

## URINARY RETENTION AND VOIDING DYSFUNCTION IN WOMEN WITH UTERINE LEIOMYOMA

### Hypothesis / aims of study

Approximately 30% of women suffer from symptomatic uterine leiomyoma. Although clinicians may elicit urinary symptoms from patient histories, few systematic studies have confirmed a causal relationship between voiding dysfunction and leiomyoma. Urinary retention is extremely uncommon in reproductive-aged women, and only a few cases reports have identified patients with uterine fibroids causing retention. We present eight consecutive patients with uterine leiomyoma and a myriad of urinary complaints that ultimately led to urinary retention during the study period.

### Study design, materials and methods

We conducted a systematic chart review of all patients who underwent hysterectomy or myomectomy at our center from April 2005-January 2009. Only those patients with urinary retention and leiomyoma who underwent surgery were included in the study. We reviewed hospital charts and physician notes for patient's presenting service, diagnostic and imaging studies performed and cystoscopy. Demographic and clinical data were extracted from patient charts, including age, parity, co-morbidities, and patient symptoms. Treatment and follow-up with resolution were also reviewed. We performed basic demographic statistics and unpaired t-tests for parametric variables.

### Results

We identified eight patients who underwent hysterectomy or myomectomy for urinary retention and fibroids. Overall, 504 abdominal and 148 vaginal hysterectomies were performed for benign disease during the study period. Of all abdominal hysterectomies, 1.58% (8/504) were performed for urinary retention and fibroids.

Patients generally had little access to health care prior to their visit to the ER, and only one patient had a known history of uterine leiomyoma. Patient ages ranged from 25-51 years (mean 39 years, SD +/-9.8) with a median parity of 1 (SD +/-1.69, range 5). Patients presented with various symptoms including recurrent urinary tract infection (2/8, 25%) and urgency (3/8, 37%), voiding difficulty (5/8, 62%) as well as sudden and complete urinary retention (3/8, 37%). Time from initial presentation to definitive treatment depended on the service (Urology or Gynaecology) patient was referred to at time of symptom presentation. Patients presenting to Urology underwent surgical treatment on average 14 months (range 7,21months, p=0.01) after presentation, while Gynaecology patients waited on average 2.1 months (range 2weeks, 4 months) after first presentation. A mass filling the posterior cul-de-sac was the most common physical exam finding (7/8, 87% patients). One patient had a cervical fibroid. Average uterine or myoma weight at time of hysterectomy or myomectomy was 607gm (SD +/-244gm). Pressure effects on the bladder were often directly evident from imaging studies demonstrating enlarged and distorted bladders (4/8 patients on CT scan). One image from a patient demonstrated an elongated cervix anterior to the urethra and pubic bone. Additionally, two patients had cystoscopy, each with abnormal findings. One patient had urethral deviation and the other was noted to have bladder dome indentation. One patient had a bladder stretched to over 15cm with mild hydronephrosis from her chronic retention. Multi-channel cystometry was not found to be useful in the two patients who had them, showing no abnormalities during filling.

All patients underwent either myomectomy or hysterectomy with complete resolution of their symptoms. Two women had post-operative urgency noted at their three-month visit, with post-void residual volumes of less than 5.

### Interpretation of results

Although common in men with prostatic disease, urinary retention is an uncommon condition in young women. Etiologies include anti-cholinergic use, detrusor muscle hypotony, infection, pregnancy, prolonged catheter use, myasthenia gravis and other neurologic diseases. Extrinsic causes include a retroverted uterus in pregnancy, large ovarian masses, hematocolpos, uterine prolapse and uterine fibroids. As urinary retention is an uncommon condition in young women, many physicians may have a difficult time making a timely diagnosis. As evidenced by the delay in diagnosis in our patients, Urologists may look for non-gynecologic causes of retention more commonly, and delay pelvic examinations. As pelvic organ etiologies are common causes of retention in women, this delay can lead to unnecessary invasive tests and patient suffering.

Although previously thought uncommon, our patients frequently presented with urgency, frequency and intermittent retention prior to complete inability to void. Patients may present with urinary urgency and frequency, recurrent UTI, intermittent difficulty in voiding and defecating and complete and sudden urinary obstruction. Fibroids were commonly found projecting off the posterior uterus, and were often difficult to elevate from the cul-de-sac at the time of surgery because of pelvic impaction.

Multiple theories have been proposed to explain the mechanism of urinary retention. One common theory describes the incarceration of posterior fibroids into the cul-de-sac causing compression of the urethra against the pubic bone. A large fibroid may weigh down the uterus, causing acute retroversion and compression of the cervix against the proximal urethra (1). This may cause anterior deflection of the cervix and subsequent urethral compression (2). As the fibroid enlarges and becomes incarcerated in the pelvis, the bladder can be stretched across the uterus also affecting function. Other causes of urgency and frequency include urethra elongation causing intermittent voiding dysfunction.

Treatment of urinary retention caused by fibroids includes placement of a pessary to elevate the bladder neck, gonadotropin-releasing hormone receptor agonists to decrease the size of the uterus, uterine artery embolization (UAE), myomectomy and hysterectomy. Although recommended as a treatment for retention and fibroids, our patient had recurrence of her symptoms after UAE.

### Concluding message

Uterine fibroids that result in compression of the proximal urethra, elongation of the urethra and bladder, can cause voiding dysfunction and urinary retention in young women. These and other pelvic aetiologies should be considered in young women presenting with voiding dysfunction and urinary retention.

### References

1. Hosokawa Y, Kishino T, Ono T, Oyama N, Momose H. Two cases of female acute urinary retention caused by an impacted pelvic mass. *Int J Urol*. 2005 Dec; 12 (12): 1069-70
2. Novi JM, Shaunik A, Mulvihill BH, Morgan MA. Acute Urinary retention caused by uterine leiomyoma. *Journal of Reproductive Medicine*. 2004 Feb;49(2):131-2

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<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>No</b>
<b><i>This study did not require ethics committee approval because</i></b>	<b>It is a retrospective case series and this was reviewed and confirmed by the Chair of Human Subjects Committee at our institution</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>No</b>