

Immediate Foley removal after laparoscopic and vaginal hysterectomy: Determinants of postoperative urinary retention

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KEYWORDS:

Postoperative voiding dysfunction;
Postoperative urinary retention;
Vaginal hysterectomy;
Total laparoscopic hysterectomy

Abstract

STUDY OBJECTIVE: We sought to evaluate the incidence of postoperative voiding dysfunction in patients undergoing vaginal hysterectomy (VH) or total laparoscopic hysterectomy (TLH) and to identify risk factors for the development of postoperative urinary retention after uncomplicated total hysterectomy.

DESIGN: Prospective cohort study (Canadian Task Force classification II-2).

SETTING: Gynecology department of a university hospital.

PATIENTS: Two hundred thirty-three consecutive women undergoing TLH or VH for benign gynecologic disease.

INTERVENTIONS: A regimen of immediate catheter removal after the operation was instituted. A strict voiding trial protocol was used during the study period. Postoperative voiding dysfunction was defined as failure of first voiding trial after surgery (urinary retention) or postvoid residual volume of greater than 150 mL necessitating recatheterization.

MEASUREMENTS AND MAIN RESULTS: A total of 49 women (21%) developed postoperative voiding dysfunction, of which 32 (13.7%) had complete urinary retention and 17 (7.3%) had a postvoid residual volume greater than 150 mL. None of these patients experienced voiding dysfunction beyond 48 hours. There was no statistical correlation between development of postoperative voiding dysfunction and demographic, historic, preoperative, and postoperative variables collected. The only factor with significant impact on postoperative voiding dysfunction was vaginal approach to hysterectomy (OR 2.8; 95% CI 1.5–5.4). Hospital stay was significantly longer for women experiencing voiding difficulties than for those who voided efficiently (2.2 ± 0.8 [95% CI 1.5–1.9] vs 1.7 ± 1.2 [95% CI 1.9–2.4] days; $p < .0001$). Voiding dysfunction was an independent predictor of postoperative urinary tract infection (OR 4.9; 95% CI 1.6–15.4).

CONCLUSION: Patients undergoing VH are more likely to develop postoperative voiding dysfunction than those who undergo TLH, when a policy of immediate catheter removal after surgery is used. © 2007 AAGL. All rights reserved.

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Postoperative urinary retention complicates a significant proportion of major gynecologic surgical procedures and can result in considerable morbidity as a result of bladder overdistention and permanent detrusor damage.^{1,2} Moreover, postoperative voiding difficulties necessitate subjecting the patient to additional procedures that can be distressing (i.e., catheterization), delay hospital discharge, and lead to increased health care costs. Although it is well recognized that women undergoing radical hysterectomy or antincontinence surgery are especially susceptible to development of postoperative urinary retention, few studies offer insight into postoperative voiding efficiency after uncomplicated total hysterectomy.

Previously reported rates of urinary retention after hysterectomy are highly variable, ranging from 2% to 37%.³⁻⁹ This wide range reflects the lack of cross-sectional epidemiologic studies specifically addressing postoperative voiding impairment after hysterectomy for benign conditions, lack of a standard definition for voiding dysfunction, and differences in policies of bladder drainage.

Previously published reports suggest that voiding dysfunction is more frequent after vaginal hysterectomy (VH) than after total abdominal hysterectomy.^{4,8,9} Results of randomized controlled trials^{3,7} encouraged a policy of no indwelling bladder catheter after uncomplicated VH and prompted us to institute a protocol of early Foley removal in women undergoing hysterectomy for benign disease at our institution. No published clinical study has specifically addressed prevalence of voiding dysfunction after laparoscopic hysterectomy. Cause and predisposing factors responsible for delayed voiding or postoperative urinary retention remain ill defined and little information is available as to the influence of route of hysterectomy on postoperative voiding efficiency.

This prospective observational study was designed to estimate incidence of postoperative voiding dysfunction in patients undergoing VH or total laparoscopic hysterectomy (TLH) using a regimen of immediate catheter removal after surgery and to identify risk factors for development of postoperative urinary retention in this group of women.

Materials and methods

Consecutive women undergoing VH or TLH for benign gynecologic disease between September 2004 and January 2007 at our university gynecologic department were screened for study inclusion. All participants gave written informed consent, and local review board approval was obtained before beginning the study.

Eligible patients were preoperatively interviewed on normal voiding patterns and presence of symptoms of urinary tract infection (UTI) on admission. Preoperative assessment included comprehensive history, clinical evaluation of uterus size and mobility, and urinalyses. The choice of mode of hysterectomy was left to the discretion of the

surgeon. All procedures were performed by the same 2 surgeons with similar expertise of more than 10 years in both vaginal and gynecologic laparoscopic surgery.

Patients who had abdominal hysterectomy during the study period were excluded, because in our institution this surgical approach is relegated to cases in which uterine size was larger than 24 weeks or if a complicated procedure was anticipated (e.g., dense pelvic adhesions), or is the result of unintended conversion during other modes of hysterectomy. Additional exclusion criteria were: (1) history of urinary incontinence; (2) preoperative symptoms suggestive of UTI (dysuria, urgency, or frequency) or positive urine analysis for leukocytes ($\geq 10^4/\text{mL}$) or nitrite; (3) preoperative symptoms such as hesitancy, poor stream, straining to void, or incomplete emptying; (4) vaginal prolapse greater than stage I using the pelvic organ prolapse quantification system¹⁰; (5) need for concurrent procedures other than salpingo-oophorectomy; and (6) intraoperative complications that required indwelling bladder catheterization (i.e., urinary tract injury or severe hemorrhage necessitating monitoring of urinary output).

Each patient received a single dose of prophylactic antibiotic 1 hour before the operation (ampicillin-sulbactam 1.5 g intravenously). All procedures were performed under general anesthesia and a consistent protocol of intraoperative fluid and narcotic administration was used.

All eligible patients had a 16F Foley catheter inserted after anesthesia induction for the duration of the procedure and the catheter was removed in the operating department at the end of surgery.

Patients were encouraged to void in lying or standing position as soon as they experienced urge, and the voided volume was recorded. After voiding, bedside bladder ultrasound was performed to estimate postvoid residual volume (PVRV), and intermittent catheterization was carried out if residual volume was greater than 150 mL. If the patient could not void spontaneously within 6 hours of the end of surgery, ultrasound scan was done before catheterization, and catheterization was performed only when bladder volume was estimated to be greater than 300 mL and the voiding trial was still unsuccessful. If a bladder filling less than 300 mL was calculated, ultrasound was repeated every 60 minutes, and catheterization was deferred until greater than 300 mL was detected. Intermittent catheterization was considered at 3 hourly intervals until the woman was able to void and until the first PVRV was less than 150 mL, for a maximum of 3 catheterizations; after that an indwelling catheter was inserted for 24 hours.

After surgery, 30 mg of intramuscular ketorolac or 10 mg of subcutaneous morphine chlorhydrate was administered on patient request for postoperative pain relief. The timing of analgesic requirement and total amount of drugs used in the first 24 hours after surgery were recorded.

For purposes of this study, postoperative voiding dysfunction was defined as failure of first voiding trial after surgery (urinary retention) or PVRV of greater than 150 mL

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