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ORIGINAL ARTICLE

Microablative fractional CO₂ laser improves dyspareunia related to vulvovaginal atrophy: a pilot study

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Objective: This pilot study aimed to assess the efficacy in treating sexually active women who had dyspareunia related to vulvovaginal atrophy (VVA).
Materials and methods: The intensity of VVA symptoms was recorded for each patient using the Short Form 12 (SF-12) and the female sexual function index (FSFI). The patients were administered the Short Form 12 (SF-12) and the female sexual function index (FSFI) before and after the treatment. The intensity of dyspareunia significantly improved after the treatment. The intensity of dyspareunia significantly improved after the treatment. The intensity of dyspareunia significantly improved after the treatment.

Keywords: Dyspareunia, Fractional CO₂ laser, Menopause, Vaginal atrophy

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INTRODUCTION

Vulvovaginal atrophy (VVA) is a physiological process occurring from the drop of estrogen that occurs in women in menopause (1). The vagina becomes narrower and frequently the introitus can constrict. VVA is associated with a progressive loss of elasticity and may be associated with vaginal itching, dryness, and pain during sexual intercourse. Sexual dysfunctions and absence of sexual desire are frequent conditions in patients with VVA syndrome. The treatment of VVA is aimed at restoring the vaginal environment and therefore, during sexual intercourse, the typical symptoms are decreased and delayed (2). The typical symptoms are decreased and delayed (2). The typical symptoms are decreased and delayed (2).

Maurizio Filippini - Ospedale di Stato

ORIGINAL ARTICLE

Microscopic and ultrastructural modifications of postmenopausal atrophic vaginal mucosa after fractional carbon dioxide laser treatment

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Abstract Vaginal atrophy occurring during menopause is closely related to the dramatic decrease in ovarian estrogen changes occur in the structure of the vaginal mucosa, with consequent impairment of many physiological functions. In this study, carried out on biopsies of vaginal mucosa samples from postmenopausal, nonsteroidized women, we present microscopic and ultrastructural modifications of vaginal mucosa following fractional carbon dioxide (CO₂) laser treatment. We observed the restoration of the vaginal thick squamous stratified epithelium with a significant storage of glycogen in the epithelial cells and a high degree of glycogen-rich shedding cells at the epithelial surface. Moreover, in the connective tissue constituting the lamina propria, active fibroblasts synthesized new components of the extracellular matrix including collagen and ground substance.

Keywords: Vaginal atrophy · Regenerative medicine · Fractional carbon dioxide laser

Introduction

Vaginal mucosa atrophy is one of the most characteristic consequences accompanying menopause. It is due to menopause and to the depletion of ovarian estrogen. The related hormonal decline leads to the constitutive burning of the vaginal mucosa.

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Histological study on the effects of microablative fractional CO₂ laser on atrophic vaginal tissue: an ex vivo study

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Abstract

Objective: Microablative fractional CO₂ laser has been proven to determine tissue remodeling with neoformation of collagen and elastic fibers on atrophic skin. The aim of our study is to evaluate the effects of microablative fractional CO₂ laser on postmenopausal women with vulvovaginal atrophy using an ex vivo model.

Methods: This is a prospective ex vivo cohort trial. Consecutive postmenopausal women with vulvovaginal atrophy managed with pelvic organ prolapse surgical operation were enrolled. After fascial plication, the redundant vaginal end on one side was treated with CO₂ laser (SmartXide2; DEKA Laser, Florence, Italy). Five different CO₂ laser setups protocols were tested. The contralateral part of the vaginal wall was always used as control. Excessive vaginal tissue was trimmed and sent for histological evaluation to compare treated and nontreated tissues. Microscopic and ultrastructural aspects of the collagenic and elastic components of the matrix were studied, and a specific image analysis with computerized morphometry was performed. We also considered the fine cytological aspects of connective tissue proper cells, particularly fibroblasts.

Results: During the study period, five women were enrolled, and 10 vaginal specimens were finally retrieved. Four different settings of CO₂ laser were compared. Protocols were tested twice each to confirm histological findings. Treatment protocols were compared according to histological findings, particularly in maximal depth and connective changes achieved. All procedures were uneventful for participants.

Conclusions: This study shows that microablative fractional CO₂ laser can produce a remodeling of vaginal

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Vulvo-vaginal atrophy: A new treatment modality using thermo-ablative fractional CO₂ laser

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ABSTRACT

Objective: To evaluate the efficacy and feasibility of thermo-ablative fractional CO₂ laser for the treatment of vulvo-vaginal atrophy (VVA) in post-menopausal women.
Methods: From April 2013 to December 2013, post-menopausal patients who complained of one or more of symptoms related to VVA (dryness, itching, burning, dyspareunia) were enrolled in the study. All patients underwent a pre-treatment (T1) vaginal status of the women was evaluated using the Vaginal Health Index (VHI), and subjective intensity of VVA symptoms was evaluated using the Visual Analogue Scale (VAS). At T1, treatment satisfaction was evaluated using a 5-point Likert scale. Results: During the study period, a total of 44 patients were enrolled. Data indicated a significant improvement in VVA symptoms (vaginal dryness, burning, itching and dyspareunia). Moreover, VHI scores were significantly higher at T1 (p < 0.0001). Overall, 91.7% of patients were satisfied or very satisfied with the procedure and experienced considerable improvement in quality of life (QoL). No adverse events due to fractional CO₂ laser treatment occurred.
Conclusion: Thermo-ablative fractional CO₂ laser could be a safe, effective and feasible option for the treatment of VVA symptoms in post-menopausal women.

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1. Introduction

Before the climacteric period, the vagina is composed of thick layers of healthy cells, and estrogen encourages the growth and development of these cells; therefore, the vaginal epithelium remains multi-layered, and vaginal walls are supple and elastic [1,2]. The progressive reduction in circulating estrogen, which occurs following the cessation of ovarian function during menopause, induces various metabolic and tissue changes, which are most prominent in the genital tract due to its particular sensitivity to variations in sex hormone levels [2,3]. Vulvo-vaginal atrophy (VVA) is a progressive, chronic condition that manifests as atrophy of the vulvo-vaginal mucous membranes and tissues due to the menopause drop in estrogen levels [4,5]. Typical symptoms of VVA, which reflect these vulvo-vaginal morpho-functional changes, include vaginal dryness, itching, burning, irritation, dysuria and dyspareunia [6,7]. In particular, the

vaginal walls appear thinner and less elastic with loss of rugations. The entire vaginal canal becomes narrower and shorter. The vaginal surface appears dry and friable and often bleeds after minimal trauma. The vulvar area, particularly the clitoris, becomes atrophic and more vulnerable [8]. Vaginal atrophy can worsen over the years and negatively influence quality of life (QoL) [9]. Approximately 50% of postmenopausal women experience symptoms of VVA [10,11], which can range from mild (constricting) to severe (very bothersome). These symptoms may cause significant emotional distress and may result in sexual dysfunction. The burden of VVA on the individual and the population is greater than physicians may realize, especially due to socio-cultural barriers and a lack of access to health care in certain countries [12]. Because of the progressive aging of the general population, women may complain of vaginal aging symptoms (itching, burning, reduced lubrication, superficial and/or severe dyspareunia related to vulvovaginal atrophy) for more than one third of their lives [13]. Several therapeutic options are available to alleviate VVA symptoms, including non-hormonal products for mild cases, vaginal hormone therapy for persistent symptoms, and systemic hormone therapy for persistent symptoms, and systemic hormone

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DUE ARTICOLI SU RIVISTA AD ELEVATO IMPACT FACTOR



CLIMACTERIC 2014;17:1-7

A 12-week treatment with fractional CO₂ laser for vulvovaginal atrophy: a pilot study

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Key words: FRACTIONAL CO₂ LASER, MENOPAUSE, VAGINAL DRYNESS, DYSpareunia, VULVOVAGINAL ATROPHY

ABSTRACT

Objective This pilot study aimed to assess the efficacy and feasibility of fractional CO₂ laser in the treatment of vulvovaginal atrophy (VVA) in postmenopausal women.

Methods VVA symptoms were assessed before and after three applications of laser over 12 weeks in 50 women (age 59.6 ± 5.8 years) dissatisfied with previous local estrogen therapies. Subjective (visual analog scale) and objective (Vaginal Health Index Score, VHIS) measures were used during the study period to assess VVA. Quality of life was measured by using the SF-12. A subjective scale to evaluate the degree of pain related to the laser application and the degree of difficulty to perform the laser procedure was used.

Results Fractional CO₂ laser treatment was effective to improve VVA symptoms (vaginal dryness, vaginal burning, vaginal itching, dyspareunia, dysuria; $p < 0.001$) at 12-week follow-up, as well as the VHIS (13.1 ± 2.5 at baseline vs. 23.1 ± 1.9; $p < 0.001$). Both physical and mental scores of quality of life were significantly improved in comparison with baseline ($p < 0.001$). Satisfaction with the laser procedure was reported by 42 women (84%) and a minimal discomfort was experienced at the first laser application, mainly because of the insertion and the movements of the probe. Finally, the technique was very easy to perform in all women starting from the second application at week 4 and no adverse events were recorded during the study period.

Conclusions A 12-week treatment with the fractional CO₂ laser was feasible and induced a significant improvement of VVA symptoms by ameliorating vaginal health in postmenopausal women. Further controlled studies should be performed to confirm the present data and to assess the long-term effects of the laser procedure on vaginal tissues.

INTRODUCTION

Vulvovaginal atrophy (VVA) is an involution of the mucous membranes and tissues of the vulva and vagina caused by the drop of estrogen that occurs in women during menopause¹⁻³. In particular, the vagina becomes narrower and shorter and the introitus can constrict⁴. These modifications are commonly associated with the absence of sexual activity and/or with female sexual dysfunction^{5,6}. Other typical changes are represented by the progressive loss of elasticity and of rugal folds of the vaginal lining which becomes thin-

ner and may show petechiae. Sebaceous glands reduce the production of secretions and therefore, during sexual activity, lubrication is decreased and delayed^{4,5,7}. Patients with VVA complain of vaginal burning and discharges, itching, dryness, irritation, dysuria and dyspareunia⁸⁻¹¹. Moreover, the weakened tissues are more prone to develop traumas, tears, bleeding and infections^{4,7}. Recent reviews^{12,13} on the prevalence of VVA symptoms indicate that about 50% of postmenopausal women report at least one symptom associated with the condition. In spite of the relevance of VVA for quality of life, sexual function and relationships at

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Sexual function after fractional microablative CO₂ laser in women with vulvovaginal atrophy

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Key words: FRACTIONAL CO₂ LASER, MENOPAUSE, VAGINAL DRYNESS, DYSpareunia, SEXUAL FUNCTION, SEXUAL INTERCOURSE, VULVOVAGINAL ATROPHY

ABSTRACT

Objective To investigate the effects of fractional microablative CO₂ laser on sexual function and overall satisfaction with sexual life in postmenopausal women with vulvovaginal atrophy (VVA).

Method This prospective study included 77 postmenopausal women (mean age 60.6 ± 6.2 years) treated for VVA symptoms with the fractional microablative CO₂ laser system (SmartXide² V²LR, Monalisa Touch, DEKA, Florence, Italy). Sexual function and quality of life were evaluated with the Female Sexual Function Index (FSFI) and the Short Form 12 (SF-12), respectively, both at baseline and at 12-week follow-up. A 10-mm visual analog scale was used to measure the overall satisfaction with sexual life and the intensity of VVA symptoms (vaginal burning, vaginal itching, vaginal dryness, dyspareunia and dysuria) before and after the study period.

Results We observed a significant improvement in the total score and the scores in each specific domain of the FSFI at 12-week follow-up compared to baseline ($p < 0.001$). After concluding the laser treatment, the overall satisfaction with sexual life significantly improved ($p < 0.001$). Seventeen (85%) out of 20 (26%) women, not sexually active because of VVA severity at baseline, regained a normal sexual life at the 12-week follow-up. Finally, we also found a significant improvement in each VVA symptom ($p < 0.001$) and in quality-of-life evaluation, both for the scores in the physical ($p = 0.013$) and mental ($p = 0.002$) domains.

Conclusions Fractional microablative CO₂ laser treatment is associated with a significant improvement of sexual function and satisfaction with sexual life in postmenopausal women with VVA symptoms.

INTRODUCTION

Vulvovaginal atrophy (VVA) defines a progressive age- and estrogen-dependent condition that may lead to the occurrence of symptoms, such as dryness, burning, itching, irritation, discharge and dysuria¹⁻³. VVA symptoms can affect up to 50% of postmenopausal women¹⁻⁴ with a significant impact on quality of life and sexual function^{5,10}. The drop of estrogen after menopause determines histological involution both in

the vulva and in the vagina^{11,12}, such as thinning, reduced vascularization and elasticity, decreased engorgement and lubrication. All these changes are likely to produce an altered response to sexual stimuli and to dyspareunia¹³. VVA is therefore generally associated with female sexual dysfunction (FSD)¹⁴; pain during sexual intercourse, in fact, often co-exists with a decline in women's desire, arousal, orgasm and frequency of sexual activity throughout the menopausal transition and beyond¹⁵⁻¹⁷.

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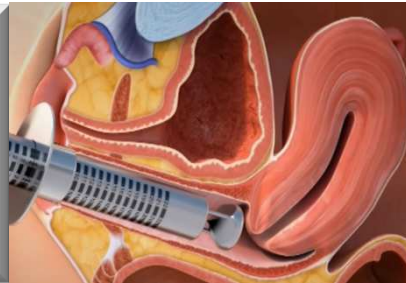
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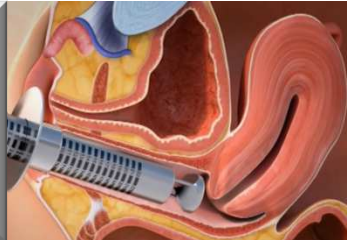
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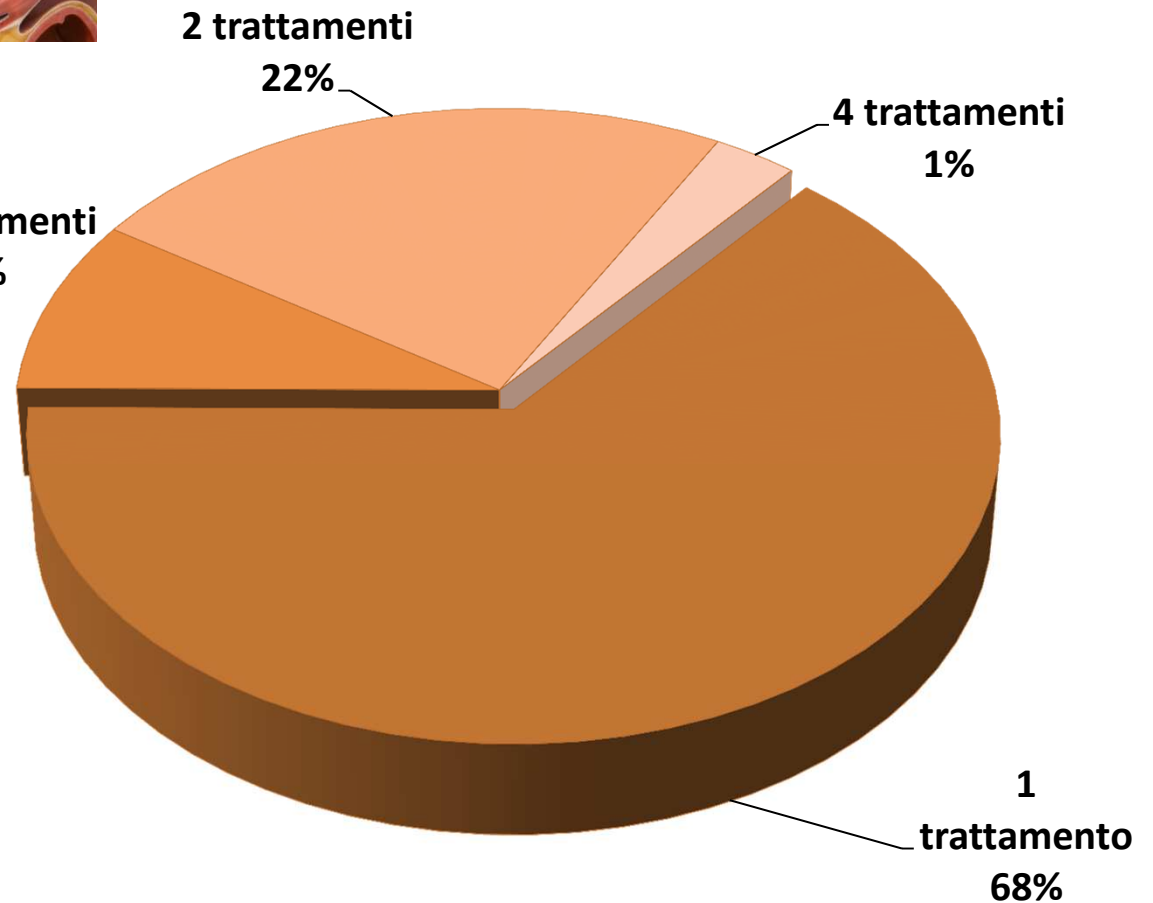
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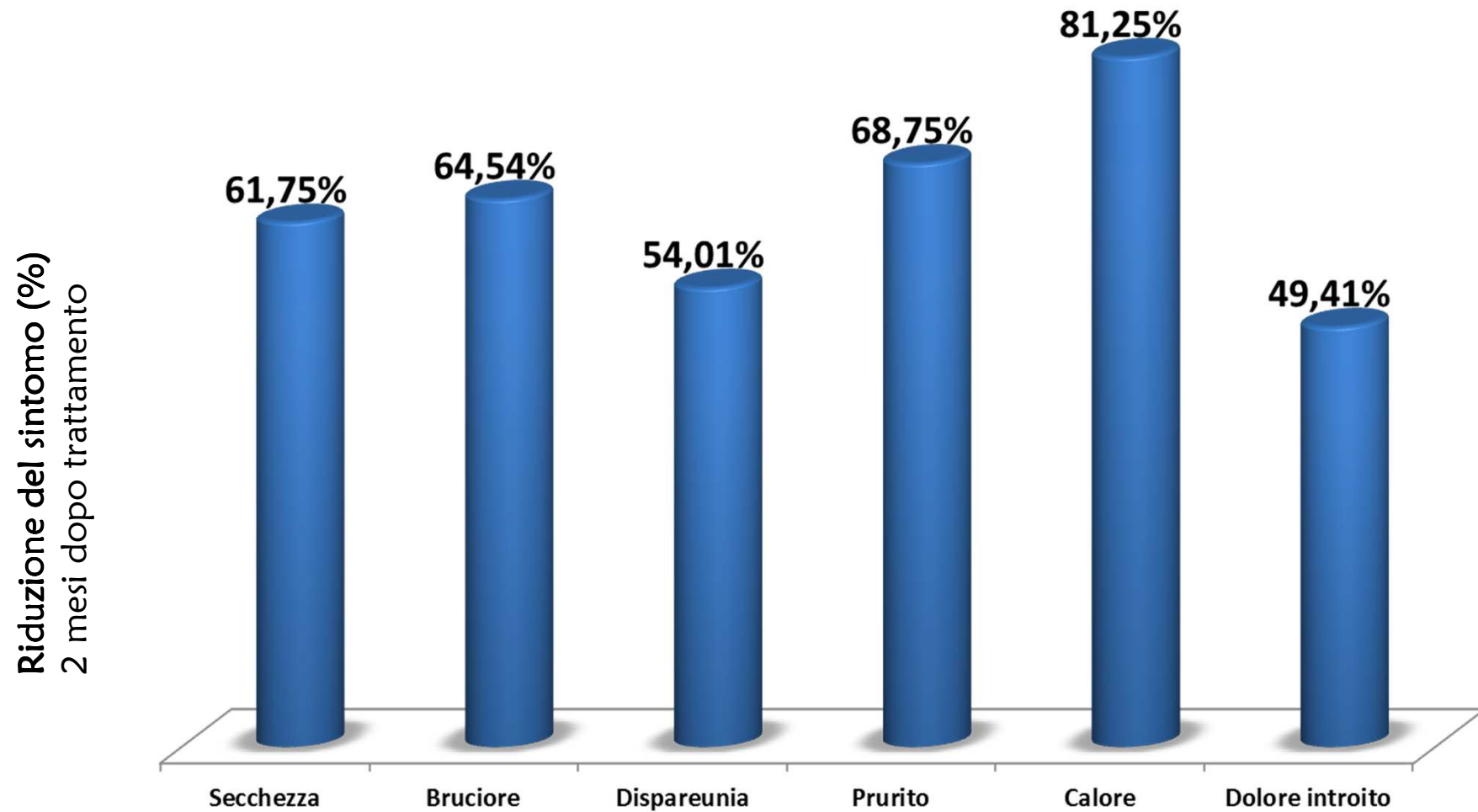
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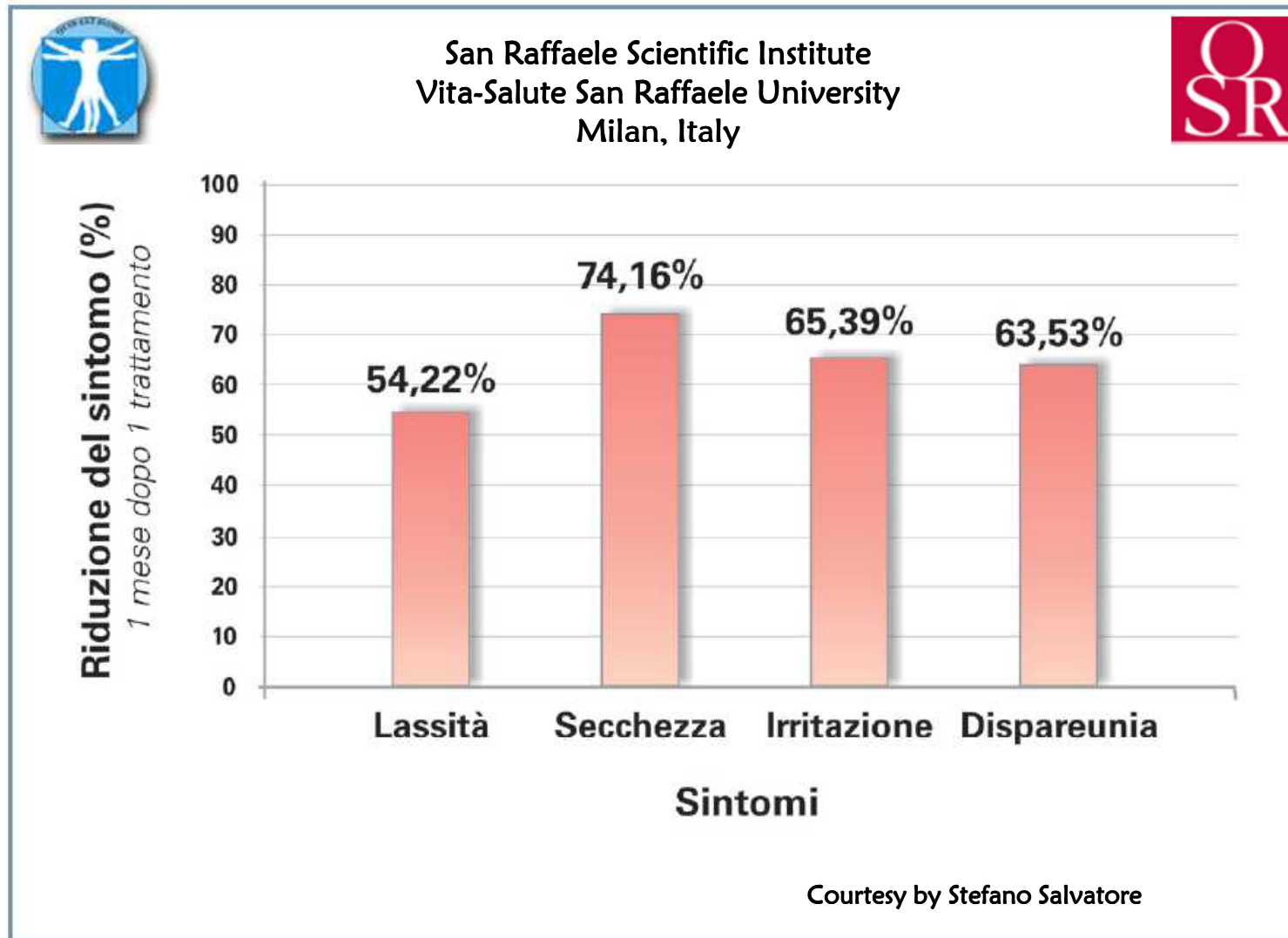
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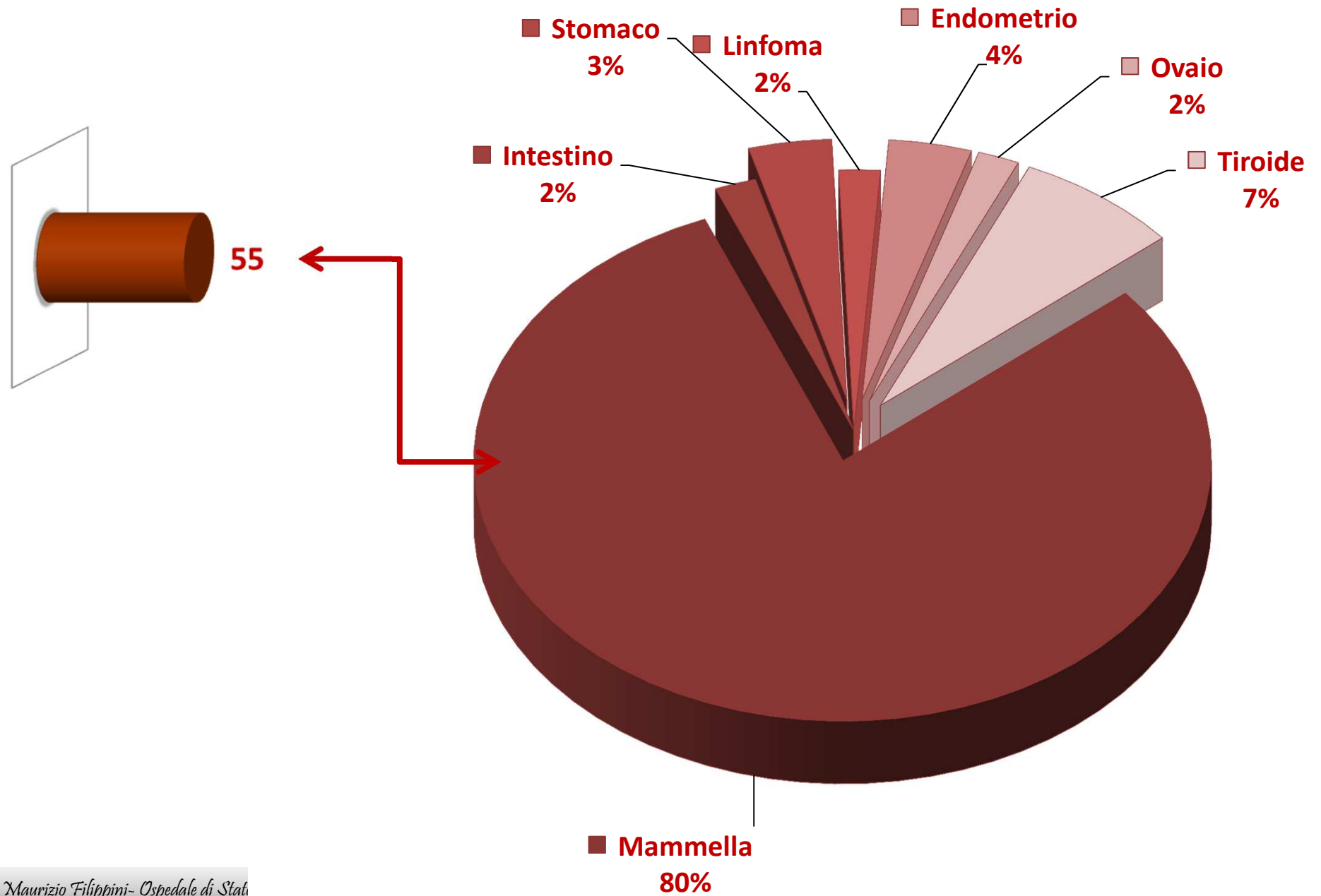




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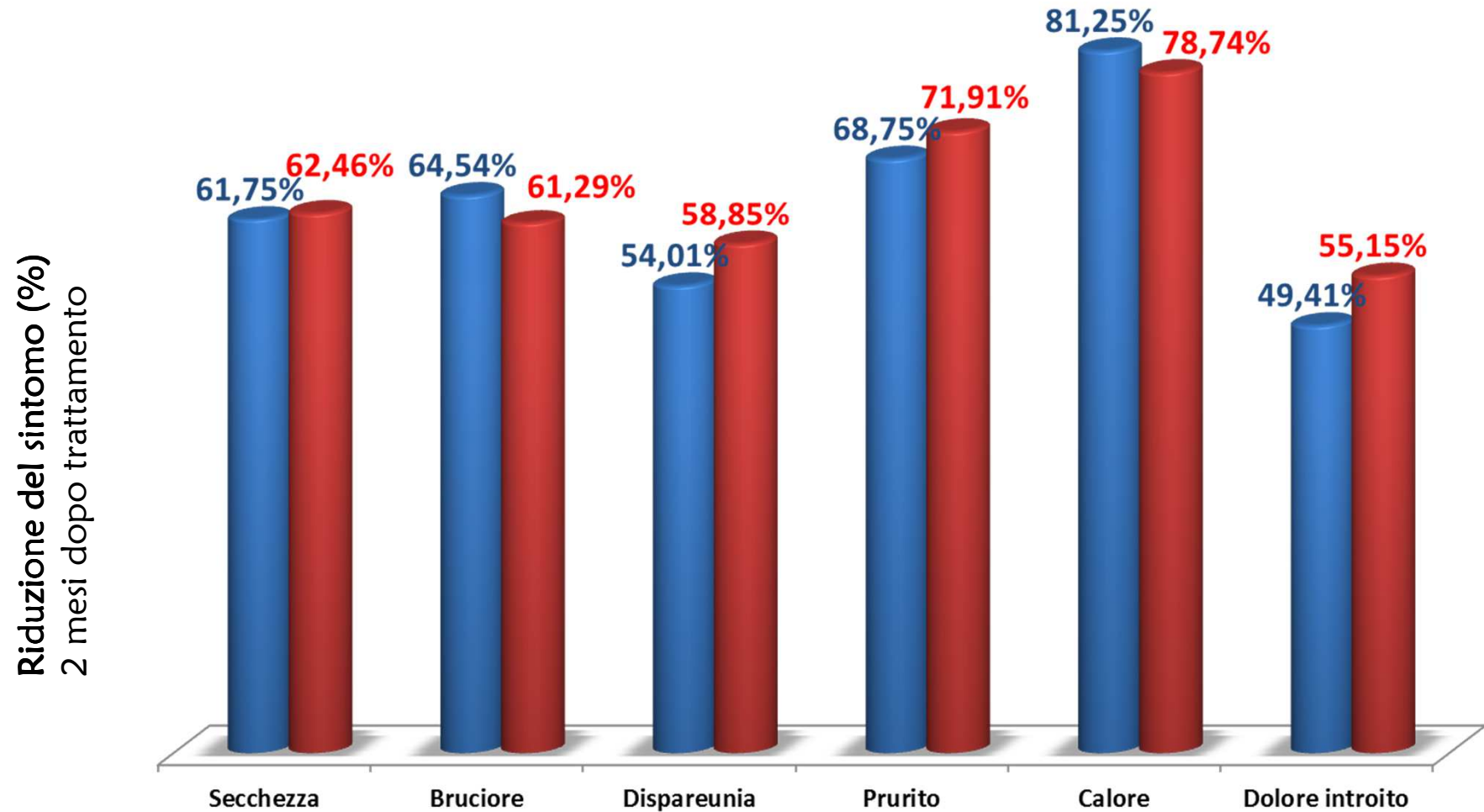
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Ospedale di Stato della Repubblica di San Marino





Use of the *MonnaLisa Touch*® Treatment on Cancer Patients

Maurizio Filippini, M.D. - Miriam Farinelli, M.D.

Gynaecological Endoscopy Functional Unit of the Republic of San Marino State Hospital

Objectives: This pilot study aimed to assess the efficacy in treating atrophic vaginitis symptoms in those women who cannot receive local or systemic hormone-based therapies, since they have had a hormone-sensitive tumour.

Materials and methods: 46 treatments with the *MonnaLisa Touch*® were performed from 01/23/2013 to 10/31/2014 at the Republic of San Marino State Hospital involved patients with neoplasias. The intensity of atrophic vaginitis symptoms was recorded for each patient.

Results: About two months after the first treatment the percent reduction of the individual symptoms was very significant, not unlike that obtained from patients who received the treatment but without neoplastic pathologies. Furthermore, after the treatment, a significant improvement in quality of life was shown.

Conclusions: Considering the absence of complications and especially the absence of contraindications, the *MonnaLisa Touch*® laser treatment is a valuable and irreplaceable aid for all patients who cannot and prefer not to receive hormone replacement therapy.

Key words: vaginal atrophy, oestrogen-sensitive tumour, induced menopause, laser

INTRODUCTION

Vaginal atrophy, also called atrophic vaginitis, affects many women throughout the world, occurring almost always after menopause, but also in all cases where there is a lack of oestrogen, such as after childbirth, during the breastfeeding stage when ovulation is blocked or after an oestrogen-sensitive tumour (such as in the breasts, endometrium or the ovaries) where a chemotherapeutic or surgical "castration" of the menstrual cycle occurs. In these cases the use of hormone replacement therapies, even local or at low dosage, are therefore absolutely contraindicated¹.

The symptoms related to vaginal atrophy normally begin to appear between the ages of 45 and 55. Unlike other symptoms of menopause, such as the hot flashes which often decrease over time, these usually continue and can worsen as time progresses.

This condition can cause dryness, irritation, burning or pain during sexual intercourse, affecting up to 40% of postmenopausal women^{1,2}.

Until now, treatment for this condition involved the prescribing of vaginal oestrogens in the form of tablets, ovules or creams to insert into the vaginal canal using an applicator, infiltrations with substances

that have a stimulating or revitalizing action such as natural hyaluronic acid.

Borrowing from dermatological treatment for collagen stimulation which has been done for many years using CO₂ fractional laser scanning systems, scientific research has come up with a very effective therapeutic solution to improve the symptoms of vulvo-vaginal atrophy³⁻⁶.

This new therapeutic opportunity is an excellent chance for all women who suffer from these disorders, especially women who do not want to take hormones for personal or psychological reasons, believing that they are the cause of the pathology.

The importance of this treatment is all the more reason to be considered for those women who cannot receive local or systemic hormone-based therapies, since they have had a hormone-sensitive tumour^{7,8}.

MATERIALS AND METHODS

359 treatments with the *MonnaLisa Touch*® using the CO₂ laser system SmartXide² (DEKA - Florence, Italy) were performed from 01/23/2013 to 10/31/2014 at the Republic of San Marino State Hospital; 46 of these treatments involved patients with neoplasias (36

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