



MICROABLATIVE FRACTIONAL RADIOFREQUENCY

Functional esthetic treatment of the genitourinary syndrome (GS).

Microablative Fractional Radiofrequency (MAFRF) is a therapeutic option widely used by dermatologists in the facial, physical and stretch marks rejuvenation treatment. Among other applications, it started to be use also in the genital area for improvement of vulvar esthetic; labia majora and Venus pubic region.

As pioneer in the world, the Brazilian industry had supported by Brazilian gynecologists developed a multi fractional device in micro points for application of the MAFRF in vaginal area with objective to stimulate neocolagenesis, neoelastogenesis and neoangiogenesis as GS treatment, before denominated as Vulvovaginal Atrophy (VVA).

In addition, as pioneer too has done a pilot study at the Heliópolis Hospital with objective to value the effects of the MAFRF on the GS, head driven by physician's Dr. Celso Luiz Borrelli and Dr. Marcia Farina Kamilos, whose results were published recently. (*New therapeutic option in genitourinary syndrome of menopause: pilot study using microablative fractional radiofrequency - Einstein (São Paulo). 2017 Oct-Dec;15(4):445-451.*)

The Brazilian **SOGESP Magazine** talked to Dr. Márcia Farina Kamilos, Gynecology Department Technical Supervisor and Person in charge for the Sector of LGTP (Lower Genital Tract Pathology) of the Heliópolis Hospital and Collaborator doctor of the Gynecology/LGTP of the HCFMUSP Hospital and Vice president of the Chapter of São Paulo LGTP and Colposcopy Association; and Dr. Celso Luiz Borrelli, Oncogynecologist and Collaborator doctor and Research investigator by Gynecology Department of HCFMUSP and Member of Fiscal Council of the SOGESP Association), to make use of the interview to update knowledge about this new treatment option for genital disturbance due GS and other applicantions.

How to define and diagnose VVA / GS?

Vulvovaginal Atrophy (VVA) terminology it is frequent used to show resulting symptoms to the reduction of the estrogen and other sexual frequent steroids in the climacterically syndrome involving vulvar, vaginal, urethra and bladder alteration. On the other side, the Genitourinary Syndrome (GS) term from Menopause is gaining renown since 2012. From there, the director's council of the *International Society for the Study of Women's Sexual Health* (ISSWSH) and the administration's council of the *North American Menopause Society* (NAMS) recognized the necessity of revising the VVA



terminology associated to the symptoms that occurs in the genitourinary tract in the post menopause period.

So, the **GS** is not limited to only **genitourinary symptoms** as vagina dryness and vulvar vestibule, burning, heat and vulvovaginal irritation but also can to present **sexual symptoms** as lack of lubrication, dyspareunia or discomfort leading to a damaged coital acting and **urinary symptoms** as urinal urgency, polyuria dysuria and current urinary infections. *Informa Dr. Borrelli.*

What are the GS causes?

The main and more frequent cause is the physiologic reduction of the sexual steroids that occurs on the climacterium period, explains Dr. Márcia. However, it can occurs in other hyposteriogenesis situations as surgical menopause, using named anti-estrogenic in breast cancer treatment, myoma and endometriosis as well ovarian dysfunction generated by oncological treatments using radiotherapy and chemotherapy. Also it can occurs as temporary form in the postpartum and lactation period.

What are the usual forms of treatment?

According to Dr. Márcia, the first line is the estrogenic local therapy of low doses (in Brazil, vaginal cream of Estriol or Promestriene), so the Works shows that systemic therapeutic hormonal can falls in even 30% in the improvement of the genital symptoms. In this case, factors are been considered: the improvement cannot be complete in any women using only the hormone; it needs continuous use (once or twice per week application's maintenance), not always followed by many women; and there is a contraindication situation for hormone use for who has a breast cancer historical report. Alternative treatments using vaginal hydrating also is necessary continuous use, it can have limited improvement, and lubricants has only temporary relief action results. The fractionated micro ablative therapeutic applied as vaginal as vulvar local stimulates thermal proteins shocks and neocollagenesis in consequence, neolastogenesis as improvement of the trophism of the genital tissue in the prolonged form. In very similar way to the MAFRF through the electromagnetic waves emission, it will be able to unleash the same thermal stimulation and it will be able to produce the same effects described by the action of the *LASER*, Complements Dr.Borrelli.

How Fractionated RF acts for trophism improvement?

Radiofrequency is a cutting and/or coagulation process of the biological tissue that use to alternate current of high frequency lifting up quickly the intracellular temperature to 100°C resulting in an expansion and rupture oh the cellular membrane. This phenomenon is known as a cellular vaporization. Devices that use high frequency of oscillation of 4MHz (4 million cycles per second) get the better control of the thermal side damage to the micro point of touch of the electrode with better consequent quality of the cellular vaporization and scarring. The fractionation consists in energy distribution in equidistant micro points, producing columns of thermal damage for vaporization in the



epidermis and in the superior dermis turning the micro columns tissue in degrade protein, remaining entire and vital the adjacent tissue to the micro points that provide cells able to regenerate the tissue. This thermal damage stimulates a several factors of regenerations, enzyme, thermal shocks proteins, interleukins, and transformer of growth factor and fibroblast migration that is responsible to the remodeling of the collagen, neocollagenesis and elastogenesis; occurs neovascularization, glycosaminoglycans stimulation and consequent improvement hydration of the tissue. Works with histological studies of the Fractionated RF and Fractionated Laser for skin and mucous membrane rejuvenation showed reepithelization stimulus of the epidermis, contraction and e remodeling of the collagen in depth dermal area. Using RF, besides the ablative effect below this, a non-ablative depth thermal effect occurs that stimulates neocollagenesis too.

Taken use of almost 30 years developing RF technology in surgical area, the Brazilian company developed an ingenious system of MAFRF, named FRAXX, that contains a small and ergonomic vaginal tip that is composed by 64 micro points, measuring 200 μ diameter x 800 μ depth each dot, equidistant 1mm between and distributed in 1cm square, that touch the vaginal walls. Besides, the Fraxx System disposes a mighty software that controls several parts of the system as the “DDP” *Dual Deep Power*, the “TIC” *Tissue Impedance Control* and the “SS” *Smart Shoot* program that randomizes the shots in form that two or more dots are not been energized sequentially. It avoids a sum of thermal effects also a significant thermal damage of the adjacent tissue. Each shot promotes 64 micro ablations into the tissue (figure 1 and 2).

Explain in more details...How is MAFRF procedures using FRAXX?

The procedure is simple and painless or just light discomfort, carried out in ambulatory/private clinic environment in a period of the 15 to 20 minutes approximately in average that allows habitual activities return, immediately. It's recommended seven days off to return a sexual relation. It is used topic anesthesia as a Lidocaine 10% spray or gel into the vestibule, 2 to 3 minutes before to start the procedure. The local anesthesia application into the vaginal walls directs to diminish the discomfort during the vaginal speculum handling also the thermal stimulation application. The vaginal speculum affords directly vision to the procedure field that permits to stimulate all vaginal walls with security. Immediately after the procedure, in some cases it may occurs a lightly heating into the vaginal introits among few hours. It can be reduced using hydrating and reepithelization creams (Dexpanthenol or panthenol) or freezing cold saline.

As already mentioned, it was done a pilot study in the Heliópolis Hospital of the State Department of Health, including 14 patients that the criteria was selected for a women with SG syndrome of the menopause that did not use any local hormonal therapy and systemic during six months to the initial studies previously, that have been updated the oncologic cytology test also without any complain or sign infection of the IGT (Inferior Genitourinary Tract). They were submitted to 3 vaginal and vestibule FRAXX sessions de FRAXX, with a programmed interval between 30 and 40 days. All patient ones were valued through life quality questionnaires in general, quality of sexual activity and satisfaction after the proceeding further the physical / gynecological examinations.



Which the practical results obtained with this study?

As result, although the reduced number of patients included in the study, MAFRF resulted effective in treatment for symptoms of the vaginal dryness and dyspareunia that eliminated the use of lubricants to the sexual relation during the period what was observed and did not present complications or significant adverse effects. Further studies will be necessary to get better results of the radio frequency effects in the long term in the vaginal tissue.

The clinical improvement of patients was important (Image 3 in the mucous membrane and in the vascularization aspect. The control of these patient ones showed that the majority (79 to 86%) was feeling very satisfied or satisfied and cured or very better from 6 to 13 months after treatment. In 3 cases it was related a return of the symptoms after 4 to 6 months that were moderate to severe atrophy cases previously to the treatment; remembering that these patient ones still were continuing without hormone therapy application use.

We notice the effective improvement in cases of symptomatic initial atrophy very often from the first application and is maintained longer time (1 year or more) mainly in those who have a regular sexual activity.

In the cases of the moderate or intense atrophy, the association to the local estrogenic therapy before and after the procedure, in the contraindication absence provides significant improvement.

Which the experience regarding the urinay symptoms?

In the pilot study of the Heliópolis Hospital 30% of the patients was presenting urinary symptoms (miccional urgency, post-coitus urinary infection, nocturia and light urinary incontinence) and there was significant improvement with the treatment. One of these studies in inquiry in the HCFMUSP, at the Urogynecology Department, is valuing the MAFRF use at the treatment of the GS of the menopause.

Dra. Márcia, are other applications oh the Fractionated RF in gynecology?

In the vulva, besides the vestibule atrophy listed to the functional alteration shall occurs sagging results as labia majora adipose tissue and mons pubis loss with esthetic repercussion. The Fraxx application in these areas improves the trophism resulting as significant esthetic in only 3 sessions (Image 4 and 5). Another quite stimulator using is in vulvar lichen sclerosus that occurs a different physiological atrophy, with a destructive component of the main extra cellular and accented reduction of the elastic fibers. In this case, we noted the improvement of the trophism and pruritus, besides reduction of the necessity of the use of local corticoids and it motivated a new study project that I make part, in Vulvar pathology Department of the HCFMUSP. Other observed applications: vulvar fissures and urethral caruncles.



Finally, summarizing, which are the main indications and advantages of the vulvar and vaginal Fraxx?

Indicated in the cases of: atrophy and symptoms as vaginal sagging, painful or sexual relation discomfort, heat and vulvovaginal irritation and persistent flowing after the menopause; urinary symptoms as dysuria, miccional urgency, urge incontinence, urinary incontinence, frequently infections of the urinary tract associated to the atrophy; urethral caruncles; vulvar fissure; selected cases of chronic vulvar pruritus (lichen sclerosus), among others.

As advantages, we emphasize that is applied the method with straight vision that allows a thorough evaluation of the complete vaginal walls contemplation and avoids an excessive applications at the same area, besides the most accessible cost in comparison to the *Laser*. The apprenticeship curve is short and the procedure is in ambulatory or in private clinic. Painless method, quick recovering and positive results from first application.

It is feasible method, which applies to all service categories being in the public or private sector.

Do the doctors have any Project for the future?

Yes, affirms Dr. Borrelli. For the necessity of more evidences being obtained regarding the methodology here presented, new studies are in course. We are practicing histological evaluations before and after the MAFRF sessions in a group of 20 patients with GS and second group with patients whom they received radiotherapy /pelvic brachtherapy, both with objective to prove the presumption of the neocollagenesis, neoeelastogenesis and neoangiogenesis.