

David J. Goldberg (Ed.)

**Laser Dermatology**

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# Laser Dermatology

With 108 Figures and 15 Tables

 Springer

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## Preface

The continual array of laser technology throughout the world has been nothing short of miraculous. Over the last fifteen years, this field has continued to grow and expand with the appearance of new technology. This book represents the most up-to-date description of the latest in laser and light-source technology. All the chapters are written by leading experts from both North America and Europe. After a chapter describing our latest understanding of laser physics, which also covers safety aspects, chapters are dedicated to laser treatment of vascular lesions, pigmented lesions and tattoos, unwanted hair, and ablative and non-ablative resurfacing and treatment for medical purposes. Each chapter begins with the core concepts. These basic points are followed by a history of the use of lasers for the cutaneous problem under discussion, currently available technology, and indications and contraindications. Each author then provides an example of his/her consent form and approaches to personal treatment.

What has become clear is that a significant understanding of lasers and light sources is required for optimum use of this technology. A basic understanding of laser physics is also fundamental to good laser treatment. Laser safety and minimizing risk to patients is at least as important as an understanding of laser physics. When these concepts, so clearly described in Chap. 1, are understood cutaneous laser technology can be safely and successfully used for a variety of purposes.

A wide variety of cutaneous vascular disorders can be successfully treated with modern lasers. The pulsed dye laser has enabled treatment of cutaneous vessels by following the principle of selective photothermolysis, a simple physics concept seen throughout laser der-

matology. The pulsed dye laser is the most effective laser for treatment of port wine stains but purpura limits its acceptability by patients for more cosmetic indications. Both facial and leg vein telangiectasia can also be treated with lasers. Other cutaneous disorders such as psoriasis, warts and scars can be improved by targeting the lesion's cutaneous vessels with appropriate lasers. Chapter 2 describes our latest understanding of the laser treatment of vascular lesions.

When considering treatment of pigmented lesions, accurate diagnosis of the pigmented lesion is mandatory before laser treatment. For some pigmented lesions, laser treatment may even be the only treatment option. Tattoos respond well to Q-switched lasers. Amateur and traumatic tattoos respond more readily to treatment than do professional tattoos. Cosmetic tattoos should be approached with caution. Treatment of melanocytic nevi remains controversial, but worth pursuing. Chapter 3 describes our latest understanding of the laser treatment of pigmented lesions and tattoos.

A wide variety of lasers can now induce permanent changes in unwanted hair. Hair-removal lasers are distinguished not only by their emitted wavelengths, but also by their delivered pulse duration, peak fluence, spot size delivery system and associated cooling. Nd:YAG lasers, with effective cooling, are the safest approach for treatment of darker skin. Despite this, complications arising from laser hair removal are more common in darker skin types. Laser treatment of non-pigmented hair remains a challenge. Chapter 4 describes our latest understanding of the laser treatment of unwanted hair

Ablative and non-ablative laser resurfacing lead to improvement of photodamaged skin.

Ablative laser resurfacing produces a significant wound, but long lasting clinical results.

Non-ablative resurfacing is cosmetically elegant, but generally leads to subtle improvement only. Visible light non-ablative devices lead to a lessening of erythema and superficial pigmentary skin changes. Mid-infrared laser devices promote better skin quality and skin toning. Chapter 5 describes our latest understanding of ablative and non-ablative laser resurfacing.

Lasers and light sources have become more commonplace in the treatment of dermatological medical diseases. Topical ALA and adjunct light-source therapy (ALA-PDT) is a proven photodynamic therapy for actinic keratoses

and superficial non-melanoma skin cancers. ALA-PDT, using a variety of vascular lasers, blue-light sources, and intense pulsed light sources, is also now being used to treat the signs of photoaging. PDT can also be useful therapy for acne vulgaris. Newer lasers and light sources are also now being used to treat psoriasis vulgaris, vitiligo, other disorders of pigmentation, and hypopigmented stretch marks. Chapter 6 describes our latest understanding of photodynamic therapy and the treatment of medical dermatological conditions.

January 2005  
David J. Goldberg

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