

# Rejuvenescimento da Genitália Feminina a Laser

 José Antonio  
Zelaquett  
Cirurgia e Tratamento  
Íntimo Feminino



# Envelhecimento Genital Feminino

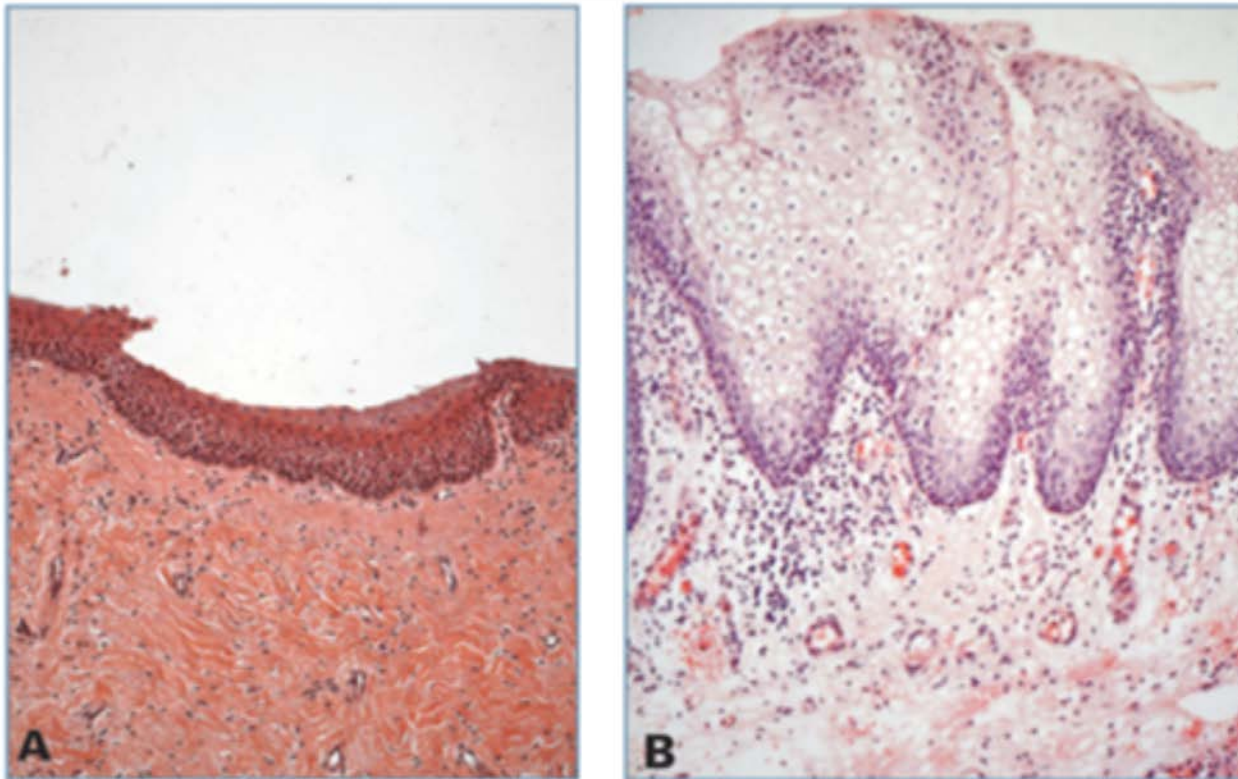
A photograph of an elderly couple, a man and a woman, smiling and looking out over a beach. The man is in the foreground, slightly to the right, and the woman is behind him, to the left. They are both looking towards the left side of the frame. The background shows a sandy beach and the ocean under a clear sky. The image has a warm, orange-toned overlay.

O aumento da expectativa de vida deu-se em ambos os sexos, porém as repercussões da longevidade foram mais expressivas nas mulheres.

Esse processo deletério progressivo do aparelho genital feminino não diminui a expectativa de vida, mas reduz drasticamente a qualidade de vida.

# Atrofia Vaginal

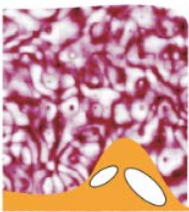


Epitélio fino, ressecado e pH elevado



**Figura 1.1** – Preparação histológica da mucosa vaginal corada com hematoxilina e eosina (H&R). (A): Mucosa vaginal pós-menopausa com atrofia causada pelos níveis reduzidos de estrógeno com presença reduzida de vasos e um epitélio significativamente mais fino e com falta de glicogênio. (B): Mucosa vaginal na idade reprodutiva; a mucosa é bem suprida de vasos e o epitélio consiste em um número maior de camadas de células, particularmente ricas em glicogênio [Cortesia do Prof. A. Calligaro – Universidade de Pavia].

# Ambiente Vaginal

Diferentes idades e condições fisiológicas

	Maturidade sexual	gravidez	Pós-menopausa
Estrógenos	++	+++	-
Epitélio da mucosa			
Glicogênio	+	++	-
pH	3.5 - 5	3 - 4.5	6 - 8
População de micro-organismos	lactobacilos		mista



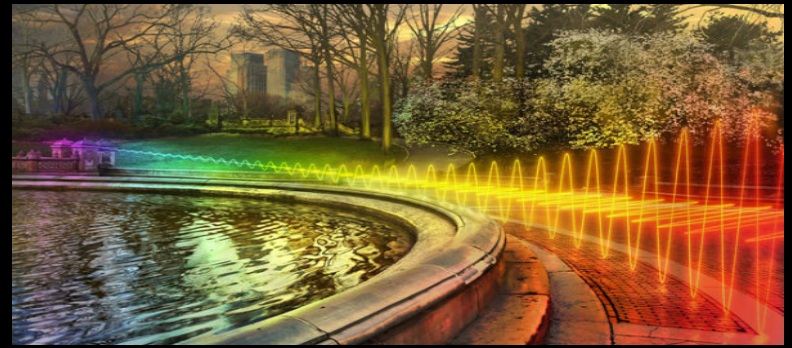
# Reposição Hormonal

O uso de estrógenos representa o tratamento eletivo para atrofia vulvovaginal.

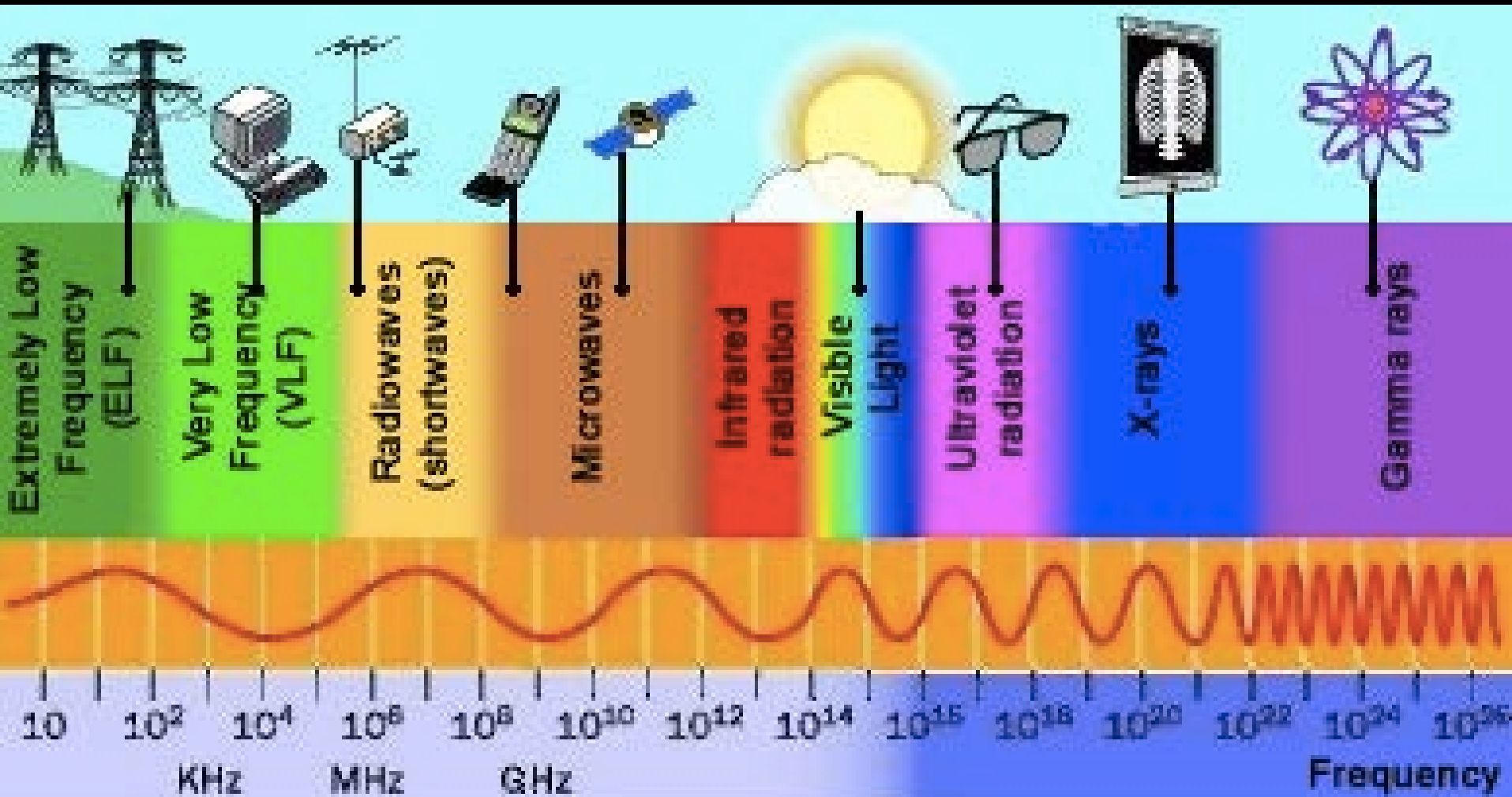
Mas um tratamento não hormonal deve ser considerado como alternativa, sabendo-se dos limites da TRH como:

- Período de tempo limitado
- Risco associado
- Intolerância ao tratatamento

# Radiação Eletromagnética



- Onda que se autopropaga no espaço resultante da interação de campos elétricos e magnéticos;
- Comprimento de onda: distância entre duas cristas consecutivas;
- Frequencia: número de ondas por unidade de tempo;
- Fóton: unidade de radiação eletromagnética.



Non-ionizing radiation

Ionizing radiation

# Laser: A Luz na Medicina

LASER (Amplificação de Luz por Emissão Estimulada de Radiação – do inglês *Light Amplification by Stimulated Emission of Radiation*)

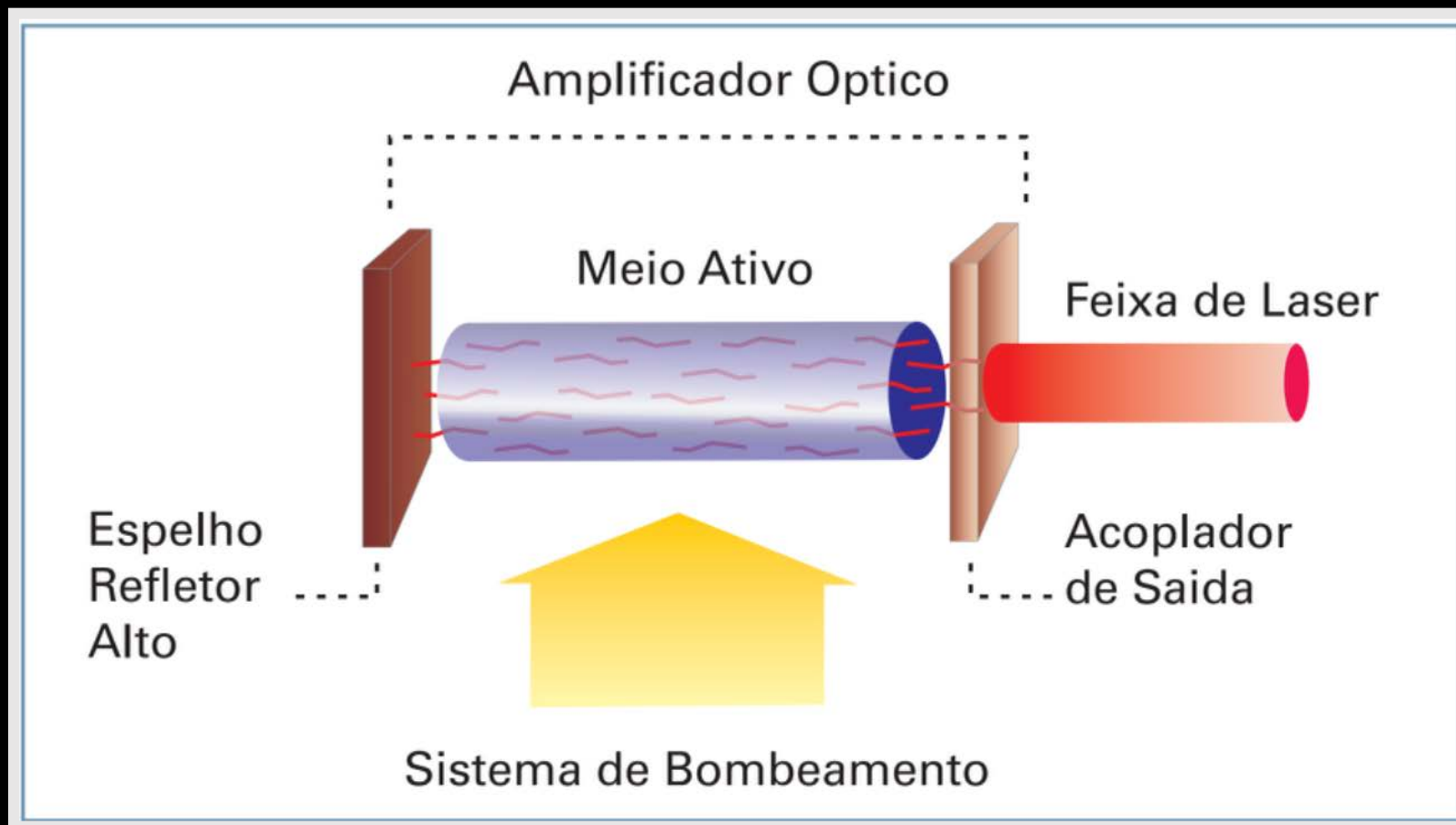
- A luz é uma radiação eletromagnética cuja energia se transmite através de partículas chamadas ftons.
- O laser tem a capacidade de estimular ftons amplificando a radiação e transformando a energia externa elétrica, ótica ou química em energia luminosa.



# O que a torna diferente de qualquer outra fonte de radiação eletromagnética?

- **Coerência:** possui relações de fase constantes no tempo
- **Brilho:** luz de alta intensidade
- **Monocromaticidade:** mesmo comprimento de onda
- **Colimada:** mesma direção (paralela, não divergente, estreita e concentrada)

O Laser é um amplificador de luz que utiliza a emissão estimulada de radiações.



O meio ativo é o elemento dentro do qual a amplificação da luz ocorre.

As unidades de medida que quantificam as radiações eletromagnéticas são muito importantes para entender a interação laser-tecido.



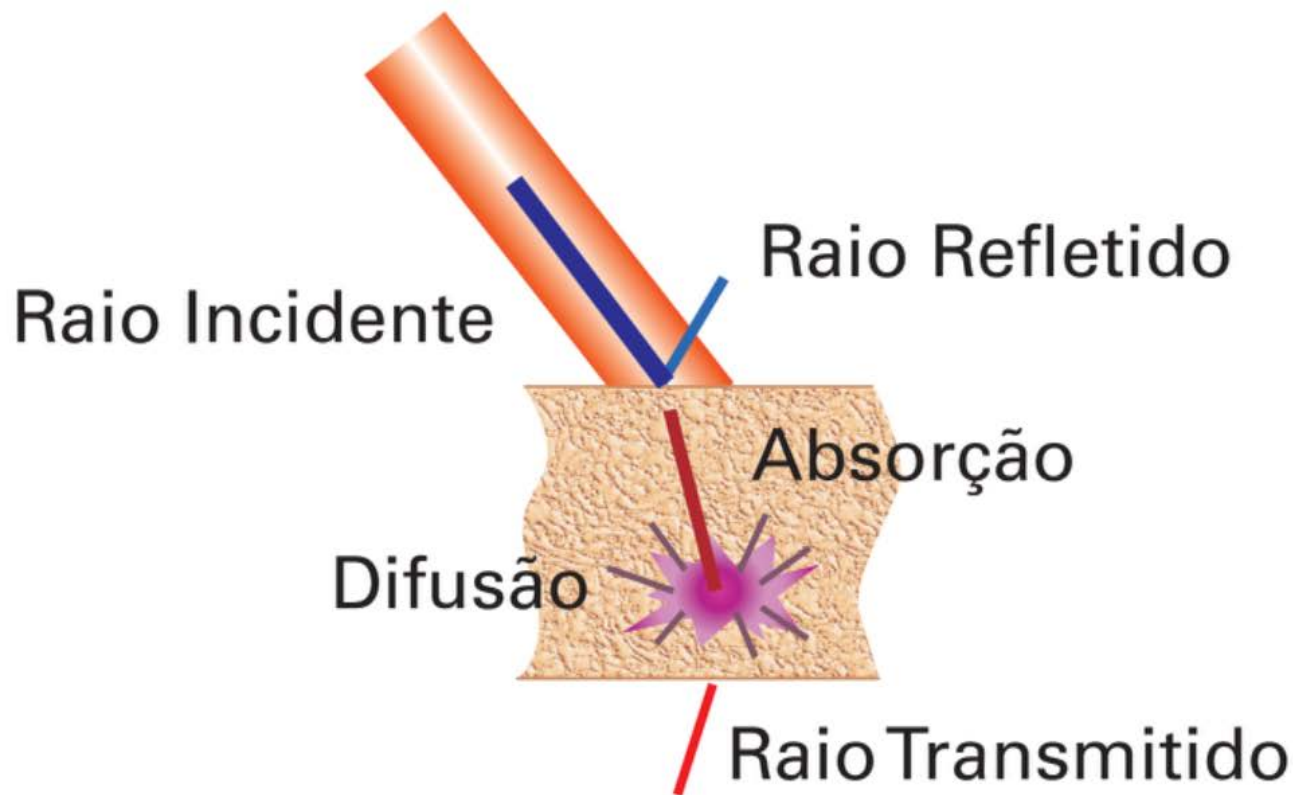
Ou seja, a maneira na qual essa energia é transmitida ao tecido, por quanto tempo e em qual área.

# Portanto:

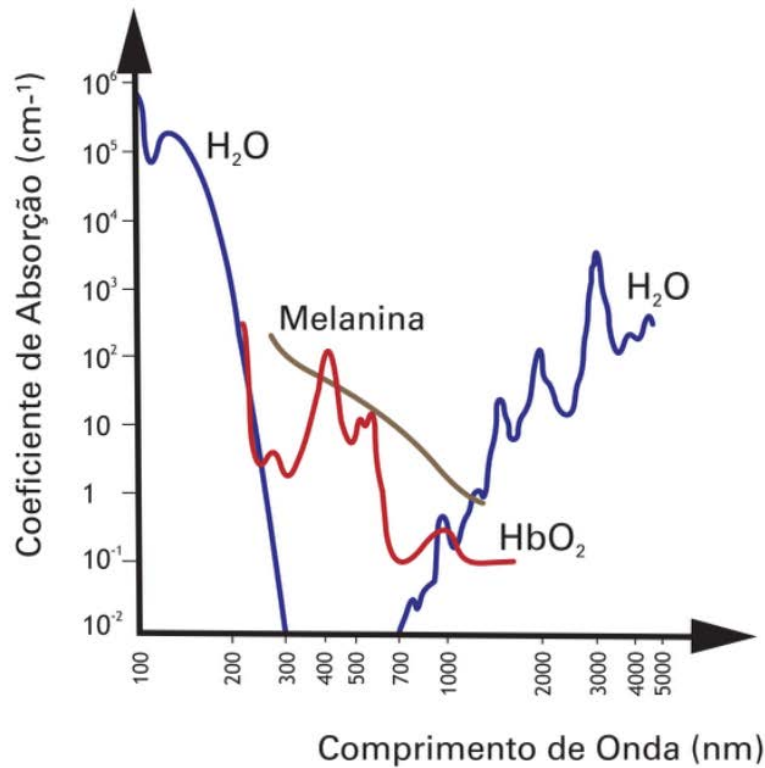
- **Energia (Jaules):** quantidade de fotons
- **Tempo de duração do pulso (segundos):** DWELL TIME
- **Tamanho do spot:** cm<sup>2</sup>
- **Frequencia ou taxa de repetição:** Hz
- **Fluência ou dose:** quantidade de energia liberada por unidade de área de superfície (J/cm<sup>2</sup>)
- **Potência:** intensidade de energia liberada (W)
- **Densidade:** espaçamento entre os pontos (micrometros)
- **STACK:** repetição do disparo no mesmo ponto



A energia da luz do laser deve ser absorvida pelo tecido e ser convertida para outra forma de energia: térmica, química ou mecânica.



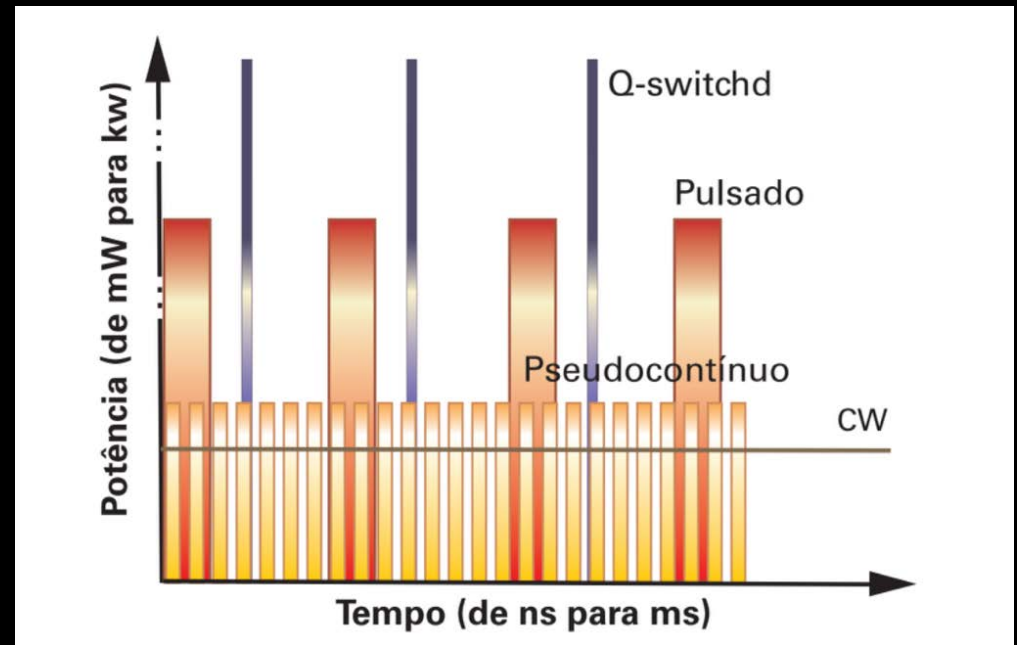
Devido a falta de homogeneidade química dos tecidos biológicos, a absorção da radiação é altamente dependente do comprimento de onda.



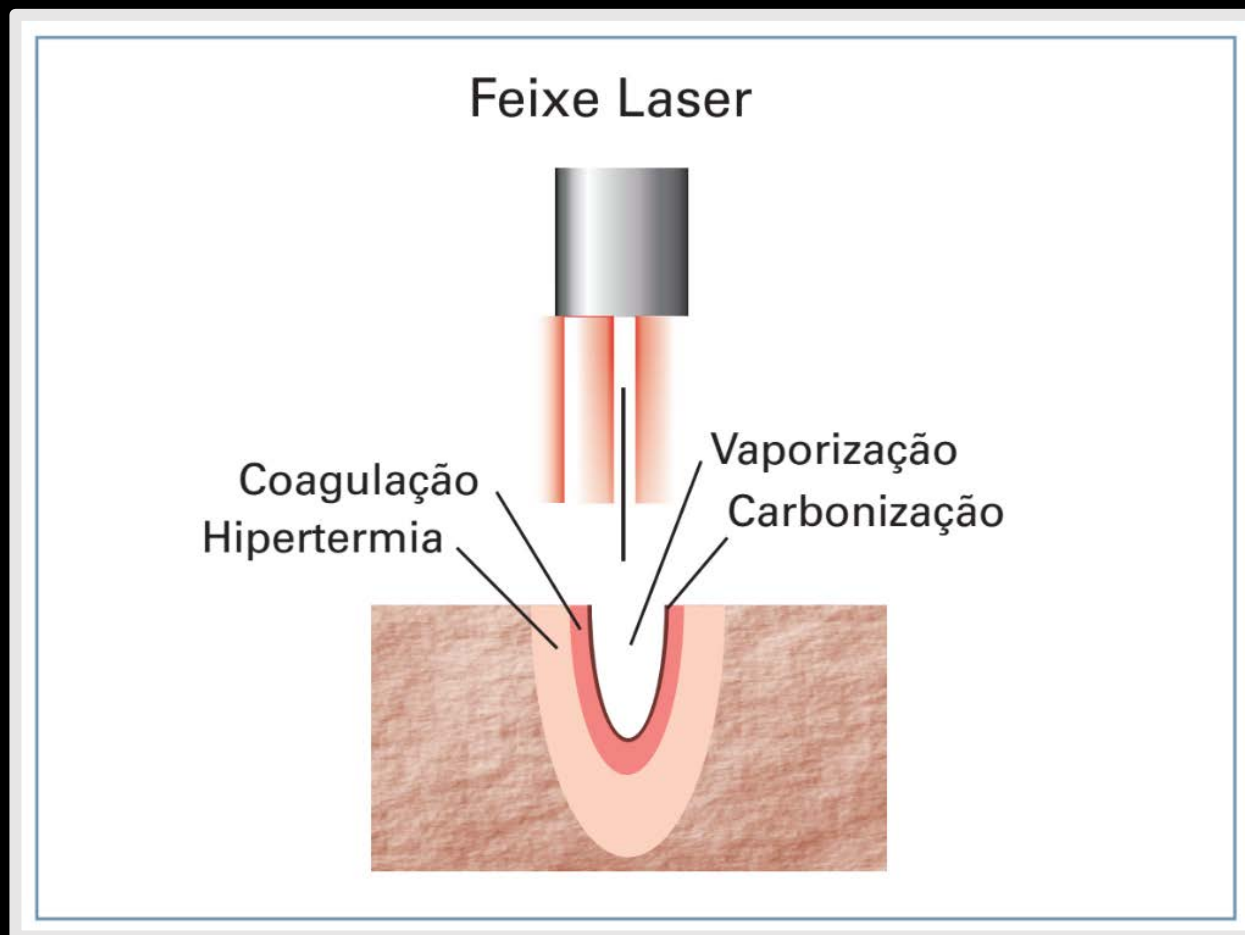
Outro fator importante é a forma da onda.

Modos de operação:

- Contínuo (CW)
- Pseudocontínuo
- Pulsado
- Q switched



A maioria dos lasers produz efeitos térmicos específicos no tecido transformando energia luminosa em calor. Essa energia térmica é capaz de vaporizar, carbonizar, coagular, estimular processos ou, simplesmente, "aquecer".





# Tipos de Laser

Há extrema variabilidade de parâmetros característicos de cada tipo de laser, sendo o comprimento de onda e o controle da emissão com o decorrer do tempo (a forma de onda do laser) os principais responsáveis pelo desempenho.

Uma quantidade mais alta de energia disponível, não necessariamente resulta em maior eficiência.

# Tipos de Laser

Existem diferentes tipos de laser, dependendo do meio ativo usado:

- Laser de estado sólido (neodímio, érbio, hólmio, etc.),
- Lasers gasosos (CO<sub>2</sub> e He-Ne),
- Lasers de estado líquido (corante),
- Lasers semicondutores (diodo).

# Tipos de Laser

## Principais características dos lasers mais comumente usados em medicina



Laser	Meio Ativo	Emissão	Aplicações	Dispersão
Alexandrite	Estado sólido	Pulsado e QS	DERMATOLOGIA: remoção de pelos, tatuagens, lesões pigmentadas, rejuvenescimento	Alta
CO <sub>2</sub>	Gás	Pulsada e contínua	Ablação cirúrgica em diferentes campos médicos (ODONTOLOGIA, DERMATOLOGIA, GINECOLOGIA, OTORRINOLARINGOLOGIA, V2LR, etc.), tratamentos com laser fracionado	Alta
Laser de corante	Líquido	Pulsada	DERMATOLOGIA: lesões vasculares superficiais, psoríase	Moderada
Diodo (GaAs, GaAlAs)	Semicondutor	Contínua ou pseudo-contínua	DERMATOLOGIA: remoção de pelos. ODONTOLOGIA: cirurgia, clareamento dentário. FLEBOLOGIA	Alta
Excimer	Gás	Pulsada	DERMATOLOGIA: psoríase, vitiligo. OFTALMOLOGIA	Limitada
Érbio (Er:YAG ou outro)	Estado Sólido	Pulsada	DERMATOLOGIA: ablação cirúrgica superficial. ODONTOLOGIA: odontologia conservativa (tratamento de cáries dentárias)	Moderada
KTP/532	Estado sólido	Pulsada, QS e Contínua	DERMATOLOGIA: lesões vasculares superficiais, tatuagens, rejuvenescimento. ODONTOLOGIA: clareamento dentário, periodontia, endodontia, cirurgia	Moderada
Neodímio (Nd:YAG ou outro)	Estado sólido	Pulsada e QS	DERMATOLOGIA: remoção de pelos, lesões vasculares. ODONTOLOGIA: endodontia, periodontia, implantologia, cirurgia, clareamento dentário	Alta
Hólmio (Ho:YAG)	Estado sólido	Pulsada	UROLOGIA. DERMATOLOGIA: lesões vasculares	Média
Rubi	Estado sólido	Pulsada e QS	DERMATOLOGIA: Remoção de pelos, lesões pigmentadas	Ruim

Tabela 2.1 – Principais características dos lasers mais comumente usados em medicina

# Laser de CO<sub>2</sub>

- Comprimento de onda de 10.600nm e seu funcionamento baseia-se na fototermólise seletiva – vaporização de células
- Contração imediata do tecido
- Melhora gradual por deposição de neo colágeno e reorganização da derme – melhora da flacidez

# Laser de CO<sub>2</sub> e H<sub>2</sub>O

**O Laser de CO<sub>2</sub>** tem alta afinidade pela água promovendo a vaporização do tecido com consequente cicatrização e estímulo à formação de colágeno.

# Vantagens do Laser

- **Preservação Anatômica**
- **Preservação Funcional**
- **Menor Dano Térmico**
- **Melhor Epitelização**
- **Menor Reação Inflamatório**

# Efeitos Biológicos

- **Aumenta da velocidade de mitoses**
- **Aumento da velocidade epitelização**
- **Anti Inflamatório**
- **Anti Edematoso**
- **Reduz Fibrose**
- **Aumenta Angiogênese**
- **Estimula Colágeno**



# Efeitos Colaterais

- Alterações de pigmentação: transitórias ou não
- Cicatriz
- Neovascularização
- Lesão herpética
- Infecção

# Laser – Principais Aplicações na Genitália Feminina

- Lipodistrofia do Monte de Vênus
- Alterações no Clitoris
- Tratamento cirúrgico nos lábios menores (Labioplastia)
- Tratamento da atrofia vaginal
  - Promove estreitamento vaginal (*“efeito tightening”*)
  - Melhora Síndrome Urogenital da Menopausa (SUG)
  - Melhora da Síndrome do Relaxamento Vaginal
- Rejuvenescimento Genital Externo
  - Melhora da flacidez, aspecto e coloração da pele dos grandes lábios
- Episiotomia
- Quelóides/Condilomas/Tumores Benignos/Neoplasias

# Efeitos na Genitália Feminina

## Coagulação de colágeno com neocolagênese

- Diminuição dos sintomas;
- Melhora do trofismo;
- Diminuição da leucorréia;
- Boa tolerância;
- Diminuição dos diâmetros vaginais;

Rejuvenescimento

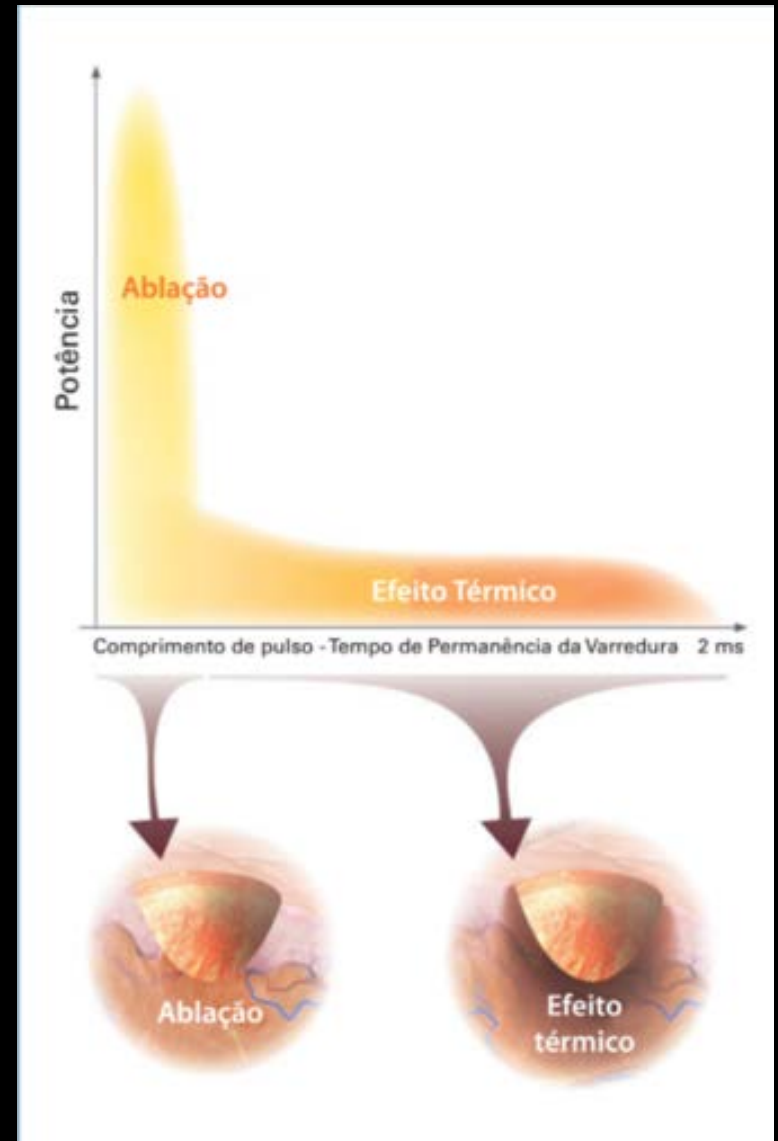
Genital

Externo

# Aplicação fracionada

É composto por um pico alto ablativo seguido por um efeito termal.

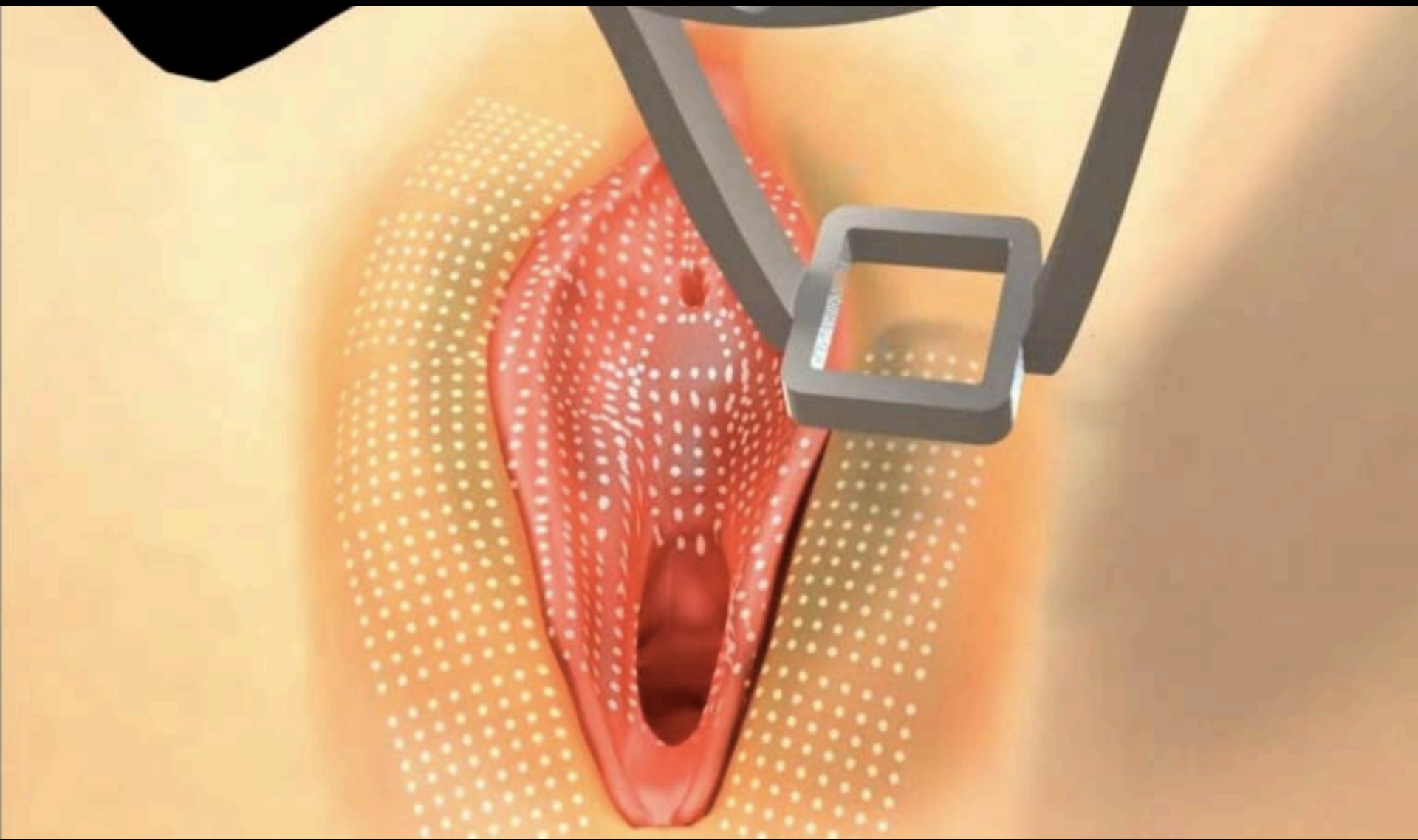
É importante quando precisamos aprofundar o calor e vaporizar a camada epidérmica, como a pele. Por essa razão é recomendado a **aplicação fracionada**.



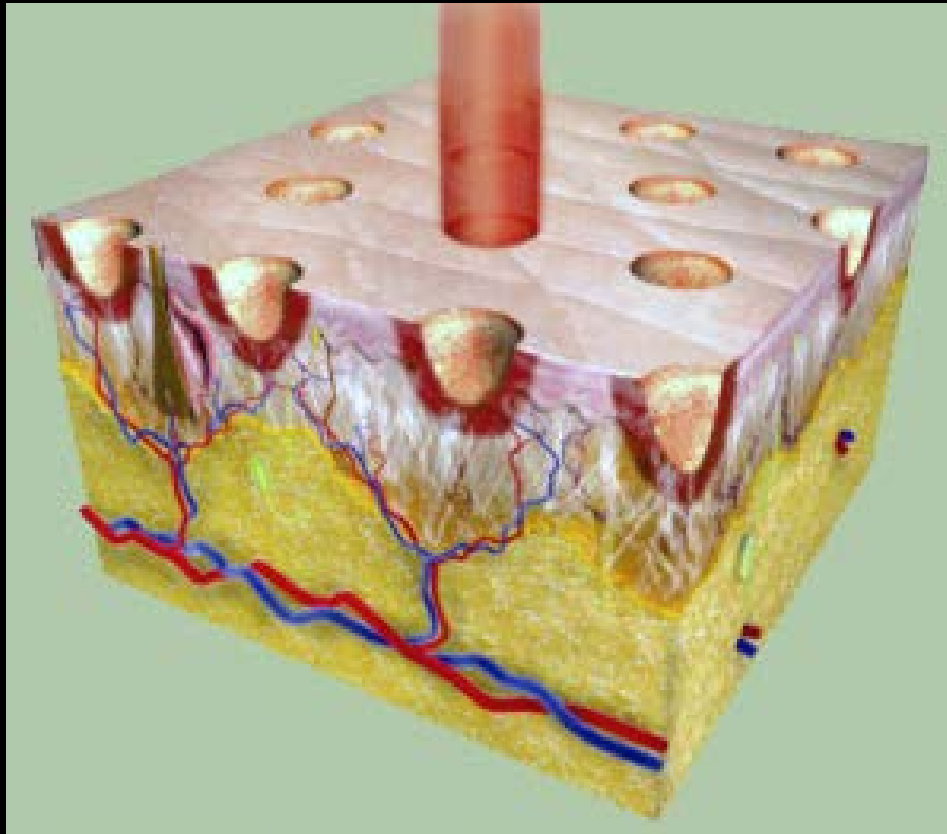
# Rejuvenescimento Vaginal Externo



*Courtesy of Prof. N.Zerbinati & Prof. S.Salvatore University of Insubria, Varese - Italy*







# DOT Resurfacing mode

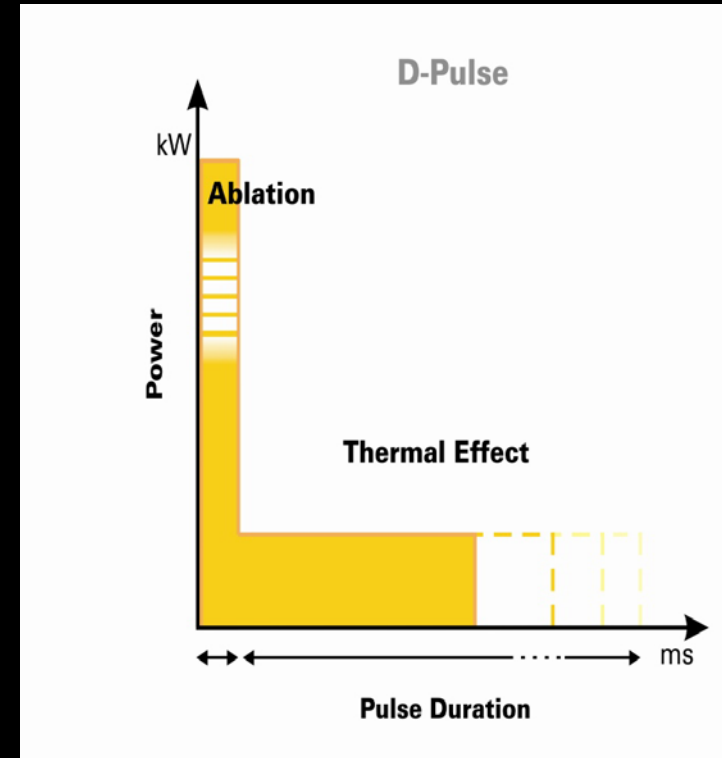
antes

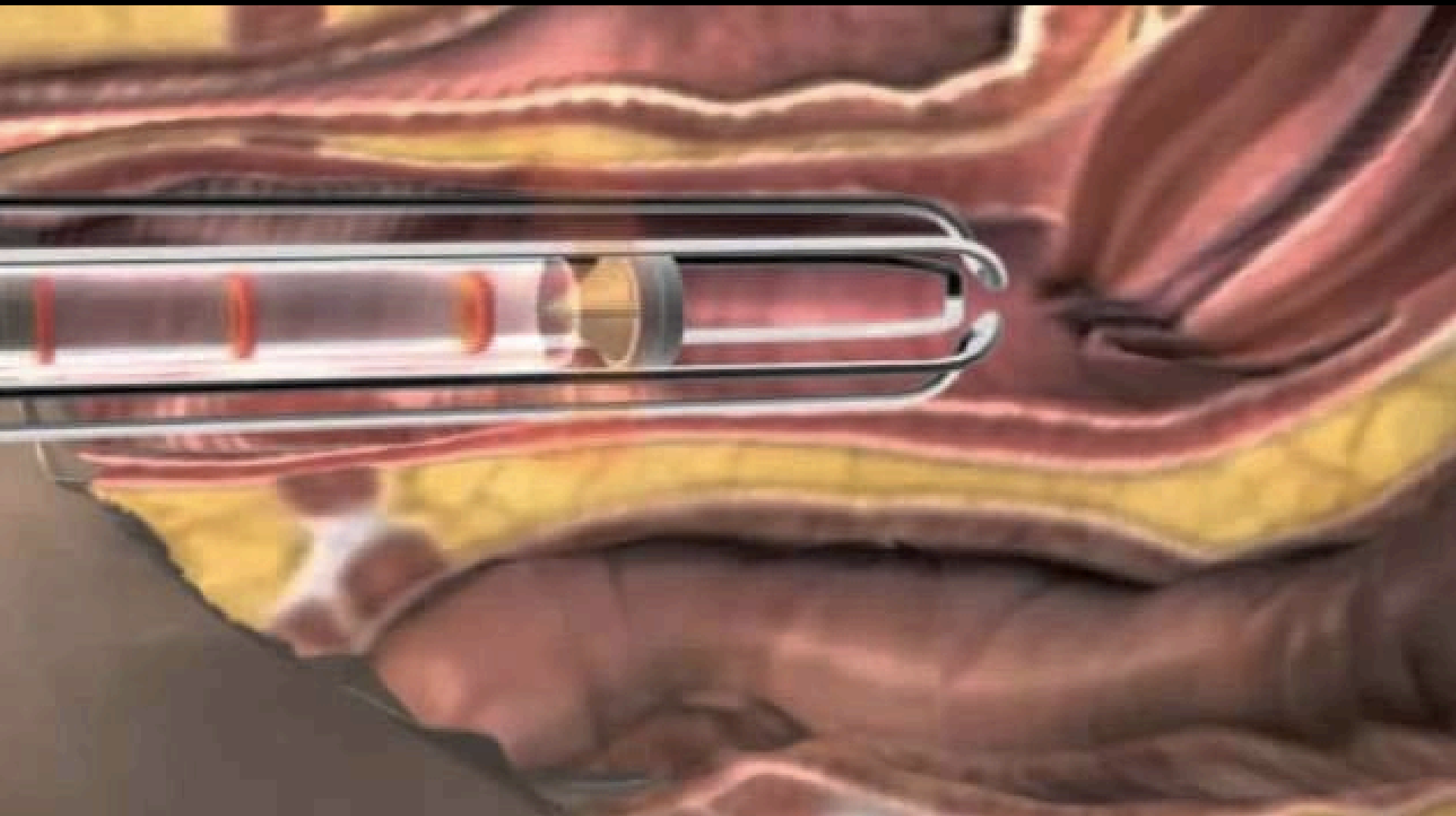
depois

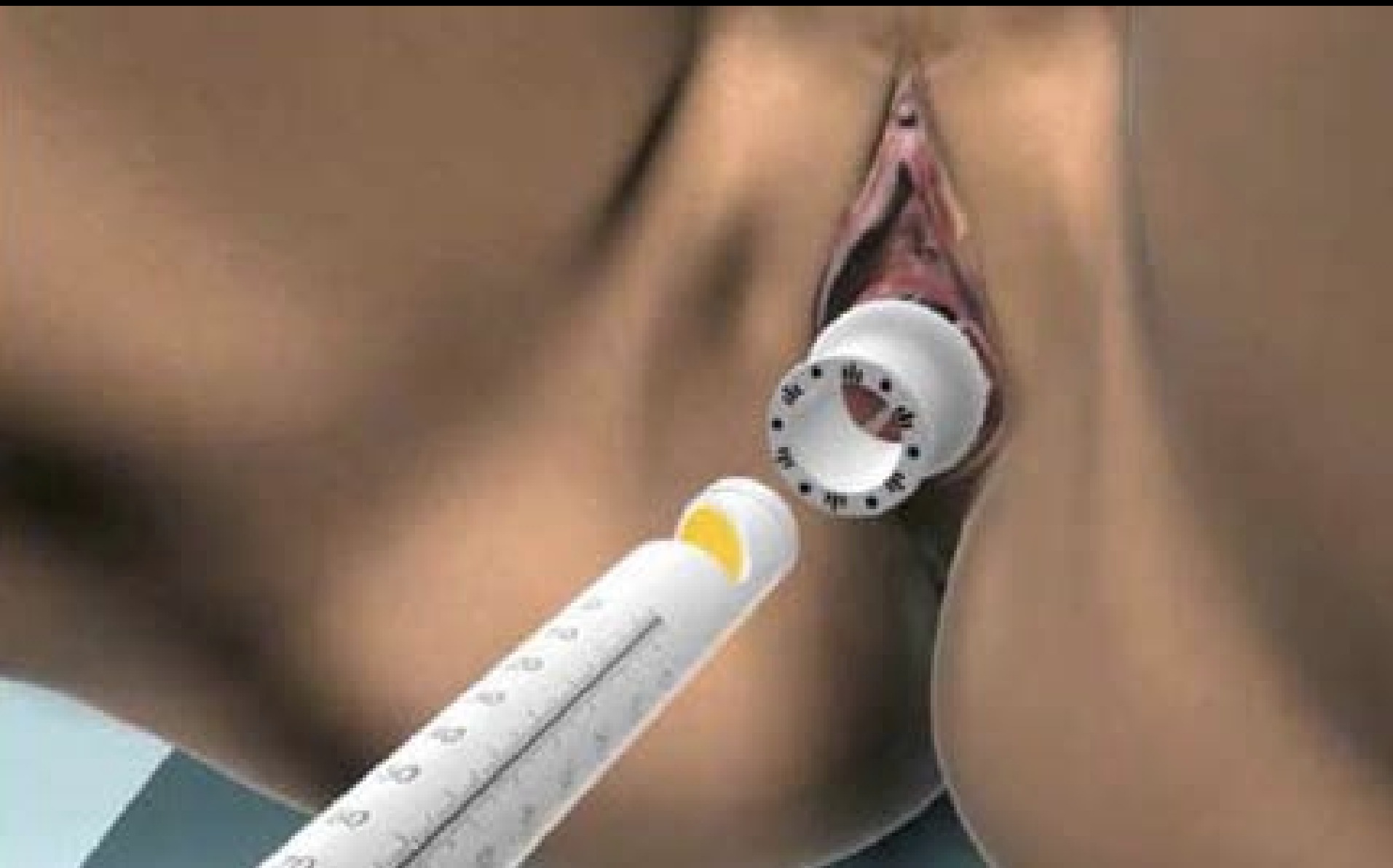


# Rejuvenescimento Vaginal Interno

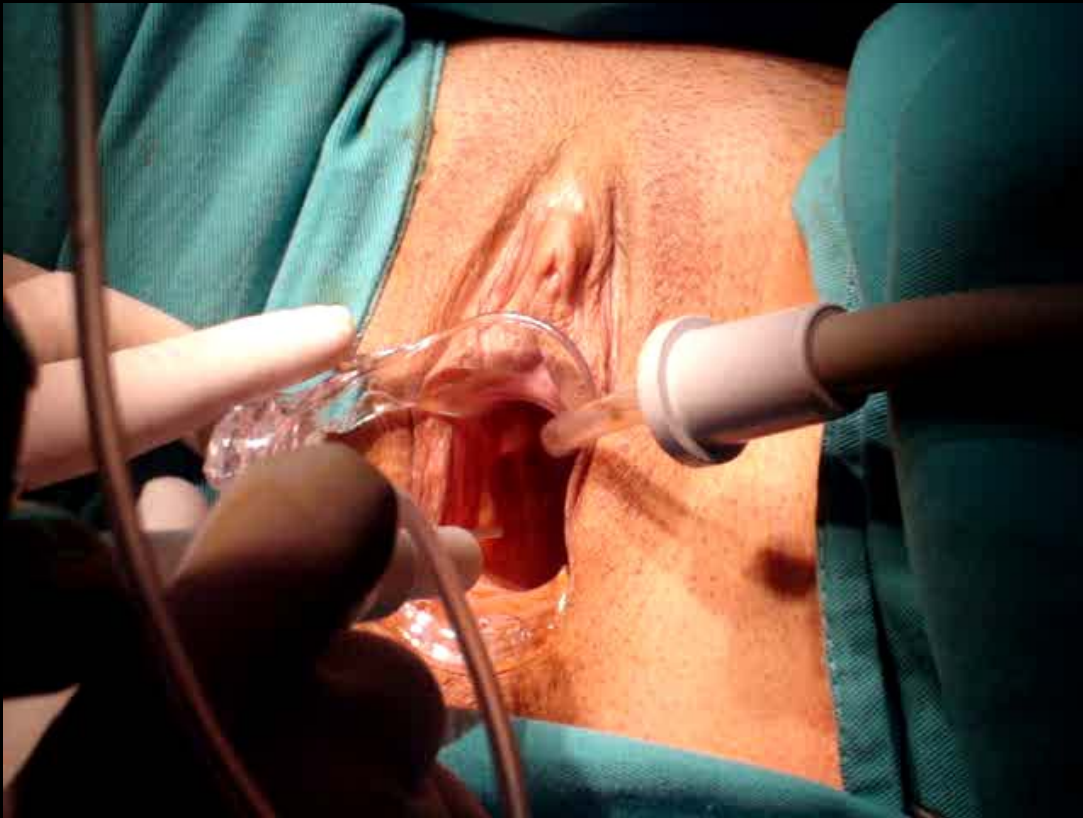
- Primeiro temos um pico alto de energia,  
-Ablação epitelial rápida da mucosa atrofica.
- Depois temos um pico baixo e longo de energia,  
-O Laser penetra no tecido estimulando a neocolagenese.
- Como resultado temos a restauração da elasticidade das parede vaginal.







# Rejuvenescimento Vaginal Interno



*Courtesy of Prof. N.Zerbinati & Prof. S.Salvatore University of Insubria, Varese - Italy*



# Rejuvenescimiento Vaginal Interno



*Courtesy of Prof. A. Gaspar University of Mendoza, Argentina*



# Rejuvenescimiento Vaginal Interno



*Courtesy of Prof. A. Gaspar University of Mendoza, Argentina*

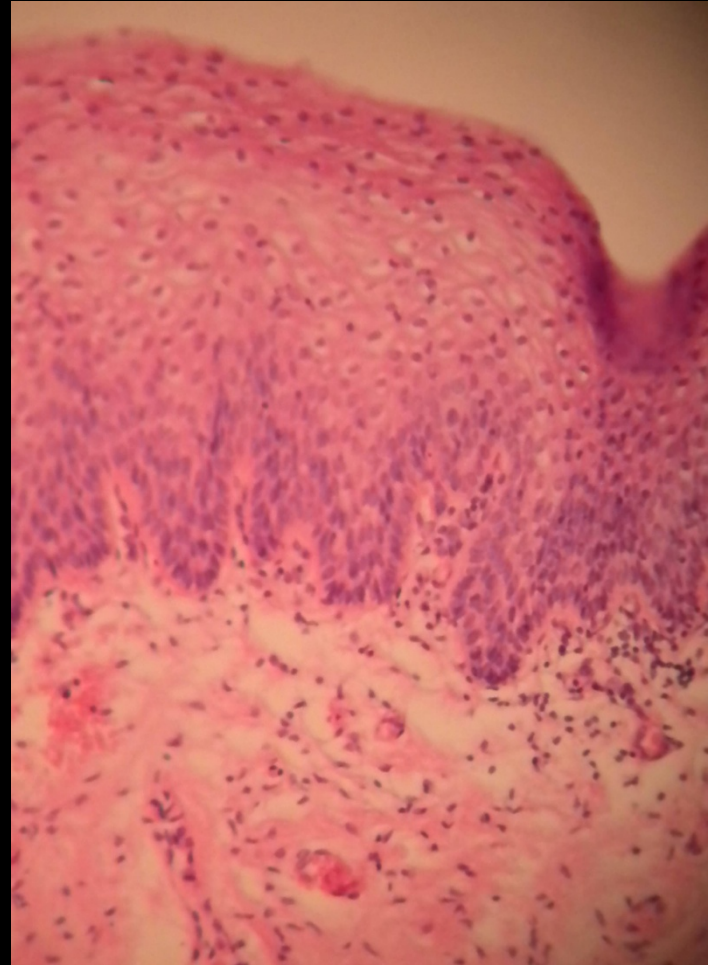
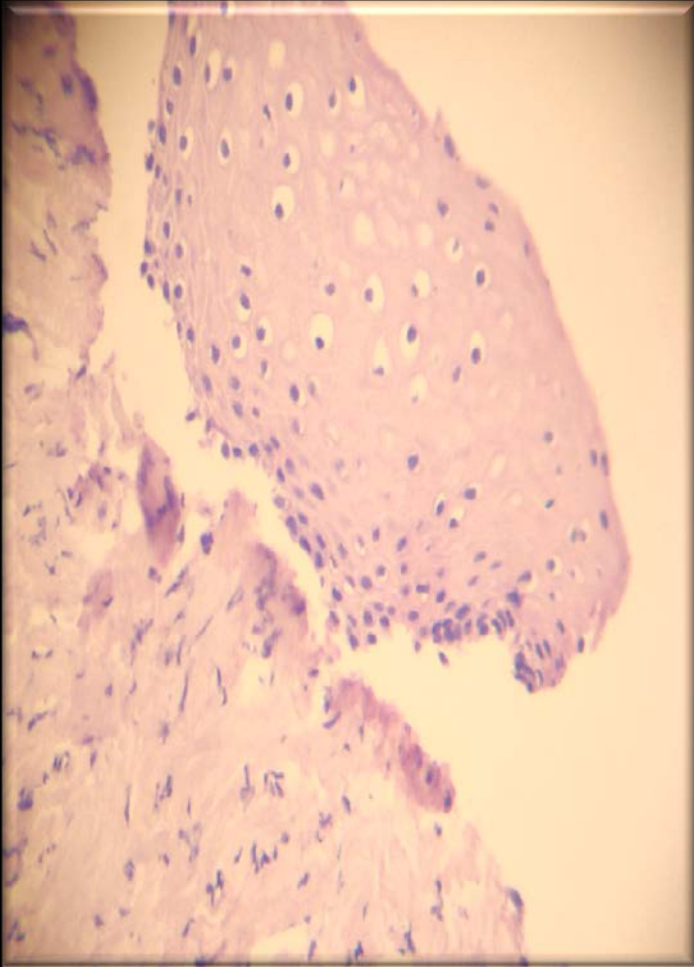
Laser CO<sub>2</sub>

Rejuvenescimento

Vaginal  
Interno



# Rejuvenescimiento Vaginal Interno



*Courtesy of Prof. A. Gaspar University of Mendoza, Argentina*



# V<sup>2</sup>LR – Main Applications



Antes



Depois



José Antonio  
Zelaquett  
Cirurgia e Tratamento  
Íntimo Feminino

# Laser CO<sub>2</sub> Fracionado em Cicatrizes



José Antonio  
Zelaquett  
Cirurgia e Tratamento  
Íntimo Feminino



Laser CO<sub>2</sub>

# Tratamento IUE



Laser CO2

# Ninfoplastia





# Laser CO2 Fracionado

## Prolapso genital



*Cortesia Dra. Fernanda Giorelli*



## PROTOCOLO CLÍNICOS GINECOLOGIA

Procedimentos	Estado	Potência (W)	Pulso	Dwell Tme (Efeito Térmico) µs	Spacing (Espaçamento) µm	Probe	Nível Stack
Atrofia Vulvo Vaginal	Pós Menopausa	40	DP	1000	1000	360	1
Atrofia Vulvo Vaginal	Menopausa	40	DP	1000	1000	360	2
Atrofia Vulvo Vaginal	Pré Menopausa	40	SP	500	500	360	3
Incontinência Urinária	Pré Menopausa	45	DP	1000	800	360	3
Incontinência Urinária com GSM		30	DP	1000	1000	360	2
Flacidez Vaginal		45	DP	1000	700	360	3
Flacidez Vulvar		20	DP	1000	700	Vulvar	2
Liquen Escleroso		20	DP	1000	1000	Vulvar	2
Cicatriz de Episiotomia		20	DP	1000	1000	Vulvar	2
Clareamento		20	DP	200	500	Vulvar	1

#### 4.1 Cicatriz Queloidiana / Hipertrófica (localizado)

#### SmartStack ✓

Fototipo	Potência (Energia Emitida) w	Spacing (Espaçamento) µm	Dwell Time (Tempo de Exposição) µs	Nível Stack	Fluência Jcm <sup>2</sup> (w.µm.µs)	Energia x Dot mJ (w.µs)	Densidade % (µm)
I	30	800	1000	2	4,54	60	7,3
II	30	800	700	2	3,18	42	7,3
III	30	800	500	2	2,27	30	7,3
IV	25	800	500	2	1,89	25	7,3
Asiática Clara	30	700	400	2	2,18	24	8,7
Asiática Escura	25	700	400	2	1,81	20	8,7

# Fototipos de pele

	<b>Cor da pele</b>	<b>Reação à 1ª exposição do verão</b>
<b>I</b>	<b>Branca</b>	<b>Sempre queima, nunca bronzeia</b>
<b>II</b>	<b>Branca</b>	<b>Em geral queima; bronzeia c/dificuldade</b>
<b>III</b>	<b>Branca</b>	<b>Queima pouco; bronzeia moderadamente</b>
<b>IV</b>	<b>Cast. claro</b>	<b>Raramente queima; bronzeia c/facilidade</b>
<b>V</b>	<b>Cast. escuro</b>	<b>Queima mais raramente; bronzeia + fácil</b>
<b>VI</b>	<b>Negro</b>	<b>Não queima; bronzeia ++ fácil</b>

1     **VAGINAL COLLAGEN REMODELLING AFTER FRACTIONAL CARBON DIOXIDE**  
2                                   **LASER SURGERY**

3  
4             Stefano SALVATORE <sup>a</sup>, MD (§); Gabriele SIESTO <sup>b</sup>, MD; Maurizio SERATI <sup>a</sup>, MD;  
5             Nicola ZERBINATI <sup>c</sup>, MD; Maurizio GRECO <sup>d</sup>, MD; Alberto CALLIGARO <sup>e</sup>, PhD

27    **ABSTRACT**

28    **Objective:** To assess collagen modifications after irradiation of CO2 laser at the level of vaginal  
29    mucosa

30    **Background:** The process of becoming older is genetically determined and environmentally  
31    modulated. The vaginal ageing alone can contribute to the loss of the vaginal trophism, tone,  
32    support and function with the development of lower urinary tract symptoms and pelvic floor  
33    dysfunction. Connective tissues and collagen constituents and architecture play an important role in  
34    this ageing process. With age, in fact, collagen fibrils loose their reticular spatial disposition and,  
35    the Type I/III ratio is altered compared to premenopausal state.

36    **Methods:** a pilot study was designed as a prospective cohort trial. Consecutive women addressed to  
37    POP reconstructive procedure were enrolled. After fascial plications the redundant vaginal edges  
38    were irradiated with a CO2 laser (SmartXide<sup>2</sup>, DEKA Laser, Florence, Italy) through a vaginal



51 **Results:** During the study period 15 women were enrolled and 30 vaginal specimens were finally  
52 retrieved. On this basis the 5 different irradiation protocols were tested six times each with different  
53 fixation modes to confirm histological findings. Treatment protocols have been compared according  
54 to the histological findings achieved, particularly in terms of maximum depth and connective  
55 changes achieved. All the procedures were uneventful for patients.

56 **Conclusions:** This pilot study showed how CO2 dot laser can produce a remodeling of the vaginal  
57 connective tissue without causing damage to the surrounding tissue. Obviously other tests,  
58 including experiments on animal models, are needed to establish the long-term outcomes before  
59 starting any other experience on humans. In agreement with the ACOG recommendations this step  
60 will be absolutely mandatory to prevent that cosmetic vaginal procedures could turn into real  
61 disasters. We feel that this study may actually represent a first step in an almost unexplored field.

62 **References:** (1) ACOG Committed Opinion Number 378; September 2007. Vaginal “rejuvenation”  
63 and cosmetic vaginal procedures.

## Randomized, double-blind, placebo-controlled clinical trial for evaluating the efficacy of fractional CO<sub>2</sub> laser compared with topical estriol in the treatment of vaginal atrophy in postmenopausal women

Vera L. Cruz, MD,<sup>1</sup> Marcelo L. Steiner, MD, PhD,<sup>2</sup> Luciano M. Pompei, MD, PhD,<sup>2</sup>  
Rodolfo Strufaldi, MD, PhD,<sup>2</sup> Fernando L. Afonso Fonseca, PhD,<sup>3</sup> Lucila H. Simardi Santiago, MD, PhD,<sup>4</sup>  
Tali Wajsfeld, MD,<sup>1</sup> and Cesar E. Fernandes, MD, PhD<sup>1,2</sup>

### Abstract

**Objective:** The aim of the study was to evaluate efficacy of fractional CO<sub>2</sub> vaginal laser treatment (Laser, L) and compare it to local estrogen therapy (Estriol, E) and the combination of both treatments (Laser + Estriol, LE) in the treatment of vulvovaginal atrophy (VVA).

**Methods:** A total of 45 postmenopausal women meeting inclusion criteria were randomized in L, E, or LE groups. Assessments at baseline, 8 and 20 weeks, were conducted using Vaginal Health Index (VHI), Visual Analog Scale for VVA symptoms (dyspareunia, dryness, and burning), Female Sexual Function Index, and maturation value (MV) of Meisels.

**Results:** Forty-five women were included and 3 women were lost to follow-up. VHI average score was significantly higher at weeks 8 and 20 in all study arms. At week 20, the LE arm also showed incremental improvement of VHI score ( $P = 0.01$ ). L and LE groups showed a significant improvement of dyspareunia, burning, and dryness, and the E arm only of dryness ( $P < 0.001$ ). LE group presented significant improvement of total Female Sex Function Index (FSFI) score ( $P = 0.02$ ) and individual domains of pain, desire, and lubrication. In contrast, the L group showed significant worsening of pain domain in FSFI ( $P = 0.04$ ), but FSFI total scores were comparable in all treatment arms at week 20.

**Conclusions:** CO<sub>2</sub> vaginal laser alone or in combination with topical estriol is a good treatment option for VVA symptoms. Sexual-related pain with vaginal laser treatment might be of concern.

**Key Words:** CO<sub>2</sub> laser – Dyspareunia – Estriol – Female urogenital disease – Postmenopause – Vulvovaginal atrophy.

Vulvovaginal atrophy (VVA) is a common disorder among postmenopausal women as a result of declining estrogen levels with menopause. It affects up to 50% of postmenopausal women, causing great impact in both quality of life and sexual function.<sup>1-5</sup>

Postmenopausal estrogen deficiency promotes morphological and secretory changes in the vulva and vagina. Reduced vascularization and blood flow leading to altered lubrication,

loss of tissue elasticity, thinning of the vaginal epithelium, and tissue friability are some of the local changes that contribute to sexual-related symptoms.<sup>6</sup> A substantial decline in glycogen production due to thinning of the vaginal epithelium promotes changes in the vaginal pH and flora with decreased lactobacilli (which normally dominates the vaginal flora), high bacterial diversity, and increase susceptibility to inflammation.<sup>7</sup>

Signs and symptoms of VVA including dyspareunia, dryness, mucosal irritation, itching, and dysuria tend to worsen within 4 to 5 years after menopause.<sup>8</sup> An online survey investigated 56,000 women's perception of VVA symptoms, and found dryness (55% of participants), dyspareunia (44%), and irritation (37%) to be the most commonly reported symptoms.<sup>6,9,10</sup>

Topical hormonal treatment is considered the gold standard therapy for postmenopausal vaginal symptoms, promoting restoration of epithelial integrity, vaginal flora, and improving VVA symptoms.<sup>5</sup> Low-dose vaginal estrogen has also been shown to be superior to systemic therapy for vulvovaginal symptomatic improvement.<sup>11,12</sup> This treatment is, however, associated with poor compliance due to multiple and inconvenient self-applications and increased vaginal discharge. The

Received March 1, 2017; revised and accepted June 19, 2017.

From the <sup>1</sup>ABC School of Medicine, São Bernardo do Campo, São Paulo, Brazil; <sup>2</sup>Division of Endocrine Gynecology, Menopause and Family Planning, Department of Obstetrics and Gynecology, ABC School of Medicine, São Bernardo do Campo, São Paulo, Brazil; <sup>3</sup>Clinical Analysis Laboratory, ABC School of Medicine, São Bernardo do Campo, São Paulo, Brazil; and <sup>4</sup>Department of Pathology, ABC School of Medicine, São Bernardo do Campo, São Paulo, Brazil.

Clinical trial registration: US National Institutes of Health (ClinicalTrials.gov) registration number: 39495014.0.0000.0082.

Funding/support: None.

Financial disclosure/conflicts of interest: None reported.

Address correspondence to: Marcelo L. Steiner, MD, PhD, Division of Endocrine Gynecology, Menopause and Family Planning, ABC School of Medicine, Av. Principe de Gales 821, Santo André, São Bernardo do Campo, SP 09060-650, Brazil. E-mail: masteiner29@gmail.com



## Use of a novel fractional CO<sub>2</sub> laser for the treatment of genitourinary syndrome of menopause: 1-year outcomes

Eric R. Sokol, MD,<sup>1</sup> and Mickey M. Karram, MD<sup>2</sup>

### Abstract

**Objectives:** To assess safety and efficacy of a fractional CO<sub>2</sub> laser therapy for the treatment of genitourinary syndrome of menopause (GSM) with follow-up to 1 year posttreatment.

**Methods:** Women presenting with GSM and meeting inclusion criterion were enrolled. Visual Analog Scales were used to grade vaginal pain, burning, itching, dryness, dyspareunia, and dysuria. Dilators were used to rate vaginal elasticity at baseline and at each follow-up visit. Before each treatment and at follow-up, Vaginal Health Index scoring and Female Sexual Function Index questionnaires were completed. Women received three vaginal laser treatments spaced 6 weeks apart. Participant satisfaction was measured on 5-point Likert scales (1 = very dissatisfied, 5 = very satisfied).

**Results:** Of 30 women (mean age 58.6 ± 8.8 years), three were lost to follow-up at 3 months and six at 1 year. None were discontinued or withdrew due to an adverse event. Average improvement in Visual Analog Scale scores for all symptom categories was statistically significant at 3 months and remained so through 1 year, except dysuria. Differences between data at 3 months and 1 year were not statistically significant, indicating persistence of positive outcomes. Average overall improvement in pain was 1.9 (±3.4), burning 1.9 (±3.1), itching 1.4 (±1.9), dryness 5.9 (±2.8), dyspareunia 4.9 (±3.3), and dysuria 0.9 (±3.1). Improvement in average Vaginal Health Index and Female Sexual Function Index scores was also statistically significant ( $P < 0.0001$ ). Of 19 women undergoing dilator examination at 1 year, 18 (94.8%) were comfortable with the same or larger dilator size. Twenty-two of 24 women (92%) were satisfied or extremely satisfied with the treatment at 1 year.

**Conclusions:** Based on study data up to 1 year, the fractional CO<sub>2</sub> laser may be an effective and safe treatment for women suffering from symptoms of GSM, although additional studies with larger populations and placebo control is needed to confirm these results.

**Key Words:** Dyspareunia – Fractional CO<sub>2</sub> laser – Genitourinary syndrome of menopause – Menopause – Vaginal dryness – Vulvovaginal atrophy.

Genitourinary syndrome of menopause (GSM), also known as vulvovaginal atrophy (VVA), is a suite of conditions resulting from atrophy of vulvovaginal tissue, including the vaginal mucosa, due to the natural decrease in estrogen levels after the onset of menopause.<sup>1</sup> Reductions in diameter and elasticity of the vaginal canal and introitus, quality of vaginal tissue, and lubrication are common, with numerous secondary effects such as dryness and irritation, dyspareunia, sexual dysfunction, and dysuria.<sup>2,3</sup> Many women endure the reduced quality of life (QoL)

associated with GSM,<sup>4,6</sup> with some studies suggesting that up to 50% of postmenopausal women suffer from menopausal vulvovaginal symptoms.<sup>7</sup>

Although safe and effective treatments such as topical lubrication, ospemifene,<sup>8,9</sup> and vaginal hormone therapy (HT)<sup>10</sup> exist for GSM, energy-based treatment devices using methods similar to those employed to rejuvenate skin of the face and body are emerging as viable alternatives.<sup>11-15</sup> Research has demonstrated the viability of the use of fractional CO<sub>2</sub> lasers and their potential to successfully treat GSM.<sup>16-20</sup>

A recent US pilot study investigated the use of a fractional CO<sub>2</sub> laser for the treatment of symptoms of GSM, with reporting of data through follow-up at 3 months after the final treatment session.<sup>21</sup> Treatment is straightforward; after insertion into the vaginal canal, a burst of laser pulses (fractional treatment) is transmitted through the tubular vaginal probe and deflected at 90° in four directions (the 12, 3, 6, and 9 o'clock positions) toward vaginal wall tissue, then rotated clockwise 45° (to the 1:30 position) for a second burst of pulses. Guided by markings on the probe, the user withdraws the probe 4 mm and repeats the procedure until reaching the

Received September 26, 2016; revised and accepted December 13, 2016.  
From the <sup>1</sup>Urogynecology and Pelvic Reconstructive Surgery, Stanford University, Stanford, CA; and <sup>2</sup>Advanced Urogynecology and Pelvic Surgery, The Christ Hospital, Cincinnati, OH.

Funding/support: This trial was supported by DEKA M.E.L.A. Srl using the investigators' protocol, with oversight by the Stanford University IRB, and also The Christ Hospital IRB; women did not pay for treatment. Financial disclosure/conflicts of interest: Dr Karram is a paid consultant of Cynosure, Inc. Dr Sokol has a relationship with American Medical Systems and has stock options from Pelavan.

Address correspondence to: Eric R. Sokol, MD, Stanford University School of Medicine, 300 Pasteur Drive, Room G332, Stanford, CA 94305. E-mail: esokol@stanford.edu





# Obrigado!

[www.esteticagenitalfeminina.com.br](http://www.esteticagenitalfeminina.com.br)



jazelaquett@gmail.com



Zelaquett Saúde Íntima Feminina



@dr\_jose\_antonio\_zelaquett

Central de Atendimento: 21 3247-2602

Celular: 21 99647-4536



José Antonio  
Zelaquett

Cirurgia e Tratamento  
Íntimo Feminino