Clinical Effect of Micturition Interruption Exercise on Urinary Incontinence After Radical Prostatectomy

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Research Article

Keywords: Kegel exercise, Micturition interruption exercise, radical prostatectomy, urinary incontinence

Posted Date: August 17th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-751102/v1

Version of Record: A version of this preprint was published at Supportive Care in Cancer on January 4th, 2022. See the published version at https://doi.org/10.1007/s00520-021-06780-y.

Abstract

Purpose

To explore the effectiveness of micturition interruption exercise in improving the incidence of urinary incontinence after radical prostatectomy.

Materials and Methods

Materials and Methods: With a retrospective case-control study, 96 patients admitted in the Second Affiliated Hospital of Zhejiang Chinese Medical University from August 2014 to August 2020 and underwent radical prostatectomy were collected as the subjects. Those patients who used micturition interruption exercise (n=48)were set as the observation group, and the control group was collected according to the ratio of 1:1, the patients used Kegel exercise (n=48). To compare the rehabilitation of urinary incontinence in patients and the effect of training compliance on rehabilitation.

Results

The recovery time of urinary incontinence in the observation group was significantly shorter than that of the control group. In the observation group, 83.3% of patients with training compliance reached an average or above, while the control group only accounted for 58.3%. International Consultation on Incontinence Questionnaire Short-Form score of the observation group was lower than that of the control group after surgery. Spearman analysis suggests that there is a negative correlation between the postoperative urinary incontinence recovery time and compliance with the micturition interruption exercise.

Conclusions

Micturition interruption exercise could not only improve the compliance of patients with exercise, but also significantly shorten the recovery time of urinary incontinence after radical prostatectomy.

Introduction

According to data from the GLOBOCAN project of the International Agency for Research on Cancer of the World Health Organization, by 2020, prostate cancer has become the disease with the second-highest incidence of tumors in men worldwide, and its death is also ranked sixth.

Radical prostatectomy (RP) is the standard treatment for localized prostate cancer, but post-prostatectomy incontinence (PPI) is a tricky complication, with an incidence rate of 2–87%. PPI is very common after surgery, and approximately 80% of patients have urinary incontinence one month after surgery. Suppose the patient's urinary incontinence is more severe and has not been improved for a long time. In that case, it will not only seriously affect the patient's quality of life and mental health, but also affect the willingness to undergo further treatment. According to the severity of urinary incontinence, the treatment of PPI includes penis clamps, pelvic floor muscle training (PFMT), biofeedback electrical stimulation, drug therapy, and artificial urethral sphincter, etc.[1, 2] At present, the Kegel exercise is the primary method of PFMT[3]. However, Kegel exercise has many steps, and the practice is complex, which easily leads to poor patient compliance, poor effects, and so on. “A return to continence is a major priority for the patient, the surgeon and their multidisciplinary health-care team.” Sean et al. said in their article[4]. Traditional methods to improve urinary incontinence after radical prostatectomy mainly focus on technological advances in surgery and postoperative pelvic floor muscle rehabilitation.

Therefore, to optimize the effect of postoperative functional exercise, after anatomical research and clinical exploration, we simplified Kegel training and designed a set of micturition interruption exercise. To evaluate the effectiveness of this method, we collected 96 prostate cancer patients admitted to the hospital from August 2014 to August 2020. All these patients were followed up for six months by telephone or outpatient clinic to assess the recovery of urinary incontinence in different periods. This is reported as follows:

1 Materials And Methods

1.1Research object

Ninety-six patients received surgical treatment at our hospital from August 2014 to August 2020. The operations were performed by the same surgeon (before that, the surgeon completed approximately 50 cases of laparoscopic radical prostatectomy. After the patient pulls out the catheter after surgery, evaluating the presence of urinary incontinence according to AUA/SUFU urinary incontinence guidelines[5]. A 1-hour urine pad test was performed by placing a weighed dry urine pad on the perineum in advance, and the patient was instructed to drink 500 ml of boiled water within the first 15 minutes and rest in bed[6]. In the next 30 minutes, the patient walked up and down the steps; in the last 15 minutes, the patient sat and stood 10 times, coughed 10 times, ran for 1 min, picked up five small objects on the ground, and washed hands with tap water for 1 min. After the test, the placed urine pad was weighed, and the patient was asked to urinate and measure the urine output. The urine leakage volume ≥ 2 g was positive, and the urine leakage volume was ≥ 5 g; that is, the degree of urinary incontinence was moderate or above.

1.1.1 Inclusion criteria:

1) Male, ≥ 50 years old, with normal cognitive function, diagnosed with prostate cancer by pathology, and able to cooperate with Micturition interruption exercise;

2)There was no urinary incontinence before the operation, and urinary incontinence occurred after RP;

3)Have did not have pelvic surgery in the past;

4) The patient or the main caregiver agrees to the nursing plan, and the urination function before the operation is not significantly affected.

1.1.2 Exclusion criteria

1) Previous history of prostate surgery;

2) Combined with severe dysfunction of the heart, lung, liver, kidney, brain, etc.(Expect to be unable to keep exercising).

3) Previous history of urinary incontinence, or urinary incontinence caused by trauma or other diseases;

4) Those who have cognitive or language impairments, poor compliance, and are not expected to complete the follow-up.

1.2 Methods

Patients diagnosed with moderate or higher urinary incontinence were divided into pelvic floor muscle exercises (Kegel exercise, three sessions per day), which was the control group; micturition interruption exercise, the observation group. During normal urination, the patients in the observation group were instructed to consciously contract the perineal muscles, stop urinating, and actively control urination. After the patients felt that they had stopped urinating, urinating again, and actively interrupting urination again. Repeatedly until urination was completed. After the patients have mastered the micturition interruption exercise, they were suggested to perform this exercise when not urinating, that is, contraction of the abdomen, perineum, and anus at the same time. It is recommended that 15–20 times be a group, and each group lasts for more than 20s to be effective. It is appropriate to feel the soreness of the perineal muscles. The course of treatment was determined on the patient's urinary control and recovery.

1.2.1 Observation indicators

The patients began to implement the medical-care integrated telephone follow-up education model 1 month after discharge. The intervention time was six months. The follow-up content included the patient's Kegel exercise and micturition interruption

exercise status and urination interval. The time, the number of urinations per day, and urinary incontinence status were investigated using the International Consultation on Incontinence Questionnaire Short-Form (ICIQ-SF), and the difficulties encountered by the patients in the training process were intervened and guided. In the 6th month, the patient was informed to come to the hospital for reexamination to learn more about the implementation of the micturition interruption exercise after discharge, compliance, and urinary control function recovery. Finally, collected statistical and analysis data.

1.3 Sample size calculation

This study was a randomized controlled trial, and the observation index was the incidence of urinary incontinence. According to estimates, the prevalence rate in the observation group at one month after surgery was 75%, and the prevalence rate in the control group was 95%, α = 0.05, and the power was 80%. Using SAS 9.4 software to calculate, the sample size of the observation group N1 = 47 cases, the sample size of the control group N2 = 47 cases, a total of at least 94 subjects were included[7]. The results of each test index were consistently significant between the two groups. Therefore, the influence of chance could be excluded, which indicates that there were indeed differences between the two groups.

1.4 Statistical methods

Data were processed using SPSS 25.0. Enumeration data were represented by cases(n%); comparison between groups was performed by $\chi 2$ test; correlation analysis was performed by Spearman correlation analysis. Significance was set at an alpha level of .05, with a statistical power of .95.

2 Result

2.1Basic information

The observation group was 60–83 years old, with an average age of 69.7 years; the control group was 59–83 years old, with an average age of 70.9. Mean body mass index (BMI) was 23.6 in the observation group and 22.6 in the control group, the difference being statistically significant ($p < .05$)

2.2 The patient's recovery from urinary incontinence after Micturition interruption exercise after surgery

We used 1-hour urine pad test to assess whether the patient has urinary incontinence (The specific steps were the same as above). The incidence of urinary incontinence in 96 patients when the catheter was removed was 100%(96/96), among which the incidence of urinary incontinence in the control and observation groups at one month after surgery was 95.8% (46/48) and 75.0%(36/48), respectively. After three months, the incidence of urinary incontinence was 75% (36/48) and 41.7% (20/48), respectively. The incidence of urinary incontinence at six months postoperatively was 33.3% (16/48) and 12.5% (6/48), respectively. There was a statistically significant difference in the incidence of urinary incontinence at each period after surgery ($P < 0.01$). Regardless of the observation group or the control group, the incidence at 1, 3, and 6 months after surgery was lower than that when the catheter was removed after surgery. The incidence at three months after surgery was lower than that at one month after surgery, and the incidence at six months after surgery was lower than that at three months after surgery($P < 0.01$). All patients had no apparent symptoms of urinary system infection during the follow-up period.

2.3 Comparison of patients' compliance with Kegel exercise and micturition interruption exercise after surgery

The patient's exercise completion status was recorded every day after the operation and scored one point for 1 d after completing the process. Finally, the patients were divided into the poor compliance group (< 25%), the general compliance group (25–75%), and the good compliance group (> 75%) according to the percentile.

After discharge from the hospital, the compliance of the observation group was significantly better than that of the control group, and the difference was statistically significant in the first and third months after surgery ($P < 0.01$). Table 1 for details.

Table 1
Functional exercise compliance(n%)

Group	Micturition Interruption Exercise compliance			Kegel exercise compliance			P
	Poor(<25%)	General(25%-75%)	Good(>75%)	Poor(<25%)	General(25%-75%)	Good(>75%)	
0 month after operation	10	14	24	20	8	20	0.07
1 month after operation	4	22	22	22	12	14	< 0.01
3 months after operation	0	28	20	26	14	8	< 0.01
Note: Most patients with urinary incontinence recover within 6 months, so the situation after 6 months is not listed here.							

2.4 The scores of ICIQ-SF of the two groups of patients

This table was used to investigate the incidence of urinary incontinence and the impact of urinary incontinence on patients. There were three scoring items: 1. The number of urine leakages (0–5 points); 2. The amount of urine leakage (0–6 points); 3. The impact of urine leakage on daily life (0–10 points) The total score was 0–21 points.

The mean ICIQ-SF score of the observation group was lower than that of the control group at 1, 3, and 6 months after surgery. It was statistically significant compared with "0 months after surgery" ($P < 0.05$). Table 2 for details.

Table 2
Comparison of the scores of ICIQ-SF between the two groups(compared with 0 months after surgery)

Group	Number of cases	0 month after operation	1 month after operation	3 months after operation	6 months after operation
		ICIQ-SF scores	ICIQ-SF scores	ICIQ-SF scores	ICIQ-SF scores
Observation group	24	9.96	6.72	4.20	3.03
Control group	24	9.88	7.48	6.39	4.98
P			< 0.01	< 0.05	< 0.05

2.5 Spearman correlation analysis of micturition interruption exercise compliance and urinary incontinence duration

In the observation group, the highest score was 7, the lowest score was 0, and the average score was 5.82. Spearman correlation analysis showed that there was a negative correlation between the duration of postoperative urinary incontinence and compliance with urination interruption training. ($P < 0.01$, $rs=-0.646$).

3 Discussion

Routine urine examinations during follow-up showed that there was no apparent urinary tract infection in both groups. There was no difference in compliance between the two groups of patients when the catheter was first removed ($P > 0.05$). However, the superiority of the observation group's exercise style began to manifest one month after the operation. This study found that the observation group patients had higher exercise compliance (83.3%vs58.3%). Analyze the reasons: simple and easy-to-learn method helps patients keep exercising. The recovery time of urinary incontinence in the observation group was significantly shorter than that of the control group (3.6 months vs5.4 months); the ICIQ-SF scores of the two groups were statistically significant at 1, 3, and 6 months significance. The above two results show that the micturition interruption

exercise is more effective than Kegel exercise in improving postoperative urinary incontinence. It can produce a difference in curative effect in a short period. Micturition interruption exercise can help the patient exercise the pelvic floor muscles more correctly. Easy-to-learn and straightforward movements improve patient compliance and increase the training effect. Patients could directly observe their urinary control during training. A good training effect was also known as the motivation of the patient to persist in training.

It has been reported that patient age, exercise compliance, and other factors are related to the recovery time of postoperative urinary incontinence[8, 9]. The results of the Spearman correlation analysis of this study showed that the postoperative recovery time of urinary incontinence is highly correlated with the compliance of urinary interruption training; that is, the better the compliance, the shorter the duration of urinary incontinence(rs=-0.646).

Pelvic floor muscle training (PFMT) can reduce the severity and duration of early urinary incontinence after radical prostatectomy[10]. The mechanism of PFMT to promote the recovery of urinary incontinence after prostatectomy is to improve the coordination and strength of the pelvic floor muscles[11]. In 1948, Arnold Kegel first described the strengthening effect of Kegel exercises on the pelvic floor muscles, which prevented cystocele, rectocele, and urinary incontinence[12]. Unfortunately, Kegel exercises were subject to individual variability, and it was not easy to standardize the procedure.

In summary, we proposed micturition interruption exercise to help patients master the correct pelvic floor muscle contraction and increase the patient’s subjective perception of the key muscle groups for urinary control, so that the patient can judge the correctness of the exercise by himself. Micturition interruption exercise hoped that patients could master the correct pelvic floor muscle contraction method by interrupting urine flow. At the same time, it was also convenient for patients to carry out without urinating.

The male urethral sphincter is composed of the proximal and distal urethral sphincters, and its integrity is closely related to male urinary control function. The proximal urethral sphincter, including the bladder neck/internal urethral sphincter (IUS), prostate, posterior urethra, and seminal caruncle, will be removed during surgery. The distal urethral sphincter, including the external urethral sphincter (EUS), urethral prostatic membrane, pelvic floor muscles, and fascial tissues are particularly important for the maintenance of the patient's postoperative urinary control function[13]. The external urethral sphincter is composed of fast and slow-contraction muscle fibers. The increase in external sphincter muscle strength and muscle fiber volume helps to improve the symptoms of PPI.

Pelvic floor muscles play an essential role in the urination process. The main muscle of the pelvic floor is the levator ani, especially at a position close to the urethral membrane. Thickening of the muscle and fusion of the urethral sphincter are the primary sources of urethral contraction. The muscle and distal urethral sphincter together constitute the pelvic floor muscle structure. The levator ani muscle covers the outer surface of the prostate. The exercise of the levator ani muscle can strengthen the function of pudendal nerve innervation and enhance pelvic floor myofascial and ligaments. In addition, the practice of the levator ani muscle provides structural support for the bladder and urethra. It improves the levator ani muscle exercise and tension to improve the ability of urinary control and reduce the incidence of stress urinary incontinence[14, 15].

Because most patients with prostate cancer are older and have limited understanding and acceptance, how to exercise and how to persist in exercise has always plagued most patients. Scholars have discovered early on that most patients may not perform normal contractions under guidance, and even a quarter of patients have worsened PPI after training[16]. Only 30% of men can perform correct pelvic floor muscle exercises after being instructed[17]. A retrospective analysis of postoperative urinary incontinence in patients with prostate cancer found that only under the guidance of a physical therapist, a standardized, reasonable, and effective PFMT can shorten the duration of urinary incontinence. However, Stafford et al. found that traditional PFMT only exercises the perianal rectal sphincter group while ignoring the damage to the urethral sphincter and bulbocavernosus muscle caused by the operation itself[18]. EUS belongs to the posterior urethral striated sphincter, which plays an important role in normal urinary control, while traditional pelvic floor muscle training is often concentrated in the anal

sphincter area[19]. Some scholars believe that attention should be paid to the training method of the rhabdomyourethral sphincter to compensate for the loss of smooth muscle and striated muscle after prostatectomy[20].

According to current research, the correctness of pelvic floor muscle exercise is more important than compliance in urinary incontinence rehabilitation[21].The advantage of micturition interruption exercise is that the levator ani muscle and the external urethral sphincter are exercised through simple and easy-to-understand urinary holding movements, which enhances the tension of the urethral fascia while maintaining proper tension of the distal urethral sphincter, thereby increasing the internal pressure always higher than the internal pressure of the bladder to achieve the purpose of control urination. Patients can directly observe the recovery of urinary control ability, which can increase confidence in the cure of urinary incontinence, so as to better perform subsequent functional exercises. In addition, at the beginning of exercise, micturition interruption exercise performed during urination could be carried out consciously through bladder function training, which is beneficial for establishing normal urination reflex[22].

Since this is a retrospective study and the sample size was small, there may be a considerable risk of bias. But each observation index indicates that there was a difference between the two groups. In addition, there may be differences in the training of different individuals, and it is difficult to ensure that the training of patients after discharge from the hospital meets the expected expectations. However, we believe that the use of micturition interruption exercise improves the treatment effect of the disease. At the same time, it is convenient for patients to understand and grasp. The implementation of training is less restricted, which helps alleviate the negative impact of the tension between doctors and patients and the high cost of medical care. Reviewing previous literature reports, combined with the analysis of this article, we know that regardless of the training method, the correctness and compliance of the patient to the exercise are particularly important. Micturition interruption exercise improves the patient's target muscle exercise accuracy while also improving patient compliance with exercise after discharge from the hospital. It shortens the duration of postoperative urinary incontinence. Besides, micturition interruption exercise is not only helpful in helping patients train pelvic floor muscles to improve PPI. Still, it can also be used as an index to evaluate the efficacy of patient training, which is also an advantage that PFMT does not have.

In the future, we will also carry out more sample sizes and multi-center prospective clinical studies to further clarify the safety and feasibility of the micturition interruption exercise and benefit more patients.

4 Conclusion

At present, it is possible that scholars have proposed to use the method of holding urine to master the correct method of pelvic floor muscle exercise, but there are not many related literature reports. We have concluded through years of clinical practice research that micturition interruption exercise can help patients better and faster relieve the trouble of urinary incontinence after radical prostatectomy.

Abbreviations

ICIQ-SF=International Consultation on Incontinence Questionnaire Short-Form

BMI=Mean body mass index

EAU=European Association of Urology

AUA=American Urological Association

SUFU=Society of Urodynamics. Female Pelvic Medicine & Urogenital Reconstruction

RP= radical prostatectomy

PPI= post-prostatectomy incontinence

PFMT=pelvic floor muscle training

ICIQ-SF= International Consultation on Incontinence Questionnaire Short-Form

IUS=internal urethral sphincter

EUS=external urethral sphincter

Declarations

Ethical Approval and Consent to Participate: All authors have participated sufficiently in the work to take public responsibility for appropriate portions of the content after receiving permission from the human research ethics committee of the Hospital (IRB No.2020-KL-167-01). As this was a retrospective study, the ethics committee abandoned the requirement for informed consent.

Consent for Publication: Not applicable.

Availability of Data and Materials: All data generated or analyzed during this research period are included in published articles. Data are available on request to the authors.

Competing Interest: The authors declare no potential conflicts of interest with respect to the research, authorship, and publication of this article.

Funding: Natural Science Foundation of Zhejiang Province for financial support (project number: Y20H270024).

Author contributions and Acknowledgements: Kang-jie He carried out the questionnaire investigation, participated in the data analysis and drafted the manuscript. Xiang-nan Yang carried out the questionnaire investigation and performed the statistical analysis. Yue Duan conceived of the study, participated in its design and coordination and Obtained funding. Zheng Zhu participated in the training of nursing in this research. Di Dai and Jia-cheng Zhang checked the correctness of the data. Jia-xing Chen proposed critical revision of the manuscript for important intellectual content. All authors read and approved the final manuscript. Thanks to everyone above for their help.

Consent for publication: Written informed consent for publication was obtained from all participants.

References

1. Anderson CA, Omar MI, Campbell SE, Hunter KF, Cody JD, Glazener CM(2015) Conservative management for postprostatectomy urinary incontinence. Cochrane Database Syst Rev 20;1(1):CD001843.
2. Comiter CV, Dobberfuhl AD(2016)The artificial urinary sphincter and male sling for postprostatectomy incontinence: Which patient should get which procedure? Investig Clin Urol 57 (1): 3-13.
3. Huang YC, Chang KV. Kegel Exercises. Treasure Island , America,2020.
4. Mungovan SF, Carlsson SV, Gass GC, Graham PL, Sandhu JS, Akin O, et al(2021)Preoperative exercise interventions to optimize continence outcomes following radical prostatectomy. Nat Rev Urol. 18(5):259-281.
5. Sandhu JS, Breyer B, Comiter C, Eastham JA, Gomez C, Kirages DJ, et al(2019)Incontinence after Prostate Treatment: AUA/SUFU Guideline. J Urol .202 (2):369-378.
6. Soto González M, Da Cuña Carrera I, Lantarón Caeiro EM, Gutiérrez Nieto M, López García S, Ojea Calvo A(2018)Correlation between the 1-hour and 24-hour pad test in the assessment of male patients with post-prostatectomy urinary incontinence. Prog Urol. 28(11):536-541.
7. Shein-Chung Chow,J Shao,H Wang,et al(2017)Sample size calculations in clinical research, third edition. Statistical Theory and Related Fields 1(2):265-266.

8. Teber D, Sofikerim M, Ates M, Gözen AS, Güven O, Sanli O, et al(2010)Is type 2 diabetes mellitus a predictive factor for incontinence after laparoscopic radical prostatectomy? A matched pair and multivariate analysis. J Urol .183 (3):1087-91.
9. Latorre GFS, de Fraga R, Seleme MR, Mueller CV, Berghmans B(2019)An ideal e-health system for pelvic floor muscle training adherence: Systematic review. Neurourol Urodyn38 (1):63-80.
10. Fernández RA, García-Hermoso A, Solera-Martínez M, Correa MT, Morales AF, Martínez-Vizcaíno V(2015)Improvement of continence rate with pelvic floor muscle training post-prostatectomy: a meta-analysis of randomized controlled trials. Urol Int 94 (2):125-32.
11. Hodges PW, Stafford RE, Hall L, Neumann P, Morrison S, Frawley H, et al(2020)Reconsideration of pelvic floor muscle training to prevent and treat incontinence after radical prostatectomy. Urol Oncol. 38(5):354-371.
12. Kegel AH(1948)Progressive resistance exercise in the functional restoration of the perineal muscles. Am J Obstet Gynecol .56 (2):238-48.
13. Moinzadeh A, Shunaigat AN, Libertino JA(2003)Urinary incontinence after radical retropubic prostatectomy: the outcome of a surgical technique. BJU Int .92 (4):355-9.
14. Bordoni B, Sugumar K, Leslie SW(2021)Anatomy, Abdomen and Pelvis, Pelvic Floor. Treasure Island ,FL.
15. Grimes WR, Stratton M(2021)Pelvic Floor Dysfunction. Treasure Island ,FL.
16. Bump RC, Hurt WG, Fantl JA, Wyman JF(1991)Assessment of Kegel pelvic muscle exercise performance after brief verbal instruction. Am J Obstet Gynecol.165 (2):322-7.
17. Ribeiro AM, Nammur LG, Mateus-Vasconcelos ECL, Ferreira CHJ, Muglia VF, de Oliveira HF(2021) Pelvic floor muscles after prostate radiation therapy: morpho-functional assessment by magnetic resonance imaging, surface electromyography and digital anal palpation. Int Braz J Urol. 47(1):120-130.
18. Stafford RE, Coughlin G, Lutton NJ, Hodges PW(2015)Validity of Estimation of Pelvic Floor Muscle Activity from Transperineal Ultrasound Imaging in Men. PLoS One 10 (12):e0144342.
19. Hall LM, Aljuraifani R, Hodges PW(2018)Design of programs to train pelvic floor muscles in men with urinary dysfunction: Systematic review. Neurourol Urodyn. 37(7):2053-2087.
20. Hodges PW, Stafford RE, Hall L, Neumann P, Morrison S, Frawley H, et al(2020)Reconsideration of pelvic floor muscle training to prevent and treat incontinence after radical prostatectomy. Urol Oncol. 38(5):354-371.
21. Hall LM, Aljuraifani R, Hodges PW(2018)Design of programs to train pelvic floor muscles in men with urinary dysfunction: Systematic review. Neurourol Urodyn.37 (7):2053-2087.
22. Yanmei Wen , Ping Ouyang, Huafeng Yang ,Shiwei Yang,Yi Song(2017)Efficacy of pelvic floor muscle training and micturition interruption training on prevention of urinary retention after radical operation of gynecological tumor:a Meta analysis.Chinese Journal of Modern Nursing .23 (33): 4244-4249.

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