The gentle solution to

Vaginal Atrophy
Vaginal Tightening
Stress Urinary Incontinence

Juliet
the feminine laser

Asclepion
Laser Technologies
Device specifications

Laser: MCL31 Dermablate (Er:YAG), Class 4

Wavelength: 2,940 nm

Fluence: Max. 250 J/cm²

Pulse duration: 100 – 1,000 µs

Frequency: 1 – 20 Hz

Modes: Gyn C, Gyn W, Ablation, Therm, MicroSpot

Spot size Gyn: V-Spot with 90° reflecting gold-coated mirror
V-Spot with 360° reflecting gold-coated cone*
MicroSpot 13 x 13 mm with variable cover rate*

Dimensions: 36 x 60 x 93 cm (W x D x H)

Weight: Ca. 75 kg

* optional
Handpieces specifications

- **Handpieces & Optics:**
  - V-Spot Handpiece with 90° reflecting gold-coated mirror
  - V-Spot Handpiece with 360° reflecting gold-coated cone*
  - MicroSpot optic 9 x 9 mm for V-Spot Handpieces
  - MicroSpot Handpiece 13 x 13 mm with variable cover rate*

* optional

MicroSpot Handpiece*  
MicroSpot optic for V-Spot  
V-Spot 90°  
V-Spot 360°*
Advantages in application and technology

<table>
<thead>
<tr>
<th>Application</th>
<th>Technology</th>
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<tbody>
<tr>
<td>Fast, painless, discreet and easy to use</td>
<td>Ablative and sub-ablative mode (thermal mode)</td>
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<tr>
<td>No anesthesia necessary</td>
<td>Most homogeneous beam profile</td>
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<tr>
<td>No surgery, minimal downtime</td>
<td>More than 2,000 Er:YAG lasers worldwide</td>
</tr>
<tr>
<td>Less risk for infection or bleeding</td>
<td>Over 15 years experience in Erbium technology</td>
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Vaginal Atrophy & Tightening

- Women undergoing menopause often experience a number of symptoms including vaginal dryness, itching, painful intercourse, poor lubrication, decreased libido and poor vaginal muscle elasticity and tone.

- This condition is also described as **Vaginal Atrophy** and it follows a reduction in the production of estrogen by the ovaries. It involves the gradual thinning of genital epithelial tissues, vaginal and vulvar mucosa, which reduce in thickness and becomes more fragile, irritable and sensitive to trauma.

- Another common condition usually associated with natural ageing as well as with vaginal childbirth is the **Vaginal Relaxation Syndrome**, a loss of the optimum vaginal structure.

- Most women refer to it complaining a loss of vaginal tightness, which is directly related to the reduction in friction during intercourse and thus to a decrease or loss of sexual gratification.

![Normal Vagina](image1.png) ![Enlarged Vagina](image2.png)
Indications

Vaginal Atrophy & Tightening

- The wall of the vagina is composed of the following layers:
  - **Epithelium**: Internal lining of epithelial tissue made up of squamous epithelial cells
  - **Lamina propria**: Connective tissue that supports the mucosa and connects it with the muscularis
  - **Muscularis**: Muscle tissue
  - **Adventitia**: Connective tissue interlaced with elastic fibers, attaches the vagina to surrounding organs

- The vaginal walls are usually collapsed so that they touch each other. The walls have many folds, which let the vagina enlarge during sexual intercourse and childbirth. Glands near the opening of the vagina secrete mucus that keeps the mucosa moist.

- **Objective of the treatment is to reach the Lamina propria**, elastic and rich in collagen that can be stimulated
Vaginal Atrophy & Tightening

Juliet is a **minimally invasive treatment**, the goal of which is to restore the original metabolism of connective tissue and improve the state of the mucosa, by stimulating a process of neocollagenesis.

This leads to a **restoration of the metabolism of connective tissue**: the inner mucosa regains elasticity and lubrication, showing improved thickness and softness. This action continues its beneficial effect even after the treatment is finished and, for this reason, many women report **further improvements during the first month post-treatment**.
Stress Urinary Incontinence (Grade 1)

- **Stress Urinary Incontinence (SUI)** is a quite widespread disease prevalent in women after their first birth (24% to 29% of women) and in women undergoing menopause because of the reduction estrogen production. Similarly, frequent exercise in high-impact activities can cause athletic incontinence to develop.

- It is a form of urinary incontinence caused by a loss of support of the urethra, which is usually a consequence of damage to pelvic support structures as a result of childbirth.

- Women with Stress Urinary Incontinence have an altered connective tissue metabolism, which causes decreased collagen production and which may result in insufficient support of the urogenital tract.

- The leaking of small amounts of urine during activities which increase abdominal pressure such as coughing, sneezing and lifting weights is a common symptom.
### Indications

#### Stress Urinary Incontinence (Grade 1)

- The ligaments of women with SUI have decreased collagen content or qualitative alternations in collagen composition.

- Women with stress urinary incontinence have an altered connective tissue metabolism causing decreased collagen production, which may result in insufficient support of the urogenital tract.

- Thermal energy from the laser source, especially in moist environments, not only effectively enhances collagen structure but also stimulates neocollagenesis.
Indications

Stress Urinary Incontinence (Grade 1)

The Juliet laser treatment leads to a restoration of the metabolism of connective tissue by stimulating new collagen production. This leads to an improvement in the condition of the mucosa and in the tone of the pelvic muscle, strengthening the vaginal tissue that contributes to support of the interior tissue and wall. The symptoms of Stress Urinary Incontinence are thus significantly reduced even after the very first treatment.

As a result of laser irradiation the intermolecular crosslinks of the triple helix of collagen shorten, which leads to the immediate tightening of collagen fibrils by two-thirds of their length in comparison to the pre-intervention state.
Preparation & Aftercare

- **Inclusion criteria:** normal cell cytology (PAP smear), negative urine culture, vaginal canal, introitus and vestibule free of injuries and bleeding.

- **Exclusion criteria:** pregnancy, intake of photosensitive drugs, injury or/and active infection in the treatment area, undiagnosed vaginal bleeding and active menstruation.

- **Immediately before the laser treatment:** the patient’s vagina (vestibule, introitus and vaginal canal) must be thoroughly washed and the disinfecting solution carefully dried off and removed from the mucosa.

- **After the laser treatment:** No special post-op therapy needed. No sexual activities for a period of 72 hours after each of the treatment sessions. With a history of genital herpes for the prevention assign valacyclovir in standard dose for three days before and after the procedure.
Phase 1 & 2: Vaginal Atrophy & Stress Urinary Incontinence

1st Phase: Ablative fractional mode

• Insert the handpiece in the vagina to the cervix/vaginal vault (7 to 10cm) with the mirror in the upward position
• Perform the treatment by rotating the handpiece by 45° (line to line) between laser pulses
• When the of 360° rotation is completed (8 pulses), withdraw the handpiece 1 cm
• Repeat the process until the 3cm indicator on the handpiece is visible outside of the vagina

2nd Phase: Thermal mode

• Re-insert the handpiece in the vagina to the cervix/vaginal vault (7 to 10cm) with the mirror in the upward position
• This time, perform the treatment by rotating the handpiece by 22.5° (line and dot) between laser pulses
• When the of 360° rotation is completed (16 pulses), withdraw the handpiece 0.5cm
• Repeat the process until the 3cm indicator on the handpiece is visible outside of the vagina

<table>
<thead>
<tr>
<th>Mode</th>
<th>Gyn C</th>
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<tbody>
<tr>
<td>Handpiece</td>
<td>V-Spot 90°</td>
</tr>
<tr>
<td>Fluence</td>
<td>15 – 35 J/cm² *</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>300 µs</td>
</tr>
<tr>
<td>Interval</td>
<td>0.5 - 2 s (according user’s experience)</td>
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<tr>
<td>Rotation angle</td>
<td>45° (line to line)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Mode</th>
<th>Gyn W</th>
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</thead>
<tbody>
<tr>
<td>Handpiece</td>
<td>V-Spot 90°</td>
</tr>
<tr>
<td>Fluence</td>
<td>3 – 6 J/cm² *</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>1,000 µs</td>
</tr>
<tr>
<td>Interval</td>
<td>0.5 - 2 s (according user’s experience)</td>
</tr>
<tr>
<td>Rotation angle</td>
<td>22.5° (line and dot)</td>
</tr>
</tbody>
</table>

* depending on the severity of the condition
Phase 3: Stress Urinary Incontinence (optional)

3rd Phase: Fractional treatment of vestibule and introitus area

- Treat the area with 2-3 passes
- Usually anesthesia is recommended, e.g. Pliaglis from Galderma

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<thead>
<tr>
<th>Mode</th>
<th>N25%</th>
</tr>
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<tbody>
<tr>
<td>Handpiece</td>
<td>MicroSpot Handpiece</td>
</tr>
<tr>
<td>Fluence</td>
<td>15 – 30 J/cm²</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>300 µs</td>
</tr>
<tr>
<td>Interval</td>
<td>0.5 - 2 s (according user’s experience)</td>
</tr>
</tbody>
</table>

* depending on the severity of the condition
Clinical Results
Clinical results

International studies show the efficacy of the Erbium:YAG technology

The Juliet procedure is performed by the MCL31 Dermablate Erbium:YAG laser system. At 2,940 nm, the laser is at the peak for water absorption. And, with the ability for both short and long pulses, studies show that it is more effective than other options.

- Over 1,000 patients showed excellent improvement with a high level of patient satisfaction (97%) and no adverse effects. Average pelvic floor muscle pressure improved by 60%, vaginal canal shrinkage by 17% and almost 70% of urinary incontinence patients were dry after 120 days\(^1\).

- In a study of 70 patients, Er:YAG achieved better and more long-lasting results than the CO2 treated ones. Patient discomfort during the treatment, as well as in the post-op period, was significantly higher in the CO\(_2\) group\(^2\).

- In a study of 37 patients, 100% of patients reported, 6 months after the treatment, improvement in vaginal tightness. 84% reported better sex. In addition, 84% of patients affected by SUI reported significant improvement in the Q-tip test score\(^3\).

Clinical results

Histological preparation
Hematoxylin & Eosin - SETTINGS: Fluence 20 J/cm² | Pulse duration 300 µs | MicroSpot Ø 350 µm

The sample at day 0 shows an altered epithelium stratification with presence of cornification and superficial areas characterized by very low cellularity.

The epithelium appears atrophic and a flattening of the dermal papillae at the dermoeipidermal junction can be recognized.

Day 0 – before the treatment

Pictures by courtesy of:
University of Milano-Bicocca, San Gerardo Hospital, Monza, Italy - Department of Obstetrics and Gynecology, Chief Prof. Rodolfo Milani
Clinical results

Histological preparation

Hematoxylin & Eosin - SETTINGS: Fluence 20 J/cm2 | Pulse duration 300 µs | MicroSpot Ø 350 µm

At day 7 (after one treatment) the pavement epithelium appears well organized, with compact structure and presence of several nuclei, both in the deeper and superficial layers.

The depth of the dermal papillae appears moreover increased, showing good tissue vitality.

Day 7 – after 1 treatment
Clinical results

Histological preparation

Hematoxylin & Eosin - SETTINGS: Fluence 20 J/cm² | Pulse duration 300 µs | MicroSpot Ø 350 µm

Day 0 – before the treatment

Day 7 – after 1 treatment

Pictures by courtesy of:
University of Milano-Bicocca, San Gerardo Hospital, Monza, Italy - Department of Obstetrics and Gynecology, Chief Prof. Rodolfo Milani
Clinical results

Two-photon microscopy image
Hematoxylin & Eosin - SETTINGS: Fluence 20 J/cm² | Pulse duration 300 µs | MicroSpot Ø 350 µm

Day 0 – before the treatment
Split epithelium with few and pyknotic nuclei

Day 7 – after 1 treatment
Multilayered well organized epithelium with presence of nuclei

Pictures by courtesy of:
University of Milano-Bicocca, San Gerardo Hospital, Monza, Italy - Department of Obstetrics and Gynecology, Chief Prof. Rodolfo Milani
Clinical results

Polarized light microscopy image
Hematoxylin & Eosin - SETTINGS: Fluence 20 J/cm² | Pulse duration 300 μs | MicroSpot Ø 350 μm

30 days after 1 treatment Neocollagenogenesis and Angiogenesis processes are still visible; a re-gained uniformity of the tissue is the evidence of efficient tissue regeneration.

In addition, the new collagen formation can be recognized through the white stripes visible in the deeper layers.

Day 30 – after 1 treatment

Pictures by courtesy of:
University of Milano-Bicocca, San Gerardo Hospital, Monza, Italy - Department of Obstetrics and Gynecology, Chief Prof. Rodolfo Milani
Clinical results

Polarized light microscopy image
Hematoxylin & Eosin - SETTINGS: Fluence 20 J/cm² | Pulse duration 300 µs | MicroSpot Ø 350 µm

Day 7 – after 1 treatment

Day 30 – after 1 treatment

Pictures by courtesy of:
University of Milano-Bicocca, San Gerardo Hospital, Monza, Italy - Department of Obstetrics and Gynecology, Chief Prof. Rodolfo Milani
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Novel Minimally Invasive VSP Er:YAG Laser Treatments in Gynecology

Erbium laser in gynecology