Non-invasive Energy-based Treatments for Vaginal Rejuvenation

Emphasis on Stress Urinary Incontinence

A paradigm shift in the management of vulvovaginal pathology has seen the rise of non-invasive energy-based treatments which are easy, safe and effective, including for Stress Urinary incontinence (SUI).

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The term vaginal rejuvenation covers a spectrum of procedures which are functional and aesthetic. These procedures aim to correct and restore the vulvovaginal tissues to their optimal structure (1).

Physiological changes in a woman's life can have a significant structural impact on the vulvovaginal region leading to laxity of the vaginal canal, pelvic floor damage, and devitalisation of the mucosal lining and tone of the vaginal wall. Factors which are responsible for these conditions include childbirth, hormonal changes due to ageing, menopause, weight fluctuations, genetics and trauma. The development of genitourinary conditions such as atrophic vaginitis, vaginal laxity, decreased sensation during coitus and stress urinary incontinence can affect a woman's confidence, quality of life and sexuality (1).

More than 50 percent of post-menopausal women still suffer from vulvovaginal atrophy. Many women with SUI do not seek help for their condition because of a lack of knowledge about treatments, embarrassment or fear that treatment will require surgery (2). However, there is a global trend with women in increasing numbers choosing to alter their genital anatomy to diminish functional discomfort, improve sexual pleasure and enhance self-esteem.

Management

First-line non-invasive treatments for vaginal atrophy and dryness involve the use of lubricants, systemic hormonal replacement and vaginal hormonal applications. Strategies to improve function of the pelvic floor muscles range from behavioural changes, pelvic floor exercises, electrical stimulation to using pharmaceutical drugs.

Invasive surgical procedures represent the gold standard and have been the mainstay of treatments to the pelvic floor and vulvovaginal region. These invasive procedures, performed by gynaecologists and plastic surgeons, range from labiaplasty altering the labia and folds surrounding the vulva to vaginoplasty involving surgery to the pelvic floor.

Energy-based Devices

Recently, these traditional treatments have been supplemented by non-surgical vulvovaginal correction procedures using non-invasive energy-based devices. Treatments with these devices alleviate the anxiety women associate with the risk, expense and downtime involved with surgery. Energy-based treatments provide more consistent results than the varying success experienced with current non-surgical therapies.

Modalities

CO_2-based or erbium:yttrium-aluminum-garnet (Er:YAG) lasers and radiofrequency(RF)-based devices are among the new modalities being applied to feminine rejuvenation. Some of the conditions these devices can be used to treat are vulvovaginal atrophy symptoms (vaginal burning, vaginal itching, vaginal dryness, dyspareunia and dysuria), vaginal laxity and urinary incontinence.

The CO_2 lasers are ablative and have deep penetration. Fractional CO_2 lasers emit laser beams at 10 600 nm wavelength. The beam is focused in small spots which are separated by healthy tissue. The CO_2 laser beam generates heat and vapourises the water content of target cells (3). The small laser beams create many microscopic areas of thermal necrosis, destroying the epidermis and dermis and inducing a wound healing cascade with subsequent new collagen and elastin fibre formation translating into healthier, firmer, tighter skin (4, 5).

The Er:YAG laser with its 2940 nm wavelength has 10–15 times the affinity for water absorption compared to the CO_2 wavelength. The laser energy emitted is in the mid-infrared visible light spectrum. Some Er:YAG laser devices are purely non-ablative, heating tissues to between 60–65 degrees, relying purely on their thermal effect to cause change while others combine both the superficial ablative and deep thermal effect to induce collagen contraction, vasculari-

sation and growth factor infiltration and stimulate neocollagenesis. These processes ultimately revitalise and restore the treated tissue elasticity resulting in remodeling (1).
RF is unabsorbed by melanin and is safe for all skin types. Transurethral monopolar RF has been used to treat SUI with minimal risk of adverse events. However, there are several unipolar, bipolar and multipolar RF devices which heat target tissues to 40–45 degrees centigrade to successfully treat vulvovaginal laxity, sexual dysfunction and mild to moderate SUI.
Two groups of patients with symptoms of vaginal relaxation were treated comparing ablative CO_2 laser therapy and non-ablative Er:YAG laser. Both groups showed improvement in vaginal tightening. Complications commonly observed in CO_2-treated patients were not seen in the non-ablative treated group (6).
All three modalities are well tolerated. Treatment protocols generally involve 2–4 treatments at 2–4 week intervals lasting 15–30 minutes at each visit (1).

SUI: Treatment

SUI is leakage of urine when abdominal pressure is increased during sneezing, coughing, physical exercises, lifting, bending and even changing position (7). Two principal causes of urine leakage during increased abdominal pressure are SUI and stress-induced detrusor overactivity, involving involuntary detrusor contractions (8). SUI has negative impact on patients' quality of life; affecting day to day activities, participation in sports and sexual activity. In Australia, over 37 percent of women experience urinary incontinence issues and unfortunately, over 70 percent of these women do not seek help.
The results I am presenting evaluate 165 women with a mean age of 48, who presented with symptoms of mild to moderate SUI. An Er:YAG laser was used for these treatments.
In addition to SUI, a significant number of women also had varying degrees of symptoms of vulvo-vaginal dystrophy or vaginal laxity. They each received three treatments, two weeks apart, and were reviewed two weeks after each treatment and at two and six months.
All the women were treated with several passes of the short and long pulse modes from both the 360- and 90-degree hand piece. The laser beam from the 360-degree hand piece fractionally targeted the vaginal wall to treat symptoms of vulvovaginal dystrophy and vaginal laxity. The 90-degree hand piece was utilised to treat SUI. The laser beam was directed at the anterior vaginal wall at the 10, 12 and 2 o'clock positions, targeting the vaginal mucosa and endo-pelvic fascia. Treatments were well-tolerated with no downtime, taking on average 15–20 minutes. There were no adverse events.

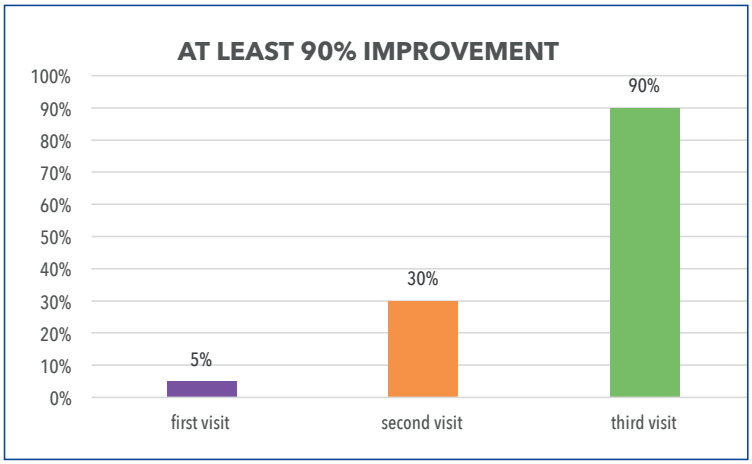

Figure: SUI improvement experienced by patients

Findings

Several women experienced improvement in urinary incontinence after the first treatment, and the degree of improvement increased with subsequent treatments. Over 90 percent of the women experienced more than 90 percent improvement in their SUI at the two month follow-up visit.
Other findings that were noted at two months were vaginal tightening in 93 percent of women. Terms used by the women and their partners to describe changes in the vagina were that it was smoother, snug, slippery, and one said that «I think it is brilliant and grippy». Of the women who received treatment, 53 percent reported that sex was better with increased sensation.
The symptoms of all 18 women presenting with mild to moderate dyspareunia settled after the third treatment. 75 percent of sexual partners reported that they were surprised but very pleased with the changes and could not believe the difference the treatments made. Several women who were pleased with the results elected to do 1–2 additional treatments. The improvements have been maintained with an ongoing regular single treatment every six months.

Conclusion

Energy-based devices can now provide women and their doctors alternative treatment options which are easily conducted, non-invasive, safe, and effective in the management of their genitourinary conditions. ▲

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