

# Deep Buried Cause of Anuria in a Patient Admitted after Elective Prolonged Surgery in a Syndromic Patient

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## ABSTRACT

**Background and clinical case:** Acute kidney injury (AKI) with anuria is a common occurrence in intensive care unit (ICU) patients and is also among the common reason for ICU admission in the postoperative period with multiple etiologies. Iatrogenic tying of the ureter during surgery while resection is rare but a significant cause of unexplained anuria during hysterectomy. Delayed diagnosis results in more severe clinical sequelae and unfavorable legal outcomes. Isolated anuria with stable hemodynamics and acceptable arterial blood gas (ABG) parameters should raise suspicion of iatrogenic anuria. This article aims to outline the clinical course and management of a syndromic patient with multiple challenges who presented with anuria, later the cause of which was found to be iatrogenic tying of the ureter during surgery. The diagnosis of this rare occurrence warrants vigilance, early detection, and prompt management.

**Conclusion:** A multidisciplinary team approach and early use of available imaging modalities like ultrasonography (USG), digital subtraction angiography (DSA), and retrograde pyelogram (RPG) help in the identification and management, thus reducing morbidity and mortality.

**Keywords:** Anuria, Digital subtraction angiography, Iatrogenic, Retrograde pyelogram.

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## INTRODUCTION

Anuria and AKI are common occurrences in ICU with multiple etiologies such as severe dehydration, shock, preexisting renal pathology, and blunt trauma abdomen. Iatrogenic tying of the ureter during surgery while resection is rare but an important cause of unexplained anuria. While ureteral injuries are an uncommon surgical complication, it is estimated that 52–82% of iatrogenic injuries occur during gynecologic surgery.<sup>1–3</sup> The rate of ureteral injury for vaginal hysterectomy is 0.2 injuries/1,000 cases, and 1.3 injuries/1,000 cases for total abdominal hysterectomy.<sup>4</sup> Patients with congenital anomalies involving multiple organs present with difficult anatomy and surgical plane hence making it difficult for the surgeon to identify structures intraoperatively.

## CASE DESCRIPTION

A 20-year-old female presents to the gynecology outpatient department with primary amenorrhea with well-developed secondary sexual character with vaginal atresia with hematocolpos with a hemorrhagic cyst in the right ovary with left ectopic and nonvisualized right kidney with congenital right leg deformity with thoracolumbar kyphoscoliosis with an atrial septal defect with mitral regurgitation posted for elective exploratory laparotomy. The patient has provided written informed consent for the publication of this case report.

The case was done under general anesthesia with due risk. Intraoperatively uterus was unicornuate with rudimentary fallopian tubes with hematocolpos, so a total abdominal hysterectomy plus bilateral salpingo-oophorectomy was performed. The intraoperative period was uneventful, with a urine output of 150 mL, and the patient was shifted to ICU for postoperative monitoring due to delayed recovery and further management. The patient was received in stable condition and

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extubated in 5 hours with vitals stable throughout and acceptable ABG parameters. The patient was anuric since admission to ICU. Mechanical obstruction was ruled out by flushing the urinary catheter and thereafter changing the catheter. USG was done, which shows an adequately filled inferior vena cava, which ruled out dehydration. There was no collection in the abdominal cavity which rules out urine extravasation due to injury to the ureter or bladder perforation. The urinary bladder was empty and the Foley bulb was visualized. Urology and nephrology consultation were done, and a DSA was planned, which shows an ectopic kidney with double ureter with hydronephrosis, and upper pole moiety was accessed. Pyelogram shows dilated ureter with distal obstruction. Cystoscopy was done in which the right ureteric orifice was not visualized, and the left ureteric orifice was visualized with no efflux of urine then the left RPG was done. Contrast extravasate in the left lower ureter and guide wire could not be negotiated beyond it. The final decision of left percutaneous nephrostomy was taken, obstruction was relieved, and the patient maintained normal urine output. The patient was advised to come after 6 weeks for ureteric reimplantation (Fig. 1).

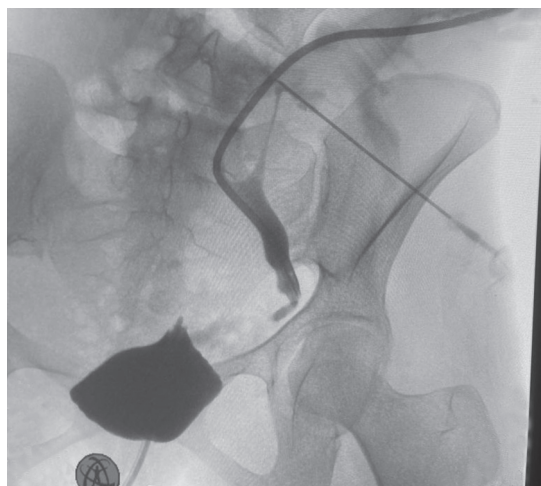


Fig. 1: A left-sided percutaneous nephrostomy

## DISCUSSION

The cause of primary amenorrhea with well-developed secondary sexual characteristics is associated with some rare conditions such as Mayer-Rokitansky-Küster-Hauser, Mullerian duct aplasia renal agenesis cervicothoracic somite dysplasia (MURCS) association, vertebral defects, anal atresia, cardiac defects, tracheoesophageal fistula, renal anomalies, and limb abnormalities, and Goldenhar syndrome.<sup>5</sup> Our patient could be an undiagnosed case of MURCS associated with supportive features, which include uterine hypoplasia, ectopic kidney, vertebral anomaly, and short stature, with additional congenital atrial septal defect. The patient's altered anatomy would have been the reason for this accidental iatrogenic tying and cutting of the ureter, which leads to anuria in the postoperative period. So, after ruling out the obvious causes of anuria, one should keep in mind the coexisting conditions of the patient and manage accordingly. Delayed diagnosis results in more severe clinical sequelae, which may lead to unfavorable and catastrophic legal as well as clinical outcomes. An unrecognized or mismanaged ureteric injury can lead to serious complications, including urinoma, abscess, ureteric stricture, ureteric fistula, and potential loss of an ipsilateral renal unit.<sup>6</sup> As this patient had a single kidney, the delay in diagnosis and management would result in a lethal outcome.

In the case of isolated anuria with stable hemodynamics and acceptable blood gases, the possibility of iatrogenic anuria should always be kept in mind. In patients with complex anatomy, the surgeon should be more vigilant in identifying ureter and other structures and must rule out such ureteric injuries intraoperatively. Preoperative ureteral catheterization has long been proposed as a technique to identify the ureters and avoid iatrogenic injury. As long as surgeons operate near the ureters, the potential for iatrogenic

ureteral injury will exist and requires a dynamic approach to management.<sup>7</sup> Iatrogenic tying is more common in gynecological procedures such as abdominal hysterectomies, which our patient underwent and leads to anuria. Early diagnosis of the ureteric injury is considered to be the single most important prognostic factor for a full recovery.<sup>8</sup> Interdisciplinary team management plays an important role. Instead of DSA contrast-enhanced computerized tomography is a better radio imaging modality. Early imaging be it USG, intravenous pyelogram, or RPG, helps in early diagnosis and may prevent catastrophic complications. The gold standard approach to checking for ureteric narrowing or contrast extravasation is to perform a cystoscopy and bilateral retrograde pyelography.<sup>6</sup>

## CONCLUSION

The study shows an unusual cause of anuria in the treatment course of a syndromic patient with multiple challenges. Vigilance and early recognition, followed by prompt management, can reduce morbidity and mortality. The use of imaging modalities and a multidisciplinary team approach proved to be a savior to catastrophic complications.

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