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2023, Volume 1, Issue 2

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Comparison of the Clinical Efficacy of Gemcitabine and Pirarubicin in the Treatment of Bladder Cancer after Electroresection

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Abstract: *Objective:* This paper aims to compare the effects of gemcitabine and pirarubicin in treating bladder cancer after electroresection. *Methods:* Bladder cancer patients who underwent bladder cancer resection in our hospital from January 2018 to January 2022 were selected as research subjects. According to the computer grouping method, 60 patients were divided into Group A (pirarubicin) and Group B (gemcitabine), and the therapeutic effects of the two groups of patients were compared. *Results:* The statistical significance of the tumor markers and related factor levels of patients in Group A and Group B before treatment was not established ($P > 0.05$). The levels of tumor markers and related factors of patients in Group B after treatment were lower than those of Group A ($P < 0.05$). There was no difference in the quality of life scores of patients in Group A and Group B before treatment ($P > 0.05$). After treatment, the quality of life scores of patients in Group B was higher than those in Group A ($P < 0.05$). The incidence rates of dysuria, hematuria, cystitis, and rash in Group B patients were less than those in group A ($P < 0.05$). The recurrence rate of patients in Group B was higher than in group A ($P < 0.05$). *Conclusion:* Both gemcitabine and pirarubicin are commonly used chemotherapy drugs after electroresection for bladder cancer. Compared with pirarubicin, gemcitabine is more effective and can improve the quality of life of bladder cancer patients.

Keywords: Gemcitabine; Pirarubicin; Electroresection; Bladder cancer

Online publication: October 25, 2023

1. Introduction

According to surveys, the incidence rate of bladder cancer has shown an increasing trend year by year. It is a malignant tumor disease that occurs in the human bladder mucosa. The characteristics of this disease include poor prognosis and high mortality [1]. Most bladder cancer patients have superficial tumors, which are limited to the mucosa and submucosa, and do not invade the muscle layer [2]. Middle-aged and older people have a high incidence of bladder cancer. The disease's main symptom is hematuria, and some patients also have symptoms such as dysuria. The everyday life and work of the patients have been greatly affected by this disease [3]. The current clinical treatment of bladder cancer is mainly surgical method. Resection of tumor tissue can reduce infiltration and metastasis. In order to reduce the postoperative recurrence rate, adjuvant chemotherapy is used

after surgery, which can effectively inhibit the growth of tumor cells and prolong survival time [4]. Among anti-tumor drugs, pirarubicin inhibits deoxyribonucleic acid (DNA) polymerase thus blocking nucleic acid synthesis, while gemcitabine incorporates DNA into cells and causes cell apoptosis. Both drugs have sound anti-tumor effects [5]. This study mainly explores the clinical efficacy of gemcitabine and pirarubicin in the treatment of bladder cancer after electroresection.

2. Clinical information and methods

2.1. Clinical information

The study began in January 2018 and ended in January 2022. The research subjects were bladder cancer patients who underwent bladder cancer resection. Based on the computer grouping method, sixty patients were divided into groups A and B. Inclusion criteria included patients that were diagnosed with bladder cancer through pathological examination, patients that meet the indications for electroresection surgery, patients and their families agree to participate in this study, and tumor diameter is less than 3cm. Exclusion criteria were patients with other tumor diseases, patients whose expected survival time is less than half a year, patients with systemic infection, and patients with coagulation dysfunction. In group A, there were 18 and 12 male and female patients, respectively. The age range was from 52 to 75 years old, with an average of 63.50 ± 5.77 years old. The pathological grades were G1, G2, and G3, with 5 cases, 12 cases, and 13 cases, respectively. In group B, there were 19 and 11 male and female patients, respectively. The age range was from 52 to 74 years old, with an average age of 63.00 ± 5.74 years. The pathological grades were G1, G2, and G3, with 6 cases, 10 cases, and 14 cases, respectively. The above data information was entered into statistical software for comparison, and the results showed no difference ($P > 0.05$).

2.2. Method

Both groups of patients underwent electroresection for bladder cancer. The postoperative drug for patients in group A was pirarubicin (Badai Factory of Japan Melox Co., Ltd., approval number X199990339). Pirarubicin was mixed with glucose solution (Anhui Changjiang Pharmaceutical Co., Ltd., National Drug Approval No. H34021808) at doses of 30mg and 40ml, respectively, and intravesical instillation was carried out. The positions were changed every 15 minutes, and the medication was administered once a week. The drug used by patients in group B was gemcitabine (Hainan Jinrui Pharmaceutical Co., Ltd., National Drug Approval No. H20163172), gemcitabine and 0.9% sodium chloride solution were mixed (Huaren Pharmaceutical Co., Ltd., National Drug Approval No. H20093777), the doses are 1000mg and 40ml respectively, and they were instilled into the bladder, position changing was done every 15 minutes, medication was taken once a week. Patients in both groups were treated for one year.

2.3. Evaluation indicators

The levels of tumor markers and related factors such as vascular endothelial growth factor (VEGF), recombinant human Dickkopf-related protein 1 (DKK-1), soluble vascular cell adhesion molecule-1 (sVCAM-1), soluble intercellular adhesion molecule-1 (sICAM-1) levels were measured and compared. The quality of life was evaluated using the Health Survey Scale (SF-36) [6]. The scale has four dimensions: physical function, emotional function, mental health, and social function, with scores ranging from 0 to 100, with higher scores indicating better quality of life. The incidence of complications and recurrence rate were compared between the groups.

2.4. Statistical processing

The data obtained from the study were put into the χ^2 and t calculator of SPSS22.0 statistical software for

comparison. When the test P value is lower than 0.05, it means that the statistical significance is established.

3. Results

3.1. Comparison of tumor markers and related factor levels

Based on **Table 1**, the statistical significance of the tumor markers and related factor levels of patients in Group A and Group B before treatment is not established ($P > 0.05$). The levels of tumor markers and related factors of patients in Group B after treatment are lower than those of Group A ($P < 0.05$).

Table 1. Comparison of tumor markers and related factor levels (mean ± standard deviation, ng/L)

Group	VEGF		DKK-1		sVCAM-1		sICAM-1	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Group A	198.80 ± 9.81	74.81 ± 8.08	69.30 ± 7.70	34.90 ± 6.04	273.83 ± 13.11	73.13 ± 7.96	201.60 ± 11.06	44.14 ± 6.97
Group B	198.79 ± 9.78	62.23 ± 7.35	69.32 ± 7.73	25.71 ± 4.36	273.85 ± 13.14	64.30 ± 7.50	201.58 ± 11.03	35.55 ± 6.24
t	0.004	6.308	0.010	6.757	0.006	4.422	0.007	5.029
P	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05

3.2. Comparison of quality of life scores

The statistical significance was not established between the quality of life scores of patients in Group A and Group B before treatment ($P > 0.05$). The quality of life scores of patients in Group B after treatment was higher than those of Group A ($P < 0.05$). The results are shown in **Table 2**.

Table 2. Comparison of quality of life scores (mean ± standard deviation, points)

Group	Physical health		Emotional function		Mental health		Social function	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Group A	52.36 ± 5.33	70.68 ± 7.01	52.23 ± 5.23	71.20 ± 7.54	53.27 ± 5.64	71.08 ± 7.39	52.11 ± 52.14	70.87 ± 7.22
Group B	52.38 ± 5.35	84.34 ± 8.60	52.20 ± 5.20	84.34 ± 8.66	53.24 ± 5.61	84.41 ± 8.73	52.09 ± 52.11	84.78 ± 8.93
t	0.015	6.743	0.022	6.268	0.021	6.383	0.001	6.635
P	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05

3.3. Comparison of the incidence and recurrence rates of complications

It can be seen from **Table 3** that the incidence rates of dysuria, hematuria, cystitis, and rash in patients in group B are less than those in group A ($P < 0.05$), and the recurrence rate of patients in group B is higher than that in group A ($P < 0.05$).

Table 3. Comparison of complication rates and recurrence rates [n (%)]

Group	Dysuria	Hematuria	Cystitis	Rash	Relapse
Group A	6 (20.00)	5 (16.67)	4 (13.33)	7 (23.33)	1 (3.33)
Group B	1 (3.33)	0 (0.00)	0 (0.00)	1 (3.33)	6 (20.00)
χ^2	4.043	5.454	4.285	5.192	4.043
P	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

4. Discussion

Bladder cancer is closely related to genetic, environmental, and other factors and significantly impacts the quality of life after the onset [7]. Surgery is the preferred method to treat bladder cancer. Since bladder cancer has the characteristics of multiple lesions and multicentric growth, it has a high recurrence rate after surgery. In order to reduce the recurrence rate after surgery, adjuvant chemotherapy will be used to improve the treatment effect [8]. Commonly used drugs for bladder cancer chemotherapy include pirarubicin, gemcitabine, and neomycin C. The ideal drug has a specific killing effect, especially on bladder cancer cells, allowing it to act on the cells and exert its effect quickly. It has the characteristics of low systemic absorption and high effective drug concentration [9].

Pirarubicin, as a semi-synthetic anthracycline anti-tumor drug, can be directly embedded into the DNA double-strand, inhibiting the activity of DNA polymerase, preventing the synthesis of nucleic acids, gradually leading to the death of tumor cells, and the disease is under control. Pirarubicin can stay long in the body and continue to exert its medicinal effect [10]. Normal cells will not absorb pirarubicin, and most of the drug solution will enter the tumor tissue, thus the tumor targeting is excellent [11]. It is worth noting that although pirarubicin is effective, it has more complications [12]. As a cytosine nucleoside derivative, gemcitabine and cytarabine are activated by deoxycytosine kinase after entering the body and then metabolized by cytosine nucleoside deaminase. Its mechanism of action is similar to that of cytarabine. After entering the body, it can be converted into nucleoside diphosphates and nucleoside triphosphates, which play a role in the G1/S phase of tumor cells. It can promote cell death after being incorporated into DNA. It can also inhibit nucleic acid reductase and reduce DNA synthesis in tumor cells [13]. The difference is that gemcitabine is incorporated into DNA and can inhibit ribonucleotide reductase, and reduce intracellular deoxynucleoside triphosphates. Another aspect different from cytarabine is that it can inhibit the reduction of deoxycytosine deaminase. The explanation of intracellular metabolites has a self-augmenting effect [14].

This study compared pirarubicin (group A) and gemcitabine (group B) for bladder cancer treatment after electroresection. The results showed VEGF, DKK-1, sVCAM-1, sICAM-1 levels in group B patients were lower than that of group A, the quality of life score of patients in group B is higher than that of group A, the incidence of dysuria, hematuria, cystitis, and rash of patients in group B is less than that of group A, and the recurrence rate of patients in group B is higher than that of group A. Instilling anti-tumor liquid into the bladder can increase the drug concentration at the lesion, increase the amount of drug absorbed and enhance the therapeutic effect. Both pirarubicin and gemcitabine have significant anti-tumor effects. In comparison, gemcitabine has fewer complications but a higher recurrence rate. As a cell growth factor, VEGF can increase vascular permeability and vascular endothelial cell migration. DKK-1 is a secreted protein that inhibits the WNT signaling pathway. Both VEGF and DKK-1 can reflect the degree of tumor progression. sVCAM-1 and sICAM-1 are the adhesion molecule immunoglobulin, which regulate the normal physiological functions of the human body and play a significant role in the development of tumors. It can reflect the activity of tumor cells. After gemcitabine treatment, the above indicators have improved, thus gemcitabine treatment has a better effect with higher safety [15].

In summary, gemcitabine and pirarubicin are commonly used chemotherapy drugs after electroresection for bladder cancer. Compared with pirarubicin, gemcitabine is more effective and can improve the quality of life of bladder cancer patients.

Disclosure statement

The authors declare no conflict of interest.

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Urology Research, 2023, Volume 1, Issue 2
https://ojs.bbwpublisher.com/index.php/UR

Application of Research-Based Quality Control Circle in Setting a New Management Model and Complete Standardized Care for Continuous Bladder Irrigation After TURP

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Abstract: *Objective:* To explore the application of research-based quality control circle in setting a new standardized nursing management model for continuous bladder irrigation after transurethral resection of prostate (TURP) surgery, and to provide theoretical basis and evidence-based support for standardizing the nursing management model of continuous bladder irrigation after TURP in the Department of Urology. *Methods:* A quality control circle was established, focusing on the existing common problems of continuous bladder irrigation. The methods include implementing appropriate measures and other steps, and comparing the incidences of bladder spasms and urinary catheter obstruction, patient satisfaction, nurses' awareness of relevant knowledge, nurses' operational satisfaction, number of liquid pours (6000ml per flush), and number of open exposures before and after the activity. *Results:* Through this quality control circle activity, the incidence of bladder spasms in patients dropped from 42% to 14.3%; the incidence of urinary catheter obstruction dropped from 36% to 12.2%; patient satisfaction increased from 82% to 95.9%; nurses' knowledge awareness rate increased from 74.2% to 96.8%; nurses' operational satisfaction increased from 80.6% to 96.8%; the above differences are statistically significant ($P < 0.05$). Moreover, the number of flushing liquid pours reduced from 5 times to 1 time, and the number of open exposures reduced from 5 times to 0 times. Circle members have improved their application of quality control circle methods, team spirit, and professional knowledge. *Conclusion:* The research-based quality control circle is suitable for setting a new standardized nursing management model for continuous bladder irrigation after TURP.

Keywords: Continuous bladder irrigation; Nursing management; Project research quality control circle

Online publication: October 25, 2023

1. Introduction

The primary purpose of continuous bladder irrigation after transurethral resection of prostate (TURP) is to promptly dilute the postoperative bleeding in the prostate fossa wound and prevent blood coagulation. Block formation stimulates the trigone area of the bladder to induce bladder spasms, leading to urinary catheter obstruction [1]. Continuous bladder irrigation prevents bladder spasms, urinary catheter obstruction, and a

vicious cycle of bleeding [2]. However, there needs to be unified guidelines at home and abroad for continuous bladder irrigation after TURP. The patient's comfort level and the nurse's satisfaction with the operation are low, and the irrigation output device is effortlessly open and exposed, which can easily cause urinary tract infection. At the same time, the project novelty report shows that there currently needs to be research reports on the standardized nursing model of continuous bladder irrigation after TURP in domestic and foreign literature. Therefore, based on the above analysis, there is an urgent need to explore innovations in clinical practice to break through the status quo and standardize the irrigation position, pressure, height, speed, temperature, and flushing devices, and full-process refined nursing management is implemented to provide a basis for clinical nursing practice. This study applied the project-based quality control circle to set a new standardized nursing management model for continuous bladder irrigation after TURP and achieved specific results. This project won the first prize in the research project group of the 3rd Guangdong Provincial Hospital Quality Control Circle Competition and the third prize in the 8th National Hospital Quality Control Circle Competition.

2. Materials and methods

2.1. General information

Patients with continuous bladder irrigation after TURP in the Department of Urology were selected as the research subjects. Inclusion criteria included patients who require continuous bladder irrigation after TURP, patients who voluntarily participate in this study and sign the informed consent form, and patients who are conscious and able to cooperate to complete the operation. Exclusion criteria were those with a history of bladder or prostate surgery, those with coagulation dysfunction and blood diseases before surgery, those with severe heart, brain, liver, kidney, and other organ dysfunction, and those with combined immune system and mental illness. The following data were collected: the incidence rate of bladder spasm, the incidence rate of urinary catheter blockage, the patient satisfaction rate, the nurse-related knowledge awareness rate, the nurse satisfaction rate before improvement (July to September 2018) and after improvement (April to June 2020), and the number of flushing pours of 6000ml liquid drainage solution and number of open exposures.

2.2. Method

2.2.1. Circle

A pro-urinary circle activity group was established in July 2018, comprising 15 professionals from the Urology Department, Nursing Department, Information Department, and Equipment Department.

2.2.2. Topic selection and its significance

Circle members used brainstorming and affinity diagramming to list existing significant issues. Through a four-dimensional weighted questionnaire, circle members used the evaluation method to evaluate superior policies, urgency, feasibility, and circle capabilities. After evaluation in four dimensions, it was determined that the theme of this event was the new standardized nursing management model for continuous bladder irrigation after TURP. According to the QC-story application judgment table, it was determined that the direction of this period's activities was project research type.

The definition of subject words is as follows.

(1) TURP: It is also called transurethral resection of prostate, and is the current gold standard for surgical treatment of benign prostatic hyperplasia [3]. It is routinely performed continuously after surgery.

(2) Continuous bladder irrigation: 0.9% normal saline is connected to the side cavity of the three-lumen balloon urinary catheter with a "Y"-shaped pipeline to form the input end; the liquid storage device is

connected to the middle chamber of the three-chamber balloon catheter to form the output end, which is continuously flushed through the siphon principle [4].

(3) Full-process standardized nursing management: The flushing position, pressure, height, speed, temperature, and flushing device are standardized to implement full-process refined nursing management.

For patients, it is conducive to promoting prognosis and improving outcomes; for the nursing team, it is conducive to exploring scientific nursing management methods and improving the connotation of specialist nursing services; for the departments, it is conducive to improving the influence of the urological nursing discipline and promoting a win-win situation among doctors, nurses, and patients; for the hospitals, it is conducive to improving the quality of medical care services and increasing social effects.

2.2.3. Activity plan formulation

A quality control circle activity plan was drawn up by the 5W1H principle (six-questions analysis method), and the activity content, time, location, method, and responsible person were clarified. The period from July 2018 to July 2020 was the activity cycle.

2.2.4. Clarification of the subject

The data mining application system diagram sequentially expands on the current problems in continuous bladder irrigation care after TURP from five aspects: personnel, information, materials, methods, and systems. Based on the existing problems, the current data were collected from the three levels of patients, nurses, and departments from July 1 to September 3, 2018.

Based on the current level, the level of expectations was determined by consulting the literature and the current situation of peers, brainstorming method was used to select alternative vital points, and based on the "80/20 rule," evaluation was carried out from three dimensions: circle ability, feasibility, and importance, and 15 essential points were identified (**Table 1**), which were eventually merged into three major key points. Key point 1: Developing nursing management procedures and specifications for continuous bladder irrigation after TURP; Key point 2: Reducing the incidence of complications of continuous bladder irrigation after TURP; Key point 3: Reducing the number of drainage fluid pours and open exposure.

2.2.5. Target setting

A total of 7 goals were set by reviewing the literature and benchmark hospitals:

(1) To reduce the incidence of bladder spasm in patients from 42% to 16.7% by July 31, 2020.
(2) To reduce the incidence of urinary catheter obstruction from 36% to 14%.
(3) To increase patient satisfaction from 82% to 95%.
(4) To increase nurses' awareness rate of relevant knowledge from 74.2% to 95%.
(5) To increase nurse operation satisfaction from 80.6% to 95%.
(6) To reduce number of drainage fluid pouring times from 5 times to 1 time.
(7) To reduce number of open exposures from 5 times to 0 times.

Table 1. Evaluation from three dimensions. Evaluation mark of the degree of relationship (three-stage evaluation): strong = 5; medium = 3; weak = 1; rated by nine circle members, with a total score of 135 points. According to the "80/20 rule," a score of 108 or above is the critical point.

Object	Dimensions	Aspects	Current level	Level of expectation	Expectation gap	Attack point	Evaluation items				Whether to adopt
							Feasibility	Importance	Circle ability	Total score	
Patient level	Personnel	Incidence of bladder spasms in patients	42%	16.7%	Reduced by 25.3%	Reduced bladder spasms incidence	33	41	37	111	√
		Incidence of urinary tract obstruction in patients	36%	14%	Reduced by 22%	Reduced urinary tract blockage incidence	33	43	33	109	√
	Information	There is only one way for patients to obtain relevant knowledge and education	Mainly explained by nurses	Bedside education electronic system diversified education	–	Added bedside education electronic system	31	33	31	95	×
	Material	Number of times to pour drainage fluid for every 6L of liquid flushed from the chest bottle	5 times	1 time	Reduced 4 times	Reduced the number of drainage fluid pours	33	37	43	113	√
	Method	Flush temperature	24℃–27℃	34℃–37℃	Proper heating	Determined the appropriate rinse fluid temperature	34	42	33	108	√
	System	Patient satisfaction	82%	95%	Increased by 13%	Improved patient satisfaction	41	41	41	123	√
Nurse level	Personnel	Awareness rate of nurses' related knowledge	74.2%	95%	Increased by 20.8%	Improved nurses' awareness of relevant knowledge	43	43	41	127	√
		Nurse operation satisfaction	80.6%	95%	Increased by 14.4%	Improved nurses' operational satisfaction	41	42	43	126	√
	Information	Related operation demonstration video	0	1	1	Recorded operation demonstration video	33	37	41	111	√
	Material	Number of open exposures for pouring and draining fluid per 6L of liquid flushed from the chest bottle	5 times	0 times	Reduced 5 times	Avoided open exposure	33	42	33	108	√
	Method	Rinse speed	Adjusted based on subjective experience. Darker colors are fast; lighter colors are slow.	An objective basis provided for flushing speed	–	Added bladder irrigation and drainage fluid color comparison card for use	33	43	33	109	√
		"Bladder Flushing Treatment Card"	Failure to dynamically reflect disease observation	Ability to objectively reflect patient condition observation	–	Developed a standardized and structured "Continuous Bladder Irrigation Nursing Record Card"	37	41	35	113	√
	System	Standardized nursing guidelines for continuous bladder irrigation after TURP	0	1	1	Developed standardized nursing care guidelines	37	43	37	117	√
		Standardized operating procedures for continuous bladder irrigation after TURP	0	1	1	Developed standardized operating procedures	37	41	37	115	√
Department level	Personnel	Doctors' satisfaction with nurses' condition observation	90.28%	95%	Increased by 4.72%	Improved doctors' satisfaction with nurses' condition observation	37	41	41	119	√
	Information	Electronic "Continuous Bladder Irrigation Nursing Record Card"	0	1	1	Established an electronic "Continuous Bladder Irrigation Nursing Record Card"	33	41	37	111	√
	Material	Liquid thermostat	0	1	1	Purchased equipment	31	43	41	115	√
		Bladder therapy device	0	1	1	Purchased equipment	31	37	33	101	×
	Method	Rinse duration	2.3 ± 1.2 days	2.0 ± 0.9 days	Reduced by 0.3 ± 0.3 days	Reduced flushing time	25	43	33	101	×
	System	Comprehensive ability system training and assessment system	None	Able to integrate medical care and conduct comprehensive ability assessment and improvement	–	Established a comprehensive ability system training and assessment system.	40	41	43	124	√

2.2.6. Formulating strategies

Through brainstorming and literature review, we proposed improvement strategies for the three key points. According to the "80/20 rule," we rated the three-level scores of "1, 3, 5" from the four dimensions of feasibility, urgency, economy, and effectiveness. Nine circle members were evaluated, with a total score of 180 points. According to the "80/20 rule," a strategy with a score of 144 or above was considered the best. A total of 9 strategies were selected and finally integrated into two strategy groups: Strategy Group I: Standardized system for continuous bladder irrigation after TURP; Strategy Group II: Research and Development (R&D) and innovation of irrigation devices.

2.2.7. Research on the optimal strategy

The circle group conducted obstacle determination (**Table 2**), and gain and loss analysis (**Table 3**) on the selected policy groups and used the Process Decision Program Chart (PDPC) method to formulate policy implementation paths.

Table 2. Obstacle determination

Strategy	Key point	Obstacle determination	Determination of side effects	Elimination of obstacles and side effects	Determination	Strategy group
Developing standardized nursing guidelines for continuous bladder irrigation after TURP	1	There needs to be a relevant guide or national industry standard reference, and a large amount of literature needs to be consulted.	Increasing the workload of evidence-based research nurses.	Adding two researchers. Based on the latest progress of relevant research and clinical practice, inviting one external expert to jointly formulate a plan with medical and nursing staff.	√	I
Developing standardized operating procedures and operating assessment scoring standards for continuous bladder irrigation after TURP.	1	There is no unified standard to follow.	None.	Consulting literature and experts, fully integrating clinical practice, and be in line with benchmark hospitals.	√	I
Strengthening relevant theoretical knowledge training and skills training.	1	There is difficulty to focus on face-to-face training.	Nurses' learning abilities are inconsistent.	Inviting experts outside the circle to conduct relevant theoretical knowledge training through "Protect the World." The platform conducts online learning and increases the number of face-to-face training sessions.	√	I
Integrating medical and nursing care and using the "SBAR + CICARE" idea to conduct systematic and comprehensive training and assessment through scenario simulation.	1	There is difficulty in covering everyone.	Assessment standards are difficult to unify, and details are cumbersome.	Conducting assessments in hierarchical groups (each group consists of one doctor, one senior team leader, two responsible nurses, and one assistant nurse) and establishing an incentive mechanism.	√	I
Reviewing the search literature, introducing a color comparison card based on science and practicality, and adjusting the flushing speed according to the color number.	2	It is necessary to screen and judge scientificity and practicality.	It takes time to test the application effect clinically.	It is completed by relevant researchers in the department, evidence-based research nurses, and specialist nurses.	√	I
Purchasing a liquid thermostat and determining the appropriate temperature range of bladder irrigation fluid.	2	Acquisition of equipment is slow and lacks funds.	Equipment is put into longer use.	Actively coordinating and communicating with relevant departments to reasonably apply for funds within the department.	√	I
Designing and formulating a standardized and structured "Continuous Bladder Irrigation Nursing Record Card" that can dynamically reflect the observation of patients' complications and conditions.	2	Nurses' observation, nursing, and nursing record writing abilities are uneven.	All relevant nursing record content needs to be analyzed.	Led by specialist nurses, designed based on relevant nursing characteristics and deficiencies in nursing records. Two experts from outside the circle were also invited to thoroughly discuss and finally formulate a plan based on clinical practice.	√	I

Table 2. (continued)

Strategy	Key point	Obstacle determination	Determination of side effects	Elimination of obstacles and side effects	Determination	Strategy group
Developing and innovating continuous bladder irrigation and drainage bottles.	3	Clinical human resources are tight.	Patent application takes a long time and is difficult to promote.	The head nurse coordinates and designates personnel responsible for related matters, actively promotes patent conversion, and applies for in-hospital projects based on patents.	√	II
Developing and innovating continuous bladder irrigation and drainage lines.	3	It requires a lot of time and effort.	Clinical application involves ethical review.	Actively applying for patents and conducting ethical reviews after the patent is converted. Conducting further clinical research after passing the test.	√	II

Table 3. Advantages and disadvantages of selected strategy

Strategy group	Advantages	Disadvantages
Strategy Group I: Setting a standardized specification system for continuous bladder irrigation after TURP	Based on evidence, establishing a standardized continuous bladder irrigation system after TURP to improve patient prognosis and achieve a win-win situation for doctors, nurses, and patients.	Literature screening requires increased investment in scientific research personnel, and it takes a long time to search Chinese and English databases.
Strategy Group II: R&D and innovation of flushing devices	Making breakthroughs and innovations based on complex clinical nursing issues to improve nurses' work efficiency and save human resource costs.	Applying for a patent takes a long time. It is necessary to increase investment in human, material, and financial resources.

2.2.8. Implementation and review of optimal strategies

The implementation and review of the strategies are as follows.

(1) Setting a standardized normative system for continuous bladder irrigation after TURP

Nursing guidelines for continuous bladder irrigation after TURP was formulated from the five aspects of irrigation position, pressure, height, speed, and temperature, based on subject words + free words. A total of 7 kinds of literature were included in the combined search of Chinese and English databases, and ten pieces of evidence were extracted. It was concluded that the left and right decubitus and semi-sitting positions should be alternately adopted; the irrigation pressure is related to the flow rate of the irrigation fluid and the suspension height, and continuous flowing should be maintained; low-pressure irrigation; the appropriate irrigation height is 40–60cm [5,6]; the irrigation speed is closely related to the occurrence of postoperative bladder spasms and bleeding [7]; there is no limit to the flushing speed within 2 hours after the operation, and it will be adjusted according to the color of the flushing fluid afterward [8]. At the same time, Jiang *et al.* [9] developed a self-made color comparison card for bladder irrigation fluid in 2020. The color comparison card is divided into eight color numbers. The corresponding drip rate for colors 1 to 2 is 80–100 drops/min, the corresponding drip rate for colors 3 to 4 is 100–150 drops/min, no treatment is required, the drip rate for colors 5 to 6 is 150–200 drops/min, it is necessary to report to the doctor and strengthen hemostasis and other treatments; when colors 6 to 8 appear and poor drainage occurs, the doctor must be reported immediately, and positive pressure irrigation with a urethral catheter must be performed. If necessary, surgery can be performed to stop the bleeding. Warming the irrigation fluid is currently considered a standard practice [10]. According to an article, a meta-analysis including 7 randomized controlled trials (RCTs) concluded that the appropriate flushing temperature is 34–37°C [11]. Therefore, the department purchased a liquid thermostat.

Moreover, standardized operation procedures and operation assessment scoring standards for continuous bladder irrigation after TURP were developed, operation demonstration videos were recorded, relevant knowledge, skills operation training and post-training assessments were conducted. Additionally, a standardized and structured "Continuous Bladder Irrigation Treatment Card" that can dynamically reflect the observation of the patient's condition was developed, including the four dimensions of vital signs, input and output, irrigation and drainage conditions, and observation and treatment of complications. A comprehensive ability system training and assessment system was established, integrating medical and nursing care. They were divided into six groups in scenario simulation and use the "SBAR + CICARE" idea to conduct systematic and comprehensive ability training and assessment to form standardized and normalized bedside handover guidelines.

(2) R&D and innovation of irrigation devices

A safe continuous bladder irrigation and drainage device was designed (Patent No.: ZL 2020 2 0405117.9). Currently, the irrigation output devices commonly used in clinical practice, such as disposable chest bottles and disposable drainage bags, all have different shortcomings. The chest bottle has a small capacity, it is frequently poured and easily exposed. There is no anti-reflux device or drainage outlet, which is time-consuming and labor-intensive, thus increasing the workload. In addition to the small capacity of the drainage bag, there is a large error between the scale on the bag and the actual amount. Testing with a syringe and measuring cup shows that when the drainage fluid is > 450ml, the error is 50 ± 14ml, and the measurement is not accurate enough. In this regard, the circle team designed a safe continuous bladder irrigation and drainage device with a capacity of 7.5L, which can reduce the number of drainage fluid pours and ensure accurate measurement. The color comparison card is designed to facilitate visual observation and comparison of the color of the drainage fluid to determine the condition; a single directional valve and "cross" drain valve can achieve closed continuous bladder flushing, hence effectively preventing the drainage fluid from being exposed.

A multi-functional continuous bladder irrigation and drainage pipeline was designed (Patent No.: ZL 2019 2 0351459.4). When a patient has a blood clot and a blocked urethra, the most commonly used clinical treatment method is combining bedside manual bladder irrigation for suction and dredging. However, the urinary catheter and drainage end need to be separated, which is prone to contamination; the diameter of the syringe nipple and the three-lumen catheter interface do not match, and the operator needs to fix it by hand. Improper methods can cause urine splashing, which is easy to cause exposure, and it is also time-consuming and laborious. In this regard, the circle team designed a drainage pipeline that eliminates the need to separate the urinary tube and drainage end during dredging. The three-way design solves the problem of syringe nipple mismatch. It can ensure the closed flushing of the entire device, thus reducing the chance of contamination and improving work efficiency.

2.3. Observation indicators

The indicators observed were the incidence of bladder spasm, the incidence of urinary catheter blockage, patient satisfaction, nurses' awareness rate of relevant knowledge, nurse operation satisfaction, the number of liquid drainage fluid pours (6000ml per flush), and the number of open exposures before and after implementation. This study had 50 patients before and 49 patients after the model implementation.

2.4. Statistical methods

SPSS22.0 statistical software was used to process the data. Measurement data were expressed as mean ± standard deviation (SD), and comparisons were made using the *t* test of two independent samples. Count data

were expressed as cases and percentages, and comparisons were made using χ^2 for inspection (inspection level $\alpha = 0.05$).

3. Results

3.1. Comparison of results before and after the improvement

After implementing the organized quality control circle activity countermeasures, in terms of patients, the incidence of bladder spasms and urinary catheter obstruction was lower than before the improvement, and patient satisfaction was higher than before the improvement ($P < 0.05$), as shown in **Table 4**. Regarding nurses, the awareness rate of nurses' relevant knowledge and the satisfaction of nurses' operations were higher than before the implementation ($P < 0.05$), as presented in **Table 5**. The number of pouring and open exposure of 6000ml liquid drainage per flush were lower than before the improvement. According to the calculation formula, the target complianc e rate is above 100%.

Table 4. Comparison of patient satisfaction before and after improvement

Improvement	Incidence of bladder spasm (%)	χ^2	*P* value	Incidence of urinary catheter obstruction (%)	χ^2	*P* value	Patient satisfaction (%)	χ^2	*P* value
Before	42	9.371	0.002	36	7.604	0.006	82	4.854	0.028
After	14.3			12.2			95.90		

Table 5. Comparison of patients' awareness rate and operation satisfaction rate before and after improvement

Improvement	Awareness rate (%)	χ^2	*P* value	Operation satisfaction (%)	χ^2	*P* value
Before	74.2	6.369	0.012	80.6	4.026	0.045
After	96.8			96.8		

3.2. Intangible results

After this quality control circle activity, circle members have demonstrated significant improvement in professional knowledge, problem-solving skills, communication and coordination skills, sense of responsibility, self-confidence, teamwork, mastery of quality control circle techniques, and enthusiasm.

3.3. Additional results

Through this quality control circle activity, we applied for two utility model patents, published one paper, and extended one clinical research topic within the hospital (Project number: LCYJ2020006).

4. Discussion

This study is based on setting a new standardized nursing management model for continuous bladder irrigation after TURP. It is oriented to achieve the goal through multidisciplinary cooperation, and by the ten steps of the project research quality control circle, using evidence-based ideas to explore its application in setting a new standardized nursing management model for continuous bladder irrigation after TURP surgery. The irrigation position, pressure, height, speed, temperature, and irrigation device were standardized, thus successfully establishing a new standardized nursing management model for continuous bladder irrigation after TURP, which improved the mastery of nursing-related theoretical knowledge and operational skills of the nursing staff,

while reducing the incidence of complications in patients with continuous bladder irrigation after TURP, and improving patient prognosis and increasing satisfaction.

5. Conclusion

To sum up, the ability of all circle members to discover, analyze, and solve problems was significantly improved in using the project research-based quality control circle, and they demonstrated their charming qualities while achieving innovation.

Funding

Clinical research project of Peking University Shenzhen Hospital (Project number: LCYJ2020006)

Disclosure statement

The authors declare no conflict of interest.

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Urology Research, 2023, Volume 1, Issue 2
https://ojs.bbwpublisher.com/index.php/UR

Review of Daozhuo Massage Therapy for Chronic Prostatitis

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Abstract: Daozhuo massage therapy for chronic prostatitis is an external treatment method that uses pointing, pressing, pushing, and kneading on specific acupoints to dredge meridians, regulate qi, and activate blood circulation. This therapy has a noticeable clinical therapeutic effect on chronic prostatitis, which is the core syndrome type of blood stasis. This article reviews the Traditional Chinese Medicine (TCM) pathogenesis of chronic prostatitis, the historical overview, clinical application, and operational precautions of Daozhuo massage therapy. It also includes a case study to discuss the significant role, effectiveness, and practical application of Daozhuo massage therapy in the clinical diagnosis and treatment of chronic prostatitis.

Keywords: TCM surgery; Daozhuo massage therapy; Chronic prostatitis; Prostate finger acupoints

Online publication: October 25, 2023

1. Introduction

Chronic prostatitis (CP) is a common disease in male. Clinical symptoms include frequent urination, urinary urgency, pain, and discomfort in the lower abdomen, perineum, and other parts. Long-term development can induce neuropsychiatric symptoms and affect men's physical and mental health. 35–50% of men are affected by chronic prostatitis in their lifetime [1]. The core pathogenesis of this disease is kidney deficiency and blood stasis, and the primary treatment principle is to promote blood circulation and remove blood stasis. Traditional Chinese Medicine (TCM) decoctions are used to correct the symptoms, and external treatments such as acupuncture and sitz baths are used as auxiliary treatments. Daozhuo therapy is rooted in acupuncture and acupoint massage techniques, applying pressing, pushing, rubbing, and other techniques on specific acupoints to dredge meridians, regulate qi, and activate blood circulation.

2. Chinese medicine understanding of chronic prostatitis

CP belongs to the "turbid semen" disease category and "stranguria" in traditional Chinese medicine. The

disease is located in the seminal chamber and involves the liver, kidney, bladder, and other organs. The nature of the disease is mainly a mixture of deficiency and excess. The understanding of the pathogenesis of CP in traditional Chinese medicine has evolved through different stages with the deepening of clinical practice [2]. The traditional view is that due to exogenous toxins, pathogens, dampness, and heat, or internal injuries due to diet, dampness and heat are injected, thereby affecting the gasification of the bladder, disturbing the seminal chamber, and mixing the semen and turbidity, eventually leading to the syndrome of turbid semen [3]. It was discovered later that the primary treatment idea was to clear away the heat and remove the dampness, but the clinical efficacy was mixed. The reason was mainly due to changes in modern living conditions and lifestyles. Drinking and sitting for long periods have become everyday living habits. The seminal chamber is located in the lower energizer, and long-term sitting leads to blocked qi and blood in the lower energizer, and blood stasis accumulates in the seminal chamber. In addition, alcohol is cold-natured, thus drinking much of it will lead to deficiency and cold in the lower energizer, leading to cold coagulation of the vessels and blocked qi and blood, and further leading to blood stasis in the seminal chamber. Therefore, kidney deficiency and blood stasis gradually become the core pathogenesis of CP [3]. In recent years, based on the theory of "long-term disease entering the collaterals," some experts and scholars believe that obstruction of collaterals is the key pathogenesis of CP and has brought the pathogenesis of blood stasis to the research level of collaterals [4].

3. A historical overview of Daozhuo massage therapy

Daozhuo massage therapy is a traditional Chinese medicine method based on the theory of viscera and meridians. It uses finger acupoints instead of traditional acupuncture stimulation. It continuously stimulates specific acupuncture points on the body surface through tapping to dredge qi and blood, and expel turbid pathogen [5], originated from the science of massage manipulation and is a kind of warming technique [6]. Compared with conventional massage therapy, the so-called "turbid-dredging massage" (Daozhuo massage) has the effect of relaxing muscles and, activating collaterals, and regulating the yin and yang of the organs. Its core advantage is to expel pathogens. It uses finger-point massage to expel phlegm, dampness, blood stasis, and other turbid pathogens from the body. In *Behind the Elbow* by Ge Hong of the Jin Dynasty, he proposed using fingers to press the Renzhong acupoint to treat comatose patients. He proposed the concept of "fingers replacing needles." After hundreds of years of experience accumulation and clinical practice, finger-point massage therapy with the core purpose of "dredging turbidity" gradually formed. With the development of andrology and the clinical practice of male diseases, Daozhuo massage therapy has been widely used in diagnosing and treating CP. Luo [7] found significant improvement of the symptoms of prostate urination and pain through massage therapy; Li *et al.* [8] conducted clinical observations and found that the improved prostate massage therapy can significantly reduce pain and discomfort during prostate massage with noticeable therapeutic effects.

4. Clinical application of Daozhuo massage therapy

Daozhuo massage therapy has noticeable therapeutic effects on various common clinical diseases. Through the manipulation of corresponding acupuncture points and the circulation of meridians, it plays the role of communicating with the inside and outside of the body, moving qi and blood, regulating yin and yang, and can significantly improve symptoms such as obstruction and pain in specific parts [9]. For example, by loosening muscle knots, pressing acupuncture points such as Wangu, Jianjing, and Tianzong can significantly relieve the symptoms of cervical vertigo [9]; pressing Qijie acupoints such as Fengchi, Baihui, and Fengfu can improve insomnia symptoms caused by menopausal syndrome [10]; techniques such as pointing, kneading, pressing,

rubbing, stretching, and pushing have sound clinical effects on patients with lumbar disc herniation and help patients to resolve their pain [11].

Applying Daozhuo massage therapy on CP patients by tapping the Ashi point (tender point), Baliao point, Huiyin point, Yinlingquan, Sanyinjiao, and other parts of the lower abdomen, lumbosacral, prostate, and other parts can promote qi, activate blood circulation, and unblock meridians, as well as dredge the turbidity blocked by prostate stasis, clear and empty the prostate gland ducts, and at the same time, use the circulation direction of qi and blood in the meridians to dredge local qi and blood, relax the muscles and activate the collaterals, which can reduce prostate pain and other related symptoms; by tapping Zusanli and Yinlingquan, heating and pressing on the Huiyin points can warm yang and transform qi, help the kidneys to open and close. At the same time, it can strengthen the spleen and qi, diuretic, and dampness, and relieve the dampness pathogens in the lower energizer. It considers both the symptoms and the pathogens, and simultaneously eliminates all pathogens to improve urination symptoms, thereby helping the prostate to return to normal function. Prostate Daozhuo therapy has noticeable clinical effects and is easy to operate, thus it is a practical clinical treatment method.

4.1. Ashi point

Ashi is an acupuncture point in traditional Chinese medicine to treat localized pain or sensitive reaction points. It is also called the Tianying point, the tender point. The Ashi point of the prostate mainly refers to one or more pain points in the lower abdomen, lumbosacral, and prostate areas. The idea of diagnosis and treatment of Ashi point originated from the *Nei Jing: Lingshu·Jingjin* chapter records: "Treatment is to use burnt needles to rob pricks, with knowledge as the number, and pain as the loss" [12]. When the disease occurs, the human body's corresponding qi and blood blockage will occur in a certain part, causing qi and blood to temporarily accumulate in a localized region, resulting in the Ashi phenomenon. Sun Simiao, a famous doctor in the Tang Dynasty, clearly put forward the name "Ashi" in *Essential Formulas for Emergencies Worth a Thousand Pieces of Gold*: "There is a method of Ashi, and if a person is in pain, he should pinch it." Prostate Ashi acupoint therapy uses techniques such as pointing, pressing, and pushing on the Ashi point to promote qi and blood circulation, relax tendons, and unblock meridians. It can dredge the prostate gland ducts through the meridians and promote the returning of normal function of the prostate.

Li Xiang *et al.* divided 94 cases of CP patients into observation group and control group. 47 patients in the control group were given prostate massage treatment. They used the palm of the index finger to massage the prostate across the rectal wall, first massaging the left and right sides, and the order was turning the outer top toward the inner bottom, repeated 3 to 5 times. This was repeated 3 times a week for 4 weeks. Results: The National Institutes of Health Chronic Prostatitis Symptom Index score (NIH-CPSI score) and white blood cell count of the patients in the control group were lower than before treatment ($P < 0.01$), and the quality-of-life score was higher than before treatment ($P < 0.05$). Wang Beiya *et al.* treated 59 CP patients with oral antibiotics and prostate massage. They used their fingertips to massage and squeeze both sides 2 to 3 times from the outside up to the inside down, and lastly massage and squeeze 1 to 2 times from top to bottom along the central sulcus. Observation of the patient's NIH-CPSI scores before and after treatment showed that the treatment plan can significantly improve the patient's pain, urination, and other symptom indicators, and various scores, such as quality of life, have improved. Prostate massage therapy has been shown to improve the symptoms of CP.

4.2. Baliao point

Baliao acupoints are located in the first, second, third, and fourth posterior sacral foramina, with eight acupoints on the left and right. They are acupoints on the bladder meridian of Foot-Taiyang. In *Lingshu·Jingmai* records: "The bladder meridian pulse originates from the eye... carries the spine, reaches the middle of the waist, enters

the pelvis, connects the kidneys, and belongs to the bladder; from the middle of the waist, carries the spine downwards, and runs through the buttocks." "If it enters the popliteal region, the disease will be caused by arteries... there will be pain in the neck, back, waist, crotch, popliteus, kicks, and feet." The "crotch" refers to the end of the ischium near the anus and perineum. It is proposed that the bladder meridian of Foot-Taiyang circulates through the lower back, the anus, and other prostate projection areas, and can treat pain in the anus and perineum. At the same time, the tapping and rubbing techniques can dredge the meridians, circulate qi and blood, and moisturize the muscles and bones. Therefore, the tapping and massaging of the Baliao point on the bladder meridian can significantly alleviate the pain caused by CP, that is centered on the prostate and radiating to surrounding tissues (such as the lower abdomen, perineum, lumbosacral area, and prostate).

Xu Xiangdong treated 54 CP patients with systematic point-kneading massage techniques centered on tapping and rubbing the Baliao acupoint with a 20-day course of treatment. Among 54 patients, 45 had complete disappearance of clinical symptoms, with a complete effective rate of 83%. It is suggested that spot rubbing and massaging Baliao point can significantly improve pain and urination symptoms caused by prostate diseases. Ma Yaohui *et al.* randomly divided 86 CP patients into observation and control groups. The observation group used acupuncture techniques, including acupuncture at Baliao points (Shangliao point, Ciliao point, Zhongliao point, and Xiliao point). Treatment was three times a week for a total of 4 weeks. The control group was orally treated with diclofenac sodium sustained-release tablets (75 mg, once a day) for four weeks. The results showed that after treatment, the NIH-CPSI total score, pain score, inflammatory factor level, and urinary symptom score of the observation group were lower than those of the control group ($P < 0.05$).

4.3. Huiyin point

The Huiyin point is located in the middle depression between the anus and the genitals. Its name was first seen in the *A-B Classic of Acupuncture and Moxibustion*: "The Huiyin, also known as the screen, is the meeting point between the two yin before defecation and after urination," the Huiyin point is the starting point of the Ren meridian. Regarding the efficacy of this point, it is also found in *A-B Classic of Acupuncture and Moxibustion* Volume 9: "Difficulty in urination, heat in the orifice, actual pain in the abdominal skin, deficiency will cause itching, and the Huiyin governs it." Using techniques such as point-kneading massage and finger trembling on the Huiyin point, through the conduction of the Ren vessel, the effect can be conducted to the diseased area, thereby improving urinary, local abdominal pain, itching, and other problems.

Hou Jin *et al.* randomly divided 120 CP patients into control and observation groups. The observation group took acupuncture therapy with the Huiyin point as the primary point, leaving the needle for 20 minutes and continuing treatment for 30 days. The control group was treated with clarithromycin (0.25 g, once a day) and terazosin hydrochloride (2 mg, once a day) for 30 consecutive days. The results showed that the rates of the NIH-CPSI score, self-rating depression scale (SDS) score, white blood cell count, and recurrence of the observation group were lower than those in the control group ($P < 0.05$).

Other experts have clearly stated, based on clinical experience, that taking the midpoint of the line connecting the anus and the root of the scrotum, stabbing straight for 0.5–1.0 inches, or moxa stick moxibustion for 5–10 minutes can effectively improve impotence, premature ejaculation, spermatorrhea, and other male diseases including CP.

4.4. Yinlingquan and Sanyinjiao

Yinlingquan is located on the inner side of the calf, in the depression between the lower inner edge of the tibia and the inner edge of the tibia. It is the joint point of the spleen meridian of Foot-Taiyin. The five elements

belong to water and should be located in the kidneys. Sanyinjiao, on the inside of the calf, 3 inches above the tip of the medial malleolus of the foot, behind the medial edge of the tibia, is the intersection point of the spleen meridian of Foot-Taiyin, liver meridian of Foot-Jueyin, and kidney meridian of Zushaoyin. *Essential Formulas for Emergencies Worth a Thousand Pieces of Gold* has the saying "stranguria, moxibustion of Foot-Taiyin Baizhuang, three inches above the medial malleolus," which can treat various symptoms of the seminal chamber. Applying finger acupoint techniques on Yinlingquan and Sanyinjiao can strengthen the spleen and replenish qi, transport water, and dampness, and achieve the effects of clearing the lower energizer, clearing away heat and dampness; at the same time, it can also strengthen the spleen and regulate blood, and help to dredge qi and blood in tendons, activate blood circulation, and remove blood stasis.

Chen Xiang *et al.* randomly divided 168 patients with chronic non-bacterial prostatitis into observation and control groups. The observation group underwent acupuncture treatment on Yinlingquan, Sanyinjiao, and other acupoints for 25–40 minutes and performed twisting and purging, continuous treatment for 2 months; the control group was treated with prostate tablets (3 7.5 mg, two times a day) for 2 consecutive months. The results showed that the total effective rate of treatment in the observation group was higher than that in the control group, and the difference was statistically significant ($P < 0.05$). Wen Cuifen *et al.* randomly divided 168 cases of CP into treatment group and control group. Patients in the treatment group were treated with warm acupuncture on acupuncture points with Yinlingquan and Sanyinjiao as the main points, once a day for 30 consecutive days; the control group took prostate tablets (two times a day for 30 days), and the results showed that the total effective rate of the treatment group reached 88.10%, and the NIH-CPSI score dropped significantly.

5. Case study

Zhang, male, 32 years old, went to see a doctor on March 17, 2021, mainly due to pain in the lower abdomen and perineum. The pain in the lower abdomen and perineum was more than 3 months, accompanied by frequent urination, urgency, yellow urine, occasional pain during urination, and moist scrotum; he had general appetite, poor sleep, difficulty in falling asleep, and fatigue after waking up, as well as sticky and greasy stools, once every two days. The patient usually had spicy and greasy food; drank alcohol for more than ten years, 3–4 times/week, 200–600 ml/time; had high work pressure and usually stayed up late; denied smoking history and history of food or drug allergies. The tongue was fat and pale, with tooth marks on the edges of the tongue, white and greasy coating, slightly stagnant sublingual veins, and a slow and slippery pulse. No noticeable abnormalities were found in the external genitalia, and there was mild tenderness in the lower abdomen. In the prostate digital examination, the prostate was slightly hard and had nodules. Auxiliary routine prostate examination in March 2021 yielded white blood cell count (WBC) of 26/high power field (HPF), red blood cell count (RBC) of 0/HPF, and phospholipid bodies were moderately reduced. TCM diagnosis found seminal turbidity, syndrome differentiation is damp-heat and blood stasis syndrome. Western medicine diagnosis was chronic prostatitis. Treatment method included clearing away heat and dampness, activating blood circulation, and removing blood stasis. For treatment with traditional Chinese medicine decoction, the prescription is as follows: 15 g of *Astragalus membranaceus*, 12 g of *Salvia miltiorrhiza*, 3 g of leech, 12 g of *Dioscorea septemloba*, 15 g of *Acorus calamus*, 10 g of *Plantago* seed, 15 g of *Poria*, 10 g of Cortex *Phellodendri*, 9 g of *Atractylodes*, 12 g Medicinal *Cyathula* root, 20 g of raw *Coix* seed, 16 g of raw licorice. 7 doses of the decoction in water were made, one dose/day, and taken warm in the morning and evening.

On March 24, 2021, he reported that frequent urination and urgency symptoms were relieved, his sleep

improved, and the pain was relieved but still affected his life. The tongue was light and fat, dark in color, with tooth marks still present, and the coating was white and slightly greasy. *Atractylodes* rhizome and *Cuscuta* were removed for the second treatment, and 15 g of *Corydalis* and 10 g of white peony root were added. 28 doses of the decoction in water were made, one dose/day, taken warm in the morning and evening. In conjunction with prostate Daozhuo massage therapy, massage, finger trembling, and other therapies are performed on the prostate's Ashi point, Huiyin point, Baliao point, Yinlingquan point, Sanyinjiao point, once a week for 4 consecutive weeks as a course of treatment. Patient receiving the first massage felt obvious tenderness and discharged pus-like white prostatic fluid.

During the third consultation on April 21, 2021, the prostate fluid routine test yielded 4/HPF WBC, 0/HPF RBC, and slightly reduced phospholipid bodies. Appetite and sleep were improved, scrotal moisture was reduced, and frequent urination and urgency symptoms were relieved. He complained that the pain was more severe 2 days after the first massage, and the pain symptoms were significantly relieved 2 days after the massage compared to the beginning. After receiving four prostate massage therapies, the patient's pain symptoms were eliminated. He was advised to have a regular and healthy schedule, avoid sitting for long periods, and exercise moderately. There was no recurrence during recent follow-up visits.

Note: CP is a common urinary tract disease in men, which is related to the liver, kidneys, bladder, and other internal organs. Traditional Chinese medicine believes that CP disease is located in the seminal chamber, and it is usually caused by liver-kidney deficiency, disturbing the kidney essence; or injected dampness and heat, and pathogenic factors disturbing the seminal chamber; or long-term illness consuming yin, excessive heat from yin deficiency, and heat disturbing the sperm chamber. The patient usually liked to eat fatty, sweet, and rich-flavored foods, drank too much, and overate, which damaged the spleen. The spleen is in poor health and generates dampness. The dampness and heat are concentrated in the seminal chamber and bladder, resulting in symptoms including frequent urination, urgency, scrotal moisture, long-lasting pathogens turbidity, blockage of meridians, qi stagnation, and blood stasis, and symptoms of pain in the lower abdomen and perineum. A fat tongue with a dull color, tooth marks on the sides of the tongue, with white and greasy coating, slightly stagnant sublingual veins, and a slippery pulse are also manifestations of damp-heat blood stasis.

6. Conclusion

In summary, prostate Daozhuo massage therapy can exert unique advantages in the clinical syndrome differentiation, diagnosis, and treatment of CP. The core of its syndrome differentiation function is to determine the type of TCM syndrome based on the four diagnostic methods of traditional Chinese medicine through palpation of the prostate and patient symptom feedback. The core of its therapeutic effect is to massage local Ashi points and other acupoints on the prostate to expel turbid pathogens in the prostate ducts and meridians in the body, dredge qi and blood, regulate the internal organs, and improve prostate-related symptoms, mainly pain. However, due to the lack of fundamental experiments and large samples, and multi-center clinical studies, high-quality evidence-based evidence has yet to be supported, and further research is required.

Funding

Beijing Traditional Chinese Medicine Science and Technology Development Fund Project (No. WHZX-2020-104)

Disclosure statement

The authors declare no conflict of interest.

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Urology Research, 2023, Volume 1, Issue 2
https://ojs.bbwpublisher.com/index.php/UR

Application of New Nursing Concepts in Disinfection Supply Center and its Impact on Disinfection and Sterilization Qualification Rate

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Abstract: *Purpose:* To explore the practical effects of applying new nursing concepts in the disinfection supply center. *Methods:* A retrospective analysis was conducted based on the nursing management work situation of our hospital's disinfection supply center from December 2022 to June 2023. The work situation of the routine nursing management model from December 2022 to March 2023 was included into the control group, while the nursing management work that applied a variety of new nursing concepts from April 2023 to June 2023 was included in the observation group. The two groups randomly selected 400 medical devices each as research objects to compare the medical devices under the two nursing management models. To deal with the qualifications, at the same time, a self-made questionnaire was issued to the 18 staff members involved during the study to compare the nursing management quality scores of the two groups. *Results:* The timely rate of recovery and distribution of medical devices, the qualified rate of cleaning, the qualified rate of disinfection and sterilization, the qualified rate of packaging, and the nursing management quality score of the observation group were all higher than those of the control group ($P < 0.05$). *Conclusion:* The application of new nursing concepts can help disinfection supply centers to further improve the disinfection and sterilization qualification rate of medical devices, and promote the improvement of the overall nursing management quality level, which is worthy of promotion.

Keywords: Disinfection supply center; New nursing concept; Disinfection and sterilization qualification rate; Nursing management quality

Online publication: October 25, 2023

1. Introduction

The disinfection supply center is an important part of the hospital. The quality level of its nursing management is closely related to the safety of patient treatment and the operational image of the hospital [1]. In recent years, there have been many new nursing concepts derived, including the "Three Modernizations," the "Five Constant Methods," the Plan-Do-Check-Act (PDCA) cycle management method, etc. They have important significance in improving the quality of nursing management in departments and units. Therefore, if these new nursing concepts are organically applied to the daily nursing management work of the disinfection supply center, they can further

make up for the shortcomings of the conventional management model and help the nursing management quality of the center to reach a more satisfactory level. At the same time, it can also better promote the improvement of the comprehensive quality of nursing staff and better ensure the treatment safety of patients [2,3]. This study conducted an effective observation on the significance of the application of relevant new nursing concepts in our hospital's disinfection supply center in promoting the quality of nursing management.

2. Materials and methods

2.1. General information

A retrospective analysis was conducted on the nursing management work of the Disinfection Supply Center of our hospital from December 2022 to June 2023, and March 31, 2023 was the separation day, which means that the nursing work situation from December 2022 to March 2023 was classified as the control group, and the nursing work situation from April 2023 to June 2023 was classified as the observation group. A total of 800 surgical instruments were selected and managed, and there were 400 surgical instruments in the control group, of which 115 were from basic surgery, 68 from obstetrics and gynecology, 42 from stomatology, 28 from ophthalmology, 38 from pediatrics, and 109 from neurosurgery; there were 400 surgical instruments in the observation group, of which 108 were from basic surgery, 65 from obstetrics and gynecology, 34 from stomatology, 22 from ophthalmology, 45 from pediatrics, and 126 from neurosurgery. After comparing the data, there was no difference between groups ($P > 0.05$).

During the study period, there were 18 staff working in the center, including 1 male and 17 females; the age range was 24–45 years old, with a mean of 32.15 ± 8.14 years old; the working experience ranged from 1 to 25 years, with a mean of 12.53 ± 3.44 years; the ratio of disinfection personnel to nurses was 3:15; the ratio of education level of college to undergraduate was 12:6; marital status ratio of single to married was 7:11. Inclusion criteria included age < 55 years old and working experience ≥ 1 year; had professional qualification certificate; were aware of the research, and had documents to prove their independent will. Exclusion criteria were pregnant and lactating employees; trainees; those who had been away from work for a long time due to various reasons (leave time > 1 month); those whose positions were changed or fired during the research period.

2.2. Method

The control group still completed the recycling, cleaning, packaging, disinfection, sterilization, supplying, and other processing processes of various medical devices according to the previous routine nursing management model.

The observation group promoted and applied many new nursing concepts to the actual nursing management work of the center, including:

(1) Promotion and implementation of the "Three Modernizations" concept: The so-called "three modernizations" refer to institutionalized management, neat display, and standardized operation. Based on strict compliance with a series of relevant management systems and guidelines for disinfection supply centers promulgated by the state, combined with the actual medical development of the unit, the relevant nursing management systems and processes in the department, and the rigorous and meticulous regulations have been improved, and center staff are required to strictly follow the requirements, and at the same time, pay attention to keeping the working environment clean, orderly, beautiful, warm, and safe at all times, so as to better improve work efficiency and maintain a pleasant and positive working attitude.

(2) Reasonable application of "Five Constant Methods": The so-called "five constants" refers to "always

rectifying, always cleaning, always organizing, always standardizing, and always introspecting." This concept is incorporated into the whole-process nursing quality management work of the disinfection supply center. On the one hand, nursing management methods can provide continuous supervision, so that areas or problems that are not managed properly can be discovered in a timely manner, and they can be better improved and optimized; on the other hand, it can help the staff to change their thinking and discover their own shortcomings and problems through constant introspection, so as to more actively look for ways to make progress, constantly improve independent initiative, and value teamwork, thereby contributing to the establishment of the overall image of the department and the improvement of staff quality.

(3) Active promotion of the PDCA cycle method: The PDCA cycle method is a contemporary new type of total quality management method in society, which mainly advocates the four processes of plan, do, check, and act; it aims to discover problems and formulate solutions, implement plans, and verify plans' implementation effects, evaluate current management results, and resolve remaining issues in the next cycle. Through this process, limited human resources can be utilized to the maximum extent, and many effective preventive and response measures can be taken predictably. Therefore, it comprehensively largely improves the quality of nursing management work at one stage. This improvement not only includes the improvement of management systems and nursing processes, but also the professional abilities and comprehensive qualities of nursing staff, including awareness of responsibility, awareness of laws and regulations, awareness of risks, comprehensive improvement in awareness of prevention, ability to detect and solve problems, etc. For example, if the PDCA cycle method is applied in the disinfection supply center, a more scientific and humane improvement plan can be proposed based on the summary of common problems in the previous work process, including rational planning of different processing areas for medical devices, and prohibiting personnel from other areas from randomly changing duties; developing a detailed instrument cleaning chart so that personnel can intuitively master the cleaning techniques and complete work efficiently by category; after each work is completed, there must be the signature and date of the person who handled the work, so that when problems arise, they can be traced back to the source in a timely manner. At the same time, it can also increase the responsibility awareness of personnel, better restrain their own behavior, and reduce related risks.

(4) Improvement of the performance appraisal system, reward and punishment system, and flexible shift system: Classes are organized regularly for staff in the center to learn advanced nursing concepts and technologies, and regular assessments are conducted, and the assessment results are included in the performance. A strict reward and punishment system is implemented, with comprehensive quality inspections regularly conducted at the center; those with good performance should be actively praised or rewarded, those with improper work attitudes require timely corrections and will be punished in the form of notifications, and those who make nursing errors require severe criticisms and corrections. A flexible shift system is formulated and improved based on the principle of "humanistic care" to ensure that each employee has sufficient rest time, so that they can work with a fresh and positive attitude.

(5) Comprehensive development of Internet management: A complete Internet management platform is actively established to incorporate the daily care management of the disinfection supply center into the entire computer management system of the hospital, so that 24-hour monitoring and related adverse events can be reviewed step by step, thereby better identify and solve problems, and comprehensively improve the center's overall care efficiency.

2.3. Observation indicators

The indicators below were observed in the groups.

(1) Qualification rate of medical device processing

Standardized statistics were carried out on the timely recovery and distribution rate, cleaning qualification rate, disinfection and sterilization qualification rate, and packaging qualification rate of the two groups of medical devices, and the observed values were compared.

(2) Nursing management quality score

When the nursing management work of the two groups had come to an end, a self-made "Nursing Management Quality Rating Form" was distributed for the two groups of staff to independently score the quality of nursing management in terms of the center's systems, processes, personnel, etc. The division range is 0–100, and the score corresponds to the quality level of the nursing management.

2.4. Statistics

Using SPSS25.0 software as the statistical basis, all the obtained data were divided by nature. If it belongs to measurement data, it will be displayed as mean ± standard deviation (SD), and a parallel *T* test will be performed; if it belongs to count data, it will be displayed as percentage (%). At the same time, the chi-square test is performed. If the final *P* value is smaller than 0.05, it indicates that there is a statistically significant difference.

3. Results

3.1. Comparison of medical device processing qualification rates between the two groups

As seen in **Table 1**, the timely recovery and distribution rate of medical devices, and the qualified rate of cleaning, disinfection, sterilization, and packaging of the observation group were all higher than those of the control group, $P < 0.05$.

Table 1. Comparison of medical device processing qualifications [n (%)]

Group	Timely recovery and distribution rate	Qualified rate of cleaning	Qualified rate of disinfection and sterilization	Qualified rate of packaging
Control group ($n = 400$)	362 (90.50)	368 (92.00)	362 (90.50)	357 (89.25)
Observation group ($n = 400$)	390 (97.50)	395 (98.75)	398 (99.50)	391 (97.75)
T	17.376	20.658	34.105	23.776
P	0.001	0.001	0.001	0.001

3.2. Comparison of nursing management quality scores between the two groups

From **Table 2**, the total score of nursing management quality of the observation group was significantly higher than that of the control group, $P < 0.05$.

Table 2. Comparison of nursing management quality score results (mean ± SD, points)

Group	System	Process	Personnel	Total score
Control group ($n = 18$)	84.56 ± 6.87	86.87 ± 7.45	82.14 ± 6.05	84.45 ± 6.72
Observation group ($n = 18$)	92.45 ± 8.78	96.33 ± 9.45	95.87 ± 9.24	95.05 ± 8.99
T	3.003	3.335	5.274	4.007
P	0.005	0.002	0.001	0.001

4. Discussion

Disinfection Supply Center is an important sterile item supply unit in the hospital. It is a relatively independent work system with clear rules and complete processes. At the same time, the sterile items involved in its management scope and equipment are closely related to the normal work and operation of various departments of the hospital and the development of related medical research work, thus they also reflect the comprehensive characteristics. More importantly, the quality of nursing management of the center largely determines the high level of nosocomial infection rate, that is, the center also shoulders the important responsibility of preventing nosocomial cross-infection and protecting patient safety. Therefore, it is necessary to emphasize the quality of nursing management in the center, and actively and continuously explore various emerging nursing concepts in order to promote its nursing quality level [4-6].

The results in **Tables 1** and **2** show that compared with the control group, the medical device processing qualification rate and overall nursing management quality in the observation group are at a higher level, suggesting that the application of new nursing concepts is of great value. The introduction of advanced nursing concepts such as "transformation," "impermanence method," and PDCA cycle method can help the disinfection supply center to formulate more complete systems, such as performance appraisal system, reward and punishment system, flexible shift system, etc., which can make the staff's work more efficient. The ability and comprehensive quality of staff can be further improved, so that they can more proactively complete relevant job functions [7-10]; at the same time, a more detailed and complete work process can also be determined, and with the support of Internet technology, it can move closer to scientific and standardized modern management standards [11,12].

5. Conclusion

In summary, the active application of a variety of new nursing concepts in the routine nursing management of the disinfection supply center can help to effectively improve the processing qualification rate of medical devices, and achieve the purpose of comprehensive quality improvement of systems, processes, and personnel. It has high promotion and clinical application value.

Disclosure statement

The author declares no conflict of interest.

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Urology Research, 2023, Volume 1, Issue 2
https://ojs.bbwpublisher.com/index.php/UR

Clinical Efficacy and Safety of Transurethral Plasma Enucleation in the Treatment of Benign Prostatic Hyperplasia

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Abstract: *Objective:* This paper aims to analyze the effectiveness and safety of transurethral plasma enucleation in clinical treatment of benign prostatic hyperplasia. *Methods:* A total of 100 patients with benign prostatic hyperplasia who received surgical treatment in our hospital from January 2022 to January 2023 were randomly divided into groups by envelope method. 50 patients who received transurethral plasma resection of the prostate were selected as the control group and 50 patients who received transurethral plasma enucleation of the prostate were the study group. The effective rate of treatment, incidence of complications, postvoid residual (PVR) volume, maximum urinary flow rate (Qmax), and international prostate symptom score (I-PSS) were compared between the two groups. *Results:* By comparison, the effective rate of treatment in the study group was higher ($P < 0.05$). By comparison, the incidence of complications in the study group was lower ($P < 0.05$). Before treatment, there was no significant difference in PVR, Qmax, and I-PSS scores between the two groups ($P > 0.05$). After treatment, the PVR and I-PSS scores of the study group were lower, and Qmax was higher ($P < 0.05$). *Conclusion:* In the treatment of benign prostatic hyperplasia, the application of transurethral plasma enucleation can improve the clinical efficacy and clinical symptoms, with high safety and application value.

Keywords: Benign prostatic hyperplasia; Transurethral plasma enucleation; Safety; Effectiveness

Online publication: October 25, 2023

1. Introduction

In urology, benign prostatic hyperplasia (BPH) is very common. It is said that the incidence of this disease can reach 50–80%. The main symptoms of patients include frequent urination, increased residual urine volume, and dysuria. As the condition worsens, there will be varying degrees of overflow incontinence or chronic urinary retention [1,2]. Middle-aged and elderly men are a high-incidence group for this disease, and the prevalence rate will increase with age. Transurethral resection of the prostate is currently the gold standard for the treatment of this disease, but there are major limitations in this operation. This operation is not suitable for patients with large prostate volume, and it is prone to complications such as bleeding or resection syndrome symptoms, which can adversely affect the prognosis [3,4]. Transurethral plasma enucleation is based on the plasma bipolar

resection system. During the operation, the electrocoagulation system can be used to coagulate the bleeding site in real time to stop the bleeding, which can ensure the clarity of the intraoperative field of view and improve the clinical efficacy [5,6]. In this study, 100 patients with benign prostatic hyperplasia admitted to our hospital from January 2022 to January 2023 were selected as the research objects, and they were compared and observed in groups to determine the efficacy and safety of transurethral plasma enucleation.

2. Materials and methods

2.1. General information

The study selected 100 patients with benign prostatic hyperplasia who were treated in our hospital from January 2022 to January 2023, and divided them into groups by random envelope method. There were 50 patients in the control group, aged between 54 and 72 years old, with an average of 63.26 ±4.31 years old, the course of disease was between 1–3 years, with an average of 2.11±0.36 years, the body mass index (BMI) was between 23–26kg/m^2, the average BMI was 24.54±0.72 kg/m^2. The 50 patients in the study group were aged between 55–74 years old, with an average of 64.17±4.49 years old, the course of disease was between 1–4 years, with an average of 2.39±0.44 years, the BMI was between 23–27kg/m^2, the average BMI was 24.86±0.85 kg/m^2. There was no significant difference in the general information between the two groups ($P > 0.05$). The ethics committee had approved the study.

Inclusion criteria included patients who meet the diagnostic criteria for benign prostatic hyperplasia confirmed by relevant tests [7], patients with complete clinical data, and patients who voluntarily participate in the research project and sign the consent form.

Exclusion criteria were patients with contraindications related to surgery, patients without indications for surgery, patients with severe urinary system infection, and patients unable to communicate normally due to cognitive impairment, mental illness, etc.

2.2. Methods

The preoperative preparation methods of the two groups of patients were the same, the preoperative examination was improved, and the specific situation of the lesion hyperplasia was clarified. The operation plan of the control group was transurethral plasma resection of the prostate. The anesthesia plan was combined spinal and epidural anesthesia, and after the onset of anesthesia, the patient was assisted to take the bladder lithotomy position, and the operation was started after disinfection and draping. The distal landmark is the seminal colliculus, and the proximal landmark is the bladder neck. The right lobe, left lobe, and bladder neck were cut with an electric knife in sequence. After the operation was completed, the seminal colliculus was trimmed, and the excised tissue fragments were sucked out. After hemostasis with the electric knife, an F22# three-lumen catheter is inserted for urine drainage.

The operation plan of the study group was transurethral plasma enucleation. The anesthesia plan and the position of the operation were the same as that of the control group. The urethral dilation was determined according to the urethral caliber of the patient. The 26F resectoscope sheath was implanted and the plasma resectoscope was sent visually along the urethra to the bladder with saline as the medium. The target location was seminal colliculus of the prostate. At 6 o'clock, the prostate capsule was cut through all the entrances, and the incision was made in the direction of the bladder through the urethral mucosa. After enucleation of the prostate tissue, electrocoagulation was performed, and 200ml normal saline was injected into the bladder after it was clear that there was no bleeding. After the lens was removed, the bladder base was gently pressed by the hand, and a three-cavity catheter was indwelled after the urethral orifice was cleared. After the operation, it is

necessary to continue to flush the bladder with normal saline until the flushing fluid is clear.

2.3. Observation indicators

The indicators below were compared between the two groups.

(1) Comparison of treatment effectiveness. Clinical symptoms have been significantly improved after treatment, postvoid residual (PVR) volume and maximum urinary flow rate (Qmax) have been improved by more than 90%, and no postoperative complications are considered to be markedly effective. Clinical symptoms have improved after treatment, with the improvement rate of PVR and Qmax less than 90%, but more than 70%, and mild complication, these are considered to be effective. The clinical symptoms are not improved after treatment, or aggravated, and the improvement rate of PVR and Qmax is less than 70%, and severe complication symptoms, these are ineffective. Treatment effective rate = $100.00\% - \frac{\text{number of ineffective cases}}{50} \times 100.00\%$.

(2) Comparison of incidence of complications, including secondary bleeding, temporary urinary incontinence, and urethral injury.

(3) Comparison of relevant indicators, including PVR, Qmax, and International Prostate Symptom Score (I-PSS). The I-PSS score ranges from 0 to 35 points, and the higher the score, the more severe the prostate symptoms of the patient.

2.4. Statistical methods

The study data were processed using SPSS24.0 statistical software package. The treatment response rate and complication rate were described by n (%), and the scores of PVR, Qmax, and I-PSS were described by mean ± standard deviation (SD). By t and χ^2 tests, $P < 0.05$ meant that the difference between groups was statistically significant.

3. Results

3.1. Comparison of treatment effectiveness

The effective rate of treatment in the study group was 98.00% (49/50), 34 cases were markedly effective (68.00%), 15 cases were effective (30.00%), and 1 case was ineffective (2.00%). The effective rate of treatment in the control group was 80.00% (40/50), markedly effective in 23 cases (46.00%), effective in 17 cases (34.00%), and ineffective in 10 cases (20.00%). It can be seen that the study group has a higher effective rate ($P = 0.010$, $\chi^2 = 6.537$).

3.2. Comparison of incidence of complications

The incidence of complications in the study group was lower than that in the control group ($P < 0.05$), as shown in **Table 1**.

Table 1. Comparison of incidence of complications [n (%)]

Group	Secondary bleeding	Temporary urinary incontinence	Urethral injury	Complication rate
Control group (n = 50)	2 (4.00)	5 (10.00)	2 (4.00)	9 (18.00)
Study group (n = 50)	0 (0.00)	1 (2.00)	0 (0.00)	1 (2.00)
χ^2	-	-	-	5.444
P	-	-	-	0.019

3.3. Comparison of relevant indicators

Before treatment, there was no significant difference in PVR, Qmax, and I-PSS scores between the two groups ($P > 0.05$). After treatment, the PVR of the study group was lower than that of the control group, Qmax was higher than that of the control group, and I-PSS score was lower than that of the control group ($P < 0.05$), as presented in **Table 2**.

Table 2. Comparison of related indicators (mean ± SD)

Group	PVR (ml)		Qmax (ml/s)		I-PSS (points)	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Control group (n = 50)	115.39±11.84	23.13±3.19 △	8.60±3.34	13.72±3.11 △	26.47±3.16	13.54±1.36 △
Study group (n = 50)	116.27±12.07	16.38±2.27 △	8.54±3.28	20.35±4.16 △	27.00±3.21	7.39±2.27 △
t	0.368	12.190	0.090	9.026	0.831	16.433
P	0.713	<0.001	0.928	<0.001	0.407	<0.001

△ indicates $P < 0.05$ compared with before treatment

4. Discussion

Prostatic hyperplasia is a common disease of the urinary system, and with the prolongation of the course of the disease, the condition will become more and more serious, and related complications will be induced, which seriously affects the patients' quality of life. The probability of suffering from this disease is as high as 50% for the elderly over 60 years old, and as high as 80% for the elderly over 80 years old [8,9]. With the continuous advancement of minimally invasive technology, there are more and more surgical treatment options for this disease. Transurethral plasma resection is one of the commonly used surgical options for the treatment of this disease. However, during the operation, it needs to be resected along the direction of the urethral mucosa of the patient's prostate to the outer capsule, which will result in anatomical layers. Moreover, the distal vision is not clear, and during the resection process, the high temperature of the electric resection can cause scabbing of the surrounding tissue, which also has a certain impact on the effect of the operation. Transurethral plasma enucleation is based on transurethral plasma resection and has been improved. This technique uses high temperature to vaporize or cut the tissue, and can directly peel off the diseased tissue, with good hemostatic effect. Additionally, the visual field during the operation is also clearer, which can effectively make up for some shortcomings of transurethral plasma resection. The working principle of the transurethral plasma enucleation system is as follows. There are two electrodes in the electrocution ring, the working electrode and the return electrode, with physiological saline as the medium, and under the mediation of physiological saline, a control loop is formed with the electrocution ring [9,10]. The results of this study showed that after the patients in the study group received transurethral plasma enucleation, the effective rate of treatment was significantly higher than that of the control group, the PVR and I-PSS scores were lower than those of the control group, and the Qmax was higher than that of the control group ($P < 0.05$). The reason may be that during the transurethral plasma enucleation operation, the current passes through the circuit generated between the two electrodes to release radio frequency energy, and then through the transformation of the medium, a plasma region of highly ionized particles can be formed, which can break the organic molecular bonds of the prostate tissue. After it is fused into basic molecules or low molecules, and crushed or gasified, the proliferative prostate tissue can be separated and enucleated along the envelope more accurately and thoroughly, thus reducing the influence of proliferative prostate tissue on urination to the greatest extent [10,11]. Moreover, the visual field is clear during

the operation, the bleeding can be treated in time, with good hemostasis effect, which is also conducive to postoperative repair. In addition, the control circuit formed with saline as the medium can prevent the current from passing through the human body from damaging the prostate capsule nerve during cutting. The results of this study also showed that the incidence of postoperative complications in the study group was lower than that in the control group ($P < 0.05$), which may be due to the fact that transurethral plasma enucleation adopts the method of hemostasis while cutting, thus it can reduce secondary hemorrhage risk. Additionally, it can also avoid heat penetration during electrocution, reduce damage to surrounding tissues, and further reduce the risk of complications such as postoperative urinary tract irritation. The results of this study are consistent with those of previous studies [12,13], hence further confirming the effectiveness and safety of transurethral plasma enucleation in the clinical treatment of benign prostatic hyperplasia.

In summary, surgical treatment is currently the main clinical treatment for benign prostatic hyperplasia. In the selection of surgical methods, the application of transurethral plasma enucleation can improve the clinical treatment effect and clinical symptoms of patients, with high surgical safety and application value.

Disclosure statement

The author declares no conflict of interest.

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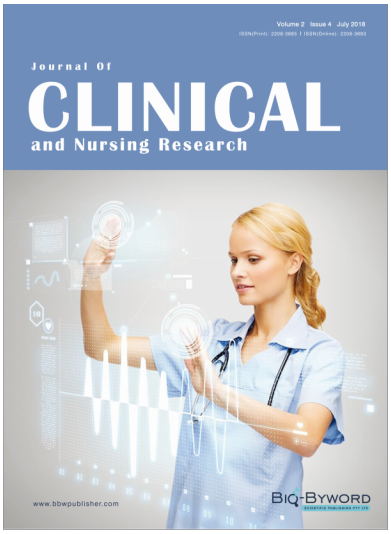

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