



# Acute Renal Insufficiency Caused by Total Uterine Prolapse: A Case Report and Review of the Literature

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We aimed to report a case with acute renal insufficiency and hydronephrosis treated by surgical repair of the total uterine prolapse. A 61-year-old woman presented to our clinic with a general weakness, lower abdominal pain, decreased urination and dysuria. Her pelvic examination revealed the fourth-degree uterine prolapse and blood tests demonstrated failure of renal function tests. Abdominal computed tomography showed bilateral hydroureteronephrosis and the prolapsed uterus and the bladder through the pelvis. After acute vital intervention surgical repair of the pelvic floor with vaginal hysterectomy was performed. There were no complications associated with the surgery. The patient's renal function tests returned to normal and urine extraction increased. We suggest renal evaluation should be considered for cases with severe prolapse of the uterus and if hydroureteronephrosis exists, surgical treatment should be performed as soon as possible to prevent irreversible consequences.

**Keywords:** hydronephrosis, renal function, renal insufficiency, uterine prolapse, vaginal hysterectomy.

## Introduction

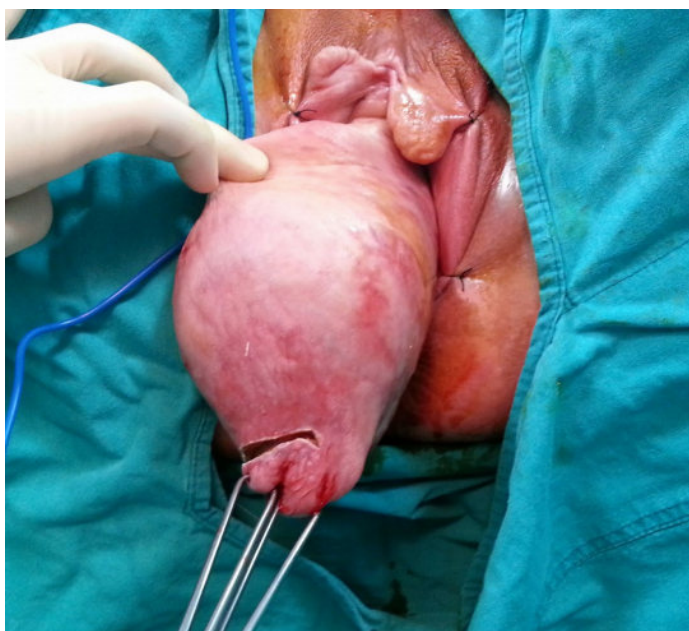
Pelvic organ prolapse (POP) is the downward displacement of structures that are normally located at the level of or adjacent to the vaginal vault. Due to this anatomical displacement, hydronephrosis is one of the various complications which was first reported in 1923 by Brettauer and Rubin [1]. This easily overlooked complication can cause irreversible results if not treated properly. We report a case of postrenal acute renal failure caused by total uterine prolapse.

## Case report

61-year-old woman was admitted with a three day history of general weakness, vomiting and lower abdominal pain. She also described decreased urination and dysuria. She had one term pregnancy terminated by vaginal delivery. She had hypertension for several years which was kept under control with medical treatment. Her family history was not significant.

On physical examination, her temperature was 36°C, blood pressure was 70/40 mmHg, pulse rate was 105 beats/min and her respiratory rate was 22 breaths/min. Both lungs were clear on auscultation, her abdomen was not distended and no abdominal bruit was heard. She had no pretibial pitting edema. On admission, her serum blood urea nitrogen was 229 mg/dL and creatinine was 20.26 mg/dL. Other laboratory findings included Hb of 7.2 g/dL, sodium of 138 mmol/L, potassium of 8 mmol/L, chloride of 114 mmol/L. Arterial blood gas analysis showed pH: 7.268, pCO<sub>2</sub> 17.2 mmHg and HCO<sub>3</sub><sup>-</sup> 7.9 mmol/L. The urinalysis showed pH 6.5, specific gravity 1005, protein (2+) and blood (2+).

The pelvic examination revealed fourth-degree uterine prolapse according to the Baden-Walker Halfway system and vaginal eversion with ulcerated mucosa (Fig. 1). Transabdominal ultrasonography showed bilateral severe hydroureteronephrosis but no additional remarkable finding. Abdom-



**Figure 1** - Fourth-degree uterine prolapse (vaginal eversion) and marked vesico-cervical border.



**Figure 2.** Abdominal computed tomography: coronal view of bilateral hydronephrosis (arrows) and hydroureter (arrow-heads); pelvic cavity with nonvisible uterus and bladder.

inal computed tomography presented that the uterus and the bladder were prolapsed through the pelvis, bilateral hydroureteronephrosis with renal cortical thinning (Fig. 2). Catheterisation of the bladder revealed anuria. Due to these findings, she was diagnosed with postrenal acute renal failure. She was resuscitated with intravenous fluids and placed on hemodialysis. After acute vital intervention, bilateral nephrostomy catheterisation was performed.

After stabilization of the renal function tests and the patient's physical condition, a POP surgery was planned. The cervical cytologic examination showed chronic inflammation. The endometrial biopsy was reported as "squamous metaplastic changes of the epithelial fragments, surface epithelial changes and atrophy of the glandular tissues". Vaginal hysterectomy with anterior and posterior colporrhaphy and right sacrospinous fixation procedures were performed. There were no complications associated with the surgery. The patient's follow-up renal functional tests were normal and urination volume increased up to 6L/day.

A postoperative transabdominal ultrasonography showed a receding pattern of hydroureteronephrosis. The nephrostomy catheters were removed 2 days after the surgery. The patient was discharged on the seventh postoperative day. Despite the normal preoperative endometrial sampling, the specimen's pathological examination revealed endometrioid adenocarcinoma (Grade 1) with absence of myometrial and lymphovascular space invasion.

## Discussion

The 37% prevalence of POP in the general population increases to 64.8% in older women [2]. The studies of large patient cohorts list prevalence of 25/323 (7.7%) and 31/189 (17.4%) [3, 4]. In a recent publication, Constantini et al. reported that the 5% overall prevalence of hydronephrosis in the 257 patients who

underwent surgery for POP decreased to 3.5% when POP-related hydronephrosis was assessed [5]. Hence, as these studies included symptomatic preoperative patients, the prevalence of hydronephrosis associated with POP might be higher if undiagnosed or overlooked asymptomatic patients were included.

Several theories have been suggested to explain the mechanism of developing hydroureteronephrosis secondary to POP. In 1980, Hader and Meiraz proposed that the ureters become entrapped by the genital hiatus against the fundus of the uterus [6]. Although widely approved, this hypothesis fails to explain hydroureteronephrosis in patients who have undergone hysterectomy previously and the unilateral cases. Alternatively, Lieberthal and Frankenthal described a mechanism for hydroureteronephrosis with uterine prolapse that might be considered as a plausible mechanism with vaginal vault prolapse cases [7]. They theorized that cardinal ligaments form a sling over the ureters at the uterocervical junctional level and pull them downward when the uterus descends, which causes kinking of the ureters.

In the literature, there are several reported cases such as incidental diagnosis of hydroureteronephrosis due to uterine prolapse, bilateral hydronephrosis caused by vaginal vault prolapse or end-stage renal failure at neglected prolapse cases [8, 9]. To the best of our knowledge, our report is the second acute renal failure case caused by uterine prolapse in the literature [10]. We suggest renal evaluation should be considered for severe POP cases and if hydroureteronephrosis exists, surgical treatment should be performed as soon as possible to prevent irreversible consequences.

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