

Section: Medical Surgical Nursing

Combination of bladder training and Kegel exercises to reduce urinary incontinence in patients after TURP

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Abstract

Continence and bladder care are essential components of healthcare to improve patient quality of life. Bladder training and Kegel exercises are commonly used together to manage urinary incontinence. Bladder training aims to increase the interval between the urge to urinate and actual voiding, thereby improving bladder control and reducing urinary frequency. Kegel exercises strengthen the pelvic floor muscles, which support the bladder, rectum, and other pelvic organs, and help reduce accidental urine leakage. Both interventions are effective behavioral therapies and are often recommended as first-line approaches, particularly for stress and urge incontinence. The aim of this research is to determine the effectiveness of combined bladder training and Kegel exercises as nursing interventions to treat urinary incontinence in patients with BPH post-TURP. Mr. N, a 61-year-old male with BPH post-TURP, presented with complaints of pain during urination, difficulty initiating urination, weak or interrupted urine flow, dribbling at the end of urination, a sensation of incomplete bladder emptying, and increased urinary frequency, including nocturia. His vital signs were blood pressure 159/101 mmHg, temperature 36°C, pulse 69 beats per minute, and respiratory rate 20 breaths per minute. Prior to illness, his urinary output was three times per day with a total volume of 900 cc. After the TURP procedure, he was fitted with an irrigation catheter, producing approximately 4000 cc over 8 hours. One day post-TURP, his urine output was 900 cc/day, with urine appearing dark yellow, non-viscous, and slightly reddish. The combination therapy of bladder training and Kegel exercises was performed twice daily for three consecutive days. Evaluation showed consistent improvement in the two primary nursing diagnoses: urinary incontinence and acute pain. Both problems decreased progressively and were resolved by the third day of intervention.

Keywords: Bladder training, BPH, Kegel exercise, TURP, Urological Nursing

Introduction

BPH (Benign Prostatic Hyperplasia) is a common condition experienced by older men and a common cause of lower urinary tract symptoms (Xu et al., 2024). BPH refers to non-malignant growth or hyperplasia of prostate tissue and is a common cause of lower urinary tract symptoms (LUTS) in older men (Madersbacher et al., 2019). Urinary incontinence (UI) and BPH are two common urogenital problems in men. Urinary incontinence is the involuntary leakage of urine. This condition is common in older adults but can also affect younger adults and have a significant impact on health and quality of life (Theodorou et al., 1998). Urinary incontinence can occur after surgery for BPH. This can occur as a result of chronic BPH, which causes instability in the bladder muscles (Bruschini et al., 2011). BPH is the most common benign neoplasm in men, and recent data show that approximately 10% of these patients will require some form of surgical treatment. Based on the health profile of Central Java Province, the highest prevalence of BPH cases in Central Java is 4,794 (66.33%) cases in Grobogan Regency compared to the total number of prostate cases in other regencies or cities in Central Java. Early incontinence is typically associated with urgency incontinence, either due to irritative symptoms resulting from prostate fossa healing and related urinary tract infections or excessive detrusor activity caused by long-standing BPH. Many factors are involved in the aetiology of post-prostatectomy incontinence. These factors include BD, such as DC (direct compression) and/or DO (distal obstruction), and impaired sphincter mechanisms. Continence and bladder care are crucial in healthcare to enhance the quality of patient care. To assist individuals with urinary elimination, nursing interventions play a vital role in ensuring their comfort, privacy, and safety during the process.

Conservative treatment options, including pelvic floor exercises, bladder retraining, and fluid modification, are recommended before referral to secondary services. Bladder training aims to increase the interval between urination and is widely used to treat urinary incontinence (Lee et al., 2013). Bladder training is widely used for the management of urinary incontinence in both primary and secondary care settings and in institutional settings in the community. Bladder training is generally used for the management of people with urge incontinence. Bladder training aims to increase the time interval between urination, either through a mandatory schedule or a self-adjusted schedule, so that incontinence can eventually be avoided and continence can be restored: this may take several months to achieve.

Kegel exercises are a non-pharmacological approach to managing urinary incontinence by strengthening the pelvic floor muscles. These exercises involve contracting and relaxing the muscles that control urine flow, helping to improve bladder control and reduce leakage (Urvaylioğlu et al., 2021). Research has shown that Kegel exercises can be effective in reducing the severity and impact of urinary incontinence, particularly stress urinary incontinence, in both men and women (Chitre & Kulkarni, 2023). Kegel exercises are also considered the most cost-effective therapy and differ from other treatments because they can be performed anytime and without the need to visit a hospital (Jalalinia et al., 2020). To strengthen the pelvic floor muscles, patients simply need to practice regularly. The purpose of this case study is to assess whether Kegel exercises and bladder training can effectively alleviate symptoms of urinary incontinence, ultimately improving patients' quality of life and psychological well-being. The combination of bladder training and Kegel exercises showed that combining Kegel exercises and bladder training successfully reduced episodes of urinary incontinence. This research method is descriptive in the form of a case study. The descriptive research method in case studies aims to provide a detailed and in-depth description of a particular case or phenomenon by systematically collecting and analysing data. This research does not aim to test cause-and-effect relationships or generalizations, but rather to comprehensively understand the characteristics, aspects, and context of the case being studied. The subject of this case study is a 61-year-old patient with Post TURP (Transurethral Resection Prostate) BPH on the first day after TURP in Ward Cempaka 1 of RSUD Temanggung. The instruments used in this case study are observation sheets are used by researchers or medical personnel to record changes in the subjective and objective conditions of patients before and after interventions involving Bladder Training and Kegel Exercises. The indicators observed include facial expressions during pain and a reduction in urinary incontinence.

Case Description

General data collected from patients with urinary incontinence nursing problems includes general patient identification, such as name, age, gender, address, education, occupation, ethnicity, religion, date of admission to the hospital, medical record number, and medical diagnosis. The nursing care provided focuses on the application of a combination of bladder training and Kegel exercises to reduce urinary incontinence in Mr. N, a 61-year-old man. Mr. N's medical diagnosis is BPH post TURP. From the assessment conducted on January 21, 2025, it was found that Mr. N experienced the following main complaints: pain during urination, difficulty urinating, weak or interrupted urine flow, urine dripping at the end of urination, feeling of incomplete urination, and increased frequency of urination, even at night. The patient's vital signs were blood pressure 159/101 mmHg, temperature 36°C, pulse 69 beats per minute, and respiration 20 breaths per minute. In the urinary system, prior to the illness, the patient had a urine output of 3 times per day with a urine volume of 900 cc. After the TURP procedure, the patient was fitted with an irrigation catheter at approximately 4000 cc/8 hours. One day post-TURP, the urine volume was 900 cc/day, the urine was dark yellow in colour, not thickened, and had a characteristic urine odour with a slight reddish tint. Supporting data (laboratory tests) obtained from the patient showed lymphocyte levels of 19.8% (low) and NLR of $3.5 \times 10^3/\mu\text{L}$ (low). The nursing diagnosis of this problem is in accordance with the SDKI, namely urinary urgency incontinence associated with irritation of the bladder contraction receptors, evidenced by a strong urge to urinate accompanied by incontinence (D.0047). The patient also experienced pain in the genital area and abdomen after TURP surgery. The pain experienced is rated at a level of 5 (moderate pain), which interferes with the patient's activities and sleep patterns. Based on this data, the issue of acute pain related to physical trauma is evident, as demonstrated by the post-operative TURP procedure, where the patient complains of pain, appears to be grimacing, adopts a protective posture, is restless, and has difficulty sleeping (D.0070).

In the diagnosis used as the primary case for implementation in urinary elimination disorders related to bladder irritation, based on the Indonesian Nursing Outcomes Standards (SLKI), it is expected that the problem will be resolved with improved urinary elimination outcomes (L.04034), including urinary urgency, bladder distension, incomplete urination (hesitancy), residual urine volume, and urine dribbling decrease over a 3x24-hour implementation period. The implementation provided to patients over a period of 3x24 hours involves several actions based on SIKI, namely identifying signs and symptoms of urinary retention or incontinence, identifying factors causing urinary retention or incontinence, monitoring urine elimination (e.g., frequency, consistency, odor, volume, and color), recording urination times and output, limiting fluid intake, teaching patients to recognize urination signs and the appropriate time to urinate, teaching pelvic floor muscle strengthening therapy/urination therapy, and recommending adequate fluid intake, if there are no contraindications. The author conducted education on pelvic muscle strengthening or urination exercises that patients can perform to address urinary incontinence issues, combining bladder training therapy and Kegel exercises to help improve pelvic muscle strength and urination function, thereby reducing urinary incontinence problems experienced by patients. The combination of bladder training and Kegel exercises was taught to patients on a daily basis for 3 days of implementation.

On the first day of evaluation, the patient still frequently urinated and was unable to hold urine. The patient appeared to have reduced pelvic and urinary muscle strength, and after being taught a combination of bladder training and Kegel exercises, the SLKI target for urinary elimination disorders began to decline. The patient was able to follow the instructions given, and urinary incontinence symptoms began to improve, thereby affecting the patient's elimination pattern. On the second day of implementation, the patient still complained of frequent urination, but

reported feeling better and able to hold urine after performing bladder training and Kegel exercises. The patient could also rest peacefully without experiencing nocturia. On the third and final day of implementation on January 23, 2025, the combination of bladder training and Kegel exercises successfully achieved the target set based on the SLKI, as evidenced by the patient no longer complaining of frequent urination and being able to hold urine, thereby affecting the patient's elimination pattern.

Discussion

The results obtained from the patient's assessment data showed that the patient complained of an inability to hold urine, with a urination frequency of 10-12 times per day. The patient had a catheter in place, and the urine appeared dark yellow in colour. After TURP, the urine output was 900 cc/day. The complaints experienced by patients are due to urinary incontinence following TURP, which can be attributed to pain caused by factors such as catheter use, inflammation, an overly full bladder, and inadequate timely pain relief. Urinary incontinence after TURP can result in pain that may be a significant factor affecting recovery and quality of life. Urinary incontinence in men with BPH occurs due to prostate growth that compresses the urethra. Additionally, the bladder wall lining thickens during this growth process. These symptoms cause the bladder muscles to weaken, leading to various types of urinary incontinence. The internal sphincter, a ring of muscle that controls urine flow, is located at the neck of the bladder. During TURP, this sphincter may be damaged or removed, impairing its ability to close effectively and prevent leakage. The nerves that control the bladder and sphincter muscles may be affected during surgery, potentially impairing their ability to function properly. In patients who have undergone TURP, urinary incontinence occurs because the procedure indirectly stimulates certain receptors to release urine. This condition is a result of the surgical procedure disrupting the normal function of the urinary system, particularly the muscles and nerves involved in bladder control. The surgery can affect the internal and external urethral sphincters, the bladder neck, and the pelvic floor muscles, leading to stress incontinence (leakage due to pressure) or urgency incontinence (sudden and strong urge to urinate).

The implementation carried out to address urinary incontinence issues includes identifying signs and symptoms of urinary retention or incontinence, identifying factors causing urinary retention or incontinence, monitoring urine elimination (e.g., frequency, consistency, odour, volume, and colour), limit fluid intake, teach how to recognize signs of urination and the appropriate time to urinate, teach pelvic floor muscle strengthening therapy/urination therapy (bladder training and Kegel exercises), recommend adequate fluid intake if there are no contraindications, and recommend reducing fluid intake before bedtime. The interventions provided over three days for this patient strengthened the pelvic floor muscles, improved bladder sphincter function, and enhanced blood circulation, thereby accelerating post-operative recovery. In addition to its physiological benefits, Kegel exercises positively impact the patient's quality of life, such as increasing self-confidence and comfort in socializing. Given their proven effectiveness and non-invasive nature, bladder training and Kegel exercises can serve as standard interventions for managing urinary incontinence. Nursing interventions for elimination disorders in this patient are based on the principle that urinary incontinence is not dependent on the underlying disease and is often reversible. Pelvic floor muscle training is a drug-free, non-invasive, and cost-effective method for controlling urinary system disorders in patients.

Bladder training is an important and effective form of behavioural therapy for treating urinary incontinence (Zhengyong et al., 2014). The goal is to increase the amount of time between emptying the bladder and the amount of fluid that the bladder can hold. This exercise can also reduce leakage and urgency associated with this problem (Hagovska et al., 2024). Modality therapy or Kegel exercises are given to strengthen the pelvic muscles so that they can have an effect on the elimination disorders experienced by patients. The author conducted bladder training with Kegel exercises 1 time during the 3 days of implementation. The patient was initially advised to maintain the contraction for 3 seconds, followed by a 5-second rest, and then gradually increase the contraction duration up to 10 seconds. This exercise was performed twice daily for 3 consecutive days and gradually increased to 60 contractions per day. Kegel exercises, or pelvic floor muscle exercises, stimulate proprioceptors and mechanoreceptors within the pelvic floor muscles and surrounding tissues. These receptors play a crucial role in improving bladder control and continence by enhancing the strength and coordination of the muscles involved in urinary control. Proprioceptors are located within muscles and tendons and provide the brain with information about the body's position and movement. In the context of Kegel exercises, proprioceptors in the pelvic floor muscles help the brain understand the state of muscle contraction and relaxation, enabling better control over bladder and bowel function. Meanwhile, mechanoreceptors respond to mechanical stimuli, such as pressure and stretching, within tissues. Kegel exercises stimulate mechanoreceptors in the pelvic floor muscles and surrounding connective tissue. This stimulation can help improve the muscles' ability to respond to changes in pressure within the bladder and abdomen, reducing the likelihood of urinary leakage (Büyükyılmaz et al., 2020). Bladder training for urinary incontinence affects muscarinic receptors, particularly the M2 and M3 subtypes, located in the smooth muscles of the bladder (detrusor). These receptors play a key role in bladder contraction and the urge to urinate. By encouraging scheduled urination and gradually increasing the time between urges, bladder training helps retrain the bladder and improve bladder control (Yang et al., 2020). Bladder training works by helping individuals become more aware of their bladder signals and gradually delaying

urination, which can lead to a decrease in the sensitivity of these receptors and reduce the frequency of urges and episodes of incontinence.

After three days of bladder training, patients were able to control their urge to urinate and reduce the frequency of urination. By performing Kegel exercises, patients were able to reduce the severity of urinary incontinence in patients who had undergone TURP. The research findings indicate that this combined approach can significantly improve bladder control in women, thereby reducing episodes of incontinence and increasing the number of women achieving complete continence. Combined nonpharmacological therapy involving Kegel exercises and bladder training carries minimal risk for patients and is beneficial in reducing the frequency of urinary incontinence. This study demonstrates that pelvic floor muscle strengthening exercises (pubococcygeal muscles) surrounding the middle part of the urethra, performed in elderly patients with urinary incontinence, can strengthen these muscles, thereby close the urethra and enable patients to consciously use these muscles to prevent urine leakage.

Conclusion

The results obtained during the 3-day intervention showed a decrease in the degree of urinary incontinence from moderate to mild with monitoring of urinary elimination patterns through urination frequency. During the 3 days of implementation, the patient urinated 10 times on the first day. On the second day, the patient urinated 9 times/day, and on the last day of implementation, the patient urinated 5 times a day. Combined nonpharmacological therapy involving Kegel exercises and bladder training poses minimal risk to patients and is beneficial in reducing the frequency of urinary incontinence. Bladder training encourages patients to consistently control their urge to urinate and schedule urination at specific intervals, as well as to increase the intervals between urination. Using bladder training techniques and Kegel exercises to strengthen the pelvic floor muscles, distraction and/or relaxation help reduce the urge to urinate until the interval is reached. If bladder training is used alone to treat urinary incontinence, patients will only be able to overcome urinary leakage by holding back the urge to urinate. Conversely, if Kegel exercises are performed alone, patients may not necessarily be able to hold back the urge to urinate. Therefore, this combination therapy can be said to be more effective and beneficial in treating elimination disorders and improving the quality of life of patients with elimination disorders or urinary incontinence. It is hoped that the implementation of Kegel exercises and bladder training as part of the treatment plan will yield positive results, helping patients resume their daily activities more effectively.

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