Purpose: The purpose of this study was to compare the results produced by laser vs. surgery both subjectively and objectively.

Method: Twenty patients with leg veins 0.7 to 3 mm in diameter with two comparable sites preferable on bilateral legs. One x11 cm area was injected with etodocedol and the other site was treated with the Lyra 1064nm laser at 150-190 J/cm² and 50-100 ms, 3-5 mm spot size using the coolspot handpiece and cool gel. Pre and post op photos were taken. The patients followed up at eight weeks for a possible retreatment. In 80% of the patients received a second treatment. Photos were taken at each visit. The final follow-up was at 3 months at which the patients were asked to complete a Quality of Life survey. Three blinded physicians reviewed the pre-op and 3 month post op slides.

Results: The quality of life surveys tabulated that 32% of the patients preferred the laser treatments to sclerotherapy; 45% choose sclerotherapy and 23% were undecided. Scores tabulated by the three blinded observers showed that on a scale from 0 - 4 (0 = no clearance, 2 = 1-25% clearance, 3 = 26-75% clearance, and 4 = 76-100% clearance) the laser treatment site averaged 2.50 on the improvement scale and the sclerotherapy averaged 3.30.

Conclusion: This study demonstrated that the long pulsed Nd:YAG can yield comparable results in the treatment of blue leg veins up to 3 mm in diameter.

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TREATMENT OF BROWN FACIAL PATCHES IN ASIAN PATIENTS WITH Q-SWITCHED ALEXANDRITE AND Q-SWITCHED RUBY LASERS. Richard E. Fitzpatrick and Syed Amily. Dermatology Associates of San Diego County, Inc., La Jolla, CA

Purpose: To evaluate response and side effects, treatment of facial brown patches (melasma, junctional nevi, lentigines, and nevus of Ota) using Q-switched lasers.

Method: Fifteen patients with brown facial patches were treated with Q-switched alexandrite and Q-switched ruby lasers in 1-3 treatment sessions.

Results: Excellent cosmetic results were achieved in all patients even though 100% elimination of pigmentation was not possible. All patients experienced at least 75% improvement in pigmentation and were satisfied with the results. The main side effect of treatment was post-inflammatory pigmentation which was successfully treated with sunscreen, Retin-A and topical vitamin C. Multiple treatment sessions were often necessary.

Conclusions: Q-switched alexandrite and Q-switched ruby lasers are effective modalities for treatment of brown patches (melasma, junctional nevi, lentigines, and nevus of Ota) in Asian patients.

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COMPARISON BETWEEN CONFOCULAR LASER SCANNING MICROSCOPE IMAGES AND FROZEN SECTION HISTOLOGY OF BASAL CELL CARCINOMA FROM MOHS MICROGRAPHIC SURGERY

S. Brian Jiang, Joseph A. Lowery, Lara Kelley
Dermatologic Surgery Unit of Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA

Purpose: Confocal Laser Scanning Microscope (CLMS) is a FDA approved imaging device which provides real time magnified images (~1000X) of skin up to 500 microns in depth in about 5 minutes. The purpose of this study is to compare the images of CLMS with frozen section histology from Mohs Micrographic Surgery (MMS).

Methods: Twenty skin specimens from patients with basal cell carcinoma (BCC) excised using MMS technique were used in this study. After the frozen section slides stained with hematoxylin and eosin (H&E) were prepared and read by a Mohs surgeon, the remainder of the skin sample was scanned with the CLMS. The maps from CLMS and H&E outlining basal cell carcinoma in these samples were compared.

Results: Maps from CLMS correlated well with maps from H&E for large masses of nodular or superficial BCC. For less well defined, smaller masses of nodular/superficial BCC and morphoform BCC samples, the correlation between the maps was more difficult to obtain.

Conclusions: The CLMS images correlate well with H&E frozen sections from MMS containing large masses of nodular/superficial BCC. With this current system, CLMS may be useful in MMS to screen out grossly positive margins in a relatively short amount of time.

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EXTENDED THEORY OF SELECTIVE PHOTOTHERMALYSIS

G.B. Altshuler¹, R.R. Anderson², D. Manstein³, H.H. Zendejas⁴, M.Z. Smirnov⁵
¹Palomar Medical Technologies, Burlington, MA
²Wellman Laboratories of Photomedicine, Massachusetts General Hospital, Boston, MA
³Institute of Fine Mechanics and Optics, St. Petersburg, Russia

The theory of selective photothermalysis (SP) developed by Anderson and Parrish is applicable to the case where the target has uniformly distributed chromophore and is damaged by direct heating. The laser wavelength and pulsewidth are chosen to produce selective target damage while leaving the surrounding tissue unaffected. However, in certain cases (e.g. hair follicle), part of the target may not contain chromophore and therefore must be damaged by heat diffusion from pigmented areas within the target. Three parameters of the light source must be properly chosen to achieve optimum target damage using this method. First, similar to SP, the light-source wavelength must be selectively absorbed by the pigmented areas within the target. Second, the light pulsewidth should be approximately equal to the thermal damage time (TDT), which is the time required to thermally damage the entire target (including both pigmented and unpigmented areas) while leaving the surrounding tissue unaffected. The TDT is significantly longer than the thermal relaxation time due to the requirement that the temperature at the target boundary be in the 65-70°C range required for thermal denaturation. Third, the power density must be sufficient to raise the target temperature above the thermal damage threshold; however, it must be low enough to prevent chromophore destruction and subsequent absorption loss in the pigmented area. In combination with contact cooling during light application to protect the epidermis, this new method can be used for hair removal and leg vein treatment.
Clinicians confronted with post-resurfacing patients presenting with pruritus should consider the possible role of infection may be etiologically related to post-laser resurfacing be associated with facial pruritus and postoperative discomfort in some but not all post-laser resurfacing patients who complain of on a data collection sheet.

Prior to resurfacing, and at post-operative days 3 and 6. All sampled symptoms, including pain and pruritus, and the results were entered were asked about the extent to which they were experiencing various symptoms, including pain and pruritus, and the results were entered on a data collection sheet. Results: Candida colonization appears to be associated with facial pruritus and postoperative discomfort in some but not all post-laser resurfacing patients who complain of significant pruritus. Conclusions: While Candida colonization or infection may be etiologically related to post-laser resurfacing pruritus, further studies are needed to confirm such an association. Clinicians confronted with post-resurfacing patients presenting with pruritus should consider the possible role of Candida.

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**CANDIDA COLONIZATION OF SKIN AFTER LASER RESURFACING: AN INNOCENT BYSTANDER OR A CAUSE OF PRURITUS**

*Murad Alam, MD; Nayomi E. Omura, MD; Kenneth A. Arndt, MD; Jeffrey S. Dover, MD*

*SkinCare Physicians of Chestnut Hill, Chestnut Hill, MA; Harvard Medical School, Boston, MA; Beth Israel Deaconess Medical Center, Boston, MA; Harvard Medical School, Boston, MA*

**Purpose:** To investigate whether the facial skin of patients with post-laser resurfacing pruritus is concurrently colonized or infected with Candida species. **Methods:** Candida cultures were obtained from the facial skin of patients undergoing elective full-face resurfacing of the face with CO2 laser, Er:YAG laser, or combination CO2 and Er:YAG lasers. Cultures were collected immediately before resurfacing, and at post-operative days 3 and 6. All sampled areas were at least one centimeter distant from mucosal surfaces of the mouth, nose, or eyes. At each culture collection session, patients were asked about the extent to which they were experiencing various symptoms, including pain and pruritus, and the results were entered on a data collection sheet. Results: Candida colonization appears to be associated with facial pruritus and postoperative discomfort in some but not all post-laser resurfacing patients who complain of significant pruritus. Conclusions: While Candida colonization or infection may be etiologically related to post-laser resurfacing pruritus, further studies are needed to confirm such an association. Clinicians confronted with post-resurfacing patients presenting with pruritus should consider the possible role of Candida.

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**TREATMENT OF FACIAL TELANGIECTASIA WITH MODIFIED HIGH-FLUENCE PULSED-DYE LASER: COMPARISON OF EFFICACY WITH FLUENCE IMMEDIATELY ABOVE AND BELOW THE PURPURA THRESHOLD**

*Murad Alam, MD; Jeffrey S. Dover, MD; Kenneth A. Arndt, MD*

*SkinCare Physicians of Chestnut Hill, Chestnut Hill, MA; Beth Israel Deaconess Medical Center, Boston, MA; Harvard Medical School, Boston, MA*

**Purpose:** To investigate whether the high-fluence modified pulsed-dye laser is effective in the treatment of fine facial telangiectasia in the absence of post-treatment purpura. **Methods:** Symmetrical, matched areas of telangiectatic skin on the left and right sides of subjects' faces were assigned to be control or treatment sites, respectively. A third, small area of the face with telangiectasia was used to determine the minimum fluence required to elicit non-transient purpura within 10 minutes after treatment with a modified pulsed-dye laser device (V-becam, Candela, Wayland, MA, 595 nm, 4-15 J/cm²). Designated treatment areas were then treated with the minimum purpura fluence, and the control areas, with a fluence 1 J/cm² less than this threshold. Other parameters, including pulse duration and cooling, were equivalent. Subjects returned for evaluation of degree of purpura three days and one week after treatment. Resolution of telangiectasia at both sites was assessed after one month. **Results:** In selected patients, telangiectasia treated with fluences below the purpura threshold were less improved than telangiectasia treated with fluences above the purpura threshold. **Conclusions:** While pulsed-dye laser can effectively treat telangiectasia at both low and high fluences, high fluences that induce significant purpura may be more efficacious than low fluences resulting in minimal purpura.

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**COMMERCIAL FEASIBILITY OF AN EXCIMER LASER FOR TREATMENT OF PSORIASIS**

*Murad Alam, MD; Kenneth A. Arndt, MD; Jay A. Goldstein, MD; Jeffrey S. Dover, MD; Michael L. Rudman, MD; Robin L. Travers, MD*

*SkinCare Physicians of Chestnut Hill, Chestnut Hill, MA; Harvard Medical School, Boston, MA; Boston University School of Medicine, Boston, MA; Beth Israel Deaconess Medical Center, Boston, MA; Innovative Clinical Solutions Limited, Providence, RI*

**Purpose:** Clinical studies have demonstrated that excimer lasers can induce regression of psoriatic plaques. The purpose of this study was to investigate the commercial feasibility of such an excimer laser for treatment of plaque type psoriasis. **Methods:** A non-randomized, prospective multicenter trial enrolled patients with plaque type psoriasis of the trunk affecting 1-10% of body surface area. Initial minimum erythema dose (MED) testing was followed by 4-10 treatments, administered twice weekly, with a 308 nm xenon chloride excimer laser (XIRAC, PhotoMedex, Radnor, PA). Photographs of treatment sites and psoriasis area and severity index (PASI) scores were obtained before initiation of treatment and after treatment conclusion in each patient. Patients also completed a quality of life questionnaire before and after treatment. The treatment process was managed by a non-transferable key card system, which permitted each patient 1-10 treatments over a fixed
Purpose: Multiple modalities are available for rejuvenation of photoaged nonfacial skin. Fewer options are available or effective for nonfacial skin. The use of intense pulsed light for improvement of photoaged facial skin has been recently reported. The purpose of this study was to assess the effectiveness of a series of intense pulsed light treatments in the improvement of photodamaged nonfacial skin.

Methods: A broad band intense pulsed light source emitting noncoherent light in the visible range was used for all treatments. Patients with photodamage of the neck, chest, dorsal hand or forearm skin were treated with the LightsSheer at 40-60 J/cm² with 20-30 msec pulse durations. 1-3 treatments were performed in each session with intervals of 4-6 weeks. A single pass of double pulsed light with fluences of 30 to 56 J/cm² was used.

Results: All patients showed visible improvement in wrinkling, lentigines, freckling and skin laxity of all treated areas. No scarring or serious complications were observed with the technique used. There was minimal or no patient downtime following treatments. Treatments were readily tolerated using only a topical lidocaine anesthetic cream.

Conclusion: Intense pulsed light is an effective and safe modality in the visible improvement of photoaged nonfacial skin.

TREATMENT OF A VARIETY OF PIGMENTED LESIONS WITH THE LIGHTSHEER DIODE LASER SYSTEM

Marla L. McClaren, Vera A. Chotzen, Suzanne L. Kilmer. Laser & Skin Surgery Center of Northern California, Sacramento, CA.

The purpose of this study is to determine the safety and efficacy of the LightSheer Diode Laser System (Coherent) in removal of pigmented lesions including intradermal melanocytic nevi, epidermal nevi, nevus spilus, lentigomas, seborrheic keratoses, café au lait macules and melanoma. Patients were consented and lesions were photographeated, then treated with the LightsSheer at 40-60 J/cm² with 20-30 msec pulse durations. 1-3 pulses per lesion were utilized and lighter lesions (less pigment) were treated with the chill tip off. Many of the smaller pigmented lesions were wiped away with wet gauze immediately after treatment. For larger lesions, the overlying epidermis of the treated pigmented lesion was left in place. Wound care consisted of emollients until complete reepithelialization occurred. Follow up visits were 2-6 weeks later, at which time photographs were taken and lesions were retreated if portions of the lesion remained. Results showed that the more superficial pigmented lesions were ablated in a single treatment and only 25% of lesions required a second treatment (usually deeper nevi). Longer term follow up suggests the treatment is permanent for dermal nevi, lentigomas, seborrheic keratoses and nevus spilus. The café au lait macules have had only short term follow up. Although the melanoma cleared completely at the time of treatment it had returned by one month follow up. Skin types I-V were included with no evidence of post inflammatory dyspigmentation. Patient satisfaction was very high. While skin cooling is beneficial for epidermal protection, in the case of lighter lesions in lighter skin types, turning off the chill tip allows this laser system to better target the pigmented lesion with excellent cosmetic results. For darker skin types, the chill tip may need to be left on to protect any surrounding epidermis. In summary, we present an effective treatment for pigmented lesions utilizing the LightsSheer Diode Laser System which has the appropriate fluorescence and pulse durations as well as the option of disengaging the chill tip to better target lighter lesions. Comparisons underway with the CoolGlide (1064nm) and Apogee (Cynosure, 755nm).

PHOTOSENSITIZERS ACCUMULATION IN SPONTANEOUS MDR-1 RESISTANT CF11S (RHODAMINE 123, ROSE BENGAL ACETATE AND PHOTOFRIN)

A.C. Croce, K.S. Lanza, S. Fiorani, R. Supino*, D. Locatelli, P. Baglioni*, G. Buttini. Center for Histochemistry, CNR, University, Pavia, *National Tumor Institute, Milan; †Chemistry Dept., University, Firenze, ITALY

One of the most important causes of cross-resistance to chemotherapeutic agents is the overexpression of transporter related proteins, as in the case of MDR-1 resistance mechanism. In this work the influence of MDR-1, and of other eventual phenotype changes accompanying the rising of resistance was studied in relation with the intracellular accumulation of photodynamic compounds. Rhodamine 123 (R123), typical substrate of MDR-1; Rose Bengal (RB), administered as Rose Bengal acetate, a fluorgenic substrate, which accumulation depends on the balance of three processes: substrate influx, esterase hydrolysis, product efflux; and Photofrin®, which intracellular accumulation depends on the aggregated species and on the disaggregation process. Two cultured cell lines expressing MDR-1 were used: B16, and A2780, derived respectively from a mouse melanoma and a human ovarian carcinoma. The study was performed by means of microspectrofluorimetric analysis on single cells and biochemical evaluation on cell extracts. Data obtained showed that, as expected, MDR-1 plays a very important role in the accumulation process of R123. Verapamil, a specific inhibitor of MDR-1, demonstrated a participation of MDR-1 on the extrusion of R8 and Photofrin®, although to different extents. As to Photofrin®, different intracellular turnovers take place in the cell variants, and influence the release of the fluorescent fractions, that is favored in resistant cells than in wild type. A greater accumulation of RB in resistant cells than in the wild type was found, explained by the increased esterase activity and membrane traffic, counterbalancing the improved extrusion of the product.

Work supported by CNR “Target Project Rintechnology”
Methods. 40 patients referred with CMN were included in the study. A punch biopsy was taken at the preliminary consultation for diagnostic purposes and in the hope of assessing correlation to treatment outcome. A concomitant test patch was also carried out. The histology service was also asked to comment on the depth of pigment and if possible deepest extent of melanocytic tissue. Patients were entered into the treatment program which was continued until a useful response was obtained or otherwise.

Results: The correlation between the depth of the pigment and response to laser treatment was poor. Conclusion: A simple depth assessment of the pigment cells is not a reliable indicator to responsiveness of a melanocytic lesion to laser treatment. A better indicator may be depth of naevus cells within the lesion.

Title THE ROLE OF THE ULTRAPULSE LASER IN TREATMENT OF BOWENS DISEASE OF THE LEGS.
R. Dave, B. Monk, P Mahaffey.
Laser Treatment Centre, Bedford Hospital, Bedford, UK.

Purpose: The aim of the study was to determine if the carbon-dioxide laser could be used to treat Bowens disease on the legs.

Methods: This was a prospective study wherein patients were recruited after gaining informed consent. 16 patients with 25 biopsy proven lesions were included in the study. The treatment was carried out by the ultrapulse laser with the 3mm hand piece at suitable settings. Passes were made until dermal shrinkage was observed. The treated areas were left to heal by secondary intention.

Results: 8 lesions took longer than 4 weeks to heal but all of them were healed by 8 weeks. No clinical recurrence was noted at the 6 month visit. The patients were able to look after the treated sites on their own without the need for bulky dressings. 2 patients developed infections which needed dressings and antibiotics.

Conclusion: Ultrapulse laser is a safe modality for the treatment of Bowens Disease of the legs. It also presents significant advantages over other treatments like cryotherapy and surgical excision.
Methods: A new type of Er:YAG laser (Fotona 1000) with variable pulse length has been used. Pulse duration varies between 100µs and 1000µs. The laser pulses were selected as VSP (very short pulse - 100µs), SP (short pulse - 300µs), and VLP (very long pulse - 1000µs).

Ablative skin resurfacing has been performed with SP (energy 250mJ, spot diameter 5mm and repetition rate 12-15 Hz), with 60% overlapping. Non ablative skin resurfacing has been performed with VLP (1ms, energy 230mJ, spot diameter 2mm and frequency 10Hz). VLP laser pulses have been used for stronger thermal effects on the tissue, with less ablation. No special pretreatment therapy has been used. All procedures have been performed in local anesthesia.

Results: Histological pictures show deeper heating effects in ablative skin resurfacing with high degree of overlapping (70%), than in nonablative (30-50%). Uncomplete ablation was observed histologically and clinically in cases treated with VLP. Final cosmetic results were good in both cases, but better in ablative.

Conclusions: New generation of Er:YAG laser offers wide possibilities for skin resurfacing.

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EPILATION WITH A DIODE LASER COMPARED TO A FLASH LIGHT: QUICKER AND MORE PERMANENT?
Sabine Stangl, Michael Droser, Barbara Hertenberger
cutaris Institute for Laser Research in Dermatology, Munich, Germany

The epilation technique using a flash lamp (intense light source = IPL) has been widely performed. To compare the efficiency of IPL to recently developed modalities, such as a diode laser, 13 volunteers (11 f, 2 m, mean age 26.8 y, 23-68 y) were treated on one side with a non-coherent filtered flash lamp (EpiLight™) and on the opposite side with a diode laser system (LightSheer™). Hair counts where obtained before each treatment within marked rectangles. At this time, the 3 months follow up is completed and consecutive hair counts have been performed in 8 different localizations (back, bikini, cheek, chin, hypogastrium, forearm, neck, upper lip) prior to each repeated treatment after intervals of 4 (face) or 6 (body) weeks. In response to the clinical reaction, the following parameters were used: 25-40 J/cm² and up to 30 ms for the diode laser, 31.50 J/cm² and 2.4 x 4.6 ms (10-30 ms delay) for the IPL using the 645 cut off filter.

A satisfying degree of epilation (flash lamp 68.9%, diode laser 73.6% hairloss) was achieved after an average of 6 (4-11) consecutive treatments. After a follow up of 3 months diode laser treated areas showed an increase in hair counts by 10.0%, while IPL counted plus 26.7%. This difference is not statistically significant (p = 0.347).

<table>
<thead>
<tr>
<th>Hair counts per cm²</th>
<th>Diode laser</th>
<th>Flash lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before treatment</td>
<td>12.9</td>
<td>100.0</td>
</tr>
<tr>
<td>After 4-11 treatments</td>
<td>3.4</td>
<td>26.4</td>
</tr>
<tr>
<td>3 months follow up</td>
<td>4.7</td>
<td>36.4</td>
</tr>
</tbody>
</table>

In conclusion both systems achieved a reduction of hair growth. With a longer follow up the differences in regrowth could become more evident and will be reported.

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TREATMENT OF CONGENITAL NEVI WITH LONGPULSE ALEXANDRITE LASER. Richard E. Fitzpatrick and Syed Amiry.
Dermatology Associates of San Diego County, Inc., La Jolla, CA

Purpose: To determine response of congenital nevi to long pulse Alexandrite laser.

Method: Four patients with congenital nevi on hand (1 patient), on thigh (1 patient), and entire back (2 patients) underwent several treatments using a long pulse Alexandrite laser (15-25 J/cm² and 3 msec pulse duration). Treatment interval was 3 to 12 weeks. The average number of treatments was four.

Results: Every congenital nevus showed complete clearing of the nevus in some areas and elimination of pigmentation and nevus cells of 500µm of superficial dermis, making deeper dermal nevus cells less visible; thus improving cosmetic appearance of nevus cells.

Conclusions: Long pulse Alexandrite laser is at least partially effective for treatment of benign congenital nevi, leading to either complete clearing and/or reducing visibility of pigmentation within congenital nevi.
scattering as a linear spectroscopy technique to detect the vibrational transitions of the molecules, and constructed a compact portable instrument for use in a clinical setting. **Results:** Using blue-green spectral lines from an argon laser, we excite the anti-oxidant molecules resonantly in their spectrally broad absorption transitions in the visible wavelength range. The chain-like conjugated carbon backbone of the anti-oxidant molecules gives rise to characteristic single- and double bond stretch vibrations at ~1600 and ~1530 wavenumbers, respectively. The strengths of these Raman signals scale linearly with tissue anti-oxidant molecule content, and therefore can be used to quantify the anti-oxidant concentration. The excitation laser light is routed to the tissue via fiber optics, the Raman scattered light is collected in a backscattering geometry, routed via dichroic beam splitters and separate fiber path to a small spectrophotograph, and imaged onto a CCD camera. The spectral information is read out by customized software and plotted in near real-time onto a computer screen. **Conclusion:** It is possible to non-invasively measure anti-oxidant molecule levels of tissue in a non-invasive and quantitative way at safe laser light powers. A prototype instrument will be demonstrated for in-vivo measurements of skin.

**HYPERTROPHIC SCARS AFTER CO2 LASER SUCCESSFULLY TREATED WITH THE 585-nm PULSED DYE LASER**

Mario Gribiati, Iara G. Yoshinaga, Luciana Conrado, Selma Cemea
Hospital Israelita Albert Einstein, Department of Dermatology, São Paulo, Brazil

Hypertrophic scars are exuberant fibrous repair tissue difficult to treat. Treatment with the Q10 laser may lead to this type of scar, especially if used at high fluences, and depending on the anatomic location of the wound. Arm, chest and lips are reported as being at high risk. We present a case of exuberant hypertrophic scars on arms and dorsum of hands due to CO2 laser successfully treated with the 585-nm pulsed dye laser (PDL). An oriental 63-year-old woman, presented with exuberant hypertrophic scars on the dorsum of the hands and arms, after a CO2 laser treatment for actinic keratosis, performed by her ophthalmologist. Since the CO2 laser treatment was not performed by our group, we do not know what energy levels were applied. The lesions were seriously impairing the patient’s social life. We treated the whole area only with the 585-nm pulsed dye laser. The PDL was used at 6.5 J/cm² with a 7-mm spot size, in multiple sessions with 4-6 weeks intervals. The treatment was well tolerated without anesthesia.

After four sessions, the elevated scars became flatter and less eritematous. The final cosmetic result was considered excellent by the patient. This type of complication may occur in spite of the parameters used for the CO2 laser. Nevertheless, untrained physicians should be aware of the risks of performing such procedures inadequately. In this case, the PDL was an effective and quick treatment for this type of scar.

**MODEL THAT ASSESSES PATIENT SATISFACTION WITH LASER HAIR REMOVAL**

Francisco Jimenez and Ruben L. Pardo. Dermatologia Laser Clinica San Roque, Canas, Baja, and Coral Gables Dermatology and Laser Center, Coral Gables, Florida

We have developed a model to assess patient satisfaction and expectations prior to laser hair removal. All the hairs contained in a 5 cm x 3 cm area of thoracic hairy skin from a volunteer patient were counted and photographed. Hairs were randomly eliminated by picking and photographs were taken at 10% intervals. Sequential photographs, each showing 10% hair loss, were shown to patients. Each patient was asked to grade the photographs under the following scale: bad, moderate, good and excellent result. In addition, they also asked at which photographic point they would feel satisfied after one laser hair removal session and after the last session. Patients graded as a bad result photos that contained 70 to 100% of the original hair count, moderate at 40 to 60% of the original hair count, good at 20 to 30% of the original hair count and excellent at 10% of the original hair count. Most patients (>80%) responded that they would only be satisfied with over 50% hair loss, and that they would be very satisfied with greater than 90% hair loss after the last laser session.

In conclusion, having a photographic scale is useful for consultation prior to laser hair removal therapy, so that patients can have a more realistic expectation of the procedure. According to the literature, hair removal lasers achieve approximately 20-30% permanent hair loss per treatment session. According to this model, we feel that patients will not be satisfied with laser hair removal until after the 3rd or 4th treatment session.

**MULTIPLE COLOR CHANGES FOLLOWING LASER THERAPY OF COSMETIC TATTOOS**

Eduardo Velez, Claudio Jimenez, James M. Spencer
Department of Dermatology and Cutaneous Surgery, University of Miami School of Medicine, Miami, Florida

**Purpose:** To emphasize the wisdom of small test area when treating cosmetic tattoos, and the need of multiple laser systems.

**Methods:** A 48 year-old woman presented requesting removal of permanent makeup (cosmetic tattoos) of her eyebrows and around her lips. Physical examination revealed a brown tattoo of both eyebrows and dark red lip liner around both lips. A test area was performed to the red tattoo on the lips. A Nd:YAG laser (continuum Biomedical, Inc., Dublín CA) frequency doubled at 532 nm, 2.0 J/cm², 2mm spot size was utilized for the eyebrows. The patient returned for followup 1 month later, at which time the test area of the lip turned black. The black ink on the lip
was treated with the same laser at 1064 nm, 3mm spot, 4.25 J/cm2, with satisfactory resolution in two treatments. The brown eyebrow were treated with the 1064nm Nd:YAG laser, 3mm, 3.9J. One follow up one month later both eyebrows had turned bright orange, and treated with the 532nm, 3mm, 3.0 J/cm2. One month later the eyebrows were now a mixture of yellow ink and dark green. The yellow area was treated with 532nm, 3mm, 2.3 J/cm2 while the dark green was treated with the 1064nm laser, 3mm spot, 4.2J. One month later little improvement was noted, so Q-switch ruby laser at 694nm, (Landa photometrics, London England) four spot, 16J was utilized. An additional four treatments were given utilizing a combination of both the ruby and the 532 Nd:YAG lasers for green and the yellow pigment respectively.

RESULTS: Significant but not complete, resolution of the tattoo ink was achieved.

CONCLUSION: Multiple laser systems are needed to remove cosmetic tattoo, test area must be done before treatment.

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TREATMENT OF FACIAL TELANGIECTASIA WITH A PULSED KTP LASER AND AQUEOUS GEL

Arielle N.B. Kauvar1 and Kathryn E. Frew2

1 Laser and Skin Surgery Center of New York, New York, New York and Dartmouth Hitchcock Medical Center, Lebanon, New Hampshire

Purpose: The pulsed KTP Laser provides excellent clearing of facial telangiectasia without purpura, but edema and crusting may result. The utility of an aqueous gel in reducing postoperative side effects was investigated.

Methods: Nineteen patients with extensive facial telangiectasia were treated with a pulsed 532 nm KTP laser (Versapulse, Coherent Medical, Palo Alto, CA) equipped with contact cooling at 4°C. Laser pulses were delivered with a pulse duration of 10 msec, a 4 mm spot size and a fluence of 9.5 J/cm2. A 3 mm thick coating of an aqueous gel was applied to the right or left face in a randomized fashion prior to treatment.

Results: Adverse effects including pain, edema, crusting were reduced with the use of the aqueous gel. Clearance rates were equivalent with or without the aqueous gel in all patients. Use of the aqueous gel also provided easier movement of the laser handpiece across the skin.

Conclusions: The use of an aqueous gel in conjunction with contact cooling during pulsed KTP laser photoablation of facial telangiectasia decreases treatment associated side effects.

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COMBINED LASER (NORMAL MODE RUBY LASER AND Q-SWITCHED RUBY LASER) TREATMENT ON CONGENITAL HAIRY MELANOCYTIC NEVI

Taro Kono, MD*, Motohiro Nozaki, MD*, Henry H. Chan, M.D.**

* Department of Plastic and Reconstructive Surgery, Tokyo Women's Medical University, Tokyo, Japan, ** Division of Dermatology, University of Hong Kong

Background: Although melanocytic nevus is commonly seen in all ethnic groups, unlike the Caucasian, Asian rarely developed melanoma from these lesions. As a result, the use of laser for the removal of melanocytic nevus is a common practice in Asian countries. Our experience indicated that a combined ruby laser approach (normal mode ruby immediately followed by multiple passes of Q-switched ruby) is more effective than the conventional laser method in the removal of melanocytic nevus. As a result, we have performed a prospective study looking at the efficacy of our technique.

Purpose: To evaluate the efficacy of the using normal mode ruby immediately followed by three passes of Q-switched ruby laser in the treatment on congenital hairy melanocytic nevi.

Methods: Thirty-four Japanese patients with hairy pigmented nevi were treated with the normal mode ruby laser (10-20 J/cm2, 1 msec) at 20W/cm2, followed immediately by three passes of Q-switched ruby laser (7 J/cm2, 30 msec). The degree of clearing was measured objectively by the use of chronometer before and after treatment (average number of treatment session 7, range 4 to 14). Two independent observers further evaluated the degree of clearing as well as the effect of hair removal.

Results: The objective degree of improvement ranged from 34% to 94%, with an average of 77.7%. After treatment, clear hair-removal was observed in 26 patients, while the remaining 8 had little or no such effect.

Conclusion: Combined ruby laser is effective in the removal of hairy melanocytic nevus both in term of degree of clearing and hair removal. Further study is necessary to look at the complication of this technique.

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DIODE LASER-ASSISTED HAIR REMOVAL THERAPY IN ASIANS: A RETROSPECTIVE STUDY OF 101 JAPANESE PATIENTS

Taro Kono, MD*, Motohiro Nozaki, MD*, Henry H. Chan, M.D.**

* Department of Plastic and Reconstructive Surgery, Tokyo Women's Medical University, Tokyo, Japan, ** Division of Dermatology, University of Hong Kong

Background: Long-pulsed Diode (800nm) laser has been successful used in the laser assisted hair removal in Caucasian race. Asian with higher epidermal melanin content is more prone to adverse effect and higher fluence may be necessary to achieve the desirable effect. Study looking at the efficacy and complication of diode laser (800nm) is therefore necessary. Purpose To evaluate the efficacy and complication of the diode (800nm) laser system in hair removal among Japanese patients.

Methods: One hundred and one Japanese patients with dark brown or black hair growth were treated with the diode laser (800 nm, 10-40 J/cm2, 5-30 msec, 9 mm 9 mm, 5°C chilled handpiece). Hair re-growth rate and complications were assessed by photographic evaluation by two independent observers. Patients were assessed 1 week after their first treatment and 6 months after their last treatment. The average number of treatment session was 2.4 (range from 1 to 8).

Results: Although all patients achieved temporary hair loss, only half of them had 60% hair reduction 6 months after their last treatment. Immediate side effect was common including erythema (8%), blistering (1%) and folliculitis (8%). Long-term complications (detected 6 months after last laser therapy) were rare and included hyperpigmentation (2%) and hypopigmentation (1%).

Conclusion: Long-pulsed Diode 800nm laser is effective in laser assisted hair removal among Asian and although immediate complications were common, they were transient in nature.
STONE CLEARANCE USING THE LOW POWER HO:LMU/M LASER
Geoffrey B Kostinger; Sean M Delair; Michael R Crane; Matthew D DuMont; Guy Shoaf; Thomas A Lanyi, P Gary Kaiz, Robert H Hackler; and Timothy D Avorch, Medical College of Virginia, Richmond, Virginia.

Purpose: The high power Holmium laser (Hol.) is a versatile and effective lithotriptor in the endourological management of urinary tract calculi, yet at an added cost. Low power Hol. with a maximum of 13 Watts can come at a lower cost. Therefore, the efficacy of the low power Hol. was evaluated in the treatment of urolithiasis.

Methods: We prospectively reviewed the data of 105 stone patients treated with the low power Hol. from January 1997 through July 1999. A total of 126 renal units (RU) were evaluated. Twenty-one patients underwent multiple lithotripsy, 4 had bilateral disease and 2 had bladder calculi for a total of 141 procedures. The mean age was 46 years old (15-89yrs). A New Star 1000 (Auburn, CA, USA) with a 10W maximum and a Dormier Hol. (Kennesaw, GA, USA) with a 15W maximum were used for all procedures. Successful stone clearance was defined as no evidence of radiopaque calculi greater than 3mm on a follow-up KUB within 3 months of the first lithotripsy.

Results: All major stone compositions were treated, including calcium-oxalate monohydrate and cystine. The mean stone size was 1.7cm (0.3-5.0cm). Calculus location included all renal calyces, ureter and bladder. Retrograde ureteroscopy was employed in all but 12 cases. Average power was 5.4W (3.8-9.6W). Mean pulse energy was 1.0J (0.7-1.3J). Mean follow up was 21.0 months (3.4-33.8mon). Of the 100 RU (79%) that were successfully cleared, 95 (95%) required only one procedure and 7 (7%) were left with stones < 3mm in diameter.

Conclusions: The low power Hol. is effective in treating urinary tract calculi, however, randomized studies need to be conducted for a direct comparison.

TREATMENT OF SKIN ULCERS WITH DEFOCUSED DIODE LASER THERAPY
Junichiro Kubota
Department of Plastic and Reconstructive Surgery, Kyorin University School of Medicine, Tokyo, Japan

Purpose: Persistent skin ulcers from various etiologies are often resistant to conventional therapeutic methodologies, and presents problems for both patients and surgeons. Laser therapy has been proved to accelerate wound healing by enhancing blood flow and other factors. We tried to treat skin ulcers with defocused diode laser therapy.

Methods: Diode laser therapy was indicated for skin ulcers that had proved resistant to past conservative treatment. The diode laser system has a wavelength of 830 nm, an output power of 1000 mw, a power density of 600 mw/cm² in continuous wave mode. The diode laser was applied with the non-contact defocused method to 5 cm above the surface of the ulcer at 6.3 J/cm² once or twice a week during the treatment period.

Results: 5 representative patients skin ulcers responded very well to the defocused diode laser therapy.

Epilation with a long pulse 1064 nm Nd:YAG laser in facial hiratism.
Jean-Luc Levy**, Mario Treles***, Adeline de Ramecourt**, * Centre Laser Dermatologique, Marseille, France
** Instituto Medico Vilaforuny, Cambrils, Spain
*** Centre d’epilation specialise,Paris,France

Purpose: To evaluate the efficacy of the Long-pulse Nd-YAG laser in removing unwanted facial hair.

Methods: Twenty-nine female Chinese patients with ABNOM (age range 28-66) were involved in the study. All underwent QS Alex laser treatment (1.064 nm, spot size 2mm, 2.0x2.0mm, 20J/cm²). Hydroquinone and tretinoin cream was given to those with hyperpigmentation post laser surgery. Clinical photographs were taken before and after laser surgery and assessed by two independent observers. The degree of clearing was scored and complications including hypopigmentation, hyperpigmentation, scarring and telangiectasia were monitored.

Results: The mean number of treatment sessions was 2.5 (range 2 to 11) and the mean treatment interval was 33 days (range 14 to 42 days). Both observers identified over 80% of the patients as having more than 50% degree of clearing and complete clearance was seen in more than 20% of the patients. Although most patients had post-laser hyperpigmentation and were on depigmentary regimen, hyperpigmentation was seen only in 15% of the patients during photographic evaluation. A mild hypopigmentation was seen in 5% of patients and transient erythema in 4%.

Conclusion: QS Alex appears to be effective in the treatment of ABNOM. Pigmentary changes were frequently seen post-operatively. Further study is necessary to compare the effectiveness of QS laser and together with topical depigmentary cream to that of QS laser on its own.
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TREATMENT OF POST IRRADIATION SKIN CHANGES WITH THE PULSED DYE LASER.
J. Friedman, M. Levy, J. Pielop: Baylor College of Medicine, Houston, Texas

Purpose: To investigate utility of pulsed dye laser in treatment of external beam radiation (XRT) induced telangiectasia.

Methods: Four patients were treated for multiple telangiectasias of the central and upper chest following mastectomy and postoperative XRT. Areas of involvement were considered by all patients to be significant cosmetic consequence. All patients were treated in a single session with the Candela® flash lamp pulsed dye vascular laser. The energy was delivered @ 555nm with a pulse duration of 450msec. Spot size varied from 3-10mm. Local anesthesia with EMLA® cream was used in one patient.

Results: All 4 patients tolerated the procedure well and no side effects or wound healing complications were noted. Excellent resolution (80-90%) was achieved in all patients after a single session. All patients were pleased with their results.

Conclusion: The flash lamp pulsed dye laser can effectively improve the telangiectasias which commonly occur following XRT. No adverse effects were noted and as such, we believe that broader application of this form of treatment in patients following XRT is warranted.

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COMPARISON STUDY EVALUATING THE EFFICACY OF THE PHOTGENICA V-STAR LASER VS. THE PHOTOGENICA V LASER IN THE TREATMENT OF WARTS.
Jennifer R. Lloyd, The Lloyd Dermatology and Laser Center, Youngstown, OH

Purpose: To determine the efficacy of two CO2 lasers, V-Star (595nm) and V laser (585nm), for the treatment of warts.

Methods: Two CO2 lasers, V-Star (595nm) and V laser (585nm), were compared for the treatment of warts. The lasers were used in conjunction with a variety of treatment protocols, including combinations of laser energy and treatment parameters. Results were recorded and compared to determine the efficacy of each laser.

Results: Both lasers were found to be effective in the treatment of warts, with the V-Star laser demonstrating a slightly higher success rate. No significant differences were found in treatment outcomes between the two lasers.

Conclusion: The V-Star laser is more efficacious for the treatment of warts.

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LASER TREATMENT OF STRETCH BIRTHMARKS
L. Longo, MD, *O. Marangoni, MD, **M. Melato, MD
General Surgery Institute and Phlebology Center, Siena University (ITALY)

Purpose: To investigate the utility of pulsed dye laser in the treatment of stretch marks.

Methods: Four patients were treated for multiple stretch marks with a pulsed dye laser. The energy was delivered @ 580nm with a pulse duration of 450msec. Spot size varied from 3-10mm. Local anesthesia with EMLA® cream was used in one patient.

Results: All 4 patients tolerated the procedure well and no side effects or wound healing complications were noted. Excellent resolution (80-90%) was achieved in all patients after a single session. All patients were pleased with their results.

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POST - LASER TREATMENT OF TELANGIECTASES
L. Longo, MD, S. Mancini, MD, *M. Postiglione, MD
General Surgery Institute and Phlebology Center Siena University (ITALY)

Purpose: To investigate the utility of pulsed dye laser in the treatment of stretch marks.

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CLINICAL EVALUATION OF DEPILASE LONG PULSE ND:YAG LASER IN THE TREATMENT OF FACIAL TELEANGECTASIA AND LEG VEINS.

Nicholas Lowe, MD, Mario Luca Russo, MD, MSc*
Department of Dermatology, UCT A, Los Angeles, California


Methods: A cycle of three sessions of laser treatment with Depilase Long Pulse Nd:YAG laser system (Depilase Yaglase, Depilase Group Ltd, London, UK) were delivered on a monthly basis to a series of patients presenting facial telangiectasia and/or leg veins. Patients were followed-up at 1, 2, and 3 months after the final treatment session. At each treatment and follow-up visit, photographic and clinical evaluations were documented.

Results: Significant cosmetic improvement was seen after each of the three treatment sessions. Side effect included mild treatment discomfort, occasional blistering, and transient criteria.

Conclusion: Depilase YagLase Long Pulse Nd:YAG Laser System is a safe and effective method of non-invasive treatment of facial telangiectasia and leg veins.

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EVALUATION OF OPEN DRESSING TECHNIQUE USING OAT BETA-GLUCAN CREAM AFTER LASER SKIN RESURFACING

Marla L. McClaren, Suzanne L. Kilmer Vera Chatzen.. Laser & Skin Surgery Center of Northern California, Sacramento, CA.

Purpose: To evaluate the safety and efficacy of a novel wound dressing containing oat beta-glucan after full face resurfacing.

METHODS. Ten patients who received full-face resurfacing using CO2 ultra-pulse laser were randomly assigned to use petroleum jelly or aqua phor immediately following the operation to reduce the inflammation and to optimize the results. We treated women ranging from 20 to 50 years of age with 577 nm laser and we followed the patients for up to one year after the treatment. We treated the telangiectasias of the face and legs with averages of 2 sessions in one month on the whole, and 3 sessions in three months, respectively. After each treatment, we randomly divided the patients in two groups. One group was treated with a mixture of Aloe vera, Aklisia and Echinacea in spray, immediately after the treatment and for the 5 days (face) and 10, 15, 30 days (leg) and one year after the last treatment. Another group of patients in the same age range and with the same type of lesions was treated with cool spray (luc) immediately after the procedure and a non-steroidal, anti-inflammatory spray during the ensuing days. This group represented the control. We did follow-ups after 3, 8, 15 days (face), and 10, 15, 30 days (leg) and one year after the last treatment. The majority of the patients treated with Resurgil* spray recovered completely after 5 days (face), 10 days (legs). These results were remarkably significant with respect to the controls. These patients also had a better post-procedure course, with less edema, erythema, and itching, when compared with the untreated patients.

In conclusion, laser therapy has a positive and specific role in the treatment of full telangiectasias, but it must be used after an exact diagnosis and according to an appropriate procedure, that includes the use of the appropriate substances during and after treatment.

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LASER ACTIVATED SHAPE MEMORY POLYMER MICROACTUATOR FOR TREATING ISCHEMIC STROKE

Melodie F. Metzger, Daniel Schumann and Duncan J. Maitland
Lawrence Livermore National Laboratory, Livermore, CA

A novel laser-activated shape memory polymer (SMP) microactuator for treating ischemic stroke is presented. Current therapies, including thrombolytic drugs (systemic and local delivery), are not effective outside of a short three-hour window after the initial presentation of stroke symptoms. However it is currently believed that patients may benefit from reperfusion of the blocked artery up to 12-24 hours after the initial onset of stroke symptoms. The SMP device is mounted on a diffusing optical fiber and delivered through a catheter (Guidant Tracker 18, 0.018" (450 μm) ID) distal of the occlusion where it is deployed to its open shape with diameters of 1400 μm. The SMP device is deployed via optical heating by a 1.5 W, 810 nm diode laser. Successful deployment of the microactuator requires well-engineered coupling of the light from the diffusing fiber through the blood into the SMP. Both the microactuator and thrombus are then removed from the vessel. Preliminary tests determined the maximum hydrostatic force and pressure against which the device could hold the clot.

Results with porcine blood clots in polyvinyl tubing (1.5 mm ID) show that the SMP microactuator is able to hold the clot under hydrostatic pressures up to 1200 mmHg and forces just under one tenth of a pound. These pressure results are approximately ten times the expected physiological values. Successful deployment of the microactuator requires well-engineered coupling of the light from the diffusing fiber through the blood into the SMP. Experimental and theoretical studies show that no peripheral damage to the blood and blood vessels from either direct laser interactions or contact with the heated SMP are anticipated in a clinical system.
EVALUATION OF SELECTIVE PHOTOTHERMALYSIS OF THE SEBACEOUS GLANDS FOR NOVEL ACNE TREATMENT

Jennifer F. Lloyd, The Lloyd Dermatology and Laser Center Youngstown, OH
Mirko Milohov, Cynosure, Inc Chelmsford, MA

PURPOSE: The purpose of this study is to evaluate the efficacy of the Diolaser laser (Cynosure, Inc) to target and destroy enlarged sebaceous glands which are preloaded with ICG chromophore.

METHODS: Ten treatment sites were chosen on the backs of patients with active acne. Topical ICG (cardiogreen) dye was applied to a 10 x 10cm area and covered with an occlusive dressing for 24 hours prior to procedure. The designated area was cleansed and treated with the Diolaser laser (4mm. 808nm. 50msec. 40/J/cm2). Photographs and biopsies were taken before and after laser irradiation.

RESULTS: Fluorescence microscopy of biopsy samples show evidence of ICG penetration into the sebaceous glands. In addition, preliminary clinical results demonstrated a decrease in acne noted in the treatment area at 3 months follow up.

CONCLUSION: ICG and Diolaser laser treatment is a novel new approach to the treatment of acne.


Leyda E. Bowes, Keyvan Nouri, Brian Berman, Gloria Jimenez, Rube Pardo, James M. Spencer*
University of Miami School of Medicine, Department of Dermatology and Cutaneous Surgery, Miami, Florida.

PURPOSE: The purpose of this study is to compare the efficacy of the 532nm Q-switched frequency-doubled Nd:YAG laser, the 585nm PDL, and the 532nm variable pulse frequency-doubled Nd:YAG laser for the treatment of pigmented hypertrophic scars.

METHODS: Six patients with pigmented hypertrophic scars and skin phototypes 2 to 4, were chosen. One scar was selected for treatment in each patient, and divided into 4 equal 2 cm segments. Three segments were treated with a different laser modality each, and one was left untreated to serve as the control. The 585 nm PDL and the 532nm frequency-doubled Nd:YAG laser, both in the Q-switched and Variable Pulse modes, were used. An average of 3.3 treatments were performed on each scar segment, with follow-up visits every 4 weeks and a maximum duration of follow-up of 26 weeks. Treatment outcome was graded by a blind observer based on the Vancouver General Hospital (VGH) Burn Scar Assessment Scale.

RESULTS: Treatment of the hypertrophic pigmented scars with the 532nm Q-switched Nd:YAG laser led to a significant improvement of 38% in the VGH score when compared to baseline (*=0.003). The 585nm PDL also had a favorable effect on the scars, with an average improvement of 36.1% in the VGH score. There was no significant difference noted between the outcome of these two lasers. Treatment with the 532nm Variable Pulse Nd:YAG laser led to a 19% improvement in the VGH score of scars, which did not differ significantly from the 16.1% improvement observed in control scars on the last follow-up.

CONCLUSIONS: The 532 nm Q-switched Nd:YAG laser and the 585 nm PDL offer comparable favorable results in the treatment of pigmented hypertrophic scars.

Laser Hair Removal in a Patient with Vitiligo

Keyvan Nouri, Gloria Jimenez, Jonette Keri
University of Miami School of Medicine, Dept. of Dermatology & Cutaneous Surgery, Miami, Florida

PURPOSE: To assess the efficacy of the Gentlase Alexandrite 755nm laser (Candela, Wayland, MA) in hair removal in areas of vitiligo vs. normal skin.

METHODS: A 36 year old woman with Fitzpatrick's skin type VI was treated with the Gentlase 755nm laser for the hair removal on her cheeks and chin. She received 8 treatments over 10 months with the above laser at the following settings: 12-15 mm spot size, 10-16 Joules, and 60-70 ms cooling spray time.

RESULTS: There was significant reduction of hair counts in the normal skin site. However, there was an actual increase in the white vitiliginous hair at the vitiligo treated site.

CONCLUSION: Laser hair removal is not effective for treatment of white hair in vitiliginous skin. This case confirms the theory that melanin is the actual target in laser hair removal.

COOLING CONCEPTS IN LASER MEDICINE - SOME SIMPLE BUT EFFECTIVE METHODS FOR SKIN PROTECTION AND PAIN RELIEF

Philipp, E.M., Attenhofer, B., Quent, C., Paette, M., Stamm, P., Moos, U., Berking, H.-P.
Kroenchenhau Nöthl, Dept. of Lasermedicine, Berlin, Germany; www.klinik-berlin.de

Cooling of skin during transcutaneous laser treatment with argon-ion-KTP- PDL, cw- or long pulsed dye-, Ruby-, Alexandrite-, Diode- and Nd:YAG-lasers enhances the depth effect of the irradiation and
HAND REJUVENATION: THE NEXT FRONTIER

Jason N. Pizzi, Cynthia Weinstein

Boca Raton, Florida and Melbourne, Australia

There has been a tremendous amount of attention afforded to rejuvenation of the aging face yet the hands often show similar changes with loss of elasticity, wrinkling, pigment dyschromia and loss of appendageal structures. There is a paucity of appendageal structures.

We treated 52 patients with 104 “aging” hands using a combined approach. In all patients the pigment dyschromia was treated using a frequency-doubled, Q switched Nd:YAG laser, at 532nm using fluences between 2-5.6 j/cm2. In 42 patients wrinkling was treated using a 1064 nm CO2, 10UCH TM laser. A surface temperature of 39-44’C was obtained using 2 passes, fluences between 30-35j/cm2, a cooling time of 30 msecs, and a delay between laser pulses of 40 msecs. No anesthesia was required. Fat grafting was also performed in 32 patients under local anesthsia with donor fat being obtained from the abdomen.

Results were graded by the patients, 2 nurses and the treating physician. In all cases > 70% improvement was achieved with a high degree of patient satisfaction. Side effects and morbidity were minimal, with the worst effect being minor bruising.

A combined approach to the aging hand with correction of pigment changes, improvement of elasticity and fat grafting appear to be able to rejuvenate the hand with minimal morbidity. Long-term data needs to be accumulated and further research needs to be performed.

TREATMENT OF UPPER LIP RHYTIDES WITH A 1320 ND:YAG NON-ABLATIVE LASER. Elizabeth Rostan and Richard E. Fitzpatrick, Dermatology Associates of San Diego County, Inc., La Jolla, CA.

Purpose: To evaluate the safety and efficacy of a 1320 nm Nd:YAG laser with cryogen cooling device in the treatment of lip rhytides and to evaluate effect of number of treatments and time interval between treatments.

Methods: 30 patients were treated on their upper lip with a 1320 nm Nd:YAG laser with cryogen cooling device (CoolTouch, Laser Aesthetics, Inc., Auburn, CA). Patients were divided into one of 3 treatment groups: 1) Group 1 received 4 treatments spaced every 4 weeks, 2) Group 2 received 6 treatments spaced every 4 weeks, and 3) Group 3 received 4 treatments spaced every 6 weeks. Two passes with the laser was performed at each treatment session. Laser settings were as follows: 28-36 j/cm2, cryogen cooling duration of 20-30ms with a laser delay of 30-40ms. Fluence was set so that epidermal temperatures (measured with an infrared thermometer in the laser head) reached 40-45’C. Optical profilometry measurements were made before and after all treatments were completed.

Results: Most patients had improvement of 25-40%. In patients with severe photodamage (Fitzpatrick photaging score of 8 or 9), only mild or no improvement was noted. No adverse sequela were observed.

Conclusion: The 1320 Nd:YAG non-ablative laser is a safe treatment for lip rhytides; however, for patients with severe rhytides only mild or no improvement is observed.

LONG-TERM RESULTS OF LASER HAIR REMOVAL. Katharina Russe-Wilflingseder, Manfred Herold

Introduction: Laser treatment for hair reduction is efficient and well accepted but reports about long term results are still rare. We evaluated our experience of laser-assisted hair removal of more than two years.
Treatment with the pulsed dye laser (PDL) improves port-wine stains (PWS), but not all patients achieve the desired degree of paling even after many sessions. We investigated the effect of the Orion KTP (532nm) or the PDL (585nm) at higher energies in PDL-resistant PWS.

In PDL-resistant PWS we performed 3 test areas using the KTP: spot sizes of 1, 2, and 4mm with a pulse width of 10, 20, and 40ms. The highest fluence tolerated was used, aiming for minimal blanching. In addition, 1 area was tested with the PDL, 5mm spot, 10/2 cm² and dynamic cooling. After 2 months, the response was assessed by the patient, the physician with the aid of photography and by spectrophotometry.

We recruited 22 patients of Fitzpatrick skin type I-IV (9 male, mean age 31 years, range 11-54). Eighteen PWS were on the face, 2 on the arm and 1 each on the neck and leg. The fluences used with the KTP in the 3 areas were 7-14J/cm², 7-16J/cm² and 6-14J/cm². Adverse effects were more frequent with the KTP than with the PDL. This table outlines the treatment response.

<table>
<thead>
<tr>
<th>Improved</th>
<th>PDL</th>
<th>KTP 1mm</th>
<th>KTP 2mm</th>
<th>KTP 4mm</th>
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<tr>
<td>0-25%</td>
<td>59%</td>
<td>77%</td>
<td>69%</td>
<td>81%</td>
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<td>26-50%</td>
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<td>51-75%</td>
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<td>76-90%</td>
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<td>91-100%</td>
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These results indicate that the KTP laser generally produces modest if any additional improvement in PDL-resistant PWS. High fluence 585nm PDL is more likely to be beneficial in a small proportion of patients.

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**REVISION OF ANSI STANDARD Z136.3 ON THE SAFE USE OF LASERS IN HEALTH CARE FACILITIES.**

David H. Sliney, U.S. Army Center for Health Promotion and Preventive Medicine
Stephen Trokel, Columbia Presbyterian Medical Center, New York

The sub-committee on the “Safe Use of Lasers in Health Care Facilities” has been working for the past two years to revise the current ANSI Standard Z136.3-1995. Since the ANSI standards development process requires a consensus approach, the development and updating of a standard can be a tedious process. The sub-committee met three times to debate the level of control to be exercised by the clinician and assisting staff and the Laser Safety Officer. The major change in emphasis has been away from the use of surgical lasers in the operating rooms of large institution settings to the small clinic and private office settings, where lasers are now far more widespread. In this case, perhaps only two or three persons are involved and the administrative detail is considerably less. The meaning of the term “laser operator” was debated and resolved. The duties of the Laser Safety Officer (LSO) were refined and clarified. Safety issues relating to changing technology, such as evolution of skin resurfacing and other dermatological use of lasers, were addressed. Occupational exposure limits, the Maximum Permissible Exposure limits (MPE’s) were changed in the basic standard, ANSI Z136.1-2000, and this has had some impact on the applications of sub-nanosecond lasers in ophthalmology and in determining safe viewing durations for lengthy exposure to visible lasers. The application of the Nominal Hazard Zone (NHZ) was also further clarified.

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**Does the Orion Laser improve Port-Wine Stains resistant to Treatment with the Pulsed Dye Laser?**

S Sommer, J Ravenscroft, R Sheehan-Dare
Leeds Dermatology Laser Centre, England

Treatment with the pulsed dye laser (PDL) improves port-wine stains (PWS), but not all patients achieve the desired degree of paling even after many sessions. We investigated the effect of the Orion KTP (532nm) or the PDL (585nm) at higher energies in PDL-resistant PWS.

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<td>51-75%</td>
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<td>5%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>76-90%</td>
<td>9%</td>
<td>5%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>91-100%</td>
<td>0</td>
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</tr>
</tbody>
</table>

These results indicate that the KTP laser generally produces modest if any additional improvement in PDL-resistant PWS. High fluence 585nm PDL is more likely to be beneficial in a small proportion of patients.

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**CARBON DIOXIDE LASER BLEPHAROPLASTY: A RETROSPECTIVE STUDY.**

Fiona Steel/David Kitchen
Flite Laser Clinic Mackay Queensland Australia
American Society for Laser Medicine and Surgery

American Board of Ophthalmology

Assessment of CO2 Laser assisted Blepharoplasty using a retrospective study of 50 patients from our clinic. Study includes data such as age sex presenting condition medical or cosmetic, operation performed, technique used, complications and outcomes. Our purpose is to show, using supporting figures, that laser assisted blepharoplasty is effective with a low incidence of intraoperative and postoperative complications and a high level of patient satisfaction. Using the correct techniques and post operative care, excellent results can be achieved. Methods / techniques used for our study include Transconjunctival Lower Lid Blepharoplasty using CO2 laser +/- Erbium Resurfacing of lower lids and Transceunaneous Upper Lid Blepharoplasty using CO2 laser. Retrospectively our study showed a low incidence of intraoperative and postoperative complications, excellent medical and cosmetic outcomes and a high level of patient satisfaction. The conclusion we have reached is that CO2 laser is both safe and effective. We found that laser blepharoplasty is tolerated very well by patients of all ages both intraoperatively and postoperatively with excellent cosmetic and medical results.

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**A CLINICAL AND HISTOLOGICAL STUDY OF A PULSE DIODE 940NM LASER WITH CONTACT AND REFRIGERATED AIR COOLING FOR THE TREATMENT OF ABNORMAL LEG VEINS.**

The 940-nm diode laser with its longer wavelength and deeper dermal penetration, peak in oxyhemoglobin absorption should offer promise in treating abnormal leg veins. Cooling with this laser should optimize...
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VERRUOUS EPIDERMAL NEVI: COMBINED TREATMENT WITH CO2 AND Q-SWITCHED RUBY LASER

Lara G. Yoshitaka, Solma Cernia, Luciana A. Conrado, Reni Grinblat, and Mario Grinblat
Hospital Israelita Albert Einstein, Department of Dermatology, São Paulo, Brazil

Epidermal nevi are organoid nevi arising from the pluripotential germinative cells in the basal layer of the embryonic epidermis. Excessive segmental lesions are difficult to treat. Surgery by excision, dermabraision or grutting can lead to unsatisfactory scar formation. We present two cases treated by a combination of CO2 and Q-switched ruby laser (QSR). The purpose was to determine the effectiveness and ease of the CO2 and the QSR laser used in combination in the treatment of extensive lesions of epidermal nevi. A 42-year-old woman (case 1) and a 38-year-old man (case 2) presented with verrucous epidermal nevi since birth. The lesions were localized on the trunk, axillae, left arm (case 1), and on the neck (case 2). The CO2 laser was used in the ultrapulsed mode at 500 mJ or in a continuous wave of 5-10 watts to treat the more keratotic regions. Then, the QSR (5-10 J/cm², 5mm spot) was used to treat thicker lesions in the same session, or in subsequent sessions to treat hyperpigmented areas left after the first treatment. General anesthesia was required for treatment of large areas. Topical lidocaine with 2.5% prilocaine or no anesthesia was re- quired for treatment of large areas. The QSR laser used in combination in the treatment of extensive lesions of epidermal nevi.

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EFFICACY OF AZITHROMYCIN VS. CEPHALEXIN BACTERIAL PROPHYLAXIS FOR LASER FACIAL SKIN RESURFACING

Author: Paul Van Camp MD, Laser Medical Skin Center
Bend, OR 97702

Purpose: To compare infection rates after laser resurfacing in patients given azithromycin vs. cephalexin bacterial prophylaxis. Methods: Charts were reviewed for 65 sequential cases of full or partial facial resurfacing. All patients were treated by the same inter and post-op regimens including antiviral and antibacterial prophylaxis. Thirty patients received azithromycin for five days beginning one day pre-treatment (500 mg then 250 mg X 4 days.) 35 patients then received cephalexin 500 mg. Tiid for 7 days beginning 1 day pre-op. Resurfacing was by dual-mode Erbium laser (Sciton Contour). Wound care included 24 hrs of occlusion with Silon TSR, then open care with bland petrolatum. Cultures were examined on days 1, 3, 7, 14, and as needed. Cultures were taken for any symptoms or signs of possible infection.

Results: Of thirty consecutive resurfacing patients on azithromycin prophylaxis, seven (23%) had wound infections in the first 7 days. Cultures (6 of 7) showed Staph. aureus resistant to erythromycin. Of 35 patients on cephalexin prophylaxis one (3%) had a staph wound infection. This is a significant difference (p=.01).

Conclusion: Using an open dressing technique after occlusion for 24 hours post Erbium laser resurfacing, cephalexin prophylaxis started one day prior to resurfacing and continued until epitelializa- tion was complete significantly reduced the rate of wound infection when compared to azithromycin prophylaxis.

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DISSEMINATED SUPERFICIAL ACANTHOLYTIC POROKERATOSIS: ER:YAG LASER TREATMENT

M. Vélez-González, Mª Nicolás-Playans, RM Pujol, J G Camarasa
Department of Dermatology Hospital de1 Mar. IMAS, Barcelona (Spain)

INTRODUCTION

Disseminated superficial acantholysis (DSAP) is the most frequent type of porokeratosis. Clinically manifested by multiple erythematous oropharyngeal macules with a raised peripheric margin, involving almost exclusively sun-exposed areas, but sparing the face. It is often only an aesthetic problem, although the development of a cutaneous squamous cell carcinoma on long-standing lesions of DSAP is a well-known phenomenon. To date, there is no effective treatment for the DSAP. Different therapeutic options include topical retinoids, topical 5-FLU, electrodessication, CO2 laser, cryotherapy, etc. have been postulated, with variable results. Treatment of DSAP with these techniques may cause residual residual scars. The Er:YAG laser application in the treatment of DSAP was proposed in order to obtain a better control of possible side effects. Er:YAG laser has a high ablative capacity, as well as a low thermal scattering and an accurate control of the depth of the selective thermolysis. We present our experience in the treatment of DSAP with Erbium: YAG laser.

REPORT OF CASES

Three patients with DSAP were included in the study. One patient presented multiple disseminated lesions and in two patients, the lesions involved mainly the lower extremities. Treatment with the Erbium:YAG laser (2940nm) of pulsed emission (15/5ms) at the rate of fluence: 15 J/cm² was administered. Local anesthesia (EMLA) was applied one hour before. The number of sessions of treatment was variable depending to the clinical response. Pre-treatment and post-treatment biopsy specimens were obtained in order to have an evolutive histopathological control. An evident clinical improvement was observed and good aesthetic results were obtained. Minimal scarring was noted after the treatment. No recurrence of the lesions was noted after 6 months of a follow-up period.
COMMENT
Taking our results into account, we consider that Er:YAG laser can be an effective alternative treatment in USAP, with low rates of side effects and good cosmetic results.

REFERENCES


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XANTHELASMA: Er:YAG LASER TREATMENT

INTRODUCTION.
Xanthelasma is often an aesthetic problem, but also a therapeutic challenge. Treatment of xanthelasma may be difficult, since the lesions are located in the proximity to the eye and a high rate of recurrence after surgical removal has reported. Several therapeutic procedures have been proposed; chemical ablation (TCA...), surgical excision and photodocumentation and electrodesiccation and CO2 laser (1). The Er:YAG laser application in the treatment of xanthelasma was proposed in order to obtain a better therapeutic result with minimal scarring and side effects. Er:YAG laser has a high ablative capacity, as well as a low thermal scattering and good control of the depth in the treatments of cutaneous lesions. We present our experience in the treatment of xanthelasma with Er:YAG laser.

CLINICAL CASE
Eight patients with xanthelasma were included in the study. The lesions were located on the upper eyelid (4 cases), lower eyelid (1 case) or both (3 cases). Treatment with Er:YAG laser (2940nm) of pulsed emission (350μs) at the rate of fluence 15 J/cm2 was administered. Local anaesthesia was applied, making several passes until achieving the total ablation of the lesion. Each treatment consisted of one or two sessions depending on the extension. An evident clinical improvement of the lesions was observed and good aesthetic results were obtained. Minimal scarring was noted after treatment. No recurrence of the lesions was noted, after 6 months of follow-up period.

COMMENTS
As has been previously proposed (2,3), we considered that the application of Er:YAG laser can be an effective alternative treated in xanthelasma, with a low rate of side effects and a good cosmetic result.

BIBLIOGRAPHY

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SUBSURFACE RESURFACING USING A CRYOGEN SPRAY COOLED 1320NM LASER
RA Weiss, MA Weiss, Johns Hopkins, Baltimore, MD

A dynamically cooled 1320nm laser has been used to treat actinic and dynamic changes of the peri-orbital region including the crow's feet region and lax skin of the lower eyelid. A thermal effect at 150 – 200 milliseconds below the surface is theoretically responsible for the stimulation of collagen synthesis.

50 patients with skin types I – VI, with rhytides of the lower lid and periorbital region, Glogau type I – II, were treated on 3 occasions one month apart with a dynamically cooled 1320nm laser using parameters of 28 – 34 J/cm2, a uniform pulse duration of 900 microseconds, dynamic cooling of 20 milliseconds with a short interval of 10 milliseconds before the laser pulse. Two-three passes were made during each treatment session. Skin surface temperature was measured during the first three pulses and fluence adjusted to reach a target of 44 to 46 degrees C at the surface. Results were evaluated by an independent observer using digital images taken just prior to treatment and at one month after the last treatment. Results were graded as none, mild, moderate and excellent improvement. Results at one month post a series of 3 treatments showed that a total of 76% of patients demonstrated some improvement as judged by digital image. 20% had excellent improvement, 33% moderate, 23% mild and 24% showed no improvement. Most notable improvement was seen in non dynamic lines. Side effects included 2 patients with one site of vessel formation, 5 patients with erythematous papules lasting for 72 hours but in the vast majority erythema lasted from 10 minutes to one hour. No pigmentation changes were observed. Dynamically cooled 1320nm laser with monitoring of surface temperature is an effective alternative for improvement of peri-orbital rhytides. This treatment is accompanied by a very low side effect profile even in skin types V.

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FACIAL LASER HAIR REMOVAL USING 1064NM Nd:YAG: A COMPARISON OF TWO DIFFERENT COOLING METHODS
RA Weiss, MA Weiss, Johns Hopkins, Baltimore, MD

Comparison of both contact and dynamically cooled 1064nm lasers for treatment of facial hirsuitism in type V and VI skin patients was performed. Twenty female type V and VI patients with excess hair on the face were treated with two treatments two months apart and evaluated at month 3 for hair counts and side effects. Hair counts using dual polarized light were performed in a 1cm2 area, before and at one month following the last treatment. Parameters for the contact cooled 1064nm laser included a 6 mm spot size, 80 J/cm2, and pulse duration of 10 milliseconds. Contact cooling was placed for 3 seconds at 1 degree C prior to the laser pulse. Parameters for dynamic cooling included pre-cooling of 20 millisecond and post-cooling of 20 milliseconds using 80 J/cm2 with a 50 mm pulse width and 5.5 mm spot size. Hair counts revealed 34% reduction after two treatments with the contact cooled 1064nm laser. Using the contact cooled system 50% of the patients developed hypopigmented circles lasting for 4 – 6 months. Hair counts for the dynamic cooling system showed 58% reduction after 2 treatments. Cryogen spray cooled skin showed 25% of the patients developing isolated areas of hyperpigmentation lasting for 2 – 3 months.

The results indicate that the 1064nm is effective for hair removal in types V and VI skin with acceptable side effects. Dynamic cooling reduces side effects and yields improved hair reduction.

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INFRARED IMAGING OF SUBCUTANEOUS VEINS STRUCTURE
V. Zharov1, M. Wanc2, S. Ferguson1, J. Eld2

1Philips Classic Laser Laboratory, University of Arkansas for Medical Sciences (UAMS), Little Rock, AR
2Department of Otolaryngology, UAMS, Little Rock, AR

The aim of this study was to test a method of infrared imaging for visualization subcutaneous veins with focus on clinical trials. The practical possibilities of near infrared (IR) imaging of skin in diffuse reflection and transillumination modes are revised. The dependence of IR image properties on wavelength, methods of illumination, polarization effects, type of sources (IR lasers, LED arrays with different
COMBINATION OF PHOTODYNAMIC AND ULTRASONIC TECHNOLOGIES FOR TREATMENT OF INFECTED WOUND
Vladimir P. Zharov1, Valery V. Bagdasarov2, Yulian A. Menyev3
1The Philips Classic Laser Laboratory, University of Arkansas for Medical Sciences, Little Rock, AR 2Moscow Clinical Hospital, Russia 3Bauman Moscow State University of Technology, Russia
The aim of this study was development of new photo-ultrasonic technologies for treatment of infected wound with focus on clinical trials. The feature of this technology is combination of two methods: photodynamic therapy (PDT) and ultrasonic therapy (UST) with antibiotics (A) as tools for effective killing bacteria. The principle of UST itself is based on introducing US oscillation in solution with photosensitizer (PS) and (A) and followed light irradiation and US low-frequency impact. As result simultaneously several phenomena appear in wound: cavitation, acoustic stream, sound pressure and photodynamic effects. It brings some new advantages: effective mix drug and PS in wound solution, ultrasound diffusion antibiotic in tissue; increasing penetration of PS in bacteria; 11% clearing of surface from necrotic adjournment; additional US-induced bactericidal effect, increasing efficacy of light irradiation in non-transparent wound; combined activation of immune system. The new combined US LED device was developed with three modes: contact below and above cavitation threshold and non-contact aerosol treatment. The main parameters: US frequency 26.5 kHz; PS-aluminum phthalocyanine 1-8 mg/l; LED array 660 nm, 5 mW); duration treatment 10-30 min. The study of several bacteria mortality (St.aureus, Streptococcus, E.coli, Psedomonas aeruginosa and Proteus) in different modes (A, US +A, PDT, US+PDT, US+PDT+A) on models and animals show significant advantage of US+PDT and US+PDT+A modes. The clinical trials in Moscow with 41 patients with different post-operation infectious complications different origin demonstrated advantage of new technology in comparison with conventional methods in cases of extended and profound wounds.

LONG PULSED DYE LASER FOR TREATMENT OF FACIAL TELANGIECTASIA
Brian Zelickson Charlotte Coles. Center for Cosmetic Care, Edina, MN.
The purpose of this study was to compare results of treating facial telangiectasia and erythema using the Long Pulsed Dye Laser (LPDL) and a 532 nm wavelength KTP Laser. Twenty-two patients with facial telangiectasia/erythema were randomized to which side of the face the chosen therapy would be administered. Pre and post-op photos were taken. Patients followed up at 1 and 6 days after treatment for photos and assessment of side effects. At the three month post-op visit photos were taken and if the patient did not have 90% or better clearance they received a second treatment using the same randomization. The same follow up schedule was followed. At three months after the final treatment each patient completed a survey. Treatment parameters for the LPDL were 595 nm, 9.5-11 J/cm2, 20-30 ms pulse width and a 7 mm spot size using dynamic cooling. With the 532 nm wavelength the treatment parameters ranged from 13-17 J/cm2, 20-50 ms pulse width and a 1-4 mm spot size. On the patient survey 50% chose the LPDL, 40% chose the KTP laser and 10% felt there was no difference from one side to the other. The side review assessment revealed that the LPDL had an improvement score of 1.43 and the KTP was 1.00. Post operatively 15% of the patients had mild purpura that lasted about 10 days and 20% had moderate edema for 3-6 days on the side treated with the LPDL, whereas, 50% had moderate edema for 3-6 days on the KTP treated side. This study shows that the LPDL is an effective treatment for facial telangiectasia/erythema with minimal side effects an minimal occurrence of purpura.