LINLINE MEDICAL SYSTEMS

ISO 13485:2016

MULTIFUNCTIONAL LASER PLATFORM

MULTILINE®

S U R G E R Y • D E R M A T O L O G Y • A E S T H E T I C S

MULTILINE®

Multifunctional laser platform with 5 solid state lasers.

Er:YAG erbium laser (2936nm)

Nd:YAP neodymium scalpel (1079nm/1340nm/1440nm)

Nd:YAP/Q-sw + KTP vascular laser (1079 nm + 540 nm)

ALEX/Q-sw alexandrite laser (755 nm)

RUBY/Q-sw ruby laser (694 nm)

We have combined the results of 25 years of research and development of laser technology into single laser platform.

Due to the modular design of MULTILINE® we offer customized technical solutions for:

- multidisciplinary hospitals,
- surgical departments,
- dermatological centers,
- vascular clinics,
- clinics of plastic and aesthetic medicine.

ALL TYPES OF BIOLOGICAL EFFECTS

MULTILINE® TECHNOLOGIES

STIMULATION OF REGENERATION

Original patented method of the spatial distribution of laser beam to induce repair of biological tissues by non-thermal microdamage of cellular structures

ULTRASELECTIVE PHOTOTHERMOLYSIS

A unique mode of generating a series of nanosecond pulses for a combination of photothermal and photomechanical effects on biological tissue. Ultra-selective treatment.

ADJUSTABLE HEMOSTASIS

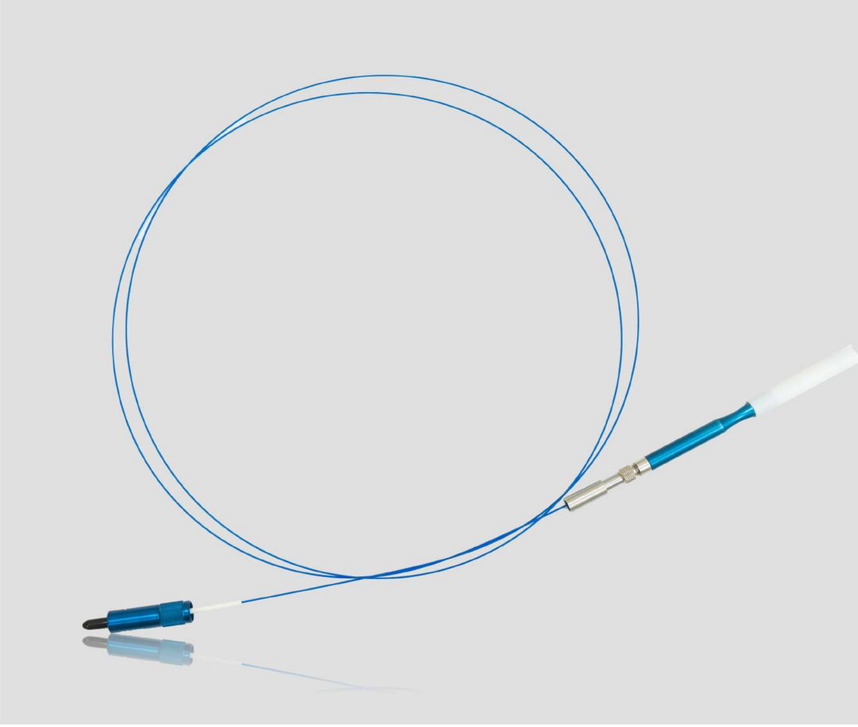
Smooth control of hemostasis during evaporation of soft tissues due to the high-pulsed mode and three wavelengths in one laser emitter. Gentle tissue removal with controlled coagulation depth.

MULTILINE® TECHNOLOGIES

Patented treatments

- METHOD FOR RENEWAL OF BIOLOGIC TISSUES
- METHOD FOR LASER COAGULATION OF BLOOD VESSELS
- METHOD FOR LASER HAIR REMOVAL
- METHOD FOR THE TREATMENT OF PIGMENTED TUMORS
- METHOD FOR THE TATTOO REMOVAL

You can use preset parameters for all the treatments developed and patented by our company. Focus on the diagnosis and follow the Control Panel instructions to choose the appropriate laser head, accessory and generation mode.



CLEAR AND SAFE TOUCH

CONTACT ACCESSORIES

Equipped with a set of replaceable and removable titanium tips for periodic cleaning and autoclave sterilization

PRECISE POINPING

CONTACTLESS ACCESSORIES

Coaxial pilot laser beam helps to accurately target the working beam and allows to work from a convenient distance.

UNIVERSAL CONNECTOR

LIGHT GUIDE ACCESSORY

Reusable light guide with a diameter of 500-600 microns, complete with fiber optic sterilizable tip

MULTILINE®

IN LASER SURGERY

- TREATMENT OF INFANTILE HEMANGIOMAS
- CHRONIC WOUND HEALING
- ENDOVENOUS COAGULATION OF VARICOSE VEINS
- ENDOSCOPIC TREATMENT
- REMOVAL OF BENIGN TUMORS

Nd:YAP/Q-sw+KTP

Treatment of infantile hemangiomas

A new patented technique for coagulation of enlarged blood vessels which is based on the creation of a new chromophore inside the treated vessel thus significantly increasing the selectivity of laser exposure. This reduces the impact on skin pigment and prevents the absorption of the laser light by the normal capillaries thus considerably reducing skin overheating and eliminating the risk of burns and scarring.

- ✓ Does not require anaesthesia
- ✓ No risk of scarring
- ✓ No risk of burns

Before and 12 month after 5 sessions. Nationwide Multi-Field Children’s Surgery Hospital, Minsk, Belarus

Er:YAG+SMA

Chronic wound healing

A two-step method for the treatment of chronic wounds consists of ablative debridement and stimulation of reparative regeneration. High-quality wound cleaning and stimulation of revascularization contribute to the healing of chronic wounds of various etiologies: trophical ulcers, diabetic foot ulcers, pressure ulcers, infectious and surgical wounds.

- Painless treatment
- 100% wound sanitation
- Relieves chronic wound pain
- Functional tissue repair

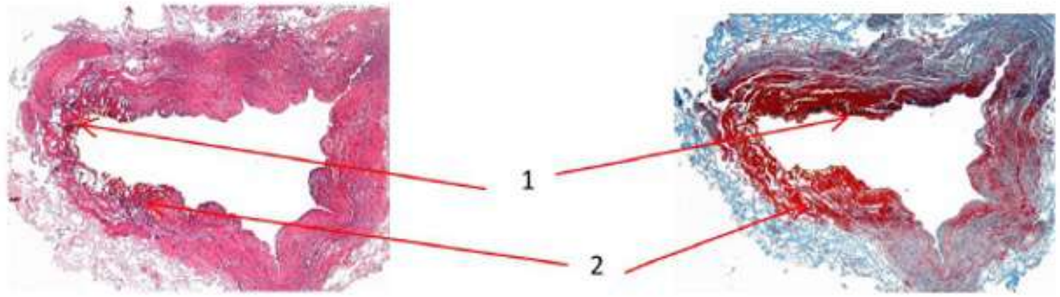
Trophic ulcer. 8 sitting with Er:YAG laser + SMA-module within 1.5 months.

State Institution "Minsk Scientific and Practical Center for Surgery, Transplantology and Hematology", Minsk, Belarus

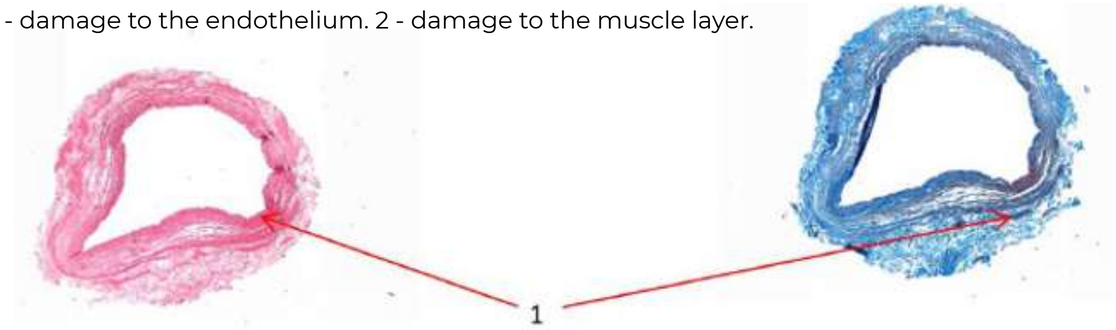
Nd:YAP

Varicose veins treatment

Pulsed radiation of a Nd:YAP 1440nm laser with a high peak power has not only a photothermal, but also a photomechanical effect. This leads to the “shooting off” of the soot formed on the light guide and driving it into the walls of the vein. As a result, a new chromophore appears on the endothelium with a very high radiation absorption efficiency. The absorption of laser radiation by these chromophores leads to local and uniform overheating of the vein walls. The end of the light guide, however, remains clean and cold.



Micropreparations of veins after exposure to Nd:YAP laser radiation (1440 nm) 50 J/cm, hematoxylin-eosin staining on the left, MSB on the right.
1 - damage to the endothelium. 2 - damage to the muscle layer.



Micropreparations of veins after exposure to diode laser radiation (1470 nm) 50 J/cm. 1 - coagulative necrosis of the endothelium less than 1/2 of the circumference of the vein.

- ✓ No risk of perforations and low thermal stress on surrounding tissue
- ✓ Uniform coagulation, excellent echogenic visibility of the working radiation
- ✓ Short rehabilitation, without subsequent anesthesia and postoperative pain
- ✓ Possibility of using simple reusable bare tip fiber

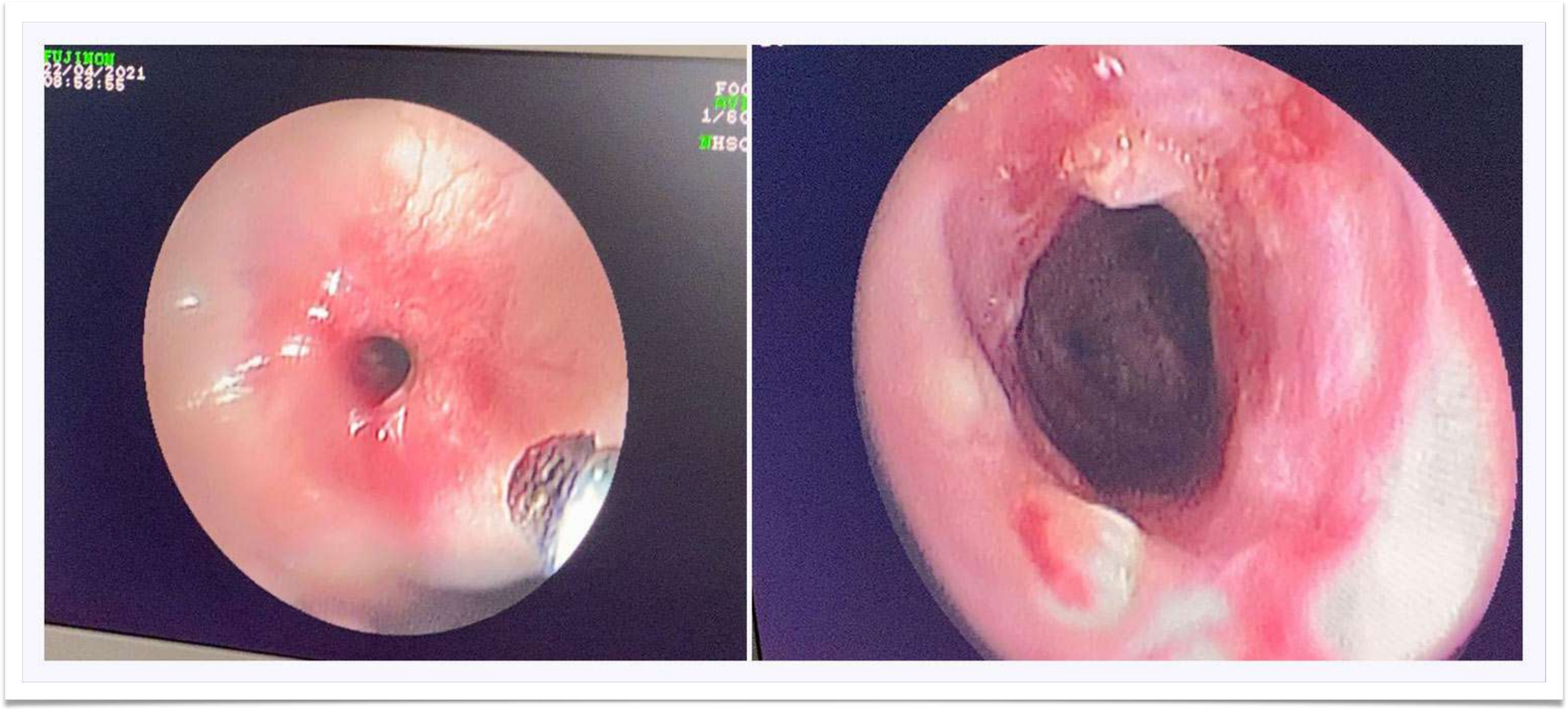
Effects on the venous wall of laser radiation in pulsed and continuous modes, D.V.Markelau, V.V.Khomchanka, et al. j. HEALTHCARE 2018;,10: 9-15

Nd:YAP

Endoscopic treatment

The MULTILINE™ Nd:YAP laser allows to limit the area of thermal destruction by the volume of stenosis to vaporize it without stimulating the fibrous tissue re-growing. Thus, during tracheal stenosis treatment, patients indicate no pain. Besides, localization of the area of thermal destruction makes it possible to avoid postoperative oedema of the trachea and does not require intubation.

- ✓ Painless treatment
- ✓ No postoperative oedema
- ✓ Low thermal stress
- ✓ No risk for recurrent stenosis



Vaporization of tracheal stenosis: before and a week after the treatmen MULTILINE™ Nd:YAP laser 1.44 μm.

State Institution "Minsk Scientific and Practical Center for Surgery, Transplantology and Hematology", Minsk, Belarus

Er:YAG & Nd:YAP

Removal of benign tumors

Er:YAG laser ablation - non-contact layer-by-layer soft tissue evaporation without coagulation of the underlying layers.

Nd:YAP laser vaporisation - contact and no-contact soft tissue evaporation with a controlled depth of coagulation and hemostasis.

- ✓ Control the cutting and coagulation properties during the procedure
- ✓ The minimal risk of complications due to the adjustable coagulation depth

Republican scientific and practical center of children's Oncology, Hematology and immunology, Minsk, Belarus

Clinic of laser cosmetology and plastic surgery LINLINE, Yekaterinburg

MULTILINE®

IN AESTHETIC MEDICINE

- LASER REJUVENATION
- VASCULAR TREATMENT
- HYPERPIGMENTATION TREATMENT
- SCARS TREATMENT
- PERMANENT HAIR REMOVAL
- TATTOO REMOVAL

Er:YAG+SMA

Laser rejuvenation

RecoSMA™ is an original technique for biological tissue recovery based on the reparative regeneration mechanism. The spatially modulated erbium laser radiation generates acoustic waves that create mechanical micro-damage to cellular structures at a depth up to 6 millimeters. The regeneration process affects soft tissues, vascular and lymphatic systems. The RecoSMA™ procedure is physiological, safe, does not cause irreversible changes in tissues and allows to restore the skin on any part of the body.

Nd:YAP/Q-sw+KTP

Vascular treatment

An ultra-selective two-wave transdermal coagulation of enlarged blood vessels method enables effective treatment of rosacea, port wine stains, stellate hemangiomas, veins in the legs without injury to surrounding tissues. Due to the two-wave technology, the effect on natural capillaries is excluded. As a result, the surrounding tissue does not overheat, it preserves the natural pigmentation of the skin and eliminates the risk of scarring. The procedure is easily tolerated and does not require anesthesia. The method is patented.

Before and after 4 sessions / Before and after 2 sessions.

Nationwide Multi-Field Children’s Surgery Hospital, Minsk, Belarus

Hyperpigmentation treatment

Alexandrite and ruby lasers are widely used for the selective photodestruction of focal hyper- pigmentation due to the fact that these wavelengths radiation is well absorbed by melanin. We have improved this treatment method by using an ultrashort pulse train to combine photo- thermal and photomechanical effects on melanin-containing cells. The new point coagulation method reduces the overall mechanical and thermal effect on the skin. Thus, when treating hy-perpigmentation with MULTILINE™ lasers, there is no risk of scarring and changes in the natural pigmentation of the skin. The method is patented.

Before and after 5 sessions / Before and after 1 session.

State Institution "Minsk Scientific and Practical Center for Surgery, Transplantology and Hematology", Minsk, Belarus

Er:YAG+SMA

Scars treatment

For the treatment of scars, we suggest using two methods: the first is to reduce scar tissue by laser ablation and the second is RcoSMA™ repair stimulation to replace fibrous tissues with functional ones. RcoSMA™ can effectively be used for the treatment of hyper-, norma- and atrophic scars (including acne and striae).

Before and after 1 sessions / Before and after 5 session.

State Institution "Minsk Scientific and Practical Center for Surgery, Transplantology and Hematology", Minsk, Belarus

Nd:YAP/Q-sw

Laser hair removal

The unique mode of generating a train of nanosecond pulses allows to destroy the hair follicle effectively, regardless of the concentration of melanin in the skin. Low thermal stress on the skin excludes the formation of scars after the procedure. This method of hair removal is effectively used for patients with hypertrichosis and hirsutism.

- ✓ Painless treatment
- ✓ For all skin photo-types
- ✓ No seasonal restrictions
- ✓ No risk of burns
- ✓ No risk of hyperpigmentation

Clinic of laser cosmetology and plastic surgery LINLINE, Yekaterinburg

Nd:YAP/Q-sw+KTP & RUBY & ALEX

Tattoo removal

The new unique method of selective photo-destruction of tattoo dye developed by LINLINE takes into account the mechanisms of optical, thermal and nonlinear selectivity. The Q-Sw pulse is divided into a train of nanosecond pulses of lower energy. As a result, every pulse of the train causes fragmentation of dye. Thus, one train is needed for layer-by-layer fragmentation of all tattoo layers without creating powerful acoustic waves that can damage surrounding tissues.

Before and after 7 sessions / Before and after 2 sessions.

Clinic of laser cosmetology and plastic surgery LINLINE, Yekaterinburg

LAST IMPLEMENTED PROJECTS

MULTILINE®

CRÉTEIL, FRANCE

Hôpitaux Universitaires Henri Mondor

- Treatment of age-related skin atrophy
- Scar treatment
- Aesthetic gynecology

Jean-Paul Meningaud, MD, PhD is Professor, Head of the Department of Plastic and maxillofacial Surgery Department at the Henri Mondor hospital.

SET OF LASER HEADS

MULTILINE®

Er:YAG + SMA module (2936nm)

MUMBAI, INDIA

S.L Raheja Hospital

- Treatment of venous and diabetic trophic ulcers
- Pressure ulcer treatment
- Treatment of non-healing postoperative wounds

Dr. Vaidya is an associate professor for fellowship in Diabetic Foot Surgery, MUHS, and an Executive Committee Member of the Diabetic Foot Society of india.

SET OF LASER HEADS

MULTILINE®

Er:YAG + SMA module (2936nm)

PARIS • BRUXELLES • GENÈVE • ANNECY • LYON • VANNES • MONTBÉLIARD

Alfa Laser Center

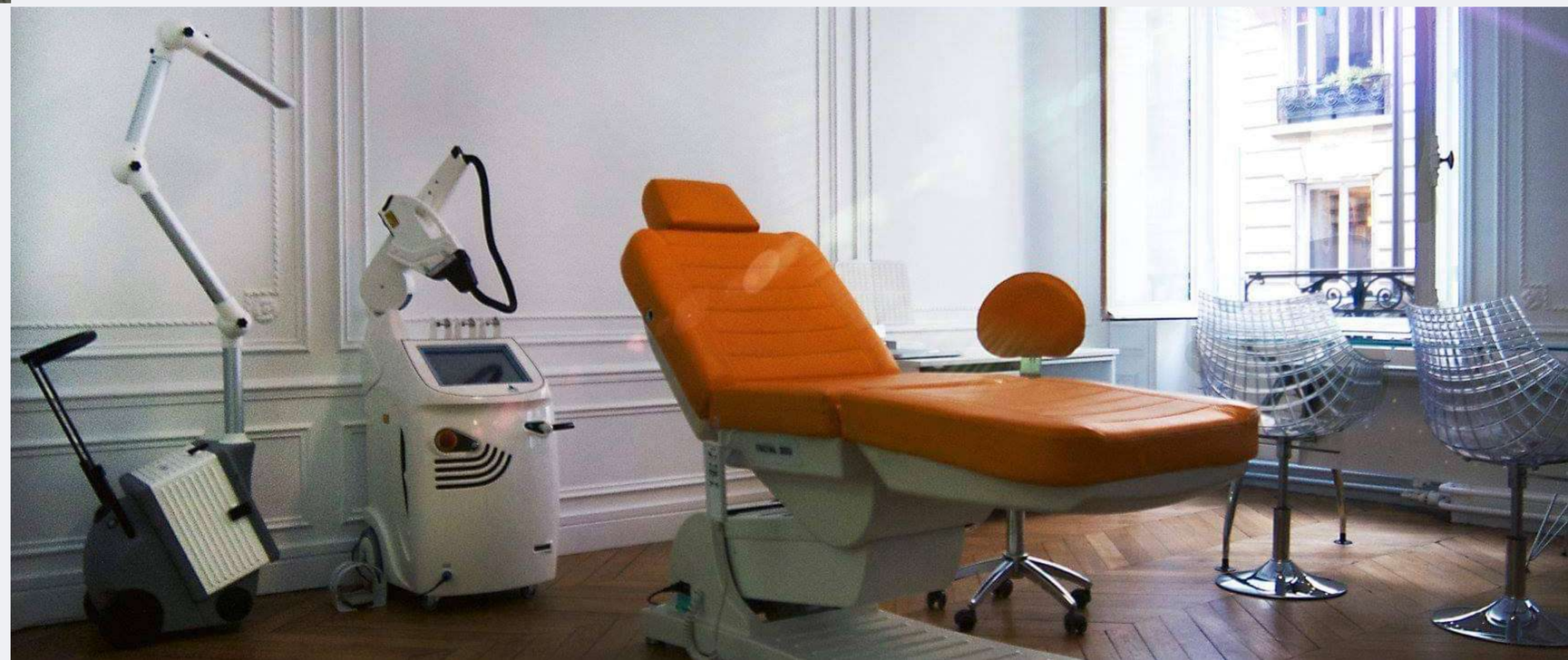
European network of aesthetic medicine clinics

- Laser rejuvenation
- Laser permanent epilation
- Vascular laser treatment
- Treatment of hyperpigmentation
- Scar treatment
- Tattoo removal

SET OF LASER HEADS

MULTILINE®

- **Er:YAG + SMA module** (2936nm)
- **Nd:YAP/Q-sw + KTP** (1079nm + 540nm)
- **ALEX/Q-sw** (755nm)
- **RUBY/Q-sw** (694nm)



MINSK, BELARUS

Nationwide Multi-Field Children's Surgery Hospital

- Treatment of infantile and pediatric hemangiomas by selective percutaneous coagulation
- Endoscopic treatment of tracheal stenoses and tracheoesophageal fistulas
- Treatment of long-term non-healing postoperative wounds

SET OF LASER HEADS

MULTILINE®

- **Er:YAG + SMA module** (2936nm)
- **Nd:YAP** (1079nm+ 1340nm+ 1440nm)
- **Nd:YAP/Q-sw + KTP** (1079nm + 540nm)

MINSK, BELARUS

State Institution "Minsk Scientific and Practical Center for Surgery, Transplantology and Hematology"

- Endovasal laser coagulation of varicose veins
- Treatment of non-healing wounds on immunosuppressive therapy
- Endoscopic treatment of post COVID tracheal stenosis NEW

SET OF LASER HEADS

MULTILINE®

Er:YAG + SMA module (2936nm)

Nd:YAP (1079nm+ 1340nm+ 1440nm)

LATEST CLINICAL STUDIES

EXPERTS

Pr. Jean-Paul Meningaud

MD, PhD, FEBOMS, Head of the Department Of Plastic
And Maxillofacial Surgery University Hospital Henri Mondor
Paris, France

Multifractional Microablative Laser Combined With Spacially Modulated Ablative (SMA) Technology for Facial Skin Rejuvenation
J. Lasers in Surgery and Medicine

Clinical Benefit of Using a Multifractional Er:YAG Laser Combined With a Spatially Modulated Ablative (SMA) Module for the Treatment of Striae Distensae: A Prospective Pilot Study in 20 Patients
J. Lasers in Surgery and Medicine

Pr. Torello Lotti

Full Professor & Chair Of Dermatologyand Venereology
University of Rome “G. Marconi”,
Rome, Italy

Treatment of psoriatic skin lesions with a new Er:Yag laser technology: A case series study. J.Dermatologic Therapy

New technology for coagulation of dilated vessels using the combined effects of several modes of generation and wavelengths in one laser pulse for the treatment of pediatric hemangiomas: Open prospective study. J.Dermatologic Therapy

Pr. Neil S SADICK

MD, Clinical Professor of Dermatology at
Weill Cornell Medical College, New York, USA

Facial rejuvenation using Er:YAG laser equipped with a spatially modulated ablation module: A clinical, ultrasound, and histological evaluation
J. Cosmetic Dermatology

Pr. Mario Trelles

MD, PhD, Plastic Aesthetic and Reconstructive Surgeon
President of the Spanish Laser Society (SELMQ)
And the European Laser Association (ELA)

Treatment of chronic lower extremity ulcers with a new Er:Yag laser technology.
J. Laser Therapy

A novel method of facial rejuvenation using a 2940-nm erbium:YAG laser with spatially modulated ablation: a pilot study
J. Lasers in Medical Science

MEDICAL SYSTEMS
LINLINE

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