

Treating Vulvovaginal Atrophy

Dr Suren Naidoo details common vulvovaginal concerns and explains how to treat atrophy with CO2 fractional laser

Vulvovaginal atrophy (VVA) is a common symptom of the menopause. It is caused by depletion in oestrogen levels, associated with menopause. Prior to this time, the abundance of oestrogen thickens the vaginal epithelium and produces glycogen, which is essential for patients who are sexually active as it maintains an appropriate acidic environment.¹ When oestrogen levels are depleted the vaginal mucosa becomes thinner, less elastic, drier and fragile. The lack of oestrogen also affects periurethral tissues resulting in stress incontinence. The subsequent effects of oestrogen depletion can have a significant impact on sexual function, quality of life and daily activities.¹

Aetiology and clinical presentation

Globally, approximately 15% of premenopausal women and 50% of postmenopausal women experience VVA-associated symptoms, however it is under-reported and the true prevalence is unknown.² The clinical manifestations of VVA generally occur four to five years after the menopause, and 25-50% of postmenopausal women present with objective changes as well as individual symptoms. Apart from the natural menopause, VVA may occur due to a surgically-induced menopause in women taking anti-oestrogen therapy following breast cancer and in some post-partum women.² The declining levels of oestrogen associated with the menopause leads to morphological alterations of the epithelium of the vaginal mucosa.³ There is loss of mucosal elasticity, loss of rugal folds, which allows for distensibility, and the vagina becomes shorter and narrower. The thinning of the epithelium and loss of vaginal rugae generally occurs two to three years after the menopause. The function of the epithelium of the vaginal mucosa is to protect the mucosa against mechanical friction during intercourse, while vaginal dryness is due to a reduction in blood flow and vaginal secretions. As such, women who are sexually active are likely to experience dyspareunia. The epithelium may become friable with petechiae and may ulcerate causing post-coital bleeding.³ The most common symptoms of VVA are vaginal dryness, itching and burning, dyspareunia, decreased genital stimulation and post-coital infections. Other symptoms include urinary tract symptoms, such as nocturia, dysuria, urinary urgency and urinary incontinence.³ The vagina is colonised with lactobacilli bacteria, which produces lactic acid and maintains an acid pH of 3.5-5, resulting in a hostile environment against pathogenic micro-organisms. Due to the lack of oestrogen in postmenopausal women, however, there is a decrease in lactobacilli and the pH can increase to 6-8, resulting in a growth of pathogens such as yeasts and bacteria, including

staphylococci, coliforms and group B streptococci. As such, the vulvovaginal area becomes susceptible to infections causing pain, vaginal discharge and post-coital bleeding.³

If the patient presents with vaginal bleeding or discharge then appropriate investigations such as pelvic ultrasound, vaginal swabs and a midstream-urine test should be done to exclude more serious causes such as cervical, endometrial and vulval cancers.

The genital tract is particularly sensitive to the decline in oestrogen levels as women get older, which, as discussed, can significantly affect women's sexual function and quality of life. While vasomotor symptoms of the menopause will gradually disappear with time, VVA symptoms are likely to become worse, which may encourage women to seek targeted therapy.

Treatment

Until recently, the treatments available included vaginal oestrogen creams, hormone replacement therapy, vaginal lubricants and moisturisers. Now, however, women can choose to undergo CO2 fractional laser treatment, which aims to rejuvenate the vulvovaginal area and relieve VVA-associated symptoms. There are other devices on the market that use radiofrequency to treat the vulval area, however, with these treatments, the vaginal mucosa is not targeted.

Patient suitability⁵

- Patients who present with gynaecological changes due to a decrease in oestrogen
- Patients with a history of breast cancer, thrombophlebitis, or other contraindications to oestrogen therapy
- Patients with inadequate response to oestrogen therapy or decline of treatment results with oestrogen

Contraindications⁵

- Vaginal, cervical, or other lesions in the treatment area that have not been evaluated and diagnosed
- Active vaginal or vulvar infection (herpes, candida, HPV, STDs)
- Pregnant or within three months postpartum
- Prolapse beyond hymen
- History of radiation to vaginal/colorectal tissue
- History of reconstructive pelvic surgery with 'mesh kits'
- History of impaired wound healing
- History of keloid formation
- Known anticoagulation treatment or thromboembolic condition

Mechanism of action

Fractional technology involves the laser emitting a beam of light that creates a pattern of small ablative wounds, without damaging the surrounding tissue, which aims to stimulate tissue regeneration.⁴ In my clinic, I use the SmartXide2 Mona Lisa Touch to treat VVA. The initial part of the laser pulse comprises high peak power for rapid ablation of the vaginal mucosa (both epithelium and lamina propria), which is characterised by low water content. The second part of the pulse is extended to create the thermal effect around the edge of ablation, stimulating the synthesis of new collagen and the components of the ground substance of the matrix.⁵ The 'injury' triggers a complex and coordinated series of events that includes:



- **Chemotaxis** – the migration of cells in response to the thermal energy from the laser
- **Phagocytosis** – the process in which cells remove pathogens and debris
- **Neocollagenesis** – the stimulus of new collagen formation

The fractional laser pulse causes thermal damage to the atrophic vaginal walls, resulting in the process described above to restore the vaginal mucosa with new cells rich in water and fibroblasts.⁵ In addition, angiogenesis, epithelialisation, and the production of new glycosaminoglycans (GAGs) and proteoglycans are vital to the wound-healing process and important in the revascularisation of the vaginal epithelium. The wound caused by the laser energy results in new tissue, comprising extracellular matrix and collagen, which forms the structure for a new network of blood vessels to replace the damaged ones.⁵ The assessment of histological examinations following CO2 laser treatment indicates that:⁶

- The mucosa is well nourished with extended three-dimensional papillae rich in blood vessels
- The glycogen of the epithelial cells is clearly visible and is present in a larger amount as compared with the initial condition
- The extracellular matrix (collagen fibres and ground substance) has increased with numerous fibroblasts that can be identified after treatment

Pre-treatment discussion

As with any aesthetic procedure, the practitioner should provide the patient with a thorough consultation, detailing exactly what the patient may experience during treatment. Key points to be aware of during CO2 fractional laser treatment are:

- Slight discomfort may be noted during insertion of the vaginal probe
- Treatment near the introitus feels 'tingly' with increased sensation
- May hear a slight 'sizzle' or 'buzzing' sound during the pulse phase, especially when treating at the introital level
- The buzzing sound may be more evident as the probe is withdrawn closer to the vaginal opening
- Some report of introitus feeling 'irritated' after treatment
- Minor spotting lasting one to two days (brown, pink or bright red)
- Reports of 'watery discharge' occurring two to three days after treatment a normal and an expected effect caused by the thermal damage to the dry vaginal epithelium and wound repair taking place, as described above

Pre-treatment protocol

Prior to treatment the practitioner should:⁵

- Use dilators to determine canal diameter size to optimise comfort for the patient
- Test vaginal pH
- Ensure that the patient has avoided sexual intercourse and all vaginal creams and lubricants 24-48 hours prior to procedure
- Check progress of VVA before each subsequent treatment and after final treatment using pH sticks

It is also important to be aware that some patients may require a series of pre-treatment dilatation based on the treating practitioner's assessment. Patients most in need of this are those who have had severe vaginal atrophy and patients who have undergone a surgically-induced menopause.

Treatment considerations

For optimum results VVA patients should undergo a series of three

treatments spaced six weeks apart (approximately 40-50 days).⁵ At the follow-up appointment, practitioners should discuss the patient's satisfaction with results and determine if follow-up treatments are required. Treatment time with a CO2 laser is usually brief, lasting approximately five minutes. Gentle manipulation of the labia minora and vulvar tissue is of utmost importance as to avoid causing discomfort for the patient. The insertion of a non-lubricated, gloved finger in the introitus with gentle downward pressure on posterior fourchette can help prior to the insertion of the probe. Depending on the patient's pain threshold, lidocaine gel or EMLA cream may be applied to vulvar/perineal tissue for five minutes prior to procedure, however it is important that the practitioner gently wipes all gel or cream off before insertion of probe.⁷ If lubricated gloves are used, ensure that any residue is thoroughly wiped off before treatment. Ensuring all residues are removed is important with the use of a fractional CO2 laser, as they are water dependent and gels will absorb the light, potentially making the treatment outcome unsatisfactory. Following treatment patients should refrain from vaginal sexual activity for 48 hours and can resume other normal activity as tolerated immediately after procedure.⁵

Potential side effects and complications

Patients may have slight reddening and light swelling immediately after a session, which will usually resolve after a few days. This may be due to the insertion and removal of the vaginal probe so practitioners should be careful to reduce the energy at the introitus to avoid causing damage. Rarely, slight blood leakage may occur but this should resolve without any treatment over 24 hours. In those patients with low immune deficiency from whatever cause the immune response to the inflammation caused by the treatment will be more evident than normal causing inguinal lymphadenopathy, these patients should be informed about this and given reassurance that it is harmless.

Conclusion

CO2 fractional laser treatment for VVA is a simple and safe, time efficient procedure that requires no/minimal anaesthesia. With little side effects and downtime, the treatment has revolutionised the lives of thousands of women worldwide, enabling them to have an improved quality of life and sexual function.



Dr Suren Naidoo has been in general practice since 1973 and has a vast amount of experience in medical emergencies and routine medicine. He has special interests in dermatology and since 2004 has worked as an aesthetic practitioner at the BMI Cavell Hospital in Enfield. Dr Naidoo is an associate member of the British College of Aesthetic Medicine and the British Medical Laser Association.

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