Pelvic Floor Weight Therapy for Urinary Incontinence Following Radical Prostatectomy

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Background and Purpose.

Urinary incontinence can be a complication of radical prostatectomy. The treatment of this condition varies widely from medicine to, in some instances additional surgical procedures. This study describes the use of rectal weights as part of a progressive therapy program to strengthen the muscles of the pelvic floor and improve the incidence of urinary leakage experienced by some post-operative radical prostatectomy patients.

Case Description.

The patient involved was a 50-year old male with a chief complaint of frequency and pelvic floor weakness. The patient had been diagnosed with prostate cancer, underwent a radical prostatectomy, and was suffering from urinary incontinence secondary to the surgical procedure. Physical therapy was initiated and the patient was instructed in a home exercise program including kegel exercises, abdominal strengthening activities including functional neuromuscular re-education with a Verimed Myoexerciser III© unit, and more importantly, the use of a Maximum Pelvic Trainer (MPT).

Outcomes.

Incidence of urinary leakage decreased with the program, and the patient felt much of his success was due to the use of the MPT.

Discussion.

This case demonstrates the potential use of the MPT in the treatment of urinary incontinence that can be associated with post-operative radical prostatectomy to strengthen the muscles of the pelvic floor and decrease the incidence of urinary incontinence.

Introduction

Urinary incontinence is a possible complication of radical prostatectomy.[1,2] Defined as the intermittent or complete absence of the ability to control loss of urine from the bladder, incontinence can be demoralizing and debilitating. Incontinence may be severe following a surgical procedure such as radical prostatectomy however there has rarely been any report of patients being completely incontinent following such a procedure. [3]

Recovery of normal urinary continence, if left untreated can take up to 2 years. [3] Reports in the literature indicate that neuromuscular re-education may be effective in managing urinary incontinence secondary to radial prostatectomy. Chang et al investigated the early effects of pelvic floor exercises on frequency of urination, terminal dribbling, urinary tract infections, and satisfaction with life after prostate surgery and concluded that a reduction of symptoms was evident within the first 4 weeks of treatment. [4] Jackson et al examined the use of biofeedback for treatment after radical prostatectomy and demonstrated improvements in 74% of subjects after a 12-month period. [5] Patterson et al reported results of using pelvic floor exercises on 49 male subjects and reported a significant decrease in the amount of urine lost when testing subjects for periods of up to 12 weeks. [6] Numerous studies may be found examining the effects of vaginal cones as weight training for women with incontinence. Fischer et al, Moore et al, and Dellas et al [7-9] found vaginal cone therapy a successful method to cure female stress incontinence. Peattit et al [10] studied 39 premenopausal patients and reported 90% of their sample of patients found cones acceptable as their method of treatment. Jonassson et al [11] reported results of 83 postpartum subjects using vaginal cones. The entire test group increased their resting pelvic floor muscle strength. Literature was not found to specifically address weight training as a form of muscle training in males' postprostatectomy. Training the muscles of the pelvic floor is carried out in several ways by clinicians including pelvic floor exercises (ie, Kegel exercises), biofeedback, weight training with cones, electrical stimulation, and bladder retraining. [3,12] As with any muscle that has been injured re-training is needed to improve the function of the muscle(s). This same principle holds true for the muscles that comprise the anatomical structure known as the pelvic floor. [12]

The pubococcygeal muscle as well as the iliococcygeal muscle make up the levator ani muscle group and function to support the pelvic organs. The coccygeus muscle is also an integral part of the pelvic floor musculature. Re-educating and increasing the contraction response in these muscles is the goal of a pelvic floor exercise program. [12]

In the past physical therapists have been able to augment pelvic floor muscle retraining in women with the use of weighted vaginal cones; however, the same type of resistance training was nonexistent for the male population with urinary incontinence. New advances in technology have uncovered ways to add

progressive weight resistance to the pelvic floor muscle retraining programs of men suffering from incontinence.

The maximum pelvic trainer (MPT) (Ralston Group, Selma, Ala) is a device designed to specifically strengthen the pelvic floor muscles of men. The unit consists of a set of 4 weights ranging from 9 ounces to 16.5 ounces. As part of a progressive therapy regime, the MPT may increase the strength of the pelvic floor musculature as well as decrease the time required to reach therapy goals.

CASE DESCRIPTION

The purpose of this case report is to describe the use of the MPT in physical therapy management of a male postprostatectomy patient with the complaint of urinary frequency and incontinence.

Our study participant was a 50-year-old male referred to physical therapy 5 weeks after a radical prostatectomy. His chief complaint was frequency with a secondary complaint of urinary leakage and stated he used approximately 4 heavy incontinence pads per day. The patient reported limiting his fluid intake due to his leakage. The patient had no history of any type of voiding dysfunction prior to his surgery. His general health was good, and he had no prior medical involvements.

ASSESSMENT

Pelvic floor muscle activity was tested using a Verimed Myoexerciser III© via external electrodes placed over the perineum. Two electrodes were placed at 3:00 and the other at 9:00, 2 centimeters from the anus with the ground electrode placed near the greater trochanter. A second set of electrodes was placed over glutei muscles to rule out use of this group (the clinic staff worked together to ensure consistency with electrode placement). In 3 trials, the patient was able to demonstrate readings of 1.16uVs, 1.3uVs, and 1.0uVs (average of 1.15uVs) consecutively with a 5-second hold (note: normal expected duration for a sustained pelvic floor contraction is 10 seconds however patient was unable to perform this upon initial visit). The testing scale used was 0.0uVs (resting) to 4.0uVs. Note: no literature was found indicating normal pelvic floor activity specifically for males. Our clinic simply tested healthy males to determine this range on the Verimed Myoexerciser III©. These testing sessions consisted of patients being instructed to attempt a sustained 10-second contraction of the pelvic floor, followed by a 20-second period of rest for a total of 30 cycles per 15 minutes. Following each testing session an individuals 3 maximum contraction readings were averaged together in order to establish a baseline number for normal expected male pelvic floor strength. Verimed © software also provided physical therapists with information regarding a patient's work average and mean which includes the total area under each contraction curve, and account for all 30 cycles. Abdominal strength was assessed with a manual muscle test (MMT) as described by Hislop and Montgomery and demonstrated a strength grade of 3 out of 5. [13]

TREATMENT

The referring physician requested physical therapy for his patient based on reports that pelvic floor re-education was effective in the treatment of pelvic floor weakness and incontinence following radical prostatectomy.

The benefits of pelvic floor exercise were explained to the patient and treatment was initiated. The patient was instructed in a home exercise program of the pelvic floor exercises, abdominal strengthening activities, and instruction in the use of the MPT. The patient was instructed to begin performing pelvic floor muscle (PFM) exercises once a day contracting the pelvic floor for 10 seconds followed by a 20-second rest cycle for a total of 15 minutes. In addition, the patient was instructed to perform isometric abdominal exercises for up to 20 repetitions. The abdominal exercises were performed with the patient lying supine in hooklying (hips & knees flexed); the patient was instructed to exhale during the contraction. Patient was then instructed to begin working with the MPT initially for 3 to 5 minutes once daily in a tall kneeling position or kneeling and leaning forward onto a chair. The MPT was inserted rectally to sit just past the anal sphincter. The MPT is not inserted past centerline of the device. The initial weight of the MPT was 9 ounces and the patient was instructed to contract the pelvic floor and lift the weight slowly thereby giving the muscles of the pelvic floor a resistive workout. The patient followed the protocol of one 5 second sustained contraction followed by 5 quick contractions then 20 seconds of rest. Initially, the routine was repeated 3 to 5 minutes depending upon the patients' tolerance. The total treatment time spent working with the MPT was slowly increased based again upon patients' tolerance of using the device.

Patient progress was monitored over a 16-week period through the use of a daily patient diary. The patient was encouraged to keep a daily log of the length of usage of the MPT as well as time of day in which he used the device and the position in which the exercise was performed (ie, tall-kneeling or kneeling and leaning). The patient was instructed to increase the weight of the MPT when he was able to work in excess of 10 minutes without experiencing fatigue in the pelvic floor musculature. Added weights increased the MPT from 9 ounces to 11.5 ounces, 14 ounces, and 16.5 ounces sequentially. Upon addition of each incremental weight the patient would again start over with a 3 to 5 minute session time and slowly increase his total treatment time to 10 minutes. Additionally, the patient was seen clinically for sessions of neuromuscular re-education to help monitor his progress. During his clinical sessions the patient was treated with biofeedback using the Verimed Myoexoeciser III predominantly for functional activities such as practicing sit-to-stand, squatting and lifting, golf swings, etc. while observing muscle activity on the Myoexerciser III screen. The patient was periodically tested in the supine position, as opposed to standing, during his session with the Verimed Myoexerciser III for resting/comparison to original numbers.

OUTCOMES

Seven days after initiating treatment with the MPT the patient reported a decrease in his urinary leakage. Two weeks later the patient had progressed the weight of the MPT from 9 ounces to 11.5 ounces and stated a desire to increase the weight up to 14 ounces. Patient continued to report feelings of increased strength and decreased leakage at each follow-up visit. Eight weeks into the program the patient reported he was able to perform strenuous activities (ie, lifting and shoveling snow) for an extended period of time without report of leakage.

At 16 weeks into the program, in which the patient had undergone 16 clinical treatment sessions, he had advanced to using 16.5 ounces of weight with the MPT. Subjectively, he stated he was quite pleased with his progress' and felt the use of the MPT, as part of his treatment program, was instrumental in his recovery from urinary incontinence. Pelvic floor muscle activity was retested with a maximum contraction of 3.88uVs, which was an improvement over his maximum contraction of 1.15uVs upon initial evaluation. The patient believed that his improved status was directly related to his daily use of the rectal weight stating he was much more aware of muscle contractions with the weight and felt he was working harder then when he did Kegel exercises only.

DISCUSSION AND CONCLUSION

This case report documents the usage of the MPT as part of a progressive program of neuromuscular re-education of the pelvic floor musculature. Because the report concerns a single uncontrolled case, limited conclusions can be drawn. As noted previously in the literature, no studies were found specifically testing the use of weights as a part of a neuromuscular re-education program for males. The authors are hopeful this case report will encourage controlled studies to be performed. For example, a manual muscle test of the pelvic floor was not performed initially at patients' request. Thus readings taken from the Verimed Myoexerciser III© were used to track his progress. It is questionable whether dryness was achieved by a true increase in muscle strength, re-education of those muscles, or possibly a combination of both. Readings taken from the Verimed Myoexerciser III© did however show an increase in the number of muscle fibers fired during contractions of the pelvic floor in response to training. Other aspects of the clinical sessions, such as the abdominal program and functional training with the Myoexerciser III©, were not eliminated secondary to the ethics involved. The contribution of individual components of the physical therapy treatment cannot be determined by this case report. A controlled study would be beneficial to determine how much of the improvement (ie, change in level of dryness) was seen by the use of the MPT, versus Myoexerciser III© functional sessions, versus a traditional home exercise program of PFM exercises. The patient in this case reported he perceived the MPT was the most important part of his program.

Comparison of treatment sessions over the 16-week period, daily diary entries, as well as subjective information from the patient suggests the use of pelvic floor weights may be effective in the treatment of urinary incontinence and pelvic floor musculature weakness, following radical prostatectomy. The use of rectal weights, as a part of a comprehensive exercise program may be an effective means of facilitating the rehabilitation process for patients experiencing urinary incontinence associated with pelvic floor weakness.

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The complete case study can be read in the June 2001 issue of Women's Health Magazine. It is a publication of APTA.