

Effectiveness of vaginal cones in strengthening pelvic floor in post-menopause female urinary incontinence: case report

Eficácia dos cones vaginais no fortalecimento do assoalho pélvico na incontinência urinária feminina pós- menopausa: estudo de casos

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RESUMO | INTRODUÇÃO: A incontinência urinária (IU), pode afetar ambos os sexos, porém apresenta alta prevalência no sexo feminino, sendo as mulheres, na terceira idade, as mais acometidas. A IU afeta a qualidade de vida (QV), pois causa desconforto, redução da autoconfiança, alteração do comportamento, interferência na sexualidade, no convívio social, na saúde física e emocional. **OBJETIVO:** Avaliar o uso de cones vaginais no fortalecimento do assoalho pélvico (AP) em mulheres com incontinência urinária pós-menopausa. **MÉTODOS:** Estudo quantitativo, de delineamento observacional exploratório do tipo estudo de casos, realizado com 2 mulheres inscritas para tratamento de IU. Foi realizado a aplicação do questionário International Consultation on Incontinence Questionnaire (ICIQ-SF) e avaliação funcional do AP por meio do perineômetro, antes e após 10 sessões, realizadas 3 vezes por semana, durante 45 minutos, através de um programa de tratamento com uso de cones vaginais e cinesioterapia, associando aos exercícios de Kegel. **RESULTADOS:** Quanto ao ICIQ-SF, a paciente 1, na avaliação pontou o escore de 10 pontos (muito grave) e na reavaliação 2 (leve impacto). A paciente 2, inicialmente pontuou 9 (grave impacto) e após o tratamento, 1 (leve impacto).. Na avaliação da contração muscular a paciente 1 obteve 40 sauers (normal) e passou para 44 (bom). A paciente 2 passou de 16 sauers (regular) para 28 (normal). **CONCLUSÃO:** Os cones vaginais beneficiaram mulheres com incontinência urinária de esforço, fortalecendo os músculos do assoalho pélvico, proporcionando melhora na qualidade de vida.

PALAVRAS-CHAVE: Incontinência urinária. Menopausa. Fortalecimento. Fisioterapia. Assoalho pélvico.

ABSTRACT | INTRODUCTION: Urinary incontinence (UI) can affect both sexes, but it has a high prevalence in females, and women in the third age are the most affected. UI affects quality of life (QOL) because it causes discomfort, reduced self-confidence, behavioral change, interference with sexuality, social life, physical and emotional health. **OBJECTIVE:** To evaluate the use of vaginal cones in strengthening pelvic stinging (AP) in women with postmenopausal urinary incontinence. **METHODS:** A quantitative, observational exploratory case study design, conducted with 2 women enrolled for UI treatment. The International Consultation on Incontinence Questionnaire (ICIQ-SF) was applied and the functional assessment of the AP by the perineometer, before and after 10 sessions, performed 3 times a week, for 45 minutes, through a treatment program of vaginal cones and kinesiotherapy, associated with Kegel exercises. **RESULTS:** Regarding the ICIQ-SF, patient 1, in the evaluation, scored 10 points (very severe) and reevaluation 2 (mild impact). Patient 2 initially scored 9 (severe impact), and after treatment 1 (mild impact) both had stress UI. In the evaluation of muscle contraction, patient 1 obtained 40 sauers (normal) and went to 44 (good). Patient 2 went from 16 sauers (regular) to 28 (normal). **CONCLUSION:** The vaginal cones benefited women with stress urinary incontinence, strengthening the pelvic floor muscles, providing improved quality of life.

KEYWORDS: Urinary incontinence. Menopause. Fortification. Physiotherapy. Pelvic floor.

Introduction

The International Continence Society characterizes incontinence as any involuntary loss of urine, occurring as a result of lower urinary tract dysfunction that results from physiological alteration of urination or the supporting structures of the organs participating in urination. This condition affects women's quality of life because it causes a series of consequences such as discomfort, reduced self-confidence, behavioral change, interference with sexuality, social life, physical and emotional health^{3,16,6,25}.

This urogynecological dysfunction can be classified into three types, considering the following symptoms: stress urinary incontinence (SUI), which is activity-related urinary loss that increases intra-abdominal pressure; Urinary urinary incontinence (UUI), defined as involuntary loss of urine associated with a strong urge to urinate, and mixed urinary incontinence (MUI), when there is an association of symptoms of stress and urge incontinence^{17,8}.

There are many risk factors that can lead to the development of UI, such as advanced age, vaginal delivery, reduced menopausal estrogen levels, bladder or uterine prolapse, intestinal constipation, white race, obesity, gynecological surgery^{9,6,25}.

At menopause, the causes of UI are due to a change in ovarian function, with a reduction in estrogen levels, leading to a decrease in trophism and vascularization of the muscles that make up the pelvic floor (PFM). The PFM becomes more delicate, dry and less elastic, becoming susceptible to stresses that may lead to UI²⁵.

Physical therapy treatment is indicated as a first option by the International Continence Society². Physical therapy has several types of UI treatments that seek to increase pelvic floor strengthening; among them, the vaginal cones stand out. The vaginal cone was proposed by Plevnik for the resisted and progressive strengthening of the pelvic floor muscles. This therapy provides insight into the perineal region, increasing pelvic floor muscle strength and recruitment of type I and type II muscle fibers¹¹.

Given the exposed context, the aim of the study is to evaluate the use of vaginal cones in strengthening pelvic tearing in women with postmenopausal urinary incontinence.

Methods

Study Design

This is a quantitative study, of an exploratory observational design, case study type⁷. Data were collected from April to May 2019. This research was duly approved by the CAEE Research Ethics Committee 94112518.1.0000.5343. And the participants, after acceptance, signed the Informed Consent Form.

Participants

The non-probabilistic research sample was made by convenience, composed of postmenopausal women enrolled for UI treatment in the first half of 2019, with availability to attend data collections and who had not previously undergone treatment. Exclusion criteria were postpartum women with urinary incontinence, women with fecal loss, and those who had undergone pelvic floor reconstructive surgery.

Methodological procedures

Initially, a functional evaluation of the pelvic floor was performed using the Kroman digital perineometer device. The Kegel perineometer is a pressure sensitive device that is inserted into the vagina and provides numerical values for muscle contraction¹¹. The Sauer Scale has an equivalent in pounds of pressure, in which 28 Sauers equals a healthy musculature being rated being classified as: 0-10 poor Sauers, regular 11-25, normal 26-40, good 41-60, excellent from 61-80 and extraordinary from 81-100²³.

The participant was asked to position herself on the stretcher in the supine position with her knees flexed. The perineometer was inserted into the vagina using a condom. The participant was also asked to perform the muscle contraction, in which the value indicated in the equipment was considered.

At the end of the evaluation, the International Consultation on Incontinence Questionnaire (ICIQ-SF) was completed to assess the impact of UI on QOL and to qualify the urinary loss of participants. This instrument was translated into Portuguese, adapted and validated by Tananini et al. (2004). Composed of four questions that assess the frequency, severity and impact of UI on Quality of Life (QOL) and a set of eight self-diagnosis items related to the causes or episodes of UI experienced by participants¹⁴.

ICIQ-SF scores are obtained by numerical values, in which the total score ranges from 0 to 21 points, and the higher the sum of points, the greater the severity and impact of UI on QOL. The impact on QoL is rated as: zero (0) point, no impact; 1 to 3 points, slight impact; 4 to 6 points, moderate; 7 to 9 points, severe; and 10 points or more, very serious¹⁴.

Subsequently, the treatment program was initiated using vaginal cones and kinesiotherapy, associated with Kegel exercises. Cones are devices of equal shapes and sizes and weight ranging from 25g to 75g, which are inserted into the vagina¹¹. The exercise program was performed three times a week with a duration of 45 minutes, totaling 10 sessions, in which the participant was instructed how to use the vaginal cone, as well as the choice of the appropriate cone, the one in which the participant was able to hold inside the vagina for 1 minute, in the standing position. As it gained strength, the weight was replaced.

The exercise program was performed with each participant, which included going up and down steps, performing squats with support, lateral walking with elastic band, walking associating contraction exercises in different postures, Kegel exercises to strengthen the pelvic muscles, with contraction of 5 seconds and relaxation for 10 seconds. They were performed with the vaginal cone inserted into the vagina.

At the end of the proposed treatment, the patients underwent functional reevaluation of the pelvic sting with perineometer and the ICIQ-SF questionnaire was applied to compare data before and after the intervention.

Data analysis

The research data were tabulated and analyzed through Microsoft Office Excel, in illustrations (spread sheets or graphs), for subsequent discussion of the results based on the theoretical framework.

Results

Two postmenopausal women participated in the study, being Patient 1 (66 years) and Patient 2 (71 years). Regarding the type of UI found in our study, both presented the effort one.

Spread Sheet 1 shows data from before and after 10 exercise program evaluations, in which both patients presented increased muscle contraction strength.

Spread Sheet 1. Evaluation of muscle contraction before and after 10 sessions

PERINEOMETER	Evaluation	After treatment
PACIENT 1		
Muscular contraction (sauers)	40	44
Classification	Normal	Good
PACIENT 2		
Muscular contraction (sauers)	16	28
Classification	Regular	Normal

Fonte: Survey data, 2019.

In Spread Sheet 2, the ICIQ-SF results were positive, with improved quality of life as well as reduced urine loss in both Patient 1 and Patient 2.

Spread Sheet 2. Quality of life assessment before and after 10 sessions

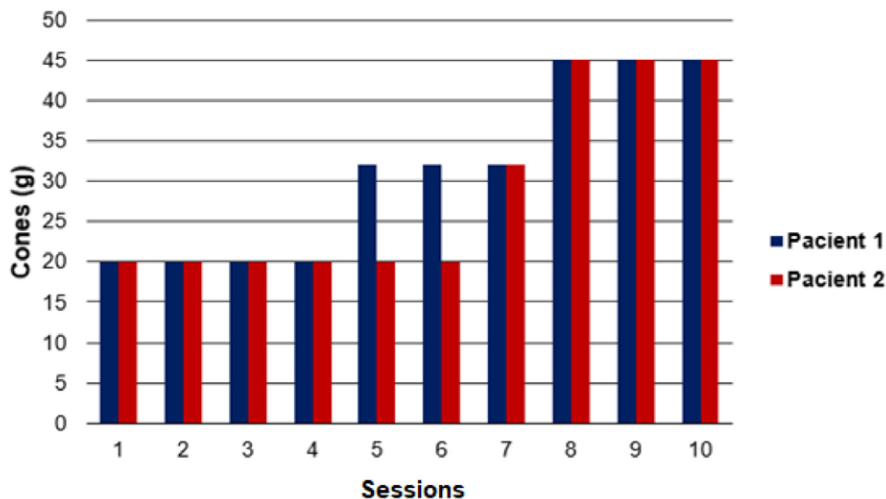
ICIQ-SF	Evaluation	After treatment
PACIENT 1		
Score	10	2
Classification	Very serious	Slight impact
When do you lose urine?	Cough or sneeze	Never
PACIENT 2		
Score	9	1
Classification	Severe impact	Slight impact
When do you lose urine?	In physical activities	Never

ICIQ-SF: *International Consultation on Incontinence Questionnaire.*

Fonte: Survey data, 2019.

Figure 1 shows that, despite the good performance of both patients, found by the evaluations, Patient 1 evolved to a higher weight cone first than Patient 2.

Figure 1. Evolution of vaginal cones according to sessions



g: grams.
Fonte: Survey data, 2019.

Discussion

This case study aimed to evaluate the use of vaginal cones to strengthen pelvic floor in two women with postmenopausal urinary incontinence. Regarding the type of UI found in our study, both presented the effort. This finding is in agreement with the literature, since studies indicate that SUI is the most frequent type of UI in females^{10,22}.

There are several techniques that have been used, although there is no great consensus in the literature. Among them, there are the specific exercises for the AP (various dosages), which is assisted or not by electrostimulation and vaginal cones. A narrative review of the literature showed that pelvic physiotherapy, especially in the treatment of UI, presents promising results, both in improving QoL and reducing urinary losses⁴. Another empirical study also found a reduction in the frequency of loss of urine and absence of discomfort when performing their daily activities, and an improvement in the muscular strength of the AP, with an increase in the degree of contraction².

In addition to UI use, AP strengthening exercises using vaginal cones have shown good results in muscle recovery after delivery¹².

Our results regarding QoL are similar to those shown by Castro et al.², demonstrating efficacy in improving patients' QoL scores. Padilha et al.¹⁴, although not intervening, when using the ICIQ-SF to assess QoL of 44 women with UI, observed that QoL in relation to urinary loss was poor to moderate. Therefore, we can verify that in the cases reported in the present study, the expected scores for age and clinical condition were exceeded.

Souza et al.²⁰, when estimating the prevalence of UI in 233 climacteric women and investigating the associated factors, found a high frequency of reports of small loss of urine (75%), suggesting better training of primary care services, so that there is a higher quality in both prevention and treatment of UI.

Silva et al.¹⁹ conducted a case study in which Kegel exercises were associated with vaginal cones, and 10 physiotherapy sessions were performed three times a week, lasting one hour. Thus, similar to our study, the patient initially used the 20g pink cone, then the 32g yellow cone and evolved to the 45g white cone, resulting in improved muscle strength¹⁹.

However, Santos et al.¹⁸ did a study comparing two techniques in 45 women with SUI, which consisted of vaginal cones and AP functional electrostimulation for 4 months. They had a significant improvement in QoL and decreased urinary loss, with no significant difference between SUI treatment techniques¹⁸. Therefore, it seems that it matters if the treatment will be by exercise or electrostimulation, and any of the modalities can be chosen, according to the professional's experience, available resources and patients' preference.

Although a study involving 39 patients with overactive bladder syndrome, which corresponds to another clinical condition, Yüce et al.²⁴, when comparing the effectiveness of AP muscle exercises associated with the use of vaginal cones, also found improvement in symptoms and QOL after intervention. The proposal to use the vaginal cone for resistance and progressive strengthening of the floor muscles has been effective. This therapy provides insight into the region by promoting sensory feedback, causing the pelvic floor muscles to contract with more vigor and better perception^{11,15}.

To choose the appropriate cone, patients begin training with the cone that they were able to keep inside the vagina for one minute in the standing position. After training, the weights become increasing. Involuntary contraction occurs during the use of cones, occurring moments of contraction and relaxation, preventing muscle fatigue and the exit of the cone from the vagina. Thus, the cones act on the stimulation and recruitment of type I (slow contraction) and type II (rapid contraction) fibers, improving pelvic muscle proprioception and stimulating increased muscle strength^{11,15}.

To increase knowledge of ways to prevent and treat UI, Oblasser et al.¹² did a systematic review on the subject and found very limited evidence. This fact justifies the production of case studies that may add information to current evidence.

It is emphasized that the early search for adequate treatment of UI is extremely important¹³. Thus, Del Pino et al.⁵ reinforce that the rate of adherence to AP muscle training in female UI patients is reduced, presenting the need for better access and treatment adherence strategies.

As limiting factors of this work, we can cite the reduced number of participants, not allowing the generalization of the obtained results, being necessary the continuity of the work, searching for a larger sample, capable to potentiate the effectiveness of the use of the cones, in the increase of the AP muscle strength.

Conclusion

Considering what was shown, it was possible to verify that the use of vaginal cones helped and benefited postmenopausal women with SUI, strengthening the AP muscles and providing an improvement in QOL, evidenced by the results of the ICIQ-SF questionnaire.

Author contributions

Holzschuh JT and Sudbrack AC participated in the conception, design, collection of research data, statistical analysis of research data, interpretation of results and writing of the scientific article.

Competing interests

No financial, legal or political conflict involving third parties (government, companies and private foundations, etc.) has been declared for any aspect of the work submitted (including, but not limited to grants and funding, advisory board membership, study design, preparation manuscript, statistical analysis, etc.).

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