

A FIVE-YEAR REVIEW OF NEPHRECTOMIES AT THE LAGOS STATE UNIVERSITY TEACHING HOSPITAL (LASUTH) IKEJA LAGOS.

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ABSTRACT

Background: Nephrectomies are performed for various reasons ranging from benign to malignant renal diseases. The surgical approach for a nephrectomy also varies with location. In Nigeria and many other developing countries, the major technique of performing a nephrectomy is an open approach.

Objective: The objective of the study was to evaluate the cases of nephrectomies performed over a 5-year period at the Lagos State University Teaching Hospital, Ikeja and compare the findings with those from other institutions in our region.

Materials and Methods: This was a retrospective study. The clinical records of consecutive patients who had nephrectomies done over a 5-year period between January 2009 and December 2014 were reviewed. The data extracted from their record included age, sex, indication for nephrectomy, laterality (whether right or left), surgical approach, duration of surgery, the incidence of blood transfusion, histological findings and treatment outcome.

Results: The records of a total of 40 patients were available. There were 16 males (40%) and 24 females (60%) with a M:F ratio of 1:1.5. The mean age was 44.75 ± 17.16 years (range: 3-70 years). The indication in the majority of the patients was renal malignancy (n = 30, 75%) while the remaining 10 (25%) were benign cases ranging from non-functioning hydronephrotic kidneys from pelvi-ureteric junction obstruction to staghorn calculi. A total of 25 cases (62.5%) were on the right, while 15 (37.5%) were on the left. The imaging study done for diagnosis was majorly an abdominopelvic CT scan in 32 patients (80%). Twenty-one patients (52.5%) had a flank approach, while 19 patients (47.5%) had an anterior approach for their surgery. The mean duration of surgery was 140 ± 53.2 minutes (range 60-270 minutes). 27 patients (67.5%) were transfused perioperatively. The majority (n = 14, 46.7%) of the patients with renal malignancy had a histological diagnosis of the papillary variant of renal cell carcinoma. 32 patients (80%) were followed up for at least 3 years, while the rest were lost to follow up. The quantity of blood transfused correlated with the duration of the surgery. There was no perioperative mortality.

Conclusion: Renal malignancies are the most common indication for nephrectomy in our centre. Though associated with a high transfusion rate, open nephrectomy (even when performed for a malignant condition) remains a safe procedure with a good outcome.

Keywords: Nephrectomy, Renal malignancies, Blood transfusion

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INTRODUCTION

Nephrectomy is one of the routinely performed urological procedures. A nephrectomy can either be simple or radical. While a simple nephrectomy is usually performed in cases of benign kidney diseases such as neglected/undiagnosed pelvic-ureteric junction obstruction or an impacted renal calculus which often has resulted in a nonfunctioning kidney, radical nephrectomy is done in cases of malignant renal disease. In the last two decades, there has been a shift in the approach to nephrectomy in the developed world. Clayman et al. in 1991 introduced the concept of minimally invasive

approach (laparoscopy), and till date, laparoscopic nephrectomy has remained the commonest laparoscopic urological procedure in the developed world.¹ This technique has become the gold standard for performing nephrectomy for both benign and malignant renal conditions.²⁻⁴ However, in developing countries like ours, nephrectomies are commonly still performed via the open approach. This is partly due to the lack of necessary equipment and expertise. In addition, our patients often present late with advanced disease and large tumours and this late presentation makes performing a laparoscopic procedure impossible or inefficient. The aim of this study was to evaluate the profile of the cases of nephrectomies done at the Lagos State University Teaching Hospital, Ikeja and compare our findings with those from other institutions in our geographical region.

Materials and Methods

This was a retrospective study that reviewed a 5-year period from January 2009 and December 2014 at the Urology Division, Lagos State University Teaching Hospital, Ikeja Nigeria. The clinical records of the patients who had nephrectomy done during the study period were

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retrieved, and the necessary data were extracted. All the patients who had a nephrectomy during the study period were included in the analysis. The one patient in whom a planned nephrectomy was abandoned due to an unresectable renal tumour was excluded from the study. Data extracted and analysed were patients' age, gender, indication for nephrectomy, type of nephrectomy, side involved, imaging study done to make the diagnosis, approach to nephrectomy, duration of surgery, blood transfusion, duration of admission, histological diagnosis and treatment outcome.

The data were expressed as means and medians, and analysis was by Statistical Package for Social Sciences (SPSS) version 20.0 for windows. Test for statistical significance was carried out using the Fischer's exact and Chi-square test, with a *P*-value <0.05 considered significant.

Results

There were a total of 40 cases out of which 16 were male (40%), and 24 were female (60%) with a M:F ratio of 1:1.5. The mean age was 44.75 ± 17.16 years (range 3-70 years). The median age was 47.5 years. The indication for nephrectomy in the majority of the patients (*n* = 30, 75%) was renal malignancy while the other 10 (25%) were benign cases ranging from non-functioning hydronephrotic kidney from pelvi-ureteric junction obstruction to staghorn calculus and ruptured haemorrhagic cortical cyst. (Table 1). A total of 25 cases (62.5%) were on the right, while 15 (37.5%) were on the left. (Figure 1). The male: female ratio amongst the patients with renal cell carcinoma was 1:1.73. The imaging study done to aid diagnosis was majorly an abdominopelvic CT scan in 32 patients (80%). An intravenous urography was done in 8 patients, while 27 patients (67.5%) had at least 2 radiological investigations (an ultrasound plus one contrast study) (Table 2). Twenty-one patients (52.5%) had a flank approach, while 19 patients (47.5%) had an anterior approach for their surgery. (Figure 2). The mean duration of surgery was 140 ± 53.2 minutes (range: 60-270 minutes). The median duration of surgery was 130minutes. 27 patients (67.5%) were transfused perioperatively. The mean quantity of blood transfused was 3.5 ± 1.9 pints (range 1-9 pints). Majority (*n* = 14, 46.7%) of those with renal malignancy had a histological diagnosis of the papillary variant of renal cell carcinoma. (Table 3). Thirty-two patients (80%) were followed up for at least 3 years, while the rest were lost to follow up. There was no perioperative mortality.

Tests for Statistical Significance

There was a significant correlation between the duration of surgery and the number of blood pints transfused (*p* = 0.042).

The gender of the patient (*p* = 0.89) and the laterality (*p* = 0.306) of the disease had no significant correlation with the need for blood transfusion.

Although more of patients that had anterior approach were transfused as compared to those who had a flank approach, this was not statistically significant ($\chi^2 = 2.849$, *p* = 0.091)

Discussion

For the five-year study period, the total number of cases of nephrectomy was 40. This is higher than the 34 reported by Eke et al. over a 10 year period in Port Harcourt.⁵ Overall,

there were more cases with renal cell carcinoma requiring radical nephrectomy than benign cases. The indications for the simple nephrectomy were nonfunctioning hydronephrotic kidney from neglected pelvi-ureteric junction obstruction, staghorn calculus and ruptured haemorrhagic cyst. There is a similar trend of higher incidence of radical compared to simple nephrectomies in findings from other centres in Nigeria, Africa and Europe.⁵ However, in the Middle East, most of the indications for nephrectomy were from benign disease.⁹⁻¹¹ This finding supports the fact that there are regional and geographical variations to the indications for a nephrectomy. The relatively low number of nephrectomies done over this period is consistent with the previously reported figures in Nigeria of five to ten-year reviews.^{5, 12} In addition, a systematic review of the literature on renal cell carcinoma in Nigeria by Atanda et al¹³ put the incidence at 0.3/100,000 and mean age at 45 ± 4 years. This low incidence could either be reflective of the true incidence of renal cell carcinoma in Nigeria or be as a result of the overall poor availability and affordability of health care services in the country. The mean age from our findings is also similar to that reported in most other studies from Nigeria.^{6, 12} The mean age is however lower than what is reported in other parts of Africa⁸ and amongst Caucasians.¹⁴ The reason for this lower age of occurrence in our environment is not yet known.

We had a predominance of right-sided lesions from our study. While some have reported similar findings,⁹ others have reported predominance of left-sided lesions.^{11, 15} This is probably an incidental finding as no particular side is generally accepted as being the more common side of occurrence of renal lesions.

There were more females than males amongst those with renal cell carcinoma with a male: female ratio of 1:1.73. Atanda et al¹³ in a systematic review of renal cell carcinoma in Nigeria, had reported a slight male preponderance, as is similarly reported in the Middle East and Europe.^{7, 16} However, some studies have also previously reported a higher incidence of renal cell carcinoma in females.^{15, 17} This has been attributed to various factors. Some authors have suggested that estrogen has a role to play in the pathogenesis of renal cell carcinoma, and this may explain the higher incidence in females.¹⁸ Other authors have opined that women are generally more health-conscious and are more likely to seek medical attention earlier than males.¹⁹ Another reason for the female preponderance could be that women do a routine ultrasound in pregnancy and are therefore more likely to present with incidentally found renal masses as reported by Salako et al¹⁵.

The most common surgical approach to nephrectomy in our centre was the flank approach. A flank approach generally reduces the risk of peritoneal and bowel-related complications. Though most surgeons will prefer an anterior approach for radical nephrectomy, the relatively common use of CT scan (80%) in our centre meant most of our patients who had a radical nephrectomy through a flank approach had been appropriately staged to have non-metastatic disease preoperatively.

The high transfusion rate of 67.5% was likely due to the fact that most of the nephrectomies (80%) were for malignant

tumours. The significant correlation between the duration of surgery and the amount of blood transfused is possibly a reflection of the increased difficulty with dealing with the larger renal tumours.

The predominant histological type amongst those with renal cell carcinoma from our study was papillary cell carcinoma which is at clear variance from what was reported in most other studies in Nigeria and in the systematic review where clear cell carcinoma was the most common histological variant.^{12,13}

Conclusion

Renal cell carcinoma is the most common indication for nephrectomy in our institution, and an open flank approach remains the most common approach used. There is a significant correlation between the duration of surgery and the likelihood of blood transfusion. Though associated with a high transfusion rate, open nephrectomy (even when performed for a malignant condition) remains a safe procedure with a good outcome.

Tables and Figures

Table 1: Indication for nephrectomy

S/N	Indication	Frequency	Percentages %
1	Renal tumour	30	75
2	Non-functioning kidney from severe Hydronephrosis, PUJ obstruction etc	8	20.0
3	Staghorn Calculus	1	2.5
4	Huge ruptured haemorrhagic cortical cyst	1	2.5
Total		40	100

Figure 1 - Laterality of renal lesion

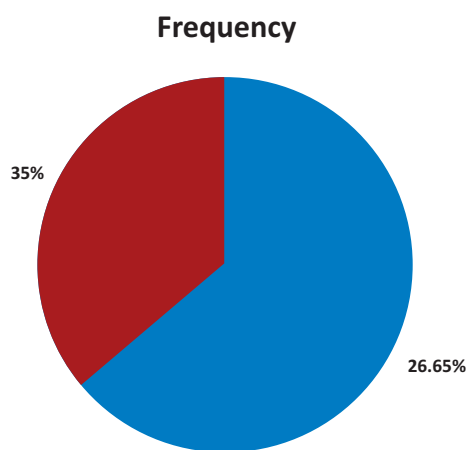


Table 2: Contrast imaging study done for 40 patients

S/N	Investigation	Number	Percentage
1	CT Scan	32	80.0%
2	IVU	8	20.0%
Total		40	100%

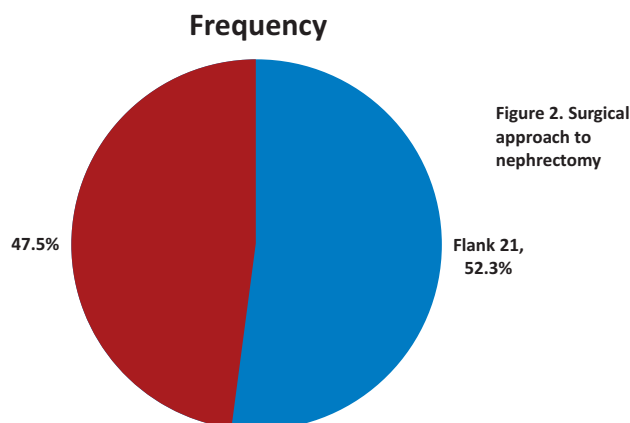


Figure 2. Surgical approach to nephrectomy

Table 3: Histological diagnosis for renal cancers

S/N	Histology	Frequency	Percentages %
1	Clear cell RCC	5	16.7
2	Papillary RCC	14	46.7
3	RCC (not specified)	1	3.3
4	TCC	1	3.3
5	Others	9	30
Total		30	100

(RCC: renal cell carcinoma. TCC: transitional cell carcinoma)

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