



ปัสสาวะค้างหลังผ่าตัดมดลูกผ่านกล้องในผู้ป่วยโรคทางนรีเวชที่ไม่ใช่มะเร็ง

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ประเทศไทย

Postoperative Urinary Retention Following Laparoscopic Hysterectomy for Benign Gynecologic Diseases

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บทคัดย่อ

หลักการและวัตถุประสงค์: ปัสสาวะค้างหลังการผ่าตัด เป็นภาวะแทรกซ้อนที่เกิดขึ้นได้ตามหลังการผ่าตัดทางนรีเวช ปัสสาวะค้างหลังการผ่าตัดตามหลังการผ่าตัดมดลูกผ่านกล้องพบน้อยที่สุดเมื่อเทียบกับการผ่าตัดมดลูกด้วยวิธีอื่นๆ ดังนั้น วัตถุประสงค์ของงานวิจัย เพื่อหาอุบัติการณ์ของปัสสาวะค้างหลังผ่าตัดในผู้ป่วยที่ได้รับการผ่าตัดมดลูกผ่านกล้อง

วิธีการศึกษา: เป็นเชิงพรรณนาเก็บข้อมูลย้อนหลัง กลุ่มตัวอย่างคือเพศหญิง 164 รายที่ได้รับการผ่าตัดมดลูกผ่านกล้องสำหรับโรคทางนรีเวชที่ไม่ใช่มะเร็งตั้งแต่เดือนมกราคม พ.ศ. 2559 ถึงธันวาคม พ.ศ. 2562 ทำการบันทึก ลักษณะของผู้ป่วย ข้อบ่งชี้ในการผ่าตัดมดลูก ผลลัพธ์ระหว่างการผ่าตัด ภาวะแทรกซ้อนระหว่างการผ่าตัด และภาวะแทรกซ้อนหลังการผ่าตัด สายสวนปัสสาวะจะถูกถอดออกหนึ่งวันหลังจากการผ่าตัดมดลูกผ่านกล้อง ปัสสาวะค้างหลังผ่าตัด หมายถึง การไม่สามารถปัสสาวะได้ซึ่งต้องมีการระบายปัสสาวะด้วยการใส่สายสวนแบบตรงหรือแบบใส่สายสวนปัสสาวะคาไว้หลังจากวันผ่าตัด

ผลการศึกษา: ค่าเฉลี่ย ของอายุ และดัชนีมวลกาย เท่ากับ 44.3 + 13.4 ปี และ 24.0 + 4.2 กก./ตร.ม. ตามลำดับ ผู้ป่วย 33 ราย (ร้อยละ 20.1) อยู่ในวัยหมดประจำเดือน และผู้ป่วย 9 ราย (ร้อยละ 5.5) เป็นโรคเบาหวาน สาเหตุที่พบบ่อยที่สุดของการตัดมดลูกคือ เนื้องอกในมดลูกที่มีอาการ (ร้อยละ 45.1) เยื่อบุโพรงมดลูกเจริญผิดที่ในกล้ามเนื้อมดลูก (ร้อยละ 16.5) และเยื่อบุโพรงมดลูกหนาตัวผิดปกติระยะก่อนมะเร็ง (ร้อยละ 11.0) การผ่าตัดมดลูกออกทั้งหมดด้วยวิธีส่องกล้องในผู้ป่วย 152 ราย (ร้อยละ 92.7) การผ่าตัดมดลูกด้วยวิธีส่องกล้องที่เหลือปากมดลูกไว้ 12 ราย (ร้อยละ 7.3) ไม่พบการปัสสาวะไม่ออกหลังการผ่าตัด ภาวะแทรกซ้อนหลังการผ่าตัดอื่นๆ ได้แก่ ไช้หลังผ่าตัด (ร้อยละ 1.8) การติดเชื้อบริเวณแผลผ่าตัด (ร้อยละ 0.6) การติดเชื้อทางเดินปัสสาวะ (ร้อยละ 0.6) และการผ่าตัดซ้ำ (ร้อยละ 0.6)

สรุป: ไม่พบปัสสาวะค้างหลังการผ่าตัด การถอดสายสวนปัสสาวะใน 1 วันหลังการผ่าตัดสำหรับผู้ป่วยผ่าตัดมดลูกผ่านกล้องมีความปลอดภัยและเหมาะสม

คำสำคัญ โรคทางนรีเวชที่ไม่ใช่มะเร็ง การผ่าตัดมดลูก การผ่าตัดผ่านกล้อง การผ่าตัดแบบแผลเล็ก ปัสสาวะค้างหลังผ่าตัด

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Abstract

Background and Objective: One of the complications of major gynecological surgical operations is postoperative urine retention (POUR). Urinary retention following a complete laparoscopic hysterectomy (TLH) was much lower than following other types of hysterectomy. The aim of the study was to determine the incidence of postoperative urinary retention (POUR) following laparoscopic hysterectomy.

Methods: This is a descriptive design. One hundred sixty-four women who underwent laparoscopic hysterectomy for benign gynecologic conditions from January 2016 to December 2019. Patient characteristics, indications for hysterectomy, perioperative outcomes, perioperative complications and postoperative complications were recorded. The urinary catheter was removed the day after laparoscopic hysterectomy. Postoperative urinary retention (POUR) is defined as the inability to urinate that requires urinary drainage with straight or indwelling catheterization after the day of surgery.

Results: The mean age and body mass index (BMI) were 44.3 ± 13.4 years and 24.0 ± 4.2 kg/m², respectively. Thirty-three patients (20.1%) were in postmenopausal, and nine patients (5.5%) had diabetes mellitus. The most common causes of hysterectomy were symptomatic uterine leiomyoma (45.1%), adenomyosis (16.5%), and endometrial hyperplasia (11.0%). Total hysterectomy via a laparoscopic approach was conducted in 152 patients (92.7%). Laparoscopic subtotal hysterectomy was performed in the remaining 12 cases (7.3%). No postoperative urinary retention was detected. Other postoperative complications included postoperative fever (1.8%), surgical site infection (0.6%), urinary tract infection (0.6%) and reoperation (0.6%).

Conclusion: No overt urinary retention was detected. The removal of urinary catheters the day after surgery for laparoscopic hysterectomy patients is safe and suitable.

Keywords: benign gynecologic disease, hysterectomy, laparoscopic surgery, minimally invasive surgery, postoperative urinary retention

Introduction

Most hysterectomies are performed for benign pathologies, such as uterine leiomyoma, dysmenorrhea endometriosis/adenomyosis, dyspareunia and prolapse.^{1,2} Minimally invasive hysterectomy increased dramatically from 39.8% in 2008 to 93.1% in 2015.^{3,4} Postoperative urinary retention (POUR) is a complication of major gynecological surgical procedures. Overdistention of the bladder and permanent detrusor damage are the consequences of urinary retention.⁵ Previous studies reported highly variable rates of urinary retention following hysterectomy, varying from 2% to 37%.⁶⁻⁹ The reported incidence of POUR following minimally invasive gynecologic surgery (MIGS) ranges from 0.5 to 21%.¹⁰ Patients with overt urinary retention (defined as being unable to void on their own while having a full bladder following the removal of a Foley catheter) or covert urinary retention (defined as having a postvoid residual volume higher than 150 mL) were diagnosed with urinary retention.¹¹

This wide range reflects the lack of a standard definition for postoperative urinary retention and differences in bladder drainage policies, the use of general compared with regional anesthesia, and the differences in the duration of indwelling catheter use in the postoperative period.⁶⁻¹² There are many risk factors for urinary retention, such as patient comorbidities, type of surgical procedures, and type of anesthesia. The duration of urinary catheterization is widely different in the perioperative setting and depends on patient factors, local policies, and physician preferences. Improper management of POUR may result in bladder overdistension, urinary tract infection, and catheter-related complications.¹⁰ Urinary catheterization is an imperative procedure during major surgery that allows urine output monitoring, guides fluid resuscitation, and serves as a surrogate marker to detect hemodynamic instability. Catheterization is an invasive procedure with possible complications, including patient discomfort, urethral trauma and catheter-related infections.^{9,13} Moreover,

increased hospitalization and increased health care costs are the sequelae of POUR. Patients at risk of developing POUR should be carefully considered. POUR has been defined as the inability to void in the presence of a full bladder. The widely varying incidence of POUR reflects its multifactorial etiology and the lack of standard defining criteria.¹⁰

Regarding the type of hysterectomy, POUR and voiding dysfunction become more frequent among patients who undergo a vaginal approach than an abdominal approach.^{6,14} For total laparoscopic hysterectomy (TLH), the urinary retention rate was significantly lower than that for vaginal hysterectomy (VH). The rate of urinary retention was 7.7% after TLH and 23.1% after VH ($p = 0.001$). The rate of voiding dysfunction was also lower after TLH than after VH. There were 14.1% and 31.9%, respectively ($p = 0.002$).¹⁴

Because of the different catheter removal protocol after TLH,^{6,14-16} the aim of the study was to determine the incidence of postoperative urinary retention following TLH and the risk factors associated with urinary retention in benign gynecologic conditions.

Methods

Patients' records were reviewed after obtaining ethics approval. All patients who underwent laparoscopic procedures for total or supracervical hysterectomy for benign gynecologic diseases were recruited in the study. In our hospital, gynecologic patients were deemed eligible for a laparoscopic hysterectomy if they had a uterine mass no larger than 16 weeks gestation, had undergone less than three prior abdominal surgeries, had no history of severe pelvic adhesions, and were not contraindicated for laparoscopic surgery. Informed consent was waived due to the retrospective and anonymous nature of the study and participants. Medical data were collected by searching computerized databases from January 2016 to December 2019. Women who underwent concomitant procedures for treating pelvic organ prolapse, urinary incontinence, or both

(including placement of tension-free vaginal tape and a pubovaginal sling) were excluded. Patient demographics, indications for surgery, perioperative outcomes and postoperative complications were recorded. The revised American Fertility Society endometriosis score¹⁷ was used to classify intraoperative lesions of endometriosis, and the abdominal and pelvic adhesions were scored according to the Diamond adhesion index score, with a score of 11 or greater considered severe adhesions.^{18,19} The operative time started from the surgical skin incision to the end of wound closure.

Prophylactic antibiotics were administered at the time of induction of anesthesia. Then, an indwelling Foley catheter was placed under sterile conditions in the operating room after intubation. The indwelling Foley catheters were removed on the morning of postoperative day 1 as part of routine postoperative care. Urinary retention was diagnosed when patients were unable to void spontaneously within 6 hours after Foley catheter removal (overt urinary retention) and were found to have a postvoid residual volume greater than 150 mL by catheterization (covert urinary retention).¹¹ The diagnosis of postoperative urinary retention was also made in patients presenting to the emergency department within 24 hours after discharge with the inability to void or incomplete voiding using the same definitions as described previously.²⁰

Sample size estimation was calculated from the formula for sample size requirements for estimating a finite population proportion. As previous study from Liang C, et. al¹⁵ found the POUR was detected 18.7% after laparoscopic hysterectomy. The participants need in the study were 92 cases. Statistical analysis was performed using STATA/SE version 10.1. Normality testing was conducted using Kolmogorov-Smirnov testing. The descriptive data were presented as percentages, means, and medians. The study was approved by the Institutional Review Boards of the Khon Kaen University (HE631053).

Results

One hundred sixty-five women with benign gynecologic conditions underwent laparoscopic procedures for hysterectomy during the study period. One woman was excluded from the study because she had urinary retention prior to surgery. The mean age and BMI were 44.3 ± 13.4 years and 24.0 ± 4.2 kg/m², respectively. Thirty-three patients (20.1%) were postmenopausal, and nine patients (5.5%) had diabetes mellitus. Seventy-two patients (43.9%) had previous laparotomy and twenty-eight patients (17.1%) had prior cesarean section. The most common causes of hysterectomy were symptomatic uterine leiomyoma (45.1%), adenomyosis (16.5%), and endometrial hyperplasia (11.0%). Total hysterectomy via a laparoscopic approach was performed in 152 patients (92.7%). The remaining 12 cases (7.3%) underwent laparoscopic subtotal hysterectomy. Among the laparoscopic approaches for total hysterectomy, 88 patients (53.7%) underwent laparoscopic total hysterectomy, followed by 25 patients (15.2%) underwent laparoscopic assisted vaginal hysterectomy, as shown in Table 1.

Table 1 Baseline patient characteristics (n=164)

Characteristics	n (%)
Age, years (mean ± SD)	44.3 ± 13.4
BMI, kg/m ² (mean ± SD)	24.0 + 4.2
Menopausal status	33 (20.1)
Diabetes mellitus	9 (5.5)
Previous laparotomy	72 (43.9)
Urogynecologic symptoms	
Urinary frequency	26 (15.9)
Stress urinary incontinence	9 (5.5)
Voiding dysfunction	6 (3.7)
Urgency urinary incontinence	4 (2.4)
Indication for hysterectomy	
Myoma uteri	74 (45.1)
Adenomyosis	27 (16.5)
Endometrial hyperplasia	18 (11.0)
Ovarian tumor	15 (9.1)
CA breast	11 (6.7)
Mental retardation	10 (6.1)
Cervical dysplasia	9 (5.5)
Type of hysterectomy	
TLH	88 (53.7)
LAVH	25 (15.2)
RAVH	10 (6.1)
vNOTES	29 (17.7)
Subtotal hysterectomy	12 (7.3)

Notes: BMI, body mass index; TLH, total laparoscopic hysterectomy; LAVH, laparoscopic assisted vaginal hysterectomy; RAVH, robotic assisted laparoscopic hysterectomy; vNOTES, vaginal natural orifice transluminal endoscopic surgery

Regarding lower urinary tract symptoms (LUTs) preoperatively, urinary frequency (15.9%) was the most common abnormal symptom, followed by stress urinary incontinence (5.5%), voiding dysfunction (3.7%) and urgency urinary incontinence (2.4%) (Table 1). No additional surgical procedure was performed in all

patients who had LUT symptoms because they had only mild symptoms and did not unduly affect their daily lives.

The presence of mild, moderate and severe endometriosis was present in 9 cases (5.5%), 5 cases (3.0%), and 6 cases (3.7%), respectively. Pelvic adhesion was present in 48 patients (29.3%). The degrees of mild, moderate and severe adhesion were 33 cases (20.1%), 5 cases (3.0%), and 10 cases (6.1%), respectively. The median amount of intraoperative blood loss was 100 ml (50, 150). The median of operative time and median postoperative hospital stay were 143 minutes (110.7, 180) and 3 days (2, 3), respectively (Table 2).

Table 2 Operative finding and perioperative outcomes (n=164)

Operative findings	n (%)
Present Endometriosis	
mild	9 (5.5)
moderate	5 (3.0)
severe	6 (3.7)
Present adhesion	48 (29.3)
mild	33 (20.1)
moderate	5 (3.0)
severe	10 (6.1)
Perioperative outcomes	
Blood loss, ml (IQR)	100 (50, 150)
Operative time, median mins (IQR)	143 (110.7, 180)
Postoperative hospital stays, median days (IQR)	3 (2, 3)

Notes: IQR, interquartile range

Perioperative complications were detected in 8 patients (4.9%), including intestinal injury (3.7%), bladder injury (0.6%) and ureteric injury (0.6%). Four patients (2.4%) required intraoperative blood transfusion. No postoperative overt urinary retention was detected. Other postoperative complications

included postoperative fever (1.8%), surgical site infection (0.6%), urinary tract infection (0.6%) and reoperation (0.6%) (Table 3).

Table 3 Perioperative and postoperative complications (n=164)

Perioperative complications	n (%)
Intestinal injury	6 (3.7)
Bladder injury	1 (0.6)
Ureteric injury	1 (0.6)
Convert to laparotomy	0 (0.0)
Blood transfusion	4 (2.4)
Postoperative complications	n (%)
Overt urinary retention	0 (0.0)
Surgical site infection	1 (0.6)
Postoperative fever	3 (1.8)
Urinary tract infection	1 (0.6)
Pulmonary complication	0 (0.0)
Cardiac complication	0 (0.0)
Reoperation	1 (0.6)

Discussion

Postoperative urinary retention is a short-term complication of laparoscopic hysterectomy. A report from the literature found that the rate of POUR after laparoscopic gynecologic surgery was 0.5- 21%.^{10,14} Our study found that no patient suffered from overt urinary retention after TLH. The wide range of the rate of POUR may be due to the differences in the duration of catheterization and concurrent procedures involving the urinary system.

The type of operation has an impact on the occurrence of POUR. Although the results have been inconsistent,²⁰ evidence suggested that the kind of hysterectomy may have an impact on postoperative urinary retention, with vaginal hysterectomy being linked to a higher incidence of this condition. Moreover, the documented prevalence of postoperative urinary retention following laparoscopic gynecologic surgery varies and might reach up to 20%.²¹

Regarding the timing of urinary catheter removal, in our practice, the urinary catheter was removed one day after TLH. However, one study from Ghezzi et al.¹⁴ reported that the rate of POUR was 7.7% after immediate urinary catheter removal in TLH patients. The higher rate of POUR in the immediate removal of urinary catheters might be due to postoperative surgical pain, the use of postoperative pain management and the inability to stand or sit, which greatly impede normal voiding function. Hemodynamic monitoring and reducing the complications on the day of surgery are the crucial postoperative management strategies. No one had a urinary tract infection after surgery in our practice. Therefore, the removal of urinary catheters one day after surgery for postsurgical patients was safe and suitable after surgical procedures, especially after laparoscopic hysterectomy procedures. MIGS with general anesthesia can temporarily contribute to autonomic nervous system dysfunction and may affect voiding function.¹³ Longer operative time (> 2 hrs), perioperative use of scopolamine or opioids and preoperative urinary retention or lower urinary tract symptoms are the risk factors for developing POUR.¹⁰ Due to the retrospective data, the postoperative voiding dysfunction in our study reported only POUR, which was defined as failure of voiding requiring catheterization after removal of the urinary catheter, and the postvoid residual urine was not evaluated. Therefore, this was a limitation of the study. A large sample size with randomization to compare the suitable time of indwelling Foley catheter after surgery should be conducted.

Conclusions

There was no case of postoperative urinary retention after laparoscopic hysterectomy in benign gynecologic diseases in this study. The removal of urinary catheters on one day after surgery for laparoscopic hysterectomy patients was safe and effective.

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