Bilateral Ureteral Obstruction and Acute Renal Failure in Spite of Prior Ureteral Catheterization in Radical Hysterectomy

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ABSTRACT

We present an extremely rare case of acute renal failure following radical hysterectomy although we inserted ureteral catheter bilaterally. A 76-year old female received bilateral ureteral catheterization prior to operation. Just after operation oliguria was admitted and serum creatinine level increased to 3.6 mg/dL. An abdominal computed tomography (CT) revealed bilateral hydronephrosis. From soon after exchange to double J catheter large amount of urine was collected and the level of creatinine normalized 2 days later. The shape of J catheter may be more effective than open-end catheter because it has multiple side hole and can ensure urinary drainage.

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Introduction

Ureteral catheterization is often required before pelvic operation by surgeons or gynecologists so that they can prevent ureter injury. Open-end catheter, Single J catheter and Double J catheter is usually inserted. We report a case of acute renal failure following radical hysterectomy although we inserted ureteral catheter bilaterally.

Case report

A 76-year old female, previously healthy, was scheduled for a radical hysterectomy with bilateral adnexectomy in suspect of uterus body cancer. Preoperative laboratory data, including a hematogram, biochemical, and coagulation test results were within normal limit. Before the operation, cystoscopy was performed and two 6-Fr open-end ureteral catheters were smoothly inserted into each ureters of which end was adjusted to the center of renal pelvis through fluoroscopy. The operation took 112 minutes and blood loss was 380 mL. Hematuria was noted during the operation and urine output was 350 ml which didn’t demonstrated anuria. Just after operation oliguria was admitted and then diuretic was administered but no uric reaction was seen. In the first operation day in the morning serum creatinine level increased to 2.69 mg/dL and limb edema was gradually noticed. An emergent abdominal computed tomography (CT) revealed mild bilateral hydrenephrosis and perirenal fat stranding (Fig. 1) which suggested renal extravasation. Ureteral catheter irrigation by using syringe was performed but no obstruction was admitted. In the afternoon the patient had no complaint about flank pain owing to epidural anesthesia but hypoxia and dyspnea came out, which lead to patient’s botherness. Then continuous hemodialysis was administered but anuria still continued. Urinary obstruction could not yet be denied, then catheter was exchanged from open-end to double J catheter. From soon after the exchange large amount of urine was collected and the level of creatinine returned to normal 2 days later. The patient had a good recovery and the double J catheters were removed 1 month later. After catheter removal no symptom nor elevation of serum creatinine was admitted.

We report a case of acute renal failure following a pelvic gynecological operation. Pre-renal causes, such as hypovolemia owing to blood loss, were excluded based on the following reasons: vital signs were stable; no peritoneal signs were observed; and anuria was not seen.
didn’t respond to a fluid challenge. Besides nonsteroidal anti-inflammatory drug (NSAIDS) induced acute renal failure was unlikely because the patient has no history of renal disease. An iatrogenic obstruction of the urinary tract was thus assumed. As mechanical occlusion of the urinary tract during an operation was ruled out by the normal postoperative urine output, the most probable cause was ureteral injury following catheterization. In ureteral catheterization bilateral ureteral orifices were placed more laterally and more backward than assumed normal position owing to ureters protrusion from enlarged uterus, but we did not feel any resistance on catheterization.

In a clinical study, 20% of patients with an open-ended ureteral catheter developed a transient rise in postoperative creatinine (1.7–3.5 mg/dl). Anuric complication due to post-retrograde ureteral catheterization is largely attributed to an edematous change in the ureteral orifice. In the current case, only minimal edema of the ureteral orifices was noted, which suggested allowed postoperative change.

NSAIDs inhibit platelet aggregation, vasoconstriction, and reversible mild renal impairment in volume-contracted states. In a study of dog’s model, Ketorolac reduced the glomerular filtration rate by 35% within 15 minutes of administration in the case of a ureteral obstruction. Macrohematuria was seen postoperatively, but it was uncertain whether macrohematuria affected urinary obstruction because of non-catheter obstruction.

Urine flow might change postoperatively. In ureteral catheterization the edge of open-ended ureteral catheter was assured to be in the middle of renal pelvis through fluoroscope. After acute renal failure abdominal CT revealed the edge of ureteral catheter at both side was moved 1–2 cm peripherally from renal pelvis (Fig. 2), illustrating slight catheter removal. If the edge of ureteral catheter is situated in ureteral space, urine flow may decrease owing to narrow space compared to renal pelvis. Once hydronephrosis is formed, kidney may be easy to descend to distal side by its weight therefore ureter will bend and form as “N” or “M” shaped ureter. Then urine flow will weaken further. In most case of our hospital slight removal did not affect urine flow, leading to anuria or elevation of serum creatinine. In addition to slight catheter removal, edematous change of ureter around edge of ureteral catheter might affect urine flow. About ureteral catheter removal there is a possibility that according to gynecological maneuver, ureter might be deviated from original position which lead to ureteral catheter deviation.

The shape of J catheter may be more effective than open-end catheter because it has multiple side hole and its edge “J” is not easier to be dropped out from renal pelvis than open-end catheter.
owing to its structure so that it can ensure urinary drainage postoperatively.

**Conflict of interest**

The authors declare that they have no conflict of interest.

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