Biofeedback, Electrical Stimulation, Pelvic Floor Muscle Exercises, and Vaginal Cones: A Combined Rehabilitative Approach for Sexual Dysfunction Associated with Urinary Incontinence

Massimo Rivalta, MD, Maria Chiara Sighinolfi, MD, Stefano De Stefani, MD, Salvatore Miceli, MD, Alessandro Mofferdin, MD, Marco Grande, MD, and Giampaolo Bianchi, MD

Department of Urology, University of Modena and Reggio Emilia, Modena, Italy

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ABSTRACT

Introduction. Urinary incontinence (UI) is often associated with sexual dysfunction. We present our preliminary experience with a combined rehabilitative approach consisting of biofeedback, functional electrical stimulation, pelvic floor muscle exercises, and vaginal cones.

Aim. The potential impact of such practice on UI and sexual function was analyzed in our case series and discussed.

Main Outcome Measures and Methods. We evaluated three women affected by UI and sexual dysfunction. The patients underwent combined pelvic floor rehabilitation (PFR), kept voiding diaries, and filled out the Female Sexual Function Index (FSFI questionnaire) before and after the completion of PFR. We evaluated each domain score, including desire, arousal, lubrication, orgasm, satisfaction, and pain.

Results. After the combined rehabilitation program, none of them had UI requiring pad use or referred urine leakage during sexual activity, including intercourse. Before PFR, FSFI score ranged from 16 to 21; after treatment, the FSFI score ranged from 22.1 to 29.3. There was an improvement in patients regarding desire, arousal, lubrication, orgasm, satisfaction, and pain.

Conclusions. A complete rehabilitation can provide a beneficial effect on sexual function. A larger trial, on a more extended female population, is currently in progress, in order to confirm our findings. The effectiveness of a complete PFR scheme, together with the lack of side effects, makes it a suitable approach to sexual dysfunction that is associated with UI.


Key Words. Urinary Incontinence; Sexual Dysfunction; Pelvic Floor; Rehabilitation

Introduction

The prevalence of urinary incontinence (UI) in women is 20% and increases to 35% among women who are over 60 years of age [1]. Treatment options may vary and usually fall under these four categories: behavioral, rehabilitative, pharmacological, and surgical. Pelvic floor rehabilitation (PFR) should be considered as first-line therapy, as it is a minimally invasive procedure and effective, without precluding surgery in case of failure [2].

A complete PFR treatment program usually includes the following: biofeedback (BFB), functional electrical stimulation (FES), pelvic floor muscle exercises (PFME), and PFME using vaginal cones (VC).
Female UI is frequently associated with sexual dysfunction and, as a consequence, lower Female Sexual Function Index (FSFI) scores in clinical trials [1,3]. An evaluation of sexual health among women who were affected by overactive bladder (OAB) was recently carried out by Coyne and coworkers: whether associated or not with incontinence, OAB results in an impairment of sexual function, desire and ability to achieve orgasm was diminished [4]. Urinary stress incontinence has been found to have a negative impact on the quality of the patient’s sexual life, the patient experiencing frequent pain and coital incontinence during intercourse [5]. A therapeutic approach to this emerging aspect of incontinence has been mentioned only with regard to transvaginal electrical stimulation [1].

We present our preliminary experience with the use of combined PFR techniques (BFB–FES–PFME–VC) in incontinent female patients affected by sexual dysfunction.

**Clinical Cases**

From March 2008 to June 2008, we evaluated three women ranging in age from 35 to 44 years old affected by UI, with stable heterosexual relationships but complaining of sexual dysfunction. All three completed a 48-hours voiding diary and underwent urodynamic evaluation (Urobenchmark 200/3 SLEM. Milan, Italy). Stress UI (mean abdominal leak point pressure: urinary leakage at 90 cm H2O abdominal pressure; mean maximum urethral closure pressure: 50 cm H2O) without significant cystocele (grade 1 or less on Halfway System Classification) was seen in all three women. The patients reported urine leakage during sexual activity or intercourse; they were negative for pregnancy and urinary tract infection and did not have a cardiac pacemaker. We investigated pelvic floor muscle strength and function with an urogynecologic evaluation and with a puborectalis test.

The patients underwent combined PFR (BFB–FES–PFME–VC) after signing an informed consent with prior verbal explanation of all the steps of the procedure. The steps for a complete PFR program were carried out as follows: (i) FES for 20 minutes once a week for a period of 3 months. Selected parameters included biphasic intermittent current with the frequency set at 50 Hz, pulse width of 300 μs, and an adjustable current intensity (0–100 mA) to reach the tolerable intensity of stimulation that did not cause pain in each individual patient [1]. “On time” ranged from 0.5 to 10 seconds and “off time” ranged from 0 to 30 seconds. (ii) BFB was conducted for 15 minutes, once a week for a period of 3 months. The special “Vaginal Combined Probe-Coloplast” (same size for all the patients) was used for vaginal stimulation and as a registering probe for both FES and electromyographic biofeedback (EMG-BFB). It is made of a longitudinal small and soft cylinder with four radial electrodes along the probe itself (PelvenCare-Coloplast equipment) (Figure 1). (iii) PFME alone and (iv) PFME using VC, performed by the patient at home, after a preliminary training with the urologist, accordingly to the Kegel protocol; this procedure requires at least 300 contractions of the pelvic floor muscle (PFM) a day divided into six sessions, isolating PFM contractions and eliminating coactivation synergies, alternating isotonic and isometric exercises. PFME were performed also using VC: three plastic cones with a metal interior that are identical in shape and volume but of different weights. Each patient began exercising with the heaviest cone retainable in the vagina for 1 minute; once the cone can be retained easily for 10 minutes, the patient started exercising with the next heaviest cone. Before moving on to a heavier cone, it is advisable to check that the patient can retain the cone when coughing, ascending and descending stairs, and running.

Patient kept voiding diaries and filled out the FSFI (FSFI questionnaire) before and after the completion of PFR. We evaluated each domain score, including desire, arousal, lubrication, orgasm, satisfaction, and pain. The optimal cutoff between normal and pathological values is set at
26.55 [6], which means sexual life is considered normal in those patients who scored >26.55, pathological in those who scored <26.55.

Results
All the patients completed the scheduled program, and their compliance was verified throughout a weekly visit. Patients reported pad usage of one to two per day at baseline. A slight hypotonus in pelvic floor muscles was evident in all the women. After the combined rehabilitation program, none of them had UI requiring pad use or referred urine leakage during sexual activity, including intercourse. Before PFR, FSFI score ranged from 16.21; after treatment, the FSFI score ranged from 22.1;29.3. There was an improvement in patients regarding desire (+26%, mean value before and after the procedure: 9 and 11.4, respectively), arousal (+17%, mean value before and after the procedure: 8.7 and 10.2, respectively), lubrication (+29%, mean value before and after the procedure: 10.2 and 13.2, respectively), orgasm (+44%, mean value before and after the procedure: 10 and 14.4, respectively), satisfaction (+54%, mean value before and after the procedure: 9.3 and 14.4, respectively), and pain (45%, mean value before and after the procedure: 9.6 and 14, respectively). None of the patients reported side effects due to the treatment.

Discussion
Female sexual dysfunction represents a common and multifaceted problem, associated with biological, sociocultural, medical, and interpersonal factors [7]. Its incidence increases with age and, according to the most recent statistics, affects 30–50% of women [1,7].

Female sexuality is adversely affected by UI in premenopausal, sexually active women: as Paradiso Galatioto et al. state, incontinent women report a higher prevalence of sexual dysfunction than those who do not suffer from incontinence. Desire, lubrication, orgasm, and sexual satisfaction are the areas most affected by this problem [3]. This may be explained by the occurrence of dermatitis caused by urine leakage, depression, and decreased libido, due to embarrassment and fear of UI during sexual activity, including intercourse [1].

Paradiso Galatioto et al., having previously investigated the role of transvaginal electrical stimulation in treating UI with regard to sexual dysfunction, stated that all female patients complaining of UI should be interviewed about sexual function [1]. The authors suggest that transvaginal electrical stimulation represents an important part of PFR. However, according to Abrams [2], a complete rehabilitation program may include other components such as BFB, PFME, and VC. The aim of this brief report was to introduce a new approach to this problem that consists of a combination of different techniques for incontinence. In such settings, an FSFI questionnaire is the best approach to assess all domains of female sexuality. It represents a valid instrument that can be applied to several diseases potentially affecting sexuality such as chronic pelvic pain and painful bladder syndrome [8]. In Paradiso Galatioto’s series, the FSFI, administered before and after electrical stimulation, showed a significant improvement in desire, lubrication, sexual satisfaction, and pain, whereas arousal and orgasm domains were not significantly affected. Our outcomes are consistent with those previously noted, thus suggesting a remarkable enhancement in sexual health and satisfaction in all the subjects. This statement is particularly evident for the orgasm, satisfaction, and pain domains.

Normalization of muscle tonus provided by PFR could be one of the possible explanation of these outcomes [9]. As a result, rehabilitation represents the basis for satisfying orgasmic sensation [10]. In fact, ischiocavernous attachment to the clitoral hood results in clitoral engorgement; bulbocavernous muscle, when contracted, places pressure on the deep dorsal vein of the clitoris, preventing venous escape [10]. Additionally, BFB–PFME can improve arousal, reducing the inhibition provided by leakage during orgasm [11].

In conclusion, complete PFR should consist in BFB, FES, PFME, and VC, as those steps act on multiple components of the pelvic floor. As reported in our case series, a complete rehabilitation can provide a beneficial effect on sexual function. A larger trial, on a more extended female population, is currently in progress, in order to confirm our findings. We conclude that the effectiveness of a complete PFR scheme, together with the lack of side effects, makes it a suitable approach to sexual dysfunction that is associated with UI.

Corresponding Author: Sighinolfi Maria Chiara, MD, Department of Urology, University of Modena and Reggio Emilia, Via del Pozzo 71, 41100 Modena, Italy. Tel: 0039-059-422-4766; Fax: 0039-059-422-2863; E-mail: sighinolfm@yahoo.com

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Category 1
(a) Conception and Design
Massimo Rivalta; Maria Chiara Sighinolfi; Salvatore Micali; Alessandro Mofferdin; Marco Grande; Stefano De Stefani; Giampaolo Bianchi
(b) Acquisition of Data
Massimo Rivalta; Maria Chiara Sighinolfi
(c) Analysis and Interpretation of Data
Massimo Rivalta; Maria Chiara Sighinolfi

Category 2
(a) Drafting the Article
Massimo Rivalta; Maria Chiara Sighinolfi; Alessandro Mofferdin; Marco Grande
(b) Revising It for Intellectual Content
Salvatore Micali; Stefano De Stefani; Giampaolo Bianchi

Category 3
(a) Final Approval of the Completed Article
Massimo Rivalta; Maria Chiara Sighinolfi; Salvatore Micali; Alessandro Mofferdin; Marco Grande; Stefano De Stefani; Giampaolo Bianchi

References