

## **Renal failure secondary to uterine prolapse**

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### **Abstract**

*Pelvic organ prolapse is a common problem in female population, and it may cause minor urological problems such as recurrent urinary system infection and voiding difficulty, as well as serious clinical problems such as advanced bilateral hydronephrosis and acute renal failure. Bilateral hydroureteronephrosis and acute renal failure secondary to pelvic organ prolapse are rarely seen. In our paper, we present the case of a 69 year old woman that developed bilateral hydroureteronephrosis, anuria and acute renal failure secondary to pelvic organ prolapse with a review of the literature.*

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### **Introduction**

Pelvic organ prolapse is the bulging of uterus, bowel, rectum and vagina out of

the vulva, and is commonly seen in postmenopausal women.<sup>1</sup> The prevalence of pelvic organ prolapse (POP) in the general population is about 14%, where it increases up to 67.8% in the elderly, causing a serious public health problem.<sup>2,3</sup> Pelvic organ prolapse should not be viewed solely as genital organ prolapse due to the close anatomical contiguity with the lower urinary tract which may cause hydronephrosis, a serious upper tract pathology, and acute renal failure. Hydroureteronephrosis secondary to POP was first described in 1824 by Frieriep.<sup>4</sup> Despite the fact that the relationship between uterine prolapse and hydronephrosis has long been identified, advanced hydronephrosis and acute renal failure secondary to pelvic organ prolapse are rarely seen.<sup>5,6</sup> In the literature, there are hydronephrosis cases secondary to pelvic organ prolapse and recurrent urinary infection, as well as, cases that develop end-stage renal failure.<sup>6,7</sup> Various different

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theories as to the relationship have been suggested. Lieberthal and Frankenthal suggested that the defining mechanism for unilateral cases and hydronephrosis secondary to vaginal cuff prolapse is the band formation of cardinal ligaments at the level of the uterocervical junction above the ureters causing a kink formation over the ureters with the uterine prolapse.<sup>8</sup>

We think that a renal evaluation is required in cases with advanced pelvic organ prolapse, as in our presented case with total uterine prolapse and high

creatinine levels.

### **Case Presentation**

A healthy 69 year old woman with a history of eight normal vaginal deliveries presented with externalized genital prolapse evolving during the last two years including dysuria, painful micturition and intermittent urinary retention. There was no urinary incontinence and the clinical examination found a genital grade IV (Baden and walker classification) prolapsed (Figure 1).



**Figure 1. View of Total uterine procidentia**

Ultrasonography was performed showing bilateral ureteral dilation with thinned renal cortex especially on the right side and a significant post voiding residual (Figure 2). Blood creatinine was 4.2 mg/dl and urea at 85 mg /dl. The urine culture revealed the presence of *Escherichia coli*, and the cervico-uterine smear was normal. Antibiotic treatment

was followed by a vaginal hysterectomy with anterior and posterior colporrhaphy, and culdoplasty were performed. There were no complications associated with the surgery. She was discharged with a blood urea nitrogen 27mg/dl and serum creatinine 1.1mg/dl on the 10th post-operative day.



**Figure 2. Marked dilation of the pelvicalyceal system on ultrasonographic image**

Two months later, the patient reported a significant clinical improvement with the disappearance of urine retention episodes, dysuria and the normalization

of the renal function. The ultrasonography showed a regression of hydronephrosis and good renal parenchyma (Figure 3).



**Figure 3. Postoperative (two months) normal view of pelvicalyceal system on ultrasonographic image**

### **Discussion**

Pelvic organ prolapse is defined as the abnormal descent of the pelvic organs with the vaginal walls down together.<sup>9</sup> It usually coexists with cystocele, rectocele and enterocele. Pelvic prolapse is extremely common in the female population, and the decisive treatments include surgical and conservative methods.<sup>10</sup> Pelvic prolapse involves the herniation of the bowel, rectum and the ureters towards the pelvic floor. In which case, some pathological changes occur in the ureter

and bowel anatomy with secondary disturbances in renal functions due to obstruction may be seen. Even secondary renal failure due to pelvic organ prolapse is rare; there are attempts to define this situation with various hypotheses. One of the most important hypotheses suggests that the bilateral ureters are compressed between the uterine fundus and bowel against the levator ani muscles, with this pressure being conducted to the upper urinary tract, causing a decrease in glomerular filtration rate (GFR) and, thereby a disturbance in renal

functions.<sup>11</sup> In addition, it is reported that the uterine artery and inferior pubic ramus region also compresses the bilateral ureters causing pathology.<sup>12</sup> Another hypothesis says that the translocation of the neck of the bowel inferiorly causes a compression on the ureters between the uterus and the inner side of the genital hiatus, causing hydronephrosis.<sup>13</sup> This hypothesis was supported in 1992 by Jay et al.<sup>14</sup>; however, they couldn't explain the reason that unilateral hydronephrosis clearly happens in some cases.<sup>15</sup> In addition to this, the definite mechanism causing renal failure is not known, and is thought to be multifactorial. Disturbance of renal functions secondary to advanced stage uterine prolapse is classified as post renal with urea and creatinine levels increasing in these cases.<sup>16</sup> The obstruction of voiding causes the reversal of Starling forces that provide the glomerular filtration and the progressive obstruction results in hydronephrosis.

In studies, 5-17% cases of uterine prolapse were detected to have hydronephrosis, and it is reported that as the level of uterine prolapse increases, the severity of hydronephrosis increases too.<sup>5,11</sup> On the other hand, in the case of obstruction removed in the first 48 hours, the GFR recovers totally, but if this period exceeds 12 weeks, minimal or no recovery is observed.<sup>9</sup> In addition, if the obstruction is mild or acute, or the collector system is surrounded by a retroperitoneal tumor or fibrosis, hydronephrosis may not appear.

In a Swedish community-based study, the prevalence of any degree of prolapse in women aged 20 to 59 years was 30.8%.<sup>12</sup> In an observational study,

recruiting women seen for routine gynecological health care, the stage-wise distribution of pelvic organ prolapse was as follows: stage 0 — 6.4%; stage I — 43.3%; stage II — 47.7%; stage III — 2.6%.<sup>14</sup> (15) Major uterine prolapse in this series accounts for 50.3% of cases (age range = 18 to 82 years).<sup>13</sup> The age-specific incidence of surgically managed prolapse increased with advancing age and the lifetime risk of undergoing surgery for prolapse by the age of 80 years was 11.1%.<sup>17</sup>

In this case, acute renal failure developed secondary to obstructive uropathy. Serious urological problems are observed in cases that are long-lasting or disregarded. In most of these cases, the hydronephrosis is asymptomatic. And sometimes, as in our case, the prolapse presents with acute renal failure. It is observed that with appropriate medical and surgical treatment, the acute renal failure secondary to prolapse resolves. Primary renal failure must be excluded before proceeding with management for the uterine prolapse. This case highlights, that in cases with total uterine prolapse, the urological examination should be performed precisely with both medical and surgical treatment options considered. Our case recovered with early diagnosis and rapid treatment, before it progressed into chronic renal failure, which causes diminished quality of life and is even life-threatening.

## **Conclusion**

We believe that all cases with pelvic organ prolapse, especially those with acute renal failure and other urinary system pathologies, should have detailed urogynecological examinations.

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