

Original Research

POSTOPERATIVE ANXIETY IN PATIENTS UNDERGOING RETROGRADE URETEROSCOPIC LASER LITHOTRIPSY: A CROSS-SECTIONAL STUDY AT THONG NHAT HOSPITAL

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ABSTRACT: Ureteral calculi account for approximately 20–40% of urinary tract stone diseases, second only to renal calculi. Retrograde ureteroscopic laser lithotripsy is a widely used minimally invasive procedure, offering rapid recovery and low complication rates. However, postoperative anxiety remains a clinical concern. A descriptive cross-sectional study was conducted on 165 patients undergoing retrograde ureteroscopic laser lithotripsy at Thong Nhat Hospital between March and September 2023. The prevalence and severity of postoperative anxiety were assessed using standardized measures. Postoperative anxiety was identified in 95.15% of patients, predominantly at a mild level. Mild and moderate anxiety were observed in 83.64% and 11.51% of cases, respectively, with a mean score of 4.53 ± 2.58 . The most common concerns included fear of complications (84.8%), postoperative pain (66.1%), and indwelling JJ stent placement (43.6%). Postoperative anxiety was highly prevalent among patients undergoing retrograde ureteroscopic laser lithotripsy, although generally mild in severity. These findings highlight the need for structured perioperative counseling and psychological support to address patient concerns and improve postoperative recovery following ureteroscopic procedures.

Keywords: Anxiety, Ureteroscopy, Ureteral calculi, Postoperative period.

1. INTRODUCTION

Ureteral calculi are a common cause of urinary tract obstruction. Retrograde ureteroscopic laser lithotripsy (URS) has become a first-line, minimally invasive treatment with high stone-free rates in contemporary European Association of Urology (EAU) guidance [1].

Beyond technical success, perioperative anxiety is highly prevalent and clinically meaningful. A recent narrative review and a global meta-analysis estimate that about one in two surgical patients experience preoperative anxiety; typical concerns include surgical complications, disability after the procedure, anesthesia-related loss of control, and pain during or after surgery. Higher anxiety has been linked to poorer postoperative pain control and increased morbidity [2,3].

In the context of stone surgery, indwelling ureteral stents and the URS episode itself impose a significant symptom burden that degrades health-related quality of life. Foundational work with the Ureteral Stent Symptom Questionnaire (USSQ) demonstrated substantial urinary symptoms, pain, and interference with daily activities [4], while qualitative evidence from the USDRN STENTS cohort describes prominent psychological, functional, and interpersonal effects of stents after URS [5] yet qualitative perspectives on patients' stent experiences remain unknown. We describe psychological, functional, and interpersonal effects of post-ureteroscopy stents and whether additional patient-reported assessments may be needed. **Materials and Methods:** Using a qualitative descriptive study design, we conducted in-depth interviews with a nested cohort of participants in the Study to Enhance Understanding of Stent-associated Symptoms (STENTS).

Despite these insights, postoperative anxiety remains under-characterized in routine URS care. Early interventional data suggest that structured, nurse-led patient education for individuals receiving a double-J stent after URS can reduce both pre- and postoperative anxiety and improve discharge readiness [6]. The present study therefore aims to estimate the prevalence and severity of postoperative anxiety following URS at Thong Nhat Hospital, providing evidence to inform targeted perioperative counseling and supportive

interventions.

2. SUBJECTS AND METHODS

2.1. Study population

The study population consisted of patients who underwent elective retrograde ureteroscopic laser lithotripsy at the Department of Urology, Thong Nhat Hospital, from March 1, 2023, to September 30, 2023.

Inclusion criteria were patients aged 18 years and older who were indicated for elective retrograde ureteroscopic laser lithotripsy and who provided informed consent to participate in the study.

Exclusion criteria included patients receiving anxiolytic or antidepressant medications, patients with alcohol dependence, those undergoing emergency surgery, and patients who did not complete the study questionnaire.

2.2. Study design

This was a descriptive cross-sectional study.

Sample size: The sample size was calculated using the formula:

$$n = \frac{Z_{1-\alpha/2}^2 P(1-P)}{d^2}$$

Based on the study by Thai Hoang De (2011), which assessed patient psychology before and after surgery at An Phu District General Hospital, the prevalence of preoperative anxiety was reported as 83.43% [7]. Using this prevalence, the minimum sample size was estimated as:

$$n = \frac{1.96^2 \times 0.8343 \times (1 - 0.8343)}{0.06^2} = 147.52$$

Accordingly, the minimum required sample size was 148 patients. In the present study, 165 patients were recruited.

2.3. Data collection and study variables

General demographic and clinical information of the patients was collected, including age, sex, educational level, marital status, health insurance status, average monthly income, history of

previous surgery, comorbidities, stone characteristics, and perioperative factors.

Postoperative anxiety was assessed using the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A), originally developed by Zigmond and Snaith (1983)[8]. The Vietnamese version of the HADS, translated and validated by Do Cao Cuong (2013), was used in this study, with a reported Cronbach's alpha of 0.81[9].

The HADS-A consists of seven items, with a total score ranging from 0 to 21. Anxiety severity was classified according to Polit as follows: no anxiety (0 points), mild anxiety (1–7 points), moderate anxiety (8–14 points), and severe anxiety (15–21 points)[10].

Postoperative anxiety assessment was conducted 24–48 hours after surgery or prior to hospital discharge.

2.4. Data analysis

Data were entered and analyzed using SPSS version 20.0. Descriptive statistics were used to summarize patient characteristics and anxiety levels. Categorical variables were presented as frequencies and percentages, while continuous variables were presented as means \pm standard deviations or medians with interquartile ranges, as appropriate.

Comparisons between male and female patients were performed using the Chi-square test or Fisher's exact test for categorical variables. For continuous variables, the independent samples t-test or Mann–Whitney U test was applied, depending on data distribution. All statistical tests were two-sided, and a p -value < 0.05 was considered statistically significant.

2.5. Ethical considerations

The study protocol was reviewed and approved by the Institutional Ethics Committee of Thong Nhat Hospital (Approval No. 258/2025/CN-BVTN-HDDD, dated April 28, 2025). All participants were informed about the study objectives and procedures, and written informed consent was obtained prior to participation.

3. RESULTS

3.1. Characteristics of the Study Population

As shown in Table 1, female patients were significantly older than males (56.8 vs. 49.6 years, $p < 0.001$). Most participants had a high school education or below (68.5%), with educational attainment significantly higher among males ($p = 0.010$).

As shown in Table 2, more than half of patients (54.5%) had a history of previous surgery, though complications were rare (1.8%). During the current ureteroscopic procedure, bleeding (4.8%) and infection (0.6%) were infrequent, with no significant sex differences observed ($p > 0.05$).

As shown in Table 3, more than half of patients (57%) had left-sided ureteral stones, with the upper ureter being the most common site (53.9%). Comorbidities were present in 40% of cases, with no significant sex differences observed ($p > 0.05$).

As shown in Table 4, fear of complications (84.8%) and postoperative pain (66.1%) were the most frequent concerns. Anxiety related to JJ stent placement was reported by 43.6% of patients, significantly more common in females ($p < 0.05$).

3.2. Anxiety levels of patients after retrograde ureteroscopic laser lithotripsy

As shown in Table 5, overall postoperative anxiety was mild (mean 4.53 ± 2.58), with higher scores in females. The most prominent symptom was a frightened feeling in the stomach (0.79 ± 0.58), while sudden panic was least reported (0.34 ± 0.53 , p -value < 0.05).

As shown in Table 6, most patients experienced mild anxiety (83.6%), while 11.5% reported moderate anxiety; severe anxiety was not observed. Anxiety severity differed significantly between males and females ($p < 0.05$).

4. DISCUSSION

This study revealed that postoperative anxiety was highly prevalent among patients undergoing retrograde ureteroscopic laser lithotripsy, though predominantly mild in severity.

Table 1. Distribution of age and educational level among study participants (n = 165)

Variables	Total (n = 165)	Male (n = 93)	Female (n = 72)	p-value
Mean age (years)	52.72 ± 12.99	49.57 ± 13.24	56.79 ± 11.53	<0.001
Age group				
≤ 60 years, n (%)	110 (66.7)	70 (75.3)	40 (55.6)	0.008
> 60 years, n (%)	55 (33.3)	23 (24.7)	32 (44.4)	
Educational level				
High school or below, n (%)	113 (68.5)	54 (58.1)	59 (81.9)	0.010
College or above, n (%)	52 (31.5)	39 (41.9)	13 (18.1)	
Health insurance				
Yes, n (%)	153 (92.7)	86 (92.5)	67 (93.1)	0.886
No, n (%)	12 (7.3)	7 (7.5)	5 (6.9)	
Marital status				
Single/unmarried, n (%)	11 (6.7)	10 (10.8)	1 (1.4)	0.017
Married, n (%)	154 (93.3)	83 (89.2)	71 (98.6)	
Average monthly income (million VND)	8.0 (5.4–11.0)	10.0 (6.4–13.0)	6.0 (4.0–8.0)	<0.001

Table 2. Distribution of previous surgical history, complications from prior surgery, and complications during the current ureteroscopic procedure among study participants

Variables	Total (n = 165)	Male (n = 93)	Female (n = 72)	p-value
History of surgery				
No prior surgery, n (%)	75 (45.5)	46 (49.5)	29 (40.3)	0.240
Previous surgery, n (%)	90 (54.5)	47 (50.5)	43 (59.7)	
Complications from previous surgery				
Yes, n (%)	3 (1.8)	2 (2.2)	1 (1.4)	0.716
No, n (%)	162 (98.2)	91 (97.8)	71 (98.6)	
Complications during current ureteroscopy				
Bleeding				
Yes, n (%)	8 (4.8)	5 (5.4)	3 (4.2)	0.720
No, n (%)	157 (95.2)	88 (94.6)	69 (95.8)	
Infection				
Yes, n (%)	1 (0.6)	0 (0.0)	1 (1.4)	0.254
No, n (%)	164 (99.4)	93 (100.0)	71 (98.6)	

Table 3. Distribution of ureteral stone location and comorbidities among study participants

Variables	Total (n = 165)	Male (n = 93)	Female (n = 72)	p-value
Ureteral stone location				
Right side, n (%)	71 (43.0)	43 (46.2)	28 (38.9)	0.344
Left side, n (%)	94 (57.0)	50 (53.8)	44 (61.1)	
Stone segment				
Upper third of ureter, n (%)	89 (53.9)	48 (51.6)	41 (56.9)	0.613
Middle third of ureter, n (%)	43 (26.1)	27 (29.0)	16 (22.2)	
Lower third of ureter, n (%)	33 (20.0)	18 (19.4)	15 (20.8)	
Comorbidities				
Yes, n (%)	66 (40.0)	34 (36.6)	32 (44.4)	0.305
No, n (%)	99 (60.0)	59 (63.4)	40 (55.6)	

Table 4. Distribution of factors influencing patient anxiety after retrograde ureteroscopic laser lithotripsy

Variables	Total (n = 165)	Male (n = 93)	Female (n = 72)	p-value
Fear of complications, n (%)	140 (84.8)	81 (87.1)	59 (81.9)	0.360
Fear of postoperative pain, n (%)	109 (66.1)	56 (60.2)	53 (73.6)	0.072
Fear of indwelling JJ stent, n (%)	72 (43.6)	34 (36.6)	38 (52.8)	0.037

Table 5. Patient anxiety after retrograde ureteroscopic laser lithotripsy assessed by the HADS-A scale

Variables	Total (n = 165)	Male (n = 93)	Female (n = 72)	p-value
I feel tense, \pm SD	0.62 \pm 0.57	0.57 \pm 0.58	0.69 \pm 0.55	0.162
I feel as if something awful is about to happen, \pm SD	0.73 \pm 0.68	0.63 \pm 0.62	0.85 \pm 0.74	0.047
Worrying thoughts go through my mind, \pm SD	0.62 \pm 0.65	0.55 \pm 0.62	0.72 \pm 0.68	0.087
I can sit at ease and feel relaxed*, \pm SD	0.76 \pm 0.79	0.69 \pm 0.78	0.86 \pm 0.79	0.163
I get a sort of frightened feeling as if something is in my stomach, \pm SD	0.79 \pm 0.58	0.67 \pm 0.56	0.96 \pm 0.57	0.001
I feel restless as if I have to be on the move, \pm SD	0.66 \pm 0.50	0.59 \pm 0.52	0.74 \pm 0.48	0.063
I get sudden feelings of panic, \pm SD	0.34 \pm 0.53	0.23 \pm 0.47	0.49 \pm 0.56	0.002
Total	4.53 \pm2.58	3.92 \pm2.41	5.31 \pm2.60	

* Positively worded item, reverse coded.

Table 6. Distribution of prevalence and severity of anxiety among patients after retrograde ureteroscopic laser lithotripsy

Variables	Total (n = 165)	Male (n = 93)	Female (n = 72)	p-value
Anxiety severity after procedure				
No anxiety, n (%)	8 (4.85)	7 (7.5)	1 (1.4)	0.046
Mild anxiety, n (%)	138 (83.64)	79 (84.9)	59 (81.9)	
Moderate anxiety, n (%)	19 (11.51)	7 (7.5)	12 (16.7)	
Severe anxiety, n (%)	0 (0.0)	0 (0.0)	0 (0.0)	

Patient characteristics: The mean age of our cohort was 52.7 years, higher than reported in some previous studies [11]. This may be attributed to the hospital's role as a geriatric and tertiary referral center, serving an older and multimorbid population. Male patients accounted for 56.4%, similar to prior studies [6,7]. Educational attainment was relatively high, reflecting the hospital's patient demographics, where individuals often come from professional or well-educated backgrounds.

Surgical history and comorbidities: More than half of patients had undergone prior surgery (54.5%), consistent with Nguyen Tan Viet (2018) [12]. The prevalence of comorbidities (40%) was also in line with previous findings [13], underscoring the medical complexity of this population.

Postoperative anxiety: The overall HADS-A score indicated mild anxiety (mean 4.53 ± 2.58), with most patients experiencing mild anxiety and 11.5% reporting moderate levels. These findings align with Nguyen Thi Hue (2023), who reported predominantly mild anxiety in cardiac patients [13]. Although severity was low, the high prevalence emphasizes that anxiety is a near-universal concern after surgery.

Factors influencing anxiety: Fear of complications (84.8%) and postoperative pain (66.1%) were the most common concerns, while 43.6% of patients were worried about JJ stent placement. Female patients were significantly more anxious about stent placement than males ($p < 0.05$). Compared with previous studies [11, 13], higher levels of concern in our cohort may reflect gaps in preoperative counseling.

Clinical implications: These findings underscore the importance of integrating

structured perioperative counseling into standard care. Clear explanations regarding expected pain, potential complications, and the necessity of JJ stent placement may help alleviate anxiety, improve adherence, and optimize recovery outcomes.

Future directions: Further research should investigate the effectiveness of structured psychological interventions, including standardized counseling protocols and digital health tools, to reduce anxiety and enhance overall patient well-being in ureteroscopic surgery populations.

In future studies, multivariate regression models should be applied to identify independent predictors of postoperative anxiety, including demographic, clinical, and perioperative factors. Such analyses would allow better identification of high-risk patient groups and facilitate the development of targeted psychological interventions.

Limitations: This study has several limitations. First, anxiety was assessed only in the postoperative period; preoperative anxiety levels were not measured. Therefore, direct comparison between pre- and postoperative anxiety and evaluation of the effectiveness of perioperative interventions could not be performed. Future longitudinal or interventional studies should consider assessing anxiety at multiple perioperative time points to better evaluate changes over time and the impact of targeted interventions.

5. CONCLUSION

Postoperative anxiety was highly prevalent among patients undergoing retrograde ureteroscopic laser lithotripsy, although generally mild in severity. The most common concerns included fear

of complications, postoperative pain, and JJ stent placement. These findings highlight the importance of incorporating structured perioperative counseling and psychological support into routine care to address patient concerns and improve recovery outcomes. Future studies should evaluate targeted interventions to reduce anxiety and enhance patient well-being following ureteroscopic procedures.

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