



# Young As You Look

SUMMER 2002

NEWSLETTER

## Laser Technology

**Laser is an acronym for the light amplification by the stimulated emission of radiation. In short, it is a very pure form of light energy.**

**Advances in laser technology have significantly altered the options available for treatment of dermatological conditions of the skin.**

Prior to the laser surgery revolution which began in the 1960's dermatologists had few options to offer patients with unwanted abnormalities of the skin which involved the color, texture and quality of the skin. Excision, grafting, radiation, chemical peels and dermabrasions were used with varying degrees of success to remove or improve abnormalities of the skin. The risks with these procedures were high and the results were not always as reliable as one would hope. The patient was often faced with the trade off between an abnormality and a scar, hypopigmentation and/or hyperpigmentation.

Lasers offer selectivity, specificity, and control for the treatment of conditions, including growths, vascular, and

pigmentary lesions of the skin, which have challenged dermatologists for years.

The goal of the dermatological laser surgeon is to remove those components of the skin that are abnormal or unwanted without disturbing



**ZAP!**  
**SURGERY**  
BEYOND THE CUTTING EDGE

that which is normal. Wavelength and pulse duration are the key variables which make laser systems suitable for the treatment of a wide variety of dermatological conditions. Different components of the skin absorb different wavelengths of light, so in order to obtain an optimal response the targeted tissue must be precisely matched with the wavelength which is most likely to be absorbed. The wavelengths of some laser systems are absorbed by the color of atypical tissue or foreign material in the skin while other wavelengths are absorbed by intracellular water.

It is for this reason that to be truly effective dermatologic laser surgeons require several different types of laser systems.

### MESSAGE FROM DR. DON GROOT



**DR. DON GROOT**  
DERMATOLOGIC & LASER SURGERY  
*Clinical Professor of Medicine*  
University of Alberta

**From June 15, 2002 to January 5, 2003 the Odysium will be exhibiting the Canadian premiere of the ZAP SURGERY.**

This unique interactive exhibit provides the participant with a closer look at how light, sound and other forms of energy are used in actual surgical procedures. We are proud to sponsor this cutting edge program and will dedicate this issue of the **Young As You Look** newsletter to sharing with you some of the most common skin conditions that lasers can treat. There are so many more uses for lasers than those which are presented, however we are limited by space. If you have a lesion which is raised, discolored (brown or red) lumpy, and/or annoying, laser may offer you a treatment solution.

# Common Pigmented Lesions

## Common Pigmented Lesions Treated with Lasers

There are an enormous number of pigmented lesions that can appear on the body, ranging in color from light to dark brown or black. They may be flat, raised, speckled, and/or lumpy. Some lend themselves to treatment with a laser more than others.

Some of the more common types of pigmented lesions which are treated with lasers are described in the columns to the right.



Age Spots  
BEFORE



Age Spots  
AFTER



Moles  
BEFORE



Moles  
AFTER



Tattoos  
BEFORE



Tattoos  
AFTER

Young As  
2 You Look

## SEBORRHEIC KERATOSES (Barnacles of Age)

Lasers are particularly beneficial in the treatment of these age related lesions of the skin. **Seborrheic keratoses** are generally found in caucasian people 50 years or older. They may appear anywhere on the body but are commonly found on the torso and/or face. These raised lesions, often appear in crops and increase in number with advancing age. A layer of greasy ker-

atin covers the lesion giving it a dull brown appearance. The overall appearance is that of the lesion being stuck onto the skin like a barnacle.

Superficial lesions which are richly colored with melanin can be removed with a pigment removal laser such as the Alexandrite. For deeper lesions the CO<sub>2</sub> laser may be used to vaporize the lesion.

## SOLAR OR ACTINIC KERATOSES (Precancers)

**Solar or actinic keratoses** generally appear in areas of sun exposure such as the face, ears, and back of the hands. Although most commonly seen in people over the age of 40, young adults who have experienced a lot of sun may present with this condition.

The lesions tend to be less than 1 cm in diameter and are characteristically scaly and red. These lesions are predisposed to squamous cell carcinomas in 20% of

cases. For this reason alone removal and pathological evaluation is prudent.

Cryosurgery which is also featured at the **Zap Surgery** exhibit or chemical ablation are frequently used to treat these lesions, however when they are thicker treatment with the CO<sub>2</sub> laser/curettage method gives the best result.

## LENTIGINES (Age Spots)

Lentigines are small brown superficial discolorations in the skin. Two common types of lentigines are referred to as solar or simplex.

Solar lentigines, often referred to as **age spots**, are the direct result of exposure to ultra-violet light even

though they are often associated with age.

Lentigines Simplex may appear at any age and are not the result of sun exposure.

Pigment removal lasers work particularly well in the treatment of lentigines.

## NEVI (Moles)

There are many types of **nevi**, including cellular nevi, epidermal nevi, benign melanocytic nevi, congenital melanocytic nevi and lentiginous nevi. The key feature which distinguishes these lesions is which layer of the skin the melanin (pigment) is found in. Because of the variety of different types of nevi, diagnosis is important, as some are more prone to be precancerous than others. It is for this reason that a piece of the nevi is

taken and sent to the pathologist before laser removal. Most people want their moles removed because they do not like the way they look.

If the lesion is relatively small and superficial, vaporization with the CO<sub>2</sub> laser is possible. If it has a lot of pigment in it the pigment removal lasers are beneficial. The advantage of removal with a laser is that there is less likely to be a visible scar after the treatment.

## TATTOOS

**Tattoos** are imposed on the skin either by trauma (road rash) or artistic endeavors (decorative). The same lasers which are effective for removing pigment created by the body are also useful in removing tattoos. The variables which determine the successful removal of a

tattoo with lasers include the type of laser used and the type of tattoo be it traumatic, amateur decorative or professional decorative. Also the size, age and location of the tattoo influence the outcome of the treatment.

# Common Vascular Lesions

## PORT WINE HEMANGIOMA

Present at birth **port wine hemangiomas** are flat vascular lesions which vary in size and depth of color. They may appear on any area of the skin. Some lesions may regress with time, others may become deeper in color, displaying texture changes such as thickening and nodularity.

Size, color, depth and location of the lesion on the body determine how successfully and quickly a port wine

hemangioma can be removed. The flash-lamp-pumped vascular dye laser has proven very effective in the removal of most port wine hemangiomas. Deeper lesions may lend themselves better to treatment with a double frequency long pulse duration Nd:Yag laser with a chilled tip to cool the skin. Multiple sessions with both laser types are usually required to eliminate the layers of vascularity.

## CAVERNOUS HEMANGIOMAS

A **cavernous hemangioma** may be characterized by tumor-like networks of dilated blood vessels and/or irregularly shaped, thin-walled spaces that may permeate organ systems. Cavernous hemangiomas appear during childhood and will grow proportionally as the child grows. They can vary greatly in size and are usually under the skin. When they are elevated above the surface of the skin they may appear to be nodular and

bluish purple in color. When compressed these lesions will often empty of blood then rapidly refill. There are several sub categories of cavernous hemangiomas.

Lasers have made tremendous headway within the last year in the treatment of cavernous hemangiomas because wavelengths of light are now available that can reach these deep lesions.

## TELANGIECTASIA (Facial Veins)

Arteries, capillaries and veins which become permanently dilated are referred to as **telangiectasia**. Heredity, systemic conditions, medications, radiation and environmental hazards all contribute to the pathogenesis of telangiectasia.

Vascular removal lasers have been used to successfully

remove telangiectasia from the face, neck and upper chest regions for a number of years. The long pulsed green Nd:Yag lasers with a chilled tips are the best alternative for deep, larger vessels while the pulsed dye laser is used for superficial vessels. Multiple sessions may be required.

## CHERRY HEMANGIOMAS

These bright, red capillary tumors may appear in showers over night particularly in people over the age of 40. Benign in nature they rarely grow much larger than a few millimeters in diameter.

Most people request removal of cherry hemangiomas with laser for cosmetic reasons and they are easily zapped away with a vascular removal laser.

## SPIDER NEVUS

The dilated end of an ascending artery acts as a hub for dilated arterial branches referred to as spider nevi. Bright red in color these lesions often annoy patients

because they look like pimples that never go away. Zapping these lesions with a vascular removal laser can solve this annoying problem.

## Common Vascular Lesions Treated with Lasers

Vascular refers to conditions which involve blood vessels. Common vascular lesions which are treated with lasers include:



Portwine Birthmark

BEFORE



Portwine Birthmark

AFTER



Cavernous Birthmark

BEFORE



Cavernous Birthmark

AFTER



Facial Veins

BEFORE



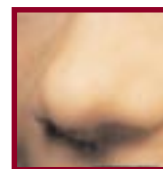
Facial Veins

AFTER



Spider Nevi

BEFORE



Spider Nevi

AFTER

- ▶ **Liposuction**  
 Tumescant  
 Ultrasonic
- Laser Surgery**  
 Wrinkles  
 Facial Veins  
 Birthmarks  
 Scar Revision  
 Tattoos  
 Moles & Brown Spots  
 Skin Cancers
- Facial Rejuvenation**  
 Laser Resurfacing  
 Laser Eyelid Lifts  
 Botox  
 Soft Tissue Implants  
 Collagen Replacement  
 Chemical Peels  
 Mega Peels
- Leg Veins**  
 Sclerotherapy  
 Laser Removal
- Hair**  
 Laser Removal  
 Transplants

# Other Conditions

## Treated with Lasers

### SOLAR ELASTOSIS (Wrinkles)

Long term exposure to ultraviolet light causes damage to the skin, especially the superficial layers of the dermis. Elastins increase in number becoming thick and entangled. Collagen degenerates and fibrous support loses its form. Melanin becomes unevenly distributed in the epidermis. The result is **wrinkles**, uneven pigment, and texture changes such as cross hatching. These symptoms are often attributed to aging, but it is sun exposure which is the culprit.

Women have been battling solar elastosis for years and the treatment remedies have been many and varied. Without a doubt the first step is to avoid the sun and when in the sun to use broad spectrum sun screens and to wear protective

clothing. Through non-ablative laser treatments subtle improvement can be achieved in the size of pore, texture, vascularity, general coloring and fine wrinkles. To achieve dramatic changes the ablative CO<sub>2</sub> laser with scanners addresses problems such as deep wrinkles, pigment changes and texture variations. A planned approach which includes the use of sun screens, medicated creams, micro-dermabrasions, and non-ablative laser resurfacing (New York Triple Rejuvenation Program) is generally the least invasive approach for the treatment of solar elastosis.



Wrinkles  
BEFORE



Wrinkles  
AFTER

[NEW YORK TRIPLE REJUVENATION PROGRAM]

### UNWANTED HAIR

**Excessive facial and body hair** is usually related to an over sensitivity of the hair follicles to normal hormone levels in the body but it can be related to high levels of hormone production, tumors or other medical problems. Therefore, concerns about excessive hair or an unusual onset of hirsutism need to be investigated.

Many people, however, are simply hairy by nature or are concerned about normal amounts of hair that are considered to be socially unacceptable. Lasers are able to disable thousands of hair follicles in a single treatment resulting in fewer, finer, lighter hair which is less obvious and easier to manage.

### SCARS

Although **scars** represent our innate ability to heal after a traumatic or systemic injury to the skin, societal norms dictate that scars, particularly if they are visible, are unacceptable even though healing may have followed a normal process. For this reason many individuals will seek to have their scars improved.

Lasers have significantly improved the options available for scar revision. In some cases simple excision is the answer, however the components of most scars are too complex for this to achieve significantly better results. A scar may be raised, nodular, thick, erythematous, over pigmented, devoid of pigment, depressed or any combination of these components.

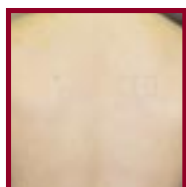
Raised scars will often flatten with an injection of intraleisional cortisone, however if there are texture variations in

the scar such as nodularity and excessive thickness then vaporization with a CO<sub>2</sub> laser will resurface the scar to give it a flatter, smoother appearance. The **vascular removal lasers** and the **pigment removal lasers** can be used to treat erythema and hyperpigmentation in scars, respectively. Depending on the nature of a depressed scar it can either be raised with implant material or surgically repaired with punch, full thickness skin grafts or microsurgery followed by resurfacing with the CO<sub>2</sub> laser.

Traditional wisdom would suggest that one waits until a scar has fully healed before embarking on scar revision, however, the ideal time for scar revision using lasers is 6 to 12 weeks after completion of the initial healing process.



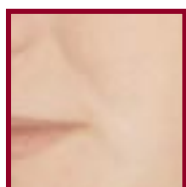
Hair  
BEFORE



Hair  
AFTER



Scars  
BEFORE



Scars  
AFTER

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4  
Young As  
You Look

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