

## Original Article

## SPECTRUM OF ENDO-UROLOGICAL PROCEDURES PERFORMED AT A NIGERIAN KIDNEY TRANSPLANT CENTRE

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### Abstract

**Background:** The practice of endo-urology has become a significant component and standard for urological care worldwide. Using minimal access and miniaturized instruments, complex procedures can be safely executed with reduced morbidity and overall patient satisfaction. Kidney transplantation (KT) remains the gold-standard for renal replacement therapy for patients with chronic kidney disease and its practice in sub-Saharan Africa and Nigeria has been on the rise in the past decade. KT programs must be adequately equipped for endo-urological services as they are crucial to the pre- and post-transplant care of these patients.

**Objective:** To determine the spectrum of endo-urological procedures carried out at a Nigerian kidney transplant centre.

**Materials and Methods:** A retrospective review of all endo-urological procedures carried out between January 2019 and June 2020 (18 months) was done. Data were analysed using SPSS version 23.

**Results:** Diagnostic cystoscopies (9, 3.5%), cystoscopy with the removal of double J stents (183, 71.8%), trans-urethral resection of the prostate (20, 7.8%) and stone surgeries (21, 8.3%) accounted for a significant proportion of endo-urological surgeries performed during this period. A significant majority of these procedures were performed on post-transplant patients.

**Conclusion:** There is a need for endo-urological treatment of both pre- and post-kidney transplant patients in every kidney transplant program. The modern urologist must possess this skill-set to align with the ever-changing medical trends and provide patients with the best possible outcome.

**Keywords:** Endo-urology, Kidney transplantation, Sub-Saharan Africa, Nigeria.

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### INTRODUCTION

The birth of endo-urology and its practice two centuries ago has heralded many advances in its technology and acceptance globally.<sup>1</sup> Gigantic and ergonomically inefficient equipment have given way to fine, high-quality miniaturized tools aimed at performing otherwise cumbersome procedures with minimal incisions and a shorter patients' recovery time. These minimal access techniques have become the gold-standard of urological practice all over the world and have gained increasing popularity and uptake in Nigeria over the last three decades.<sup>2,3,4</sup> Many endo-urological procedures can be

performed with minimal anaesthesia and on a day-case basis. Despite the momentum gained by endo-urology practice in Nigeria over the last decade, these facilities still pale in comparison to the large population of Nigerian patients desirous of such services.<sup>5</sup>

Kidney transplantation (KT) remains the gold standard for renal replacement therapy (RRT) for patients with End-stage renal disease worldwide.<sup>6, 7</sup> Previously, many Nigerian (ESRD) patients sought KT abroad due to the lack of proper KT programs in the country. However, the past decade has witnessed a massive rise in the number of facilities with expertise and resources to safely undertake

KT with satisfactory and comparable outcomes. This in effect has limited the otherwise large population of ESRD patients who sort KT abroad in the form of medical tourism.<sup>8</sup>

Patients with ESRD often also present with urological conditions which require endo-urological intervention either pre- or post-KT. It has been established that various aetiologies of obstructive nephropathy can lead to ESRD and consequently necessitate KT while in other circumstances transplanted patients are still prone to other pathologies which can be found within the normal population.<sup>9,10,11</sup>

In certain instances, there is a need to undertake procedures like trans-urethral resection of the prostate or renal/ureteric stone surgeries to salvage some kidney function in this group of patients and/or alleviate their pain before KT.<sup>12,13</sup>

In other circumstances, endo-urological procedures are performed in these patients after KT.<sup>14,15,16</sup> It is imperative to mention that a kidney transplant program must be equipped with the necessary gadgets and surgical skills to be able to handle some of these issues when they arise. There are very few tertiary health facilities in Nigeria who offer KT and possess the pre-requisite endo-urological support hence the paucity of literature on the subject.

We aim in this paper to present the spectrum of endo-urological procedures performed in a Nigerian Kidney transplant centre.

**MATERIALS AND METHODS**

A retrospective review of all endo-urological procedures performed in Zenith Medical and Kidney Centre (ZMKC), Abuja was done over 18 months, between January 2019 to June 2020. Socio-demographic characteristics, diagnosis, the timing of procedure (pre- or post-transplant),

performed, indication, complications and follow-up were retrieved from the hospital Electronic Media Records (EMR). Data was inputted and analysed using IBM Statistical Package of Social Sciences Version 23.

**RESULTS**

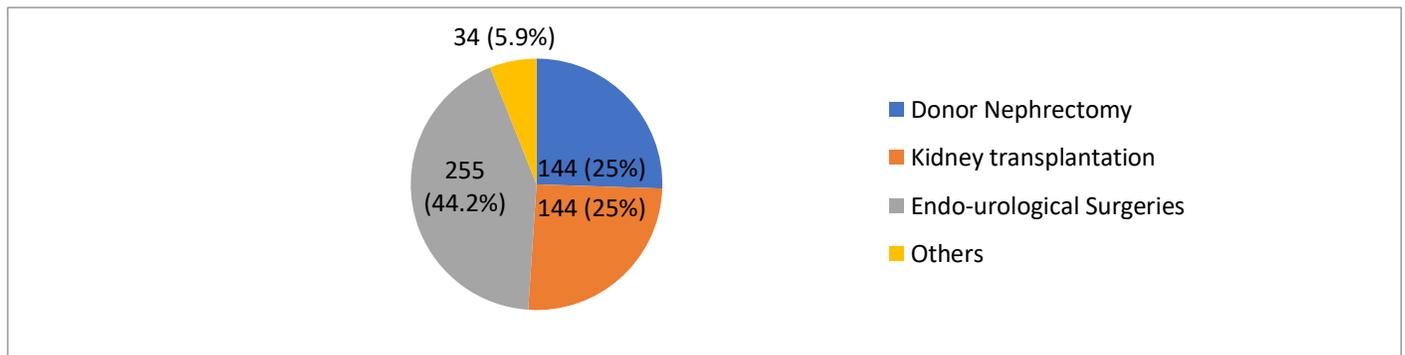
A total of 577 urologic procedures were carried out in 18 months. Endo-urological procedures accounted for 255 cases and 44.2% of the total urological surgeries during the study period. The other cases done were donor nephrectomies (144, 25%), kidney transplantations (144, 25%) and other open surgical procedures like radical nephrectomy, pyeloplasty, arteriovenous fistula creation etc. (Figure 1).

Endo-urological procedures were both diagnostic and therapeutic in nature with therapeutic procedures making up 246 (96.5%) and diagnostic cystoscopies accounting for 9 (3.5%). Removal of double J stents in post-transplant patients accounted for most of the cases done with 56.5% and were all done as day-case procedures (Table 1).

There were 164 (64.3%) males and 91 (35.7%) females in this series giving a Male: Female ratio of 1.8: 1. The age range of patients who had endo-urological procedures these periods were from 9 to 82 years with a mean age of 54.6. +/- 12.2 years.

Local anaesthesia was used in 202 patients accounting for 79.2% of endo-urology procedures, 38 (14.9%) by regional anaesthesia and 15 (5.9%) by general anaesthesia.

Blood transfusion requirements were very low with transfusion only performed in 3 TURP accounting for 1.2% of the entire population of endo-urological procedures.



**Figure 1: Urological Procedures Performed**

**Table I: Endourological Procedures Performed at ZMKC**

Breakdown of Endo-uological Procedures Performed	Frequency (n)	%
<b>Cystoscopy &amp; Double J Stent removal</b>		
<b>Post-Kidney transplant</b>	144	56.5
<b>Post lithotripsy and others</b>	39	15.3
<b>Cystoscopy and Double J stenting of Ureter</b>	9	3.5
<b>Diagnostic Cystoscopy</b>	9	3.5
<b>Percutaneous Nephrolithotomy</b>	13	5.2
<b>Ureteroscopy and Lithotripsy</b>	8	3.1
<b>Trans-urethral resection of the Prostate (TURP)</b>		
<b>Pre- KTP</b>	5	2.0
<b>Post-KTP</b>	7	2.7
<b>Others</b>	8	3.1
<b>Trans-urethral resection of bladder tumour (TURBT)</b>	1	0.4
<b>Ultrasound-guided procedure</b>		
<b>Percutaneous Nephrostomy</b>	2	0.8
<b>Drainage of Renal Cysts</b>	2	0.8
<b>Drainage of Post-transplant Urinomas/ Lymphoceles</b>	8	3.1
<b>Total</b>	<b>255</b>	<b>100</b>

## DISCUSSION

In this review, endo-uological procedures constituted 44.2% of the total urological procedures performed during the study period. This showcases the significant impact of endo-uological services in an active kidney transplant program. Endo-urology has a key role in the renal transplantation either in the pre-transplant patient or post kidney transplant patient. In many of the developed economies, endo-urology now has a role in kidney transplant itself as laparoscopic-assisted donor nephrectomies and robotic-assisted techniques are becoming increasingly popular.<sup>17,18</sup> These haven't caught

up in sub-Saharan Africa due to limitation in training and gadgetry to execute these minimal access techniques. Therefore, a kidney transplant program should be equipped with the necessary gadgetry and surgical skills to cater for such conditions when the need arises.

Cystoscopy and stent removal accounted for the majority of the endo-uological procedures carried out. This is not surprising as DJ stents are routinely left in place post-transplant to keep the neocystostomy patent, and has to be removed four weeks post-transplant via cystoscopy. Diagnostic cystoscopies were carried out on a few occasions in patients presenting with unexplained bladder

outlet obstruction or frank haematuria before kidney transplantation. Cystoscopy and DJ stenting as a bridging therapy for patients presenting with deteriorating renal function in the phase of obstructive nephropathy from kidney stones before definitive therapy was carried out. The diagnostic and therapeutic cystoscopies were all carried out as day cases. The cystoscopies for DJ stents removal and those performed for diagnostic purposes were carried out under local anaesthesia. This makes local anaesthesia the most used anaesthesia in this series, being that cystoscopies for stent removal in post KT patients accounted for a greater proportion of endourological cases.

Benign prostatic hypertrophy (BPH) is a common cause of morbidity among men in middle and elderly age-group.<sup>14</sup> Considering that a significant proportion of men with end-stage renal disease (ESRD) also fall into the same age-group, it is routine to elicit lower urinary tract symptoms in these patients following KT when their urine output increases from its pre-transplant level. Left unattended to, BPH has been significantly associated with renal allograft loss from back pressure effects on the renal allograft.<sup>19</sup> There is evidence from longitudinal studies that BPH is a progressive disease.<sup>8</sup> The transurethral resections of the prostate (TURP) done over this study period were on pre-KT patients, post-transplant patients and other men who had significant LUTS and a clear indication for prostatectomy. TURP pre-KT is associated with a significantly higher risk of intra and post-operative haemorrhage due to the impaired renal function hence requires a meticulous multi-disciplinary team approach in pre-operative preparation and post-operative management. This will include haemodialysis, with or without blood transfusion to optimize the patient and control of co-morbidities like hypertension and diabetes mellitus. There is controversy as to whether a surgical correction is more advantageous if performed before or after transplant. Some authors argue that if performed before transplant while the patient is still oliguric/anuric, bladder neck contracture or urethral scarring may develop.<sup>20</sup> On the other hand, if performed after transplant; one study reported a 25% incidence of major perioperative complications including death. In recent times and with the improvement in electro-cautery for TURP, the efficacy of TURP in the treatment of BOO after KT has been reportedly excellent in well-selected patients.<sup>21</sup> Considering the risk of infection with

immunosuppressants, several authors recommend performing TURP 6 to 8- weeks pre-transplant.<sup>8</sup>

In our centre, patients with symptomatic BPE are commenced on medical therapy especially alpha-1 adrenergic blockers pre transplant and followed-up post-transplant for worsening symptoms and subsequently offered TURP at least 12-week post-transplant if symptoms do not improve or other clear indications for prostatectomy.<sup>22</sup>

Urolithiasis is also a common cause of obstructive nephropathy especially when they occur bilaterally or in a solitary kidney. Endourological procedures performed on patients with stone disease in this series include percutaneous nephrolithotomies (PCNL) and ureteroscopy and lithotripsy.<sup>23</sup> Stones in the lower and mid-ureter were approached in retrograde fashion by ureteroscopy and lithotripsy while kidney, renal pelvis and upper ureteric stones were accessed by PCNL. Two of the patients who had bilateral PCNLs with the hope of salvaging some renal function eventually required KT. The remaining PCNLs were performed on patients when indicated with upper urinary tract stones without kidney failure. None of the post-transplant patients required any form of stone surgery during the study period.

Image-guided procedures like percutaneous nephrostomies for urinary diversion in infected obstructed renal systems were performed in few patients while drainage of big renal cysts with/without adjuvant sclerotherapy was performed. Post-transplant complications like urine leaks with consequent urinomas and lymphoceles may require percutaneous drainage under ultrasound guidance to prevent secondary infection of these collections and its antecedent co-morbidity as similarly carried out by Gipson in his series of post KT patients.<sup>24</sup>

## CONCLUSION

An active kidney transplant program must be properly equipped and skilled for endo-urolological procedures which have become critical in the management of these patients. Endoscopic removal of double j stents, TURPs and minimal access stone surgeries are some of the common endo-urolological procedures performed with a good outcome. It is imperative for the modern urological surgeon in a KT program to possess endo-urolological skills in this ever-changing terrain of medicine.

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**CONFLICT OF INTEREST**

There is no conflict of interest among the authors.

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**AUTHORS CONTRIBUTIONS**

Drs Igbokwe and Abu were involved in the conceptualization and initial write-up of this paper. Drs Aremu and Igbokwe performed most of the endourological procedures. Dr Olatise supervised and made initial corrections to the manuscript. Dr Okafor retrieved and analysed the data from the records.

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