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*Original Article*

# Application of comprehensive nursing intervention in patients with upper urinary tract calculi undergoing flexible ureteroscopy-assisted treatment

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**Abstract:** Objective: The aim of this study was to explore the application of comprehensive nursing intervention in perioperative nursing of upper urinary tract calculi treated with flexible ureteroscopy. Methods: A total of 96 patients with upper urinary tract calculi were randomly divided into the test group and control group. The control group received routine nursing during the perioperative period. The test group received comprehensive nursing intervention, providing additional nursing care before and after surgery. Negative emotions of the patients were assessed by Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS) scores. Quality of life, before and after nursing, was assessed by Shot Form 36 Health Survey (SF-36). Postoperative pain was assessed using Visual Analogue Scale (VAS) scores and nursing satisfaction was assessed via questionnaire surveys. Result: Incidence of postoperative complications in the test group was significantly lower than that in the control group ($P<0.001$). Negative emotion scores of the test group were significantly lower than those of the control group ($P<0.001$). Life quality scores of the test group, after nursing, were significantly higher than the control group ($P<0.001$). Postoperative VAS scores of the test group were significantly lower than the control group ($P<0.001$). Nursing satisfaction of the test group was significantly higher than that of the control group ($P<0.05$). Conclusion: Application of comprehensive nursing intervention in perioperative nursing of upper urinary tract calculi treated with flexible ureteroscopy can effectively decrease complication incidence and alleviate negative emotions and postoperative pain, improving the quality of life.

**Keywords:** Comprehensive nursing, flexible ureteroscopy, upper urinary tract calculi

## Introduction

Upper urinary tract calculi is one of the most common diseases of the urinary system, with a high incidence rate [1]. Main treatment methods of urinary calculi include extracorporeal shock wave lithotripsy and percutaneous nephrolithotomy. However, neither the safety nor the effectiveness of these methods has been satisfactory [2]. In recent years, with the development of medical technology, the flexible ureteroscope has been widely used due to the characteristics of less trauma and good efficacy [3]. However, with application of the flexible ureteroscope, although the therapeutic effects on patients with urinary calculi have been greatly improved, patient rehabilitation and life quality after surgery are affected, to some extent, due to postoperative pain and negative emotions, such as anxiety and depression [4]. In the past, the conventional nursing mode has generally been adopted although it has a certain effect on postoperative recovery and other aspects of patients. With the development of society and the advancement of medical technology, many nursing requirements for diseases are not limited to the conventional nursing mode [5, 6]. Therefore, discovery of a new nursing mode has important clinical significance in improving perioperative life quality and operation curative effects of patients with urinary calculi [7, 8].

As a new patient-centered nursing model, comprehensive nursing intervention plays a role as a comprehensive supplement and mode of

improvement for the deficiencies of conventional nursing [9]. It has better planning and comprehensiveness for patients than traditional conventional nursing. It has good effects, promoting patient rehabilitation and improving negative emotions [10]. At present, comprehensive nursing intervention has been applied for surgery of various diseases [11]. For example, some studies have investigated the effects of comprehensive nursing intervention on hematopoietic stem cell transplantation patients. It was found that comprehensive nursing intervention can effectively reduce incidence of complications in hematopoietic stem cell transplantation patients [12]. In other studies concerning nursing effects of comprehensive nursing intervention on patients with gastric ulcerative gallstones, scholars have found that comprehensive nursing intervention can effectively improve the negative emotions of patients, reduce recurrence rates of calculi in patients, and improve nursing satisfaction [12].

Although comprehensive nursing intervention has been used in a variety of diseases, reports regarding the application of flexible ureteroscope on patients with urinary calculi have been relatively few. Therefore, aiming to discover a superior nursing model for the perioperative period of patients with upper urinary tract calculi, improving negative emotions and quality of life, the current study examined the application of comprehensive nursing intervention.

## Materials and methods

A total of 96 patients with upper urinary calculi treated with ureteroscopy-assisted treatment were selected, including 57 males and 38 females, with an average age of (42.16±4.21) years. All patients were treated with flexible ureteroscope lithotripsy. Patients were randomly divided into the test group (N=48) and control group (N=48). The control group received routine nursing during the perioperative period, while the test group received comprehensive nursing intervention.

Inclusion criteria: Patients with upper urinary calculi after flexible ureteroscopy-assisted treatment. Exclusion criteria: Patients with severe liver and kidney dysfunction; Patients with other severe viscera diseases or combined with tumors; Patients with surgical contraindications; Patients with coagulation disorders; Patients that did not cooperate with the study; Patients with communication barriers.

This study was approved by the Ethics Committee of Yu Huang Ding Hospital of Yantai. All study participants provided written informed consent before participating in the study.

*Nursing methods*

Nursing intervention began from the admission of the patient. Nursing intervention on patients in the control group was conducted with the conventional nursing method. Patients received conventional preoperative examinations, operation cooperation, and postoperative guidance.

Patients in the test group received comprehensive nursing intervention, in addition to conventional nursing model as follows:

1. Preoperative intervention was conducted. The nursing staff assisted the patients by conducting a comprehensive preoperative examination, guiding their diet, maintaining the balance of water, electrolytes, and acid/alkaline. They detected various vital signs in real time, such as breathing and blood pressure. They gave patients preventive anti-infective treatment. Psychological communication with the patients before the surgery was conducted to relieve anxiety and depression. Disease-related knowledge was popularized among patients and their family members. The surgery procedures were carefully and patiently explained, giving the patients a certain understanding of the disease and surgery. This method eliminated fears, improving surgical cooperation to some degree.

2. Regarding nursing during surgery, patients were positioned in the bladder lithotomy position. The operating room temperature was adjusted to about 28°C. Vital signs of the patients were closely monitored during surgery and countermeasures were taken for any emergencies which may occur during the operation.

3. Regarding postoperative nursing, the nursing staff sent patients back and monitored their ECG and vital signs. They payed close attention to the retained ureters in the patients, maintaining their unblocked state. Patients were encouraged to drink more water and their urine output was recorded. At the same time,

**Table 1.** General information table

| Factor | Test group n=48 | Control group n=48 | $t/X^2$ | P |
|---|---|---|---|---|
| Gender | | | 0.044 | 0.834 |
| Male | 30 (62.50) | 29 (60.42) | | |
| Female | 18 (37.50) | 19 (39.58) | | |
| Age | | | 0.174 | 0.676 |
| ≥40 | 28 (58.33) | 30 (62.50) | | |
| <40 | 20 (41.67) | 18 (37.50) | | |
| BMI | | | 0.042 | 0.838 |
| ≥22 | 25 (52.08) | 24 (50.00) | | |
| <22 | 23 (47.92) | 24 (50.00) | | |
| Site of stone formation | | | 0.077 | 0.994 |
| Left ureteral calculi | 12 (25.00) | 12 (25.00) | | |
| Right ureteral calculi | 14 (29.17) | 13 (27.08) | | |
| Left renal calculi | 10 (20.83) | 10 (20.83) | | |
| Right renal calculi | 12 (25.00) | 13 (27.08) | | |
| Calculi diameter (cm) | 4.21±1.07 | 4.23±1.02 | 0.094 | 0.926 |
| Coagulation function | | | | |
| APTT s | 28.81±2.66 | 29.23±2.65 | 0.775 | 0.440 |
| PT s | 11.78±1.12 | 12.01±1.06 | 1.033 | 0.304 |
| FIB g/l | 3.21±0.19 | 3.19±0.21 | 0.489 | 0.626 |
| TT s | 14.54±1.63 | 14.53±1.62 | 0.030 | 0.976 |
| Do you have hematuria? | | | 0.044 | 0.834 |
| Yes | 29 (60.42) | 30 (62.50) | | |
| No | 197 (39.58) | 18 (37.50) | | |
| Liver function | | | | |
| Serum total protein g/L | 71.63±2.47 | 71.88±2.45 | 0.497 | 0.620 |
| Glutamic pyruvic transaminase μmol/L | 26.11±4.43 | 26.34±4.22 | 0.260 | 0.795 |
| Total bilirubin μmol/L | 11.34±2.21 | 11.31±2.18 | 0.067 | 0.947 |
| Renal function (μmol/L) | | | | |
| Creatinine | 69.34±4.12 | 70.05±4.14 | 0.842 | 0.402 |
| Urea | 5.45±0.67 | 5.57±0.72 | 0.845 | 0.400 |
| Uric acid | 291.53±13.25 | 293.56±13.41 | 0.746 | 0.458 |

anti-inflammatory rehydration, hemostasis, and other basic treatments were carried out. Adverse reactions of patients after surgery were closely monitored. Once adverse reactions, such as cyanosis, occurred, effective treatment measures were taken.

4. Regarding discharge nursing guidance, patients were advised to rest and were prohibited from participating in violent activities and heavy physical labor. They were advised to have enough daily drinking water to increase urine output, excrete the deposited crystals, and reduce solute concentrations in the urine. They were prohibited from eating spicy stimulating foods and high-fiber foods. Patients came back regularly to the hospital for follow-up consultations with doctors.

*Outcome measures*

Complications of the two groups of patients during hospitalization were recorded and compared. Complications included mild hematuria, urosepsis, urinary extravasation, and peripheral organ injury.

Psychological negative emotions of the two groups, after two weeks of nursing, were evaluated by Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS) scores [13].

**Table 2.** Complications of the two groups of patients

| Complication | Test group n=48 | Control group n=48 | $x^2$ | P |
|---|---|---|---|---|
| Mild hematuria | 2 (4.17) | 6 (12.50) | 2.182 | 0.140 |
| Urinary sepsis | 0 | 1 (2.08) | 1.011 | 0.315 |
| Extravasation of urine | 1 (2.08) | 3 (6.25) | 1.043 | 0.307 |
| Peripheral organ injury | 0 | 1 (2.08) | 1.011 | 0.315 |
| Total incidence | 3 (6.25) | 11 (22.92) | 5.352 | <0.050 |

**Table 3.** SAS and SDS scores of the two groups of patients before and after nursing

| | Test group n=48 | Control group n=48 | t | P |
|---|---|---|---|---|
| SAS | | | | |
| Before | 53.01±4.42 | 52.78±4.51 | 0.252 | 0.801 |
| After | 28.45±5.06 | 42.07±4.38 | 14.01 | <0.001 |
| t | 9.41 | 8.80 | | |
| p | <0.001 | <0.001 | | |
| SDS | | | | |
| Before | 52.25±3.89 | 52.61±4.02 | 14.01 | <0.001 |
| After | 29.11±5.07 | 41.39±4.57 | 12.46 | <0.001 |
| t | 9.71 | 8.77 | | |
| p | <0.001 | <0.001 | | |

Quality of life of the two groups of patients, before and after two weeks of nursing, was evaluated by the Shot Form 36 Health Survey (SF-36) [14], with higher scores indicating better life quality.

Postoperative pain of the two groups on the 1st day after surgery was recorded via the VAS score sheet [15].

Nursing satisfaction of the two groups of patients, after discharge, was evaluated and compared by questionnaire surveys. They were classified as great satisfaction, satisfaction, and dissatisfaction. Total nursing satisfaction = (patients with satisfaction + patients with great satisfaction)/total patients ×100%. Patient complications, negative sentiment scores, and quality of life scores were the primary measures.

*Statistical methods*

SPSS18.0 software (Bizinsight (Beijing) Information Technology Co., Ltd.) was used for statistical analysis. Chi-squared test was used for count data. Measurement data are expressed as mean ± standard deviation. Independent t-test was used for comparisons between the two groups, while paired t-test was used for comparisons within the group. P< 0.05 indicates statistical significance.

## Results

*Baseline data*

There were no significant differences in patient physiological conditions, such as gender, age, calculus size, and SAS and SDS scores (P>0.05). Thus, the two groups were comparable (**Table 1**).

*Complication occurrence*

In the test group, 2 patients had mild hematuria and 1 patient had urinary extravasation. Complication incidence was 6.25%. Numbers of patients in the control group with mild hematuria, urosepsis, urinary extravasation, and peripheral organ injury were 6, 1, 3, and 1, respectively. Complication incidence was 22.92%. Complication incidence of the test group was significantly lower than that of the control group. Differences were statistically significant (P<0.001) (**Table 2**).

*Negative emotion scores after nursing*

SAS and SDS scores, after nursing, of the test group were (28.45±5.06) and (29.11±5.07), respectively. SAS and SDS scores, after nursing, of the control group were (42.07±4.38) and (41.39±4.57), respectively. Negative emotion scores of the test group were significantly lower than the control group and differences were statistically significant (P<0.001) (**Table 3** and **Figure 1**). Results indicate that comprehensive nursing intervention can effectively improve the negative emotions of patients.

*Life quality scores before and after nursing*

There were no significant differences in life quality scores between the two groups before nursing (P>0.05). Quality of life scores of the two groups were significantly higher than those

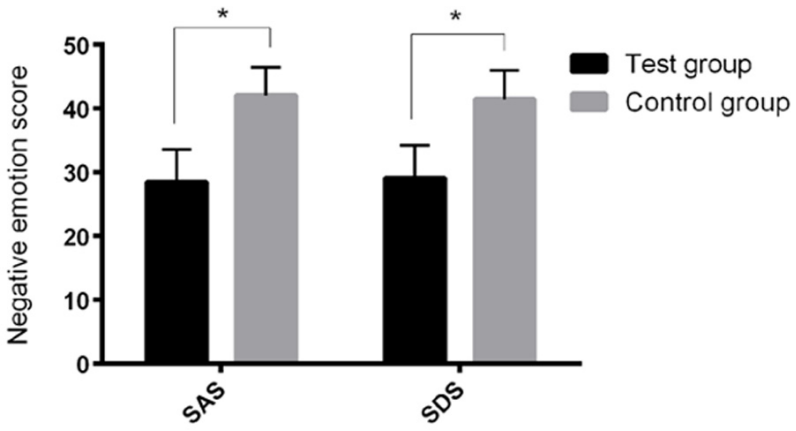


**Figure 1.** Comparison of negative emotion scores between the two groups of patients. SAS and SDS scores of the test group were significantly lower than those of the control group. Differences were statistically significant (P<0.05). Note: *indicates P<0.05.

**Table 4.** Quality of life scores of patients in the two groups before and after nursing

| Time | Test group n=48 | Control group n=48 | t | P |
|---|---|---|---|---|
| Before nursing | 54.21±4.36 | 55.02±4.22 | 0.913 | 0.363 |
| After nursing | 80.59±7.25 | 66.37±7.21 | 9.635 | <0.001 |
| t | 9.641 | 9.413 | | |
| F | <0.001 | <0.001 | | |

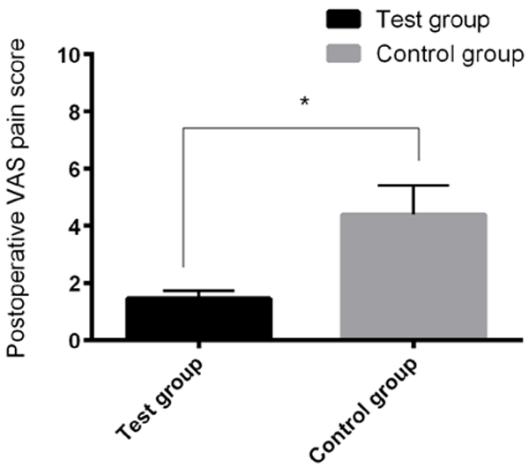


**Figure 2.** Postoperative VAS pain scores of the two groups of patients. The VAS score of the test group was significantly lower than that of the control group. Differences were statistically significant (P<0.05). Note: *indicates P<0.05.

before nursing (P<0.001). The life quality score of the test group, after nursing, was (80.59± 7.25), significantly higher than that of the control group (66.37±7.21). Differences were statistically significant (P<0.001) (**Table 4**). Results indicate that comprehensive nursing intervention can significantly improve the life quality of patients.

*Postoperative pain scores*

The VAS score of the test group was (1.46±0.27), while the VAS score of the control group was (4.39± 1.02). The VAS score of the test group was significantly lower than that of the control group. Differences were statistically significant (P<0.05), indicating that the postoperative pain of the test group was relieved more obviously than that of the control group (**Figure 2**).

*Nursing satisfaction survey*

Numbers of patients that were very satisfied, satisfied, and dissatisfied in the test group were 37, 9, and 2 cases, respectively. Nursing satisfaction was 95.83%. Numbers of patients that were very satisfied, satisfied, and dissatisfied in the control group were 24, 9, and 15 cases, respectively. Nursing satisfaction was 68.75%. Nursing satisfaction of the test group was significantly higher than that of the control group and differences were statistically significant (P< 0.05) (**Table 5**).

## Discussion

At present, the main treatment methods for upper urinary calculi include extracorporeal shock wave lithotripsy, percutaneous nephrolithotomy, and flexible ureteroscope laser lithotripsy. In the past, due to various limitations, extracorporeal shock wave lithotripsy was mainly used. This method has certain limitations concerning its efficacy and safety, however [16, 17]. Therefore, flexible ureteroscope laser lithotripsy gradually became the main treatment method. Flexible ureteroscope laser lithotripsy not only has better lithotrity effects,

**Table 5.** Comparison of nursing satisfaction of the two groups of patients

| Nursing satisfaction | Adult group n=48 | Control group n=48 | t | P |
|---|---|---|---|---|
| Very satisfied | 37 (77.08) | 24 (50.00) | - | - |
| Satisfied | 9 (18.75) | 9 (18.75) | - | - |
| Dissatisfied | 2 (4.17) | -15 (31.25) | - | - |
| Nursing satisfaction | 46 (95.83) | 33 (68.75) | 12.08 | <0.050 |

but also has the advantages of less trauma and quicker recovery, compared with traditional extracorporeal shock wave lithotripsy [18, 19]. However, some studies have shown that, in the perioperative period of patients with upper urinary calculi, many patients had complications and postoperative adverse reactions. These factors have a great impact on surgery effects and life quality [20, 21]. Since flexible ureteroscopy gradually became the main treatment method for upper urinary calculi, perioperative nursing of patients, treated in this way, became more important. Perioperative nursing has an influence on postoperative recovery and life quality of patients [3, 22]. Aiming to overcome the shortcomings of the traditional nursing model and to find a superior nursing program for perioperative nursing of patients with upper urinary calculi, the current study explored the application effects of comprehensive nursing intervention.

The present study evaluated and compared complications, psychological negative emotions, life qualities, postoperative pain scores, and nursing satisfaction of patients receiving nursing via different modes. Present results show that incidence of complications of the test group was significantly lower than that of the control group. Differences were statistically significant (P<0.05), indicating that comprehensive nursing intervention in the perioperative period of patients with upper urinary calculi can effectively reduce postoperative complications, especially occurrence of hematuria. Moreover, psychological negative emotions, life quality, postoperative pain scores, and nursing satisfaction of patients, after nursing, in the test group were better than those of the control group. Differences were statistically significant (P<0.05). Results indicate that the application of comprehensive nursing intervention in the perioperative period of patients with upper urinary calculi can effectively alleviate negative emotions and patient pain, improving their quality of life and nursing satisfaction. In a study exploring the change in inpatient nursing satisfaction due to comprehensive nursing intervention, it was found that patients that received comprehensive nursing intervention not only had significantly higher nursing satisfaction than those receiving conventional nursing, but also had more willingness for further consultations [23]. The study does not classify specific diseases, but it confirms present conclusions from a side. In a study exploring the application of comprehensive nursing intervention in the treatment of severe burns in children, it was found that children in the burn group that received comprehensive nursing intervention had a higher cure rate, less negative emotions after nursing, and shorter hospital stay times [24]. Although this study and the present study are not directed at the same disease, it effectively demonstrates the effectiveness of comprehensive nursing intervention in relieving negative emotions, consistent with present conclusions. Studies about the application of comprehensive nursing intervention in perioperative nursing of upper urinary tract calculi treated with flexible ureteroscopy have been few. Thus, we can only seek evidence from previous applications of comprehensive nursing intervention in other diseases or other treatments. However, in a study exploring the application of comprehensive nursing intervention in the treatment of upper urinary calculi combined with septic shock, it was found that comprehensive nursing intervention had great significance in stabilizing the vital signs of patients [21]. In another study exploring the application of comprehensive nursing intervention in patients with complicated renal calculi treated by minimally invasive percutaneous nephrolithotomy, it was found that, after receiving comprehensive nursing intervention, complication incidence and SAS scores of patients decreased [25]. Although the above two studies were not aimed at exploring the application of comprehensive nursing intervention in the perioperative period of patients with urinary calculi treated with flexible ureteroscopy, they explored other aspects of upper urinary calculi or different treatment methods. The conclusions reached are consistent with present conclusions.

In summary, the application of comprehensive nursing intervention in perioperative nursing of upper urinary tract calculi treated with flexible ureteroscopy can effectively decrease complication incidence. Also, it can alleviate negative emotions and postoperative pain, improving life quality and nursing satisfaction. Thus, it is worthy of promotion and application. However, because the sample size of the current study was small and related studies are few, present conclusions cannot be accurately demonstrated. Therefore, future studies should expand the sample size, carrying out subsequent multicenter and large-sample research, providing a more theoretical basis.

## Disclosure of conflict of interest

None.

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## References

[1] Zheng D, Zhong L, Huang Z, Song W and Zeng Y. Clinical effect of self-made Sanjin-Weiwei decoction for patinets with upper urinary tract calculi after extracorporeal shock wave lithotripsy. International Journal of Traditional Chinese Medicine 2017; 39: 1073-1076.

[2] Yang B, Ning H, Liu Z, Zhang Y, Yu C, Zhang X, Pan D and Ding K. Safety and efficacy of flexible ureteroscopy in combination with holmium laser lithotripsy for the treatment of bilateral upper urinary tract calculi. Urol Int 2017; 98: 418-424.

[3] Hussain M, Acher P, Penev B and Cynk M. Redefining the limits of flexible ureterorenoscopy. J Endourol 2011; 25: 45-49.

[4] Jie LI. Discussion on nursing measures of ureteroscopy pneumatic ballistic lithotripsy under the operating room in the treatment of ureteral calculi. China Health Standard Management 2016.

[5] Lakanmaa RL, Suominen T, Perttilä J, Ritmala-Castrén M, Vahlberg T and Leino-Kilpi H. Basic competence in intensive and critical care nursing: development and psychometric testing of a competence scale. J Clin Nurs 2014; 23: 799-810.

[6] Butcher HK, Bulechek GM, Dochterman JMM and Wagner C. Nursing interventions classification (NIC)-e-book. Elsevier: Health Sciences; 2018.

[7] Wang Y. Nursing experience of minimally invasive percutaneous nephrolithotomy for treatment of upper urinary tract calculi. China Health Standard Management 2015.

[8] Gui-Lian HU, Pan LL, Tao CY and Zhang SQ. Nursing experience in patients with upper urinary tract calculi by minimally invasive percutaneous nephrolithotomy. Acta Academiae Medicinae Wannan 2012.

[9] Wang Y, Pan X, Wang H, Zhang W and Gubing L. Comprehensive intervention of diabetes care ability of nurses in general hospital and its influencing factors. Chinese Journal of Practical Nursing 2017; 33: 1820-1823.

[10] Hong Q, Yuanyuan XU, Yang H, Guo Y and Radiotherapy DO. The impact analysis of comprehensive nursing intervention on the efficacy and prognosis of patients with non-small cell lung cancer treated by three-dimensional conformal radiotherapy. China Modern Doctor 2017.

[11] Liu C, Zhai J and Liu C. Using comprehensive nursing intervention during the course of hematopoietic stem cell transplantation. Chinese Journal of Practical Nursing 2015; 31: 1592-1595.

[12] Dai M. Comprehensive nursing intervention combined with routine nursing care in gallstone patients with gastric ulcer: nursing effects and impact on epidermal growth factor level. World Chinese Journal of Digestology 2017; 25: 1579.

[13] Shi J and Huayan X. Observation on the clinical effect of parecoxib sodium for injection combined with psychological intervention on postoperative analgesia in the patients with thyroid cancer. Chinese Journal of Biochemical Pharmaceutics 2017; 37: 360-361.

[14] Li TC, Liu CS, Lin CC, Lee YD, Lai JS and Li CI. Validation of the Chinese version of the SF-36 health survey questionnaire in people undergoing physical examinations. Mid-Taiwan Journal of Medicine 2005; 10: 8-17.

[15] Rahbek O, Jensen SL, Lind M, Penny JØ, Kallemose T, Jakobsen T and Troelsen A. Inferior reliability of VAS scoring compared with International Society of the Knee reporting system for abstract assessment. Dan Med J 2017; 64.

[16] Srisubat A, Potisat S, Lojanapiwat B, Setthawong V and Laopaiboon M. Extracorporeal shock wave lithotripsy (ESWL) versus percutaneous nephrolithotomy (PCNL) or retrograde intrarenal surgery (RIRS) for kidney stones. Cochrane Database Syst Rev 2014; CD007044.

[17] Ghoneim IA, El-Ghoneimy MN, El-Naggar AE, Hammoud KM, El-Gammal MY and Morsi AA. Extracorporeal shock wave lithotripsy in impacted upper ureteral stones: a prospective randomized comparison between stented and

non-stented techniques. Urology 2010; 75: 45-50.
[18] Jung H, Nørby B and Jörn Osther P. Retrograde intrarenal stone surgery for extracorporeal shock-wave lithotripsy-resistant kidney stones. Scand J Urol Nephrol 2006; 40: 380-384.
[19] Chung BI, Aron M, Hegarty NJ and Desai MM. Ureteroscopic versus percutaneous treatment for medium-size (1-2-cm) renal calculi. J Endourol 2008; 22: 343-346.
[20] Huang YT, Gu SP, Jiao Y and Qi J. Clinical effectiveness of modular flexible ureteroscope combined with Holmium laser for treatment of upper urinary calculi: a report of 33 cases. Academic Journal of Second Military Medical University 2011; 31: 1108-1112.
[21] Chen S and Urology DO. Application of comprehensive nursing intervention in upper urinary calculi with septic shock. Journal of Qiqihar University of Medicine 2017.
[22] Qing-Xia BI. The application of rapid rehabilitation concept in transurethral ureteroscopy holmium laser lithotripsy perioperative nursing. Chinese & Foreign Medical Research 2016.
[23] Shin SR and Park KY. Comparing satisfaction with nursing care and factors relevant to hospital revisit intent among hospitalized patients in comprehensive nursing care units and general care units. Journal of Korean Academy of Nursing Administration 2015; 21: 469-479.
[24] Zhao Y, Luo X, Wei L, Zou X, Ying L, Shuangshuang L, Zhao L and Zhou Q. Application of comprehensive nursing intervention in children with severe burns. Chinese Journal of Practical Nursing 2016; 32: 2441-2443.
[25] Chen YZ, Zhang SR and Surgery DO. Clinical effect of comprehensive nursing intervention on complicated renal calculi treated with minimally invasive percutaneous nephrolithotomy. China Practical Medicine 2017.