative nor fractional resurfacing produces results comparable to ablative laser skin resurfacing, but both have become much more popular than the latter because the risks of treatment are limited in the face of acceptable improvement (Alexiades-Armenakas et al., 2008).