REVIEW ARTICLE

Perioperative Nursing Considerations for Transurethral Resection Prostatectomy

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The present article was an overview of transurethral resection prostatectomy (TURP) and its prevalence, emphasizing the critical role of perioperative nursing in enhancing patient safety and outcomes. Preoperative nursing assessment was explored, covering the importance of patient history and risk assessment, diagnostic tests and evaluations, patient counseling, and informed consent, as well as preoperative optimization and preparation. The intraoperative nursing management section outlines key responsibilities in setting up the operating room, maintaining infection control, preventing specific clinical risk of TURP, managing anesthesia, ensuring surgical team coordination and communication, and adhering to evidence-based guidelines.

Postoperative nursing care focused on immediate recovery and monitoring, pain management strategies, urinary catheter care, early ambulation, complication prevention, and patient education. Emerging trends and innovations in perioperative nursing were discussed, including advancements in surgical techniques, integration of new technologies, telemedicine, and the adoption of holistic care approaches.

The present article also addressed the challenges facing perioperative nurses, such as workforce shortages and burnout, research gaps in TURP nursing, and the importance of promoting ongoing education and training. By examining these key elements, the present article provided a comprehensive resource for perioperative nurses, healthcare providers, and researchers, aimed to enhance understanding, improved patient care, and stimulated further advancements in the field.

Keywords: Benign prostatic hyperplasia; Patient-centered care; Perioperative nursing; Transurethral resection prostatectomy

Received 25 January 2024 | Revised 3 April 2024 | Accepted 4 April 2024

J Med Assoc Thai 2024;107(5):371-8

Website: http://www.jmatonline.com

Transurethral resection prostatectomy (TURP) is a widely performed surgical procedure primarily used to treat benign prostatic hyperplasia (BPH)[(1)]. Owing to the rapid increase in the world's aging population, BPH has become a global public health concern. It is characterized by the enlargement of the prostate gland, leading to urinary symptoms. TURP involves the removal of excess prostate tissue through the urethra, improving urinary flow and alleviating the associated symptoms. It is considered the gold standard surgical treatment for BPH due to its effectiveness in symptom relief and minimal invasiveness compared to open prostatectomy[(2)].

Perioperative nursing plays a pivotal role in the care of patients undergoing TURP, contributing significantly to the overall success and safety from the preoperative assessment to postoperative recovery. Perioperative nurses are crucial in preparing patients both physically and emotionally for surgery, monitoring their condition during the procedure, and providing comprehensive postoperative care. They also play a vital role in infection control, pain management, and patient education, all of these are essential components of TURP care.

The aim of the present article was to comprehensively explore the perioperative nursing considerations for TURP. By examining the critical role of perioperative nursing in TURP, the present article would delve into preoperative nursing assessment, intraoperative nursing management, and postoperative nursing care, highlighting evidence-based practices and emerging trends. Additionally, it would discuss the challenges faced by perioperative

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How to cite this article:

Ratanatherawichian Y, Preechakoon B, Pungkate P, Intarakaew T, Vichitvejpaisal P. Perioperative Nursing Considerations for Transurethral Resection Prostatectomy. J Med Assoc Thai 2024;107:371-8.

DOI: 10.35755/jmedassocthai.2024.5.13988

nurses in the field and suggest future directions for research and practice improvement.

Understanding BPH and TURP

BPH is a prevalent urological condition that primarily affects elderly men. Its prevalence increases with age, exceeding 50% in 60-year-old men and reaching as high as 90% in those aged 85 or older[3]. BPH is characterized by the non-cancerous enlargement of the prostate gland, which surrounds the urethra and can lead to constriction of the urethral opening. This condition results in lower urinary tract symptoms, including urinary frequency, urgency, nocturia, a weakened and intermittent urinary stream, and a sensation of incomplete bladder emptying[3,4]. If left untreated, BPH can lead to complications such as urinary retention, kidney problems, and bladder stones, necessitating surgical intervention. Additionally, BPH has been linked to other health issues, such as an increased risk of falls, a reduced quality of life, and higher annual healthcare costs[4]. Treatment options for BPH include pharmacotherapy, but surgical interventions may be recommended if moderate to severe symptoms persist despite non-surgical treatments[1].

TURP is the gold standard surgical technique for BPH patients with a prostate volume of 30 to 80 mL[5]. It is a widely practiced surgical procedure used in the management of BPH and certain cases of prostate cancer. The roots of TURP can be traced back to the early 20th century when urologists began seeking minimally invasive alternatives to open prostatectomy[6]. The development of specialized instruments and endoscopic technology laid the foundation for modern TURP techniques. Over the years, TURP has undergone refinement and evolution, resulting in improved outcomes and reduced invasiveness.

TURP involves the removal of prostatic tissue using a specialized endoscope known as a resectoscope, which is inserted through the urethra. With direct visualization, the surgeon employs an electrified wire loop or laser to dissect and coagulate prostatic tissue meticulously. The procedure involves resection of the prostate tissue from the bladder neck in small chips and washing it out and subsequent rollerball diathermy for hemostasis[7]. This process aims to alleviate urinary obstruction caused by an enlarged prostate. It is primarily indicated for the treatment of symptomatic BPH that has not responded adequately to medical therapy[6]. Additionally, it can be considered in specific cases of prostate cancer, particularly when the disease is localized within the prostate and poses a lower risk.

Recent advancements in surgical technology and techniques have given rise to alternative approaches to TURP, such as bipolar TURP and laser prostatectomy[6]. These approaches offer reduced bleeding and faster recovery times. Moreover, telemedicine is becoming increasingly relevant in perioperative TURP care, facilitating remote patient assessments and follow-up, thus enhancing healthcare accessibility[8].

Selecting appropriate candidates for TURP involves a comprehensive evaluation of the patient's medical history, symptoms, prostate size, and overall health[6]. Consideration must also be given to potential contraindications and alternative treatment options. Patient expectations and preferences are crucial factors in decision-making. Perioperative care encompasses a series of essential steps, including preoperative assessment, patient preparation, intraoperative management, and postoperative monitoring.

Nonetheless, like any surgical procedure, TURP carries inherent risks and potential complications. Hemorrhage, infection, urinary retention, and sexual dysfunction are among the recognized complications[9]. Understanding these risks, their prevention, and management are imperative for healthcare providers involved in TURP care.

A significance of perioperative nursing

Perioperative nursing is a specialized discipline focused on comprehensive care for surgical patients. To become competent in perioperative nursing, registered nurses typically pursue specialized education and training programs. These programs cover surgical anatomy, aseptic techniques, instrumentation, and patient care. Certification through organizations like the Association of periOperative Registered Nurses (AORN) validates expertise.

Perioperative nurses have a multifaceted role, encompassing preoperative assessments, patient education, surgical preparations, intraoperative assistance, monitoring, and postoperative care[10]. They ensure patient safety, sterility, and comfort, monitor vital signs, assist with anesthesia, and collaborate with the surgical team, which includes surgeons, anesthesiologists, and surgical technologists. Additionally, they provide patient advocacy, infection prevention, and emotional support to patients and families. The primary goals

of perioperative nursing are to ensure patient safety, optimize surgical outcomes, and promote well-being throughout the surgical journey[10].

Perioperative nursing faces ethical challenges in a high-stakes surgical environment, including informed consent, confidentiality, autonomy, and patient safety. Nurses advocate for patients, respecting their rights and ensuring their well-being, even in complex decisions involving surgical risks and complications[10].

In contemporary healthcare settings, perioperative nursing evolves with technological advancements, changing healthcare models, and patient-centered care. Nurses participate in process improvements, enhance surgical safety through checklists, and comply with evidence-based practices[11]. Integration of technology like electronic health records (EHRs) and telemedicine improves documentation and communication[8].

Preoperative nursing assessment

Before a patient undergoes TURP, a thorough preoperative nursing assessment is essential. This assessment begins with a comprehensive review of the patient's medical history. It includes gathering information about the patient's previous surgeries, medical conditions, allergies, medications, and any relevant family history[10,12]. Concurrently, the perioperative nurse conducts a risk assessment, identifying factors that may increase the patient's surgical risks. Factors such as advanced age, comorbidities such as cardiovascular disease and diabetes, and medication usage are considered. It is crucial to note that the only contraindications for TURP are untreated urinary tract infections (UTIs) and bleeding disorders[13]. Moreover, antimicrobial chemotherapy should be tried for curable preoperative UTIs and should be started a day before operation for incurable preoperative UTIs[10,12]. This ensures that all potential contraindications are addressed to minimize surgical risks.

In addition, a range of diagnostic tests and evaluations are crucial in the preoperative phase. These may include blood tests for complete blood count and coagulation profile, electrocardiograms (ECGs), chest X-rays, and renal function tests[12]. Specifically, for TURP, a baseline assessment of the patient's urinary function, including urodynamic studies and prostate-specific antigen (PSA) levels, may be performed[6,7]. These tests may impact the surgical procedure or anesthesia administration, as well as establish a baseline and guide postoperative expectations.

A crucial aspect of preoperative nursing care involves patient counseling and obtaining informed consent[10]. Perioperative nurses assume a pivotal role in providing detailed explanations of the TURP procedure, its potential benefits, associated risks, and expected outcomes to the patient[14,15]. This informational process should ideally commence as soon as the patient is diagnosed or at the earliest possible stage. The objective is to empower patients and their families with a comprehensive understanding of the patient's condition and the available treatment options.

During these counseling sessions, nurses proactively address any questions or concerns that the patient may have, ensuring that the patient is not only well-informed but also mentally prepared for the impending surgery[16]. This proactive approach to patient education and communication fosters a sense of trust and confidence in the healthcare team, thereby promoting a smoother and more informed decision-making process regarding the surgical intervention[16].

Additionally, perioperative nurses work in collaboration with other healthcare professionals to optimize the patient's health status before surgery[15]. This may involve medication adjustments, management of chronic conditions, and addressing modifiable risk factors such as smoking or obesity. Moreover, they may provide clear instructions to the patient regarding fasting guidelines, bowel preparation, and medication management on the day of surgery[12,15].

Intraoperative nursing management

The perioperative nurse's role during the intraoperative phase begins by ensuring the operating room is appropriately set up for a safe and efficient TURP procedure. This involves verifying sterilization and availability of necessary equipment and instruments. Nurses collaborate with the surgical team to arrange the operating table, lighting, and equipment ergonomically. They conduct a pre-surgery checklist, confirm patient identity and surgical site marking, and ensure safety measures like fire extinguishers and emergency equipment are in place[11].

The modified lithotomy position is the recommended posture for TURP surgery[17]. It is important to avoid using the standard lithotomy or extended lithotomy positions. When placing the patient in the modified lithotomy position, it is crucial to exercise caution to prevent overextension at the hip joint[17] and neurologic complications[18]. Additionally,

providing adequate padding and support to reduce pressure on bony prominences is essential for patient comfort and safety.

It is noteworthy that patients undergoing TURP in the lithotomy position may experience significant hemodynamic changes, including fluctuations in blood pressure and cardiac output, especially when dealing with obese patients[12]. Furthermore, patients in the lithotomy position are at a heightened risk of developing deep vein thrombosis (DVT)[12]. Therefore, vigilant monitoring and preventive measures should be in place to minimize this risk.

Preoperative hair removal is critical but should be done immediately before surgery with electric clippers, as preoperative shaving the night before the operation carries a higher risk of surgical site infections (SSIs)[19]. The timing of hair removal also impacts the SSI risk[19].

Effective communication and coordination among the surgical team, anesthesia team, and other healthcare professionals are vital for a successful TURP. Perioperative nurses facilitate clear, timely communication to keep everyone informed about the procedure's progress and any emerging issues[11]. They also assist with problem-solving in unexpected events or complications and maintain accurate records of the procedure, instrument counts, and medications administered.

Additionally, they collaborate closely with anesthesia providers to ensure patient comfort and safety during TURP. They assist in anesthesia administration and monitor vital signs, including blood pressure, heart rate, oxygen saturation, and end-tidal carbon dioxide levels[12]. For local anesthesia, they provide emotional support to keep the patient calm and comfortable, while in more complex cases with general anesthesia, they assist with airway management and ensure hemodynamic stability.

Intraoperative nursing management in TURP aligns with evidence-based guidelines and best practices. Perioperative nurses stay updated on the latest research and recommendations, following guidelines related to hemostasis, irrigation techniques, and TURP syndrome prevention[20]. Adherence to evidence-based guidelines contributes to improved patient outcomes, reduced complications, and overall TURP procedure success[20].

Infection control and aseptic techniques

Perioperative nurses play a pivotal role in upholding a sterile environment throughout surgical procedures by meticulously adhering to aseptic techniques. These techniques encompass rigorous hand hygiene practices, appropriate gowning, gloving, and skillful draping[10]. Perioperative nurses assume the vital responsibility of vigilant oversight when it comes to the handling of sterile instruments, irrigation fluids, and catheters, all while adhering to established protocols to mitigate infection risks[19]. In the event of any breaches or deviations from sterile protocols, they are trained to take immediate corrective action[10].

While transurethral surgeries are categorized as clean-contaminated procedures, studies have revealed a wide range of perioperative infectious complication rates for TURP, ranging from 1% to 26%[21], with urosepsis occurring in 1% to 4% of cases[21]. Preventing these infections is of utmost importance, and the European Association of Urology (EAU) provides comprehensive guidelines for infection control during TURP procedures, in alignment with the international standards[19].

Perioperative infections can arise from various sources, including inappropriate skin preparation, preoperative hair removal practices, prolonged operation durations, inadequate antimicrobial prophylaxis (AMP), suboptimal operating room ventilation, inadequate sterilization of instruments, the use of foreign bodies during surgery, improper drainage techniques, and less-experienced surgical approaches[19].

Urological surgeries are unique in that they involve inevitable exposure to urine in the surgical field. Additionally, detecting intraprostatic bacteria is challenging, necessitating heightened vigilance to prevent bacterial contamination during prostate surgeries. Furthermore, these procedures often require the use of indwelling catheters, which remain in place for longer durations compared to other surgeries[19]. Ensuring aseptic catheter placement, minimizing indwelling times, and employing closed drainage systems are crucial aspects of catheter management in urological surgeries.

It is imperative for perioperative nurses to maintain a constant awareness of the potential for cross-infection among catheterized patients. The periurethral bacterial flora, the various components of the catheter system, and the persistent presence of a substantial reservoir of contaminated urine collectively pose as potential sources of contamination[19]. Moreover, the patient's skin can also be a vector for bacterial transfer. Recognizing these risks, perioperative nurses diligently ensure that they do not inadvertently carry bacteria from

one patient to another, thereby upholding the highest standards of infection prevention and control.

AMP is routinely administered to mitigate the risk of perioperative infections. However, AMP is empirical in nature due to limited evidence regarding the choice of antimicrobial agents and the optimal duration of administration(19). The Centers for Disease Control and Prevention (CDC) recommends initiating AMP just before surgery and discontinuing it as soon as feasible[19]. The primary objective of prophylactic antimicrobials is not to achieve sterilization of the surgical field but to reduce bacterial numbers to a level that can be effectively managed by the patient's immune defenses.

Intraoperative complications awareness

Shivering and hypothermia may occur in TURP patients, especially if room temperature irrigating solutions are used. Using warmed irrigating solutions helps reduce heat loss and shivering, with minimal impact on bleeding[22].

TURP syndrome is a complication of TURP characterized by hyponatremia with cardiovascular and neurological manifestations[12]. The syndrome can present with a wide range of signs and symptoms, including confusion, nervousness, nausea, hemolysis, visual disturbances, coma, shock, and even death[12]. It results from excessive absorption of hypotonic irrigation fluid and is more likely with longer resection times, heavier tissue resection, and the use of monopolar diathermy. Management includes stopping intravenous (IV) fluids, discontinuing surgery, maintaining osmolality, ensuring airway support and hemodynamic stability, and considering spinal anesthesia to prevent it[12].

Bladder and prostatic capsular perforation, at an incidence of 0.7%, can occur during TURP[23]. Symptoms include abdominal distension, pain, dyspnea, decreased urine output, increased bladder pressure, and decreased core temperature[9]. Intraperitoneal perforations require surgical repair or percutaneous drainage of the abdomen[9].

Postoperative nursing care

Perioperative nurses play a pivotal role in monitoring patients emerging from anesthesia, assessing vital signs, airway, and consciousness. Any signs of respiratory distress, hemodynamic instability, or altered mental status are promptly addressed. Additionally, they ensure patient comfort, administer prescribed postoperative medications, and monitor for immediate complications like bleeding or anesthesia reactions.

Pain management in TURP involves collaboration with the healthcare team to implement effective strategies, including analgesics and opioids as needed. Emphasis is on minimizing opioid-related side effects and dependence. Nurses assess pain levels, educate patients on pain management options, and monitor for potential medication side effects.

Proper urinary catheter care plays a crucial role in postoperative nursing following TURP. This care involves continuous monitoring, ensuring catheter functionality, and vigilant assessment for signs of infection or complications. Clot retention, a common issue, typically results from inadequate bladder irrigation[12]. This can lead to bladder distention, vagal stimulation, and pain. Treatment often involves blood transfusions and the manual evacuation of blood clots through the catheter, sometimes with the use of catheter traction, as well as antibiotic therapy.

Patients may experience overactive bladder and bladder spasms after TURP, while venous thromboembolism (VTE) remains a potential complication of most surgical procedures[12]. To prevent complications like DVT, early ambulation is encouraged, when appropriate. Nurses assess patients' mobility and collaborate with physical therapists if necessary.

Patients who have an increased risk of postoperative cognitive impairment require careful attention and specialized care to prevent further deterioration of their cognitive abilities[12].

Perioperative nurses are adept at recognizing early signs of complications, including bleeding, urinary retention, and infection, and they take immediate action[9]. They maintain strict aseptic techniques when caring for catheters and ensure proper wound care[19]. Patient education covers various aspects, including postoperative expectations, wound care procedures, catheter management, medication regimens, and a discussion of potential complications and when to seek medical assistance.

Efficient discharge planning initiates early in the process, with nurses collaborating closely with other healthcare professionals to ensure a seamless transition for patients, whether they are returning home or moving to a rehabilitation facility. As part of preparing patients for discharge following TURP, healthcare providers also address potential postoperative complications and advise on managing them. These include retrograde ejaculation, urinary incontinence, erectile dysfunction, and urethral strictures, which patients should be informed about

to understand their health and recovery trajectory[9]. Patients are deemed ready for discharge from the operating theater when certain criteria are met such as their vital signs are stable, systolic blood pressure and heart rate are within 10% of their baseline[24], and they are free from symptoms such as nausea, vomiting, and severe pain[24].

In addition to meeting these clinical criteria, patients receive detailed post-discharge care instructions and essential information regarding follow-up appointments. This comprehensive approach not only supports their recovery journey but also contributes to enhanced patient satisfaction and engagement. Furthermore, it plays a vital role in reducing hospital length of stay and the likelihood of readmission, while actively involving patients in improving their physical and mental health. It is a mutually reinforcing process where patient education and discharge planning work in synergy to ensure the best possible outcome for the patient's overall well-being[25].

Emerging trends and innovations

TURP has evolved with advancements in surgical techniques, and perioperative nurses must stay informed about these innovations. Emerging techniques like bipolar TURP and laser prostatectomy offer minimally invasive alternatives, reducing bleeding and enhancing patient recovery.

Robotic systems have gained increasing prominence in urologic surgeries, including TURP, with perioperative nurses playing a pivotal role in assisting during these procedures. Traditional open resection of the prostate is gradually being supplanted by minimally invasive, safe, and highly effective methods such as monopolar transurethral resection of the prostate (M-TURP), bipolar transurethral resection of the prostate (B-TURP) and greenlight photoselective vaporization of the prostate (PVP)[26].

These endoscopic techniques offer substantial advantages to patients dealing with BPH, particularly elderly individuals who may have difficulty tolerating open surgical procedures. As a result, patients can benefit from less invasive options that provide effective treatment for their condition, and perioperative nurses play a critical role in ensuring the success and safety of these evolving urologic procedures.

Perioperative nursing benefits from technological advancements that enhance patient care and workflow efficiency. Electronic health record (EHR) systems facilitate seamless documentation and communication among healthcare providers, improving care coordination. Telemedicine platforms aid in preoperative assessments and follow-up care, increasing healthcare service accessibility. Some TURP procedures are now outpatient, requiring specialized nursing care for patient education and monitoring at home.

Advanced simulation technologies provide risk-free training opportunities for perioperative nurses to practice TURP care. Telemedicine is relevant in perioperative care, including TURP, enabling remote patient assessments, reducing in-person visits, and allowing nurses to monitor progress and address concerns promptly.

Perioperative nurses adopt a patient-centered approach, addressing psychological and emotional aspects by providing counseling, managing anxiety, and promoting mental well-being. They integrate non-pharmacological pain management techniques like mindfulness and relaxation therapies, alongside traditional methods. Dietary recommendations are provided for recovery and overall health, and collaboration with other healthcare providers ensures comprehensive, patient-tailored care.

Challenges and future directions

Addressing workforce shortages and burnout

Perioperative nursing is not immune to the broader healthcare workforce shortages. Addressing the shortage of qualified perioperative nurses is crucial to ensuring that patients receive the care they need[27]. This involves recruiting and retaining skilled nurses and optimizing staffing levels. Moreover, the demanding nature of perioperative nursing can lead to burnout. To mitigate this, healthcare institutions should prioritize strategies such as workload management, providing mental health support, and fostering a healthy work-life balance for perioperative nurses.

Research gaps in perioperative nursing.

While perioperative nursing practice continually evolves, there may be gaps in evidence-based guidelines specific to TURP. Further research is needed to establish best practices, particularly in emerging areas like minimally invasive techniques and patient-centered care.

Long-term patient outcomes following TURP, including quality of life, require more attention. Research should focus on assessing the lasting benefits and potential complications of different TURP approaches. Additionally, understanding the

patient's experience throughout the perioperative journey and identifying ways to improve patient satisfaction and engagement should be research priorities.

Promoting ongoing education and training

Perioperative nurses must remain updated on the latest advancements and best practices. Encouraging and supporting ongoing education and training is vital for maintaining high standards of care. The integration of simulation-based learning programs can offer perioperative nurses the opportunities to practice and refine their skills in a controlled environment[28]. Encouraging perioperative nurses to pursue certification and specialization in urologic and perioperative nursing enhances their expertise and competence. Furthermore, promoting collaboration among various healthcare professionals involved in TURP care, including nurses, surgeons, anesthesiologists, and urologists, should be facilitated through interdisciplinary training programs.

Conclusion

At the forefront of patient care, perioperative nurses uphold safety, sterility, and compassion throughout the TURP journey. This article delves into the intricate role of perioperative nursing in TURP and highlights evidence-based practices crucial for its success, spanning from preoperative assessment to postoperative recovery. By emphasizing patient assessment, infection control, anesthesia management, and postoperative care, perioperative nurses significantly contribute to TURP patient safety, well-being, and satisfaction. Their adaptability, dedication to education, and unwavering commitment position them as integral members of the healthcare team.

Additionally, perioperative nurses' roles in TURP care continually evolve as they embrace emerging trends, technologies, and patient-centered approaches. They also confront challenges like workforce shortages and burnout with resilience and determination.

Effective TURP patient care hinges on collaborative efforts among surgeons, anesthesiologists, urologists, and perioperative nurses. It necessitates teamwork, clear communication, and a shared commitment to patient well-being for procedural success. Furthermore, collaboration extends beyond the operating room, encompassing preoperative education, postoperative monitoring, and follow-up care. Perioperative nurses collaborate with patients, families, and other healthcare providers, promoting a holistic and patient-centered approach to TURP care.

What is already known on this topic?

BPH is a prevalent urological condition in elderly men, associated with complications such as urinary retention, kidney problems, and bladder stones if untreated. TURP stands as the gold standard surgical treatment for BPH, involving minimally invasive removal of excess prostate tissue through the urethra. Advances in surgical technology have led to alternative techniques like bipolar TURP and laser prostatectomy, offering quicker recovery and reduced bleeding. Perioperative nursing is vital for TURP's success, encompassing preoperative assessments, patient education, intraoperative support, monitoring, and postoperative care. TURP poses inherent risks, including hemorrhage and infection, necessitating rigorous infection control and aseptic techniques.

What does this study add?

The article provides a thorough exploration of perioperative nursing considerations for TURP, spanning preoperative assessment, intraoperative management, and postoperative care. It emphasizes evidence-based practices and emerging trends, particularly focusing on a patient-centered approach that addresses not only the physical but also the psychological and emotional aspects of care. The integration of technological advancements such as EHRs, telemedicine, and simulation technologies is highlighted for their positive impact on patient care, documentation, and training for perioperative nurses. The article offers insights into intraoperative complications in TURP, stressing the significance of vigilance, preventive measures, and prompt management. Addressing challenges in perioperative nursing, including workforce shortages and burnout, it underscores the ongoing need for education, training, and research to fill gaps in evidence-based guidelines. Collaborative efforts among healthcare professionals are emphasized, stressing the importance of teamwork and clear communication for the success of TURP procedures.

Conflicts of interest

The authors declare no conflict of interest.

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