

# Ureteral Calculus and Anuria in Kidney Transplanted Patient: What to do?

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**Abstract:** An obstructive ureteral calculus from a transplanted kidney is a rare condition, the prevalence of which is 0.4 to 1% in cases of kidney graft. This calculus is generally detected during diagnostic imaging exams when the patient is either asymptomatic or has a reduction in urinary output. The definitive diagnosis is determined using computed tomography and ultrasound. Resolutive treatment is normally surgical. This paper reports the case of a patient with a transplanted kidney who presented with anuria and ureteral calculus, which was treated with laser ureterolithotripsy.

**Keywords:** Kidney Transplant, Lithiasis, Treatment

## Introduction

Urinary lithiasis is a rare condition following kidney transplantation, the prevalence of which is 0.4 to 1% in cases of renal graft, with an incidence of hospitalization due to graft lithiasis of 104/100000/year<sup>1</sup>. In most cases, the calculus develops in the preoperative period. However, calculi can be found in the transplanted renal graft itself<sup>1</sup>. The donation of kidneys with calculi is currently more widely accepted provided that certain criteria are met, such as an asymptomatic donor with a single calculus and the absence of hypercalcemia, hyperuricemia, metabolic acidosis, cystinuria, hyperoxaluria, urinary infection and nephrocalcinosis demonstrated by computed tomography<sup>2</sup>.

The deterioration of renal function is common in such cases and anuria can occur when there is complete ureteral obstruction. Symptoms related to the obstruction, such as nephritic colic, are generally absent, since the ureter of the transplanted kidney is denervated<sup>3</sup>. The diagnosis of renal lithiasis is generally made between three months and three years after transplantation, with a greater frequency in the first year<sup>4</sup>, and requires diagnostic imaging exams (radiography, ultrasonography and computed tomography), blood exams and urine culture<sup>5</sup>.

Despite therapeutic strategies for lithiasis in a renal graft, there is no standardization in the literature due to the small number of cases described<sup>6</sup>. This paper presents a case of a patient with ureteral calculus and anuria in a transplanted kidney submitted to surgical treatment.

## Case Presentation

A 42-year-old female patient who had undergone kidney transplantation surgery four years earlier visited the emergency room of a university hospital. The patient reported oliguria with a two-day history. The laboratory exam revealed high creatinine. Ultrasound and computed tomography findings revealed hydronephrosis, ureteral dilation and calculus in the obstructed ureter of the transplanted kidney (Figures 1 and 2).



Figure 1. Ultrasound showing ureterohydronephrosis and calculus in ureterovesical junction.





Figure 2. Computed tomogram showing calculus impacted in ureterovesical junction.

Nephrostomy was performed to resolve the anuria (Figure 3), followed by the treatment of the calculus. Flexible laser ureterolithotripsy was performed through a percutaneous puncture in the renal calyx (Figure 4). Definitive treatment of the lithiasis involved the passage of the nephroscope through the ureteral access sheath positioned by nephrostomy puncture until reaching the ureteral calculus, which was fragmented by laser, followed by the placement of a double J stent.

The stent was removed after 20 days. The patient is currently in outpatient follow-up.



Figure 3. Anterograde pyelography through percutaneous puncture of transplanted kidney in right iliac fossa and obstructive ureteral calculus.



Figure 4. X-ray showing passage of ureteral access sheath through percutaneous puncture of transplanted kidney in right iliac fossa.

### Discussion

The patient described in this case presented lithiasis following a kidney transplant, which is a rare condition with few symptoms. An obstructive calculus in the ureter of a transplanted kidney has considerable importance, especially with regards to the preoperative diagnosis, differential diagnosis and the objective determination of the prognosis.

The location is variable. Calculi may be found in the calyx (20 to 75%), ureter (12.5 to 75%), vesical (18.2 to 50%) and even multiple sites<sup>7</sup>. In the present case, the calculus was in the ureterovesical junction.

The diagnosis was early in the patient studied here, which reduces the likelihood of the occurrence of acute kidney failure and the need for dialysis and is associated with a lower rate of intraoperative and postoperative complications. The conduct for patients with calculi diagnosed in the late postoperative period (70%) is similar to that for patients with lithiasis in the general population<sup>8</sup>. The approach is normally retrograde through the identification of the ureteral meatus. However, considering the difficulty in locating the ureteral meatus in patients with a transplanted kidney, the antero-approach through nephrostomy was employed in the present case.

If the calculus is between 1 and 2 cm, the placement of the double J stent is recommended, whereas percutaneous nephrolithotomy is the most indicated procedure for calculi larger than 2 cm<sup>9</sup>. The calculus in the patient described in this report was 1.4 cm, requiring the passage of the

nephroscope until reaching the calculus, followed by fragmentation with laser and the positioning of the double J stent.

### Conclusion

This paper described the successful treatment of a ureteral calculus and anuria in a patient with a transplanted kidney using antegrade flexible laser ureterolithotripsy through a percutaneous puncture in the renal calyx.

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