



REVISIONES

Alternative therapies for early recovery of post-prostatectomy urinary continence: systematic review

Terapias alternativas para recuperação precoce da continência urinária pós-prostatectomia: revisão sistemática

Terapias alternativas para la recuperación temprana de la continencia urinaria posterior a la prostatectomía: una revisión sistemática

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ABSTRACT:

Aim: To conduct a systematic review of the evidence of the effectiveness of Pelvic Floor Muscle Training (PFMT) in the treatment of post-prostatectomy urinary incontinence.

Method: Systematic review conducted in Ovid MEDLINE, EMBASE and LILACS in Portuguese, English and Spanish, with the time limit: 2005-2015.

Results: 9 studies analyzed the effectiveness of PFMT associated or not with biofeedback (BFB) and electrical stimulation (ES).

Conclusion: PFMT with or without the biofeedback and electrical stimulation may contribute to the early recovery of continence. Patients with initial difficulty of identifying the pelvic floor muscles can benefit from ES followed BFB sessions of structured PFMT. A greater participation of nurses in the care related to the early return of continence in post-prostatectomy patients is possible through the implementation of pelvic floor muscle exercises and behavioral therapy.

Keywords: Urinary Incontinence; Post-Prostatectomy; Pelvic Floor Muscle exercises; Nursing care.

RESUMO:

Objetivo: conduzir uma revisão sistemática a cerca das evidências da efetividade do Treinamento dos Músculos do Assoalho Pélvico (TMAP) no tratamento da incontinência urinária pós-prostatectomia.

Método: Revisão sistemática realizada nas bases de dados MEDLINE/OVID, EMBASE e LILACS nos idiomas português, inglês e espanhol, limite temporal: 2005-2015.

Resultados: 9 estudos analisaram a efetividade do TMAP associado ou não ao biofeedback e eletroestimulação.

Conclusão: TMAP associados ou não ao biofeedback e eletroestimulação podem contribuir na recuperação precoce da continência. Pacientes com dificuldade inicial de identificação dos músculos do assoalho pélvico podem se beneficiar de sessões de eletroestimulação e biofeedback. É possível uma maior inserção do enfermeiro nos cuidados relacionados ao retorno precoce da continência em pacientes pós-prostatectomizados através da instituição dos exercícios de fortalecimento do assoalho pélvico e terapia comportamental.

Palavras-chave: Incontinência Urinária; Prostatectomia; Diafragma da Pelve; Cuidados de Enfermagem

RESUMEN:

Objetivo: Realizar una revisión sistemática de la evidencia sobre la eficacia de entrenamiento de los músculos del suelo pélvico (EMSP) en el tratamiento de la incontinencia urinaria posterior a la prostatectomía.

Métodos: Una revisión sistemática realizada em Ovid MEDLINE, EMBASE y LILACS en Portugués, Inglés y Español, límite de tiempo: 2005-2015.

Resultados: 9 estudios examinaron la eficacia de los asociados o no con la biorretroalimentación y la estimulación eléctrica TMAP.

Conclusión: El EMSP con o sin biorretroalimentación y la estimulación eléctrica pueden contribuir a la pronta recuperación de la continencia. Los pacientes con dificultad inicial de la identificación de los músculos del suelo pélvico pueden beneficiarse de sesiones de electroestimulación de biofeedback. Una mayor integración de la enfermera es posible en la atención relacionada con el pronto retorno de la continencia en pacientes post-prostatectomía mediante el establecimiento de los ejercicios de fortalecimiento del suelo pélvico y terapia conductual.

Palabras clave: Incontinencia urinaria; Prostatectomía; Diafragma de la pelvis; Músculos Suelo Pélvico; Cuidados de enfermería

INTRODUCCIÓN

The global incidence of prostate cancer (PC) reaches about 71.4 cases per 100,000 inhabitants and is considered the second most common type of cancer⁽¹⁾.

There are several treatment options for men with prostate cancer; the choice depends on the degree of tumor malignancy, as well as other particularities of the patients. Radical prostatectomy leads to urinary incontinence in most cases, causing significant changes in the quality of life⁽²⁾. Several prognostic factors for failure in continence recovery have been reported in retrospective observational surveys, including advanced age, prostate size, stenosis of the anastomosis, preoperative urodynamic abnormalities, and details of the surgical technique⁽³⁾.

Urinary incontinence exerts a marked negative influence on the quality of life because of the disorders and discomforts triggered⁽⁴⁾. Involuntary urine leakage may cause embarrassment, resulting in reduced social interaction or isolation, besides expenses with diapers that can compromise the patient's income.

Firstly, it is necessary to clarify that involuntary urine leakage at any age, resulting from treatment or not, requires attention and care. Many people believe that an incontinent person is only the one who has large losses of urine on a day to day basis; this belief delays the diagnosis and consequent treatment.

Urinary incontinence is defined as any involuntary loss of urine, according to the International Continence Society (ICS)⁽⁵⁾. Involuntary loss of urine may affect to a

lesser or greater extent the quality of life of any individual, especially prostatectomized patients who also deal with many other peculiarities arising from cancer therapy.

The treatment of Post-prostatectomy Urinary Incontinence (PPUI) is often undervalued, since the improvement of the incontinence is time-dependent. Only about 5% of PPUI patients will remain incontinent 1 year after surgery⁽⁶⁾.

Like any other type of urinary incontinence, PPUI may be associated with bladder dysfunction, sphincter dysfunction or a combination of both⁽⁸⁾. The main cause of PPUI is sphincter deficiency, affecting more than two thirds of patients; about 10% of patients present isolated bladder dysfunction and one third may present both⁽⁶⁾. The internal sphincter can undergo injury during surgery and its functionality can be compromised, causing great pressure under the external sphincter, which, in turn, depends on the smooth functioning of its striated muscle fibers. When the latter are weakened, urinary losses happen⁽⁷⁾.

Conservative treatment includes behavioral therapy (lifestyle modifications such as reduction or elimination of irritating substances to the bladder), pelvic floor muscle training (PFMT), and pharmacotherapy, when appropriate⁽⁸⁾. Incontinence surgical interventions are quite effective, but are usually reserved for moderate to severe incontinence, and many prostate cancer survivors are reluctant to undergo further surgery⁽⁹⁾.

The success of PPUI treatment depends on a multidisciplinary approach involving physicians, psychologists, physical therapists/urology nurses and stoma therapists.

Although most of PPUI patients present significant improvement and/or solution of incontinence within a 12-month period without previous exercises to strengthen the pelvic floor muscles, previous studies have shown that the realization of exercises during the postoperative period contributes to regaining incontinence early^(10,11).

There is still no consensus among urologist physicians about whether to recommend conservative treatment before 12 months post-prostatectomy. Therefore, the search for scientific evidences that support or not this practice becomes necessary.

The research question that guided this review followed the P.I.O strategy and was thus established as: *Do men with post-prostatectomy urinary incontinence submitted to pelvic floor muscle post-surgery training have an early improvement in incontinence?* In this context, the objective of this study is to conduct a systematic review of the evidence of the effectiveness of Pelvic Floor Muscle Training in the treatment of post-prostatectomy urinary incontinence.

METHODS

Systematic review of the literature carried out in 8 stages: (1) elaboration of the research question; (2) literature search; (3) selection of articles; (4) data extraction; (5) methodological quality assessment; (6) data synthesis; (7) evaluation of the quality of the evidence; and (8) writing and publishing the results⁽¹²⁾.

Inclusion criteria: Randomized clinical trials with secrecy of allocation addressing the application of PFMT for PPUI treatment; articles that evaluate the improvement or cure of PPUI as the main outcome.

Exclusion criteria: Studies that performed PFMT before surgery or after 1 year; case reports, case series, case control, cohort and expert opinion; research protocols; abstracts, unpublished theses and dissertations.

The search was performed on September 26, 2015, in the electronic databases MEDLINE/OVID (1946 to 2015 set week 3); EMBASE (1974 to 2015 set 25) and Latin American and Caribbean Literature in Health Sciences (Lilacs) and was limited to articles published in the period 2005-2015 in English, Portuguese and Spanish.

Descriptors (MeSH and DeCS) and keywords were used to construct search strategies in the databases. For the search in Medline and Embase, the Cochrane's high-sensitivity search strategy was used to identify randomized studies: *(((randomized controlled trial.pt.) or (controlled clinical trial.pt.) or (randomized.ab.) or (placebo.ab.) or (drug therapy.fs.) or (randomly.ab.) or (trial.ab.) or (groups.ab)) not ((animals.sh. not (humans.sh. and animals.sh.))) and ((urinary incontinence.mp) or (continence.tw.) or (incontinence.ab.)) and ((prostatectomy.mp.) or (prostatectomy.tw.) or (prostatectomy.ab.)) and ((biofeedback.tw.) or (biofeedback.ab.) or (electric Stimulation.ab.) or (electric stimulation therapy.tw.) or (electric stimulation.tw.) or (exercise therapy.tw.) or (pelvic floor exercise.mp.) or (pelvic floor.tw.) or (pelvic floor muscle exercise.ab.))).* Where pt.(Publication Type term); .ab. (abstract); .fs.('floating' subheading); sh.(MeSH); .ti.(title); mp. (search of title, abstract, name of substance and subject heading word).

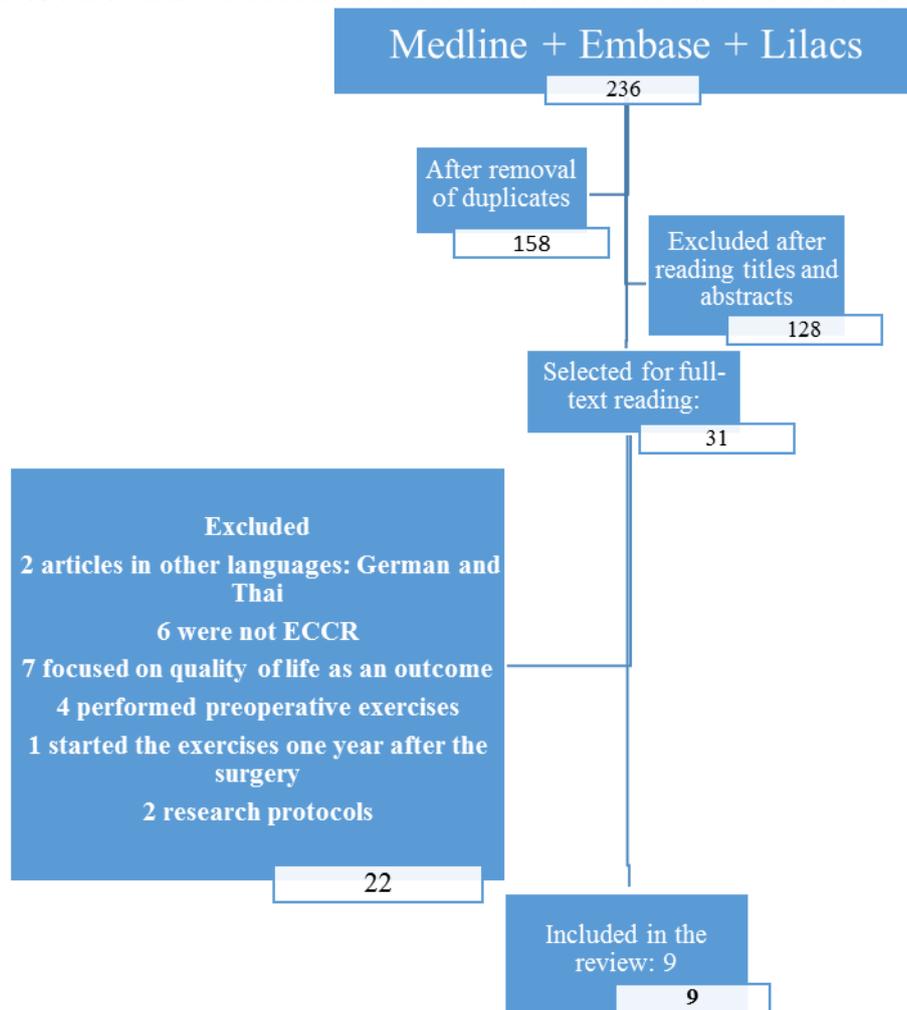
For the search in the LILACS, we opted for a more simplified adaptation in the attempt to find more studies: *(((urinary incontinence) or (continence) or (incontinence)) and (prostatectomy) and ((biofeedback) or (electrical stimulation) or (electrical stimulation therapy) or (exercise therapy) or (pelvic floor exercise) or (pelvic floor muscle exercise)))).*

The quality of the studies was evaluated according to Oxford Centre for Evidence-Based Medicine (EBMC) (2009)⁽¹³⁾ as to the level of evidence and degree of recommendation. The methodological evaluation was done through the Jadad scale (1996)⁽¹⁴⁾.

RESULTS

The search resulted in 236 studies; after removal of the duplicates, 158 studies were set apart for reading the titles and abstracts. After reading the titles and abstracts, 30 were pre-selected for reading in full-length. When applying the inclusion and exclusion criteria, 9 articles were selected for analysis, as shown in flowchart 1.

Figure 1: Flowchart of search and selection of articles included in this review



Source: Authors' elaboration

The table 1 describes the title of the study, the authors, year of publication and country of origin, as well as identification of the methodological design.

Table 1: Characterization of the Studies, Rio de Janeiro, 2017.

Title	Authors/year/country	Study design
Effectiveness of Early Pelvic Floor Rehabilitation Treatment for Post-Prostatectomy Incontinence	Filocamo <i>et al</i> , 2005 ⁽¹⁵⁾ Italy	Randomized controlled clinical trial
Contribution of Early Intensive Prolonged Pelvic Floor Exercises on Urinary Continence Recovery After Bladder Neck-Sparing Radical Prostatectomy: Results of a Prospective Controlled Randomized Trial	Manassero <i>et al</i> , 2007 ⁽¹⁶⁾ Italy	Randomized controlled clinical trial
Return to Continence After Radical Retropubic Prostatectomy: A Randomized Trial of Verbal and Written Instructions Versus Therapist-Directed Pelvic Floor Muscle Therapy	Moore <i>et al</i> , 2007 ⁽¹⁷⁾ Canada	Randomized controlled clinical trial
Does Physiotherapist-Guided Pelvic Floor Muscle Training Reduce Urinary Incontinence After Radical Prostatectomy? A Randomised Controlled Trial	Overgård <i>et al</i> , 2008 ⁽¹⁸⁾ Norway	Randomized controlled clinical trial
The recovery of urinary continence after radical retropubic prostatectomy: a randomized trial comparing the effect of physiotherapist-guided pelvic floor muscle exercises with guidance by an instruction folder only	Dubbelman <i>et al</i> , 2009 ⁽³⁾ Holland	Randomized controlled clinical trial
Early Recovery of Urinary Continence After Radical	Mariotti <i>et al</i> , 2009 ⁽¹⁹⁾	Randomized

Prostatectomy Using Early Pelvic Floor Electrical Stimulation and Biofeedback Associated Treatment	Italy	controlled clinical trial
Long-Term Effect of Early Postoperative Pelvic Floor Biofeedback on Continence in Men Undergoing Radical Prostatectomy: A Prospective, Randomized, Controlled Trial	Ribeiro <i>et al</i> , 2010 ⁽²⁰⁾ Brazil	Randomized controlled clinical trial
Conservative treatment for urinary incontinence in Men After Prostate Surgery (MAPS): two parallel randomised controlled trials	Glazener <i>et al</i> , 2011 ⁽²¹⁾ Canada	Randomized controlled clinical trial
Effect of Pelvic Floor Electrical Stimulation and Biofeedback on the Recovery of Urinary Continence after Radical Prostatectomy	Ahmed <i>et al</i> , 2012 ⁽²²⁾ Egipt	Randomized controlled clinical trial

Source: Authors' elaboration

The table 2 describes the interventions performed as well as the sample size and follow-up time of each study.

The table 3 presents the main results found in the analyzed studies as well as their conclusions.

Table 2: Interventions, sample size and follow-up time, Rio de Janeiro, 2017

Article	Intervention	N - Follow-up time
Filocamo <i>et al</i> , 2005 ⁽¹⁵⁾	All participants were evaluated in 4 meetings, 1, 3, 6 and 12 months. <u>Test group:</u> Fill in a voiding diary and instructions to increase voiding frequency. 1st meeting: PFM training in the supine position. At home: 3 sets of 10 contractions lasting 5 seconds and relaxing for 10 seconds for 10 days. Verbal explanation, palpation and visualization (by the patient) of the contraction at the base of the penis through a mirror. 2nd meeting: PFM training in all positions (sitting, crouching, using ladder, etc.). Repetition of the previous series for 7 days. 3rd meeting: Perform PFM contraction only before some activity that may induce incontinence (sneezing, coughing, weight lifting). 4th meeting: evaluation <u>Control group:</u> No guidance	300 patients (150 in each group) 12 months
Manassero <i>et al</i> , 2007 ⁽¹⁶⁾	All participants were evaluated in 4 meetings, 1, 3, 6 and 12 months and completed a voiding diary. 13 participants left the study in the control group and zero in the test group. <u>Test group:</u> Instruction and supervised PFM training during 4 meetings. Perform 3 sets of 15 daily contractions at home; progressive increase to 3 sets of 30 contractions. First the series should be performed in the supine position, then sitting and standing up. After the first month they should incorporate the exercises into their daily activities. <u>Control group:</u> In the meetings, only residual incontinence was evaluated.	107 patients (54 in the test group and 53 in the control group) 12 months
Moore <i>et al</i> , 2007 ⁽¹⁷⁾	4 weeks after radical prostatectomy, all participants received verbal and written instructions for performing 3 sets of 10 to 12 PFM contractions daily at home. <u>Test group:</u> Weekly visits with the therapist and 30 minutes of biofeedback during PFM exercises for a maximum of 24 weeks. <u>Control group:</u> performance of PFM exercises at home without contact with the therapist.	205 patients (106 in the test group and 99 in the control group) 52 weeks

Overgård <i>et al</i> , 2008 ⁽¹⁸⁾	Both groups received verbal and written instructions on the correct muscle contractions of the pelvic floor and were encouraged to perform the exercises as soon as the catheter was removed. <u>Test group</u> : PFM training guided by the physiotherapist for 45 minutes once a week, for the time the patient still used the absorbent or until the patient desired. At home: 3 daily sets of 10 most intense contractions possible lasting 6-8 seconds, perform 3-4 rapid contractions at the end of each contraction. Among the 38 patients in the test group, 20 were unable to personally attend meetings with the physical therapist. These patients were offered a DVD with the physical therapist's instructions for weekly performance of the proposed intervention. <u>Control group</u> : 3 sets of 10 contractions daily.	85 patients (42 in the test group and 43 in the control group) 12 months
Dubbelman <i>et al</i> , 2009 ⁽³⁾	<u>Test group</u> : 9 30-minute sessions of PFM strengthening exercises guided by the physical therapist plus 150 daily contractions performed at home. <u>Control group</u> : 15 sets of 10 contractions, each series must be completed within 1-3 minutes. The series must be performed within 24 hours.	79 patients* (35 in the test group and 44 in the control group) 26 weeks
Mariotti <i>et al</i> , 2009 ⁽¹⁹⁾	Both groups completed a voiding diary. <u>Test group</u> : Biofeedback + Electrical stimulation (BFB + ES): 2 weekly sessions for 6 weeks. Protocol: 15 minutes of BFD and 20 minutes of ES (30 Hz for 10 minutes and 50 Hz for 10 minutes - intensity adjusted according to the elevation of the levator ani muscle and pubococcygeus muscle and patient tolerance). Verbal instruction for correct performance of exercises at home (Kegel exercises). <u>Control group</u> : Verbal instruction on how to properly identify pelvic floor muscles plus explanatory folder on PFM strengthening exercises - Kegel exercises.	60 patients (30 in each group) 6 months
Ribeiro <i>et al</i> , 2010 ⁽²⁰⁾	<u>Test group</u> : PFM Training + Biofeedback (BFB): 30-minute weekly sessions of PFM training + BFD until reaching continence or until the 12th week. In each BFB session the patient performed 3 sets of 10 fast contractions and 3 sustained contractions (5, 7 or 10 seconds). At home: written instructions to continue performing the exercises in the lying, sitting, and standing positions. <u>Control group</u> : no written instructions about the exercises. The urologist only recommended contracting the PFM at home.	73 patients (36 in the test group and 37 in the control group) 12 months

Legend: * There were 2 losses in the test group and 11 in the control group. To obtain 80% of study power, each arm of the study should have 96 participants. However, in 2 years of recruitment it was only possible to recruit 79 patients in total.

Source: Authors' elaboration

Table 3: Main results and conclusions of the authors, Rio de Janeiro, 2017.

Article	Main results				Conclusions
Filocamo <i>et al</i> , 2005 ⁽¹⁵⁾	<u>Continent patients</u>				Urinary continence can be obtained early with the implementation of PFMT, reserving urodynamic tests only for cases where therapy fails.
		<u>Test group</u>	<u>Control group</u>	<u>P-value</u>	
	<u>1 month</u>	29 (19.3%)	12 (8%)	p = 0.006	
	<u>3 months</u>	111 (74%)	45 (30%)	p<0.00001	
	<u>6 months</u>	144 (96%)	97 (64.6%)	p<0.00001	
	<u>12 months</u>	93.3%	93.3%		
Manassero <i>et al</i> , 2007 ⁽¹⁶⁾	<u>Continent patients</u>				Early and intensive PFMT may improve continence and is recommended for all IUPP patients
		<u>Test group</u>	<u>Control group</u>		
	<u>1 month</u>	16.7%	2.5%		
	<u>3 months</u>	46.3%	22.5%		
	<u>6 months</u>	66.7%	40%		
	<u>12 months</u>	83.4%	47.5%		

Moore <i>et al</i> , 2007 ⁽¹⁷⁾	<p style="text-align: center;"><u>Continent patients</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>Test group</u></th> <th style="text-align: center;"><u>Control group</u></th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td><u>2 months</u></td> <td style="text-align: center;">23%</td> <td style="text-align: center;">20%</td> <td colspan="2"></td> </tr> <tr> <td><u>3 months</u></td> <td style="text-align: center;">28%</td> <td style="text-align: center;">32%</td> <td colspan="2"></td> </tr> <tr> <td><u>4 months</u></td> <td style="text-align: center;">40%</td> <td style="text-align: center;">44%;</td> <td colspan="2"></td> </tr> <tr> <td><u>7 months</u></td> <td style="text-align: center;">50%</td> <td style="text-align: center;">47%;</td> <td colspan="2"></td> </tr> <tr> <td><u>13 months</u></td> <td style="text-align: center;">64%</td> <td style="text-align: center;">60%</td> <td colspan="2"></td> </tr> </tbody> </table>					<u>Test group</u>	<u>Control group</u>			<u>2 months</u>	23%	20%			<u>3 months</u>	28%	32%			<u>4 months</u>	40%	44%;			<u>7 months</u>	50%	47%;			<u>13 months</u>	64%	60%			Verbal and written instructions proved to be as effective as supervised PFMT using biofeedback.
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Source: Authors' elaboration

The fourth table shows the analysis of the quality of the studies that were classified as to the level of evidence, degree of recommendation, Jadad scale score and conflicts of interest.

Table 4: Level of evidence, degree of recommendation, Jadad scale scores and conflict of interest, Rio de Janeiro, 2017.

Study	Evidence level	Degree of recommendation	Jadad scale	Conflict of interests
Filocamo <i>et al</i> , 2005 ⁽¹⁵⁾	1b	A	2	Not reported
Manassero <i>et al</i> , 2007 ⁽¹⁶⁾	1b	A	3	None
Moore <i>et al</i> , 2007 ⁽¹⁷⁾	1b	A	3	Not reported
Overgård <i>et al</i> , 2008 ⁽¹⁸⁾	1b	A	2	Not reported
Dubbelman <i>et al</i> , 2009 ⁽³⁾	1b	A	4	Not reported
Mariotti <i>et al</i> , 2009 ⁽¹⁹⁾	1b	A	1	Not reported
Ribeiro <i>et al</i> , 2010 ⁽²⁰⁾	1b	A	2	Not reported
Glazener <i>et al</i> , 2011 ⁽²¹⁾	1b	A	5	None
Ahmed <i>et al</i> , 2012 ⁽²²⁾	1b	A	3	None

Source: Authors' elaboration

DISCUSSION

Two studies evaluated the influence of periodic follow-up of a specialist during the period of PFMT *versus* the performance of home-based exercises without professional support (Overgård⁽¹⁸⁾ and Dubbelman⁽³⁾). Dubbelman analyzed 79 patients and concluded that the PFMT supervised by a therapist does not interfere with the time of return of the continence, in addition to considerably increasing the cost of the treatment⁽³⁾. Overgård analyzed 85 patients and achieved a significant result 12 months after surgery in the supervised PFMT group ($p = 0.028$)⁽¹⁸⁾.

Filocamo⁽¹⁵⁾, Manassero⁽¹⁶⁾, and Glazener⁽²¹⁾ evaluated the effectiveness of PFMT supervised by a therapist compared to no guidance; 300, 107 and 411 patients, respectively, were analyzed over 12 months. Two of them concluded that PFMT is able to reduce continence recovery time with positive results already in the first months of therapy⁽¹⁵⁻¹⁶⁾. Filocamo *et al.* obtained statistically significant results in their results in the 1st ($P < 0.00001$), third ($p < 000001$) and 6th month ($0 < 0.00001$) after prostatectomy⁽¹⁵⁾. Manassero *et al.* observed a significant improvement from the 3rd month onwards (53.7% incontinent patients in the test group and 77.5% in the control group), the difference increases at the end of the study, with 12 months, where only 16.6% still remained incontinent in the test group and 60% in the control group⁽¹⁶⁾.

Glazener *et al*⁽²¹⁾, however, did not find significant differences between the two groups studied. They concluded that the supervised PFMT costs too much and does not have the expected return. However, it is worth mentioning that, although the initial proposal of the Glazener study was to compare the supervised PFMT effectiveness with no exercise, 170 patients from the 206 allocated in the control group sought help at their respective research center and started to perform PFMT in the beginning of the study.

Furthermore, the adherence of the participants to the proposed therapy decreased at similar extent in both groups until the end of the 12 months (number of patients who periodically performed the pelvic floor strengthening exercises after 6 and 12 months: 96/188 in the test group and 64/190 in control group, and 67/192 in the test group and 51/190 in the control group, respectively). Considering the low adherence of the test and control groups to PFMT, a similar high incontinence rate is expected in both groups at the end of the study (148/196 [75.5%] test group and 151/195 [77.4%] in the control group were incontinent at the end of the 12 months - $p = 0.637$).

One study followed 114 men with PPUI for a period of 12 months, all of whom were instructed to follow a daily protocol for PFMT. Quality of life was assessed at the beginning and at the end of the follow-up⁽²³⁾. The authors concluded that pelvic floor strengthening exercises promote early rehabilitation and have a positive impact on the patients' quality of life and social activities⁽²³⁾.

In this review, four studies evaluated the effectiveness of PFMT associated with biofeedback (BFB) and/or electrical stimulation (ES)^(17,19,20,22). Two studies evaluated the use of biofeedback to better identify the muscles to be worked during PFM training plus home exercise performance compared to the control group where participants did not receive a structured PFMT program^(17,20).

Moore et al.⁽¹⁷⁾ analyzed 205 patients and obtained similar results between groups, concluding that weekly sessions with biofeedback are as effective as the practice of PFMT at home. Ribeiro et al.⁽²⁰⁾ analyzed 73 patients and found positive results in the use of biofeedback, with a significant improvement in the reduction of incontinence severity in the test group ($p = 0.017$).

The other two studies evaluated the use of biofeedback and electrical stimulation.^{21,24} Mariotti et al.⁽¹⁹⁾ analyzed the results of 60 patients where 30 received BFB and electrical stimulation sessions, in addition to performing the PFMT at home and 30 only performed the exercises at home. There was a significant improvement in the continence of patients in the test group in the first 3 months ($p < 0.05$), as well as better urinary loss rates from the 4th week of therapy ($p < 0.05$)⁽¹⁹⁾.

Ahmed et al.⁽²²⁾ compared the results of 90 patients distributed into 3 groups, one receiving only electrical stimulation (ES); the other, electrical stimulation (ES) + Biofeedback (BFB) and the third only performed PFMT at home. The authors observed that patients receiving combined therapy (ES + BFB) had statistically better results compared to the other groups ($P < 0.05$).

Electrical stimulation is a method that can increase the success of pelvic muscle exercise in patients with incontinence after radical prostatectomy (19-22). The combination of ES with BFB can help patients perform better and continue the exercises at home, thereby improving voluntary pelvic floor control⁽¹⁹⁾.

Evidence on the performance of PFMT supervised by a therapist is contradictory; in the present review, two similar studies obtained opposite results. In a meta-analysis published in 2015, the authors reached similar conclusions. Thus, it is not possible to recommend supervised PFMT for the purpose of early recovery from incontinence⁽²⁴⁾. Some authors recommend that PFMT be initiated soon after the removal of the bladder catheter, which usually occurs ten to twenty days after surgery, because it is believed that the initiated exercises suddenly accelerate the recovery of urinary

continence^(15-16,19-24). However, a study⁽²⁵⁾ performed with 120 patients, of which 60 had incontinence 14 days after catheter removal and 60 had incontinence after 12 months, where both received the same BFB + ES protocol, more than 90% of the patients achieved continence . at 6 months of treatment. This suggests that BFB + ES can be a non-invasive alternative for PPUI treatment both after catheter removal and after 12 months of surgery⁽²⁵⁾. Several conservative therapeutic approaches such as behavioral therapy and pelvic floor muscle training have been used with different protocols in an attempt to reestablish the continence of these patients as early as possible⁽²⁰⁾, however, so far the evidence is fragile, making it almost impossible to recommend a specific training program for PPUI.

Regarding the evaluation of the quality of the studies, all claimed to be controlled and randomized clinical trials. However, some of them failed to describe the randomization and blinding method used^(15,18-20), which resulted in a low score in the Jadad scale. Thus, some were considered as poor quality studies (total score less than or equal to 2). However, it is important to take into account that blinding of the involved parties (patient and therapist) is very difficult in an intervention study where the patient needs to participate actively, performing PFMT or receiving biofeedback or electrical stimulation. To attribute a score in this issue, any type of blinding that occurred in the study was taken into consideration (e.g., blindness in the statistical analysis). More detailed assessments of the methodological quality of these studies are needed for further conclusions.

The evidence found in this review indicates that PFMT associated or not with BFB and ES can have a positive effect on PPUI treatment. Patients with early identification of pelvic floor muscles may benefit from ES and BF sessions followed by structured training of the pelvic floor muscles. However, further studies are needed to generate better recommendations on therapies.

A systematic Cochrane review published in 2015 examined 99 clinical trials evaluating the effectiveness of PFMT with or without electrical stimulation and/or biofeedback in the prevention or treatment of PPUI and concluded that only 10.2% of the patients receiving the intervention remained incontinent after 12 months of surgery and 32.1% of patients who had no influence of the therapies remained incontinent⁽²⁶⁾. However, the authors state that because of the fragility and contradictory results in some studies, it is not possible to make an official recommendation regarding the use of PFMT as soon as the catheter is removed, as well as of the positive results on the indication of BFB and ES⁽²⁶⁾. The European Society of Urology⁽²⁷⁾ corroborates the results of the Cochrane Review and both conclude that more robust clinical trials and more structured study designs should be performed in order to obtain more precise conclusions regarding the therapies evaluated⁽²⁶⁻²⁷⁾.

Contributions to Nursing

Although PPUI treatment is part of nursing care, little has been described in the literature about the possible therapies to be applied by nurses. The analysis of the studies included in this review was no different; most of the studies had physicians or physical therapists as the researchers responsible, directly or indirectly conducting the rehabilitation of the patients.

An integrative review reports some nursing care for PPUI: guidance on the correct execution of pelvic floor strengthening exercises; development of a urinary control

chart (voiding diary) to be used concomitantly with behavioral therapy; training of the perineum musculature through electrical stimulation or biofeedback⁽²⁸⁾. The authors emphasize that nurses can continuously provide care through telemonitoring, reinforcing the series of the exercises and stimulating the motivation to persist in the treatment⁽²⁸⁾.

CONCLUSION

PFMT associated or not with biofeedback and electrical stimulation for PPU treatment may contribute to the early recovery of continence. Patients with early identification of pelvic floor muscles may benefit from ES and BFB sessions followed by structured training of the pelvic floor muscles.

However, larger studies with better methodological quality are necessary in order to generate more consistent recommendations.

A greater participation of nurses in the care related to the early return of the continence in post-prostatectomized patients through the implementation of pelvic floor strengthening exercises and behavioral therapy.

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