Obstructive Uropathy with Acute Pyelonephritis Induced by a Voluminous Postmenopausal Uterine Leiomyoma

Kai-Yun Wu[1], Chih-Feng Yen[1,2], Kuan-Gen Huang[1]*

[1]Department of Obstetrics and Gynecology, Chang Gung Memorial Hospital, and [2]Graduate Institute of Clinical Medical Sciences, Chang Gung University College of Medicine, Tao-Yuan, Taiwan.

Uterine myomata at different locations and of differing sizes usually produce different symptoms, including menorrhagia, tenesmus or frequent urination and, occasionally, pelvic pain. Although logically possible, significant obstructive uropathy is rarely associated with the compression of a uterine leiomyoma. We report a case of a large uterine leiomyoma presenting with bilateral hydroureter, hydronephrosis, acute pyelonephritis, and impaired renal function.

A female aged 55 years, gravida 2, para 2, was sent to the emergency room because of spiking fever and chills with ineffective antibiotic treatment for 1 week. She was healthy before these symptoms arose and was menopausal for 4 years without any hormonal supplement or vaginal bleeding. An obvious pelvic mass in the lower abdomen was noted, with tenderness and mild muscle guarding, but without obvious urinary frequency, obstructive bowel symptoms or pelvic discomfort. Physical examination revealed marked pain over the bilateral costovertebral angle of her back. The hemogram showed leukocytosis with a left shift (white blood cell count, 12,200/μL; segmented neutrophils, 84%), a biochemistry test revealed impaired renal function (serum creatinine, 2.0 mg/dL), and urine analysis found pyuria, hematuria and bacteriuria. Renal ultrasound revealed bilateral hydroureters, with mild right hydronephrosis and moderate left hydronephrosis. No renal stones or renal cysts were noted. The large pelvic mass was shown in transabdominal ultrasonography as a heteroechogenic uterine mass measuring 18.8 × 11.5 cm, compatible with a degenerated uterine leiomyoma. Computed tomography observed the large pelvic mass obliterating the entire pelvic cavity, compressing the bilateral pelvic side wall (Figure 1A), obliterating the whole inlet of the anterior pelvic brim (Figure 1B), and having associated bilateral hydroureters and hydronephrosis. There were no identifiable lymphadenopathies, ascites or pleural

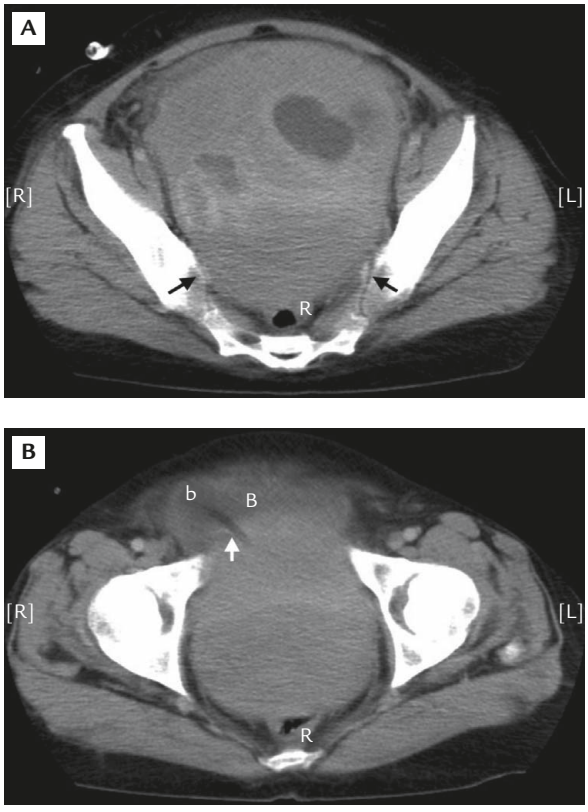

Figure 1. Computed tomography. (A) At approximately the level of S3, the large uterine leiomyoma obliterated the whole pelvic cavity and compressed the bilateral ureters (arrows) against the ramus of the ischium. The arrows indicate compressed tissue bundles around the bilateral ureters by the large uterine myoma. R = rectum. (B) At the level just above the pubic arch, the large posterior wall uterine mass still occupied the whole pouch of Douglas, and pushed the urinary bladder upward and out of the pelvic cavity. The arrow indicates a Foley catheter attached to a balloon (b) in the urinary bladder (B). R = rectum.

Correspondence to: Dr Kuan-Gen Huang, Department of Obstetrics and Gynecology, Division of Gynecologic Oncology, Chang Gung Memorial Hospital, Linkou Medical Center, 5, Fu-Hsin Street, Kwei-Shan Tao-Yuan 333, Taiwan.
E-mail: kghuang@adm.cgmh.org.tw
Accepted: January 23, 2008

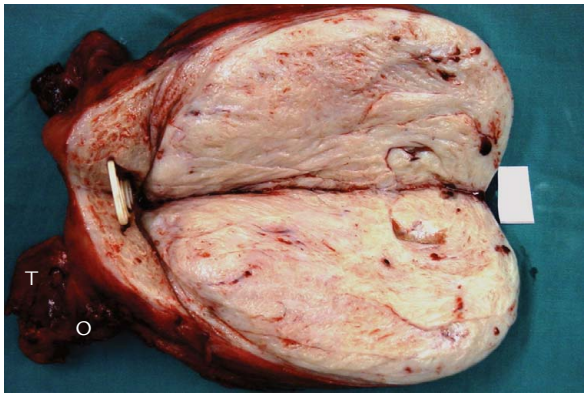

Figure 2. Surgical specimen of total hysterectomy and bilateral salpingo-oophorectomy. On longitudinal section, the benign fibroid myoma was identified arising from the lower uterine corpus, just above the isthmus portion. An intrauterine device was also noted in the uterine cavity. O = ovary; T = fallopian tube.

effusion. Exploratory laparotomy was performed when the fever subsided after aggressive antibiotic treatment. At surgery, the uterus was seen to be pushed up and outward from the pelvic cavity; a large myomatous mass, protruding from the posterior wall of the lower uterine corpus (Figure 2), was noted buried in the pouch of Douglas; the urinary bladder, vagina and uterine cervix were pulled up above the pubic bone; obvious hydroureters were found above the pelvic brim. The patient underwent total hysterectomy and bilateral salpingo-oophorectomy. The pathologic examination found a benign smooth muscle tumor with foci of hyaline necrosis and degeneration. After surgery, the patient's renal function returned to normal (serum creatinine, 1.0 mg/dL), the signs of obstructive uropathy regressed, and pyelonephritis did not recur during follow-up of more than 4 years.

Only sporadic cases of uterine leiomyomata causing obstructive uropathy can be found in the literature [1–3]. Although some authors have proposed that the ureterovesical junction is the most susceptible site of compression by a lower uterine myoma, the ureterovesical junction is located at some centimeters above the pubic bone and is actually not easily compressed against the pubic bone in patients without uterine and vaginal prolapse. This did not seem to be the situation of our patient here, since the urinary bladder, as well as the ureterovesical junction, had been pulled far above the pubic bone (Figure 1B).

The obstructive uropathy of this patient appears to have occurred at a level around S3, as shown in Figure 1A. Ureters, running retroperitoneally within a thick layer of soft tissue in the pelvic side wall, could hardly be compressed by a movable tumor within the pelvic cavity. However, this patient's myoma was so large as to firmly fit into the pouch of Douglas and symmetrically compressed a section of the ureters against the ramus of the ischium. In addition, this patient only had partial obstruction; although there were hydroureters and hydronephrosis, and urine stasis caused the development of acute nephritis and renal function impairment, she did not develop anuria, and her obstructive uropathy was totally reversed after surgery. These situations are compatible with a mechanism of ureter compression within the pelvic cavity where the ureters are still padded by some soft tissue. In contrast, compression at the ureterovesical junction against the pubic bone should cause a total obstruction and possibly terminal necrosis and fibrosis of the ureters.

Another concern in this case was the possibility of malignancy. Uterine leiomyomata are estrogen-dependent tumors, and their growth is clearly associated with circulating estrogen [4]. Generally, the myoma would shrink after menopause with a gradual remission of the symptoms, but this patient's myoma produced overt symptoms after several years of menopause. However, the incidence of myomata malignancy is rare and not easily diagnosed before surgery. Although presenting with progression after the menopause, the voluminous mass of this patient was finally proved benign. Furthermore, only one report of a uterine leiomyosarcoma causing obstructive uropathy could be found in the literature [5].

This case presents a rare situation of an expansive uterine posterior wall myoma causing obstructive uropathy. We suggest that a patient with a voluminous myoma should be considered for diagnostic imaging of the renal pelvis and urinary tract. Before permanent damage is caused, removal of the compressing leiomyoma can result in a complete recovery of the obstructive uropathy and a return to normal renal function.

References

1. Monga AK, Woodhouse CR, Stanton SL. Pregnancy and fibroids causing simultaneous urinary retention and ureteric obstruction. *Br J Urol* 1996;77:606–7.
2. Hara T, Tsuchida M, Takai K, Takiguchi S, Naito K. Ureteral obstruction in a transplanted kidney secondary to a subserous myoma uteri. *Transplantation* 2003;75:1915–6.
3. Konieczny H. Hydronephrosis of the right kidney caused by compression of the bladder and the pelvic portion of the ureter by uterine myoma. *Ginekol Pol* 1980;51:941–4. [In Polish]
4. Wallach EE, Vlahos NF. Uterine myomas: an overview of development, clinical features, and management. *Obstet Gynecol* 2004;104:393–406.
5. Goode JH. Bilateral hydronephrosis and hydro-ureters, third degree, resulting from leiomyosarcoma of the uterus. *Trans Southeast Sect Am Urol Assoc* 1952;36:1–3.