



## Ureteral Anastomosis of Ureter Transplanted to Native Ureter by Ureteral Stenosis in the Upper Third as a Complication After Renal Transplantation: Clinical Case

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### Abstract

**Introduction:** The incidence of urological complications in renal transplant patients has been reported from 2 to 3%. Currently, clinical and surgical management guidelines or treatment consensus have not been established for post-surgical complications in transplant patients, which is why describing ureteral reconstruction in a transplanted kidney due to stenosis in the upper third of the kidney serves to determine the best therapeutic surgical option with the flap to prevent loss of kidney function.

**Clinical Case:** A 51-year-old male patient, with a history of kidney transplantation 1 year ago, diagnosed with hydronephrosis due to stenosis of the transplanted ureter and urinary tract infections due to repeated nephrostomy and several failed endourological procedures.

**Conclusions:** Ureteral stenosis as a postoperative complication in kidney transplantation is one of the most important challenges for the reconstruction of the urinary tract, nephrostomy is the first line of treatment, however when traditional techniques fail, open ureteral anastomosis is a safe technique. and with good results in order to maintain the renal function of the transplanted kidney and offer the patient a better quality of life.

**Keywords:** Ureteral Stenosis; Ureteral Anastomosis; Transplanted Kidney

### Introduction

The incidence of urological complications in kidney transplant patients has been reported from 2 to 3% [1]. Currently, no clinical and surgical management guidelines or treatment consensus have been established for post-surgical complications in transplant patients [2]. Surgical complications during and after the surgical procedure expose the recipient to an increase in morbidity and mortality [3].

The most frequent urological complications after a kidney transplant either from a cadaveric donor or from a living donor are stenosis of the ureter or bladder anastomosis (2.5-7.5%) [4], ureteral vesic reflux (2-86%) [5,6], lithiasis at the graft site (0.4-1%)

[7,8], post-transplant bladder emptying dysfunction (1.1%) [9,10] and urinary incontinence (1.2-8.9%) [11].

Stenosis <3 cm in length can be treated endoscopically, either with percutaneous balloon dilation or with flexible antegrade ureteroscopy and holmium laser incision [12]. In this scenario, the success rate approaches 50%; although, maximum success is obtained for stenosis <1<sup>cm</sup> [13].

The most frequent urological complication in patients with renal transplantation is ureteral stenosis where the most commonly affected segment is ureterovesical anastomosis, whose incidence varies from 1-4.5%, usually caused by alteration in ureteral vascularization, extrinsic obstruction (lymphocele, fibrosis) or deficiency in surgical technique [14].

Stenosis at the level of the upper and middle segments are uncommon and little reported in the literature [15]. Risk factors that may be involved in the etiology of ureteral stenosis include age of the donor (over 65 years), vascular anatomical variants (more than two renal arteries in the allograft), time of prolonged cold ischemia and anastomotic technique without stent [16].

The most frequent sign of repercussion on renal function is the elevation of azoados with the concomitant renal lesion that originates after the removal of the double J catheter.

The clinical suspicion concomitantly with the alteration of the paraclinical examinations constitutes the fundamental pillar to treat this complication in time.

The diagnosis is established with renal ultrasound where the main finding that is observed is the skin-ocalicial dilation.

Urinography is a very useful diagnostic tool because by visualizing the entire ureteral path, intrinsic and extrinsic causes that are the cause of this complication can be identified [17].

Currently, conventional treatments such as endourological techniques have been used to decompress the collecting system before performing any open procedure for ureteral reconstruction [18]. Generally, the unclogging of the urinary tract with the retrograde placement of a double J ureteral catheter constitutes a real medical challenge due to the difficulty in finding the neo meatus [19]. Several authors suggest that nephrostomy placement is the first-line technique in the treatment of this complication [20].

Other endourological techniques are balloon dilation or endouretectomy, which can be performed with cold scalpel, balloon cutting catheter or Holmium laser, even with antegrade or retrograde technique [21].

When these techniques fail, the open technique is the best alternative in these cases.

The objective of this article is to report the experience in the treatment of ureteral stenosis in patients with kidney transplantation [22].

### Clinical Case

A 51-year-old male patient with a clinical history of arterial hypertension, stage 5 chronic kidney disease with triweekly dialytic

need, bilateral occipital ischemic vascular brain event with visual neurological sequelae, with cadaveric donor kidney transplantation, of one year of evolution (2018) that course without complications.

The double J ureteral catheter was removed 15 days after the procedure.

At 20 days post-surgical he came for pain in the right iliac fossa in addition to irritative urinary symptoms and fever. Upon admission, laboratory studies reported serum creatinine elevation, elevated leukocyte formula with left deviation, decreased urinary output.

A renal ultrasound was requested where moderate pielocalicial ectasia was evidenced, collection in the upper pole of approximately 88.5 ml, with increased resistance of the segmental vessels and arcuatos picture that was managed with antibiotic therapy.

After the infectious condition subsided, it was decided to place a directed CT nephrostomy that was productive with clear urine.

After 15 days the patient was discharged from the hospital. Figure 1 shows the previous renal ultrasound with ectasia in the transplanted kidney.



Figure 1: Renal Ultrasound: Kidney transplanted with ectasia.

Patient suffers incidental discharge from nephrostomy in addition to increased nitrogen and decreased diuresis.

An antegrade pyelography is performed, showing stenosis in the proximal third of the ureter of the transplanted kidney with a threadlike passage of contrast medium.

It was decided to perform a cystourethroscopy plus antegrade and retrograde ureteral dilation plus placement of a double J catheter and removal of the nephrostomy one month after the transplant.

After which uro magnetic resonance control is performed evidencing persistent pielocalicial ectasia with filiform passage of urine into the bladder, narrowing at the proximal level so that a new echo-guided nephrostomy was placed and urinary tract reconstruction was planned.

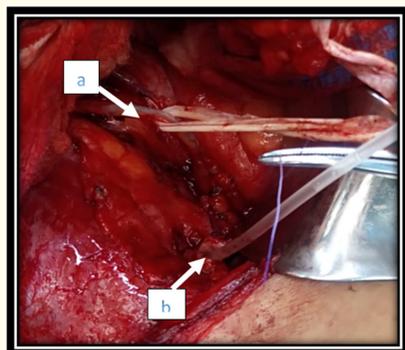
Ten months after the transplant, urinary reconstruction was performed by means of right flexible nephroureteroscopy plus ureterotomy with holmium laser and placement of double J catheter.

After catheter removal patient persists with hydronephrosis and infectious pictures with multiresistant germs controlled with multiple antibiotic and fungal schemes in addition to persistence of elevation of serum creatinine so ureteral stenosis was filia proven with excretory urogram.

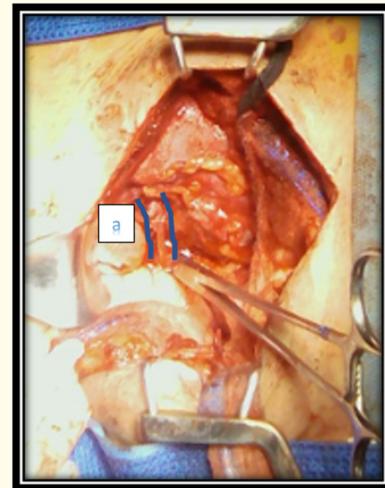
It was decided to perform an open ureteral anastomosis from the transplanted ureter to the native ureter plus placement of a double J.

During surgery, fixed adhesions were found in the proximal third of the ureter that caused the stenosis.

24 hours after surgery, an ultrasound control was performed, evidencing the absence of renal ectasia.



**Figure 2:** Individualization and recognition of ureters: a) Native ureter. b) Transplanted kidney ureter.



**Figure 3:** a) Ureteral anastomosis.

## Discussion

Among the most frequent post-surgical complications in kidney transplantation is the stenosis of ureterovesical anastomosis.

Rarely, stenosis is reported at the proximal level. Despite this, at the moment, there is no consensus of international standardized treatment that guides the urologist in the management of these cases [23].

Currently, image-guided nephrostomy placement is recommended in several small studies, however, there is still not enough evidence for its standardization [24].

On the other hand, urological Endo management (balloon dilation, cold cutting with blade and Ho-YAG laser) are valid options as treatment and cure of stenosis, with success rates of 79% (63-100%) [25].

The use of balloon, antegrade and retrograde dilation showed a satisfactory temporary result, but it is suspected that due to the multiple adhesions and the continuous infectious process allow a complete success rate. Success rates of 78% are reported in literature [26].

It should be noted that the patient underwent ureterotomy with holmium laser that gave him a transient cure of approximately 2 months after the transplant [27].

In the particular case presented as there was no reference treatment for the complication associated with renal transplantation, the case was individualized [28]. The postoperative clinical and radiological results reported in the clinical case do not show ureteropielocalicial dilation and the serum creatinine concentration is within normal parameters after the open anastomosis of the ureter transplanted with the native ureter [29,30].

### Conclusion

Ureteral stenosis as a post-surgical complication in kidney transplantation.

This is one of the most important challenges for the reconstruction of the urinary tract and the correction. Different treatment options: Endo urological are effective and in the short and medium term, being nephrostomy the first line of treatment however when traditional techniques fail the patient must be individualized to decide which is the best surgical technique for resolution of this type of complication.

Due to the lack of clinical guidelines or consensus that mark the managements, guidelines of this type of complications, the present case provides truthful and reliable evidence of the management of this type of complications.

### Conflict of Interest

The author does not declare to have a conflict of interest and the confidentiality of the data was guaranteed prior to informed consent.

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