

Indications, Complications and Mortality of Nephrectomy in Tikur Anbesa General Specialized Hospital**D. Andualem, B. Teklebrihan, C. Wuletaw**

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Background: Nephrectomy is a standard therapeutic urological procedure for malignancy of kidneys and upper urinary tract, and for damaged kidneys with little or no contribution to the overall renal function. There are geographical variations in indications for nephrectomy as certain urological diseases are more prevalent in some countries. Many complications are associated with nephrectomy and Nephrectomy for malignant disease had a significantly higher rate of complications than operations for benign conditions. The purpose of this study was to gain information about the indications for and complications of conventional nephrectomy in TAH, Ethiopia

Methods: This study is a two years retrospective analysis of patients who underwent nephrectomy at Tikur Anbessa hospital from September 2009 to august 2011. Medical records of patients who underwent nephrectomy during the two years period were studied by using a preset questionnaire with regards to their age, sex, clinical presentation, investigation (laboratory and imaging), indication for nephrectomy and post-operative course.

Results: During the two years study period (September 2009 to August 2011), a total of 73 nephrectomy were performed. Forty (54.8%) patients were males and 33 (45.2%) were females. The most common presenting symptom was loin pain (100%) followed by haematuria 32(43.5%) and abdominal or flank mass 26 (35.6%). Among patients who underwent nephrectomy, 38(51.2%) had none or poor functioning kidney due to obstructive uropathy.

Discussion: In our study 46 (63%) patients underwent nephrectomy for benign conditions, which is comparable with the series reported from developing countries like Pakistan, India, Jordan and Saudi Arabia. Most of our patients had non-functioning kidney secondary to obstruction due to stone disease.

Conclusion: There is a higher rate of nephrectomy performed for benign conditions in TAGSH. Late presenting obstructive uropathy due to stone causing loss of renal function was common in our study.

Introduction

The kidneys, like any other human body organ, can be involved in various pathological processes, some of which may require its surgical removal (Nephrectomy). Nephrectomy is a standard therapeutic urological procedure for malignancy of kidneys and upper urinary tract, and for damaged kidneys with little or no contribution to the overall renal function. Simple nephrectomy is done to remove the irreversibly damaged, non-functioning kidneys involved by different benign pathological conditions like extensive renal stone disease, obstruction due to impacted calculus in the kidney or ureter, or neglected pelviureteric junction obstruction (PUJO). Although radical nephrectomy is standard treatment with localized renal carcinoma with a normal contralateral kidney, there is growing interest in the use of nephron sparing surgery for selected patients^{1, 2}.

There are geographical variations in indications for nephrectomy as certain urological diseases are more prevalent in some countries. The causes of loss of renal function, which lead to nephrectomy, also differ between the pediatric and adult patient population. Vesicoureteric reflux is the leading cause of nephrectomy in children, whereas malignancies of the kidney and upper urinary tract are listed as the leading cause for nephrectomy in adults³. Others implicate sequels of obstruction, collectively known as obstructive uropathy as the main culprit^{4,5}. Many complications are associated with nephrectomy and nephrectomy for malignant disease had a significantly higher rate of complications than operations for benign conditions^{6,7,8}.

The purpose of this study was to gain information about the indications for and complications of conventional nephrectomy in TAH, Ethiopia.

Patients and Methods

This study was a two years retrospective analysis of patients who underwent nephrectomy at Tikur Anbessa hospital, urology unit from September 2009 to August 2011. In this study children under the age of 11 years were not included because they were treated in a separate pediatric unit. In this study we looked at the demographic distribution and the clinical presentation of patients, indications for nephrectomy and associated postoperative complications. Medical records of patients who underwent nephrectomy during the two years period were studied by using a preset questionnaire with regards to their age, sex, clinical presentation, laboratory and imaging investigation, indication for nephrectomy and post-operative course. The data were analyzed using SPSS version 11 computer software. The institutional research and publication committee of the department of surgery gave prior approval to the study

Results

During the two years study period from September 2009 to August 2011, a total of 73 nephrectomy operations were performed. Forty (54.8%) patients were males and 33 (45.2%) were females. Male to female ratio was 1.2: 1. The ages of the patients ranged from 15 to 72 years with a mean of 39.2 years (Table 1). Out of the 73 nephrectomy cases, benign conditions accounted for 46 (63%) and in 37%, patients had malignant disease as the indication. The most common presenting symptom was loin pain in 100% followed by haematuria in 43.5% and abdominal or flank mass in 35.6% of the cases (Figure 1).

Table 1. Demographic Distribution of Patients who Underwent Nephrectomy.

Age	Male	%	Female	%	Total	%
11-20	1	1.4	3	4.1	4	5.5
21-30	12	16.4	10	13.7	22	30.1
31-40	7	9.6	9	12.3	16	21.9
41-50	12	16.4	7	9.6	19	26.0
51-60	5	6.8	4	5.5	9	12.3
61-70	2	2.7	-	-	2	2.7
71-80	1	1.4	-	-	1	1.4
Total	40	54.8	33	45.2	73	100

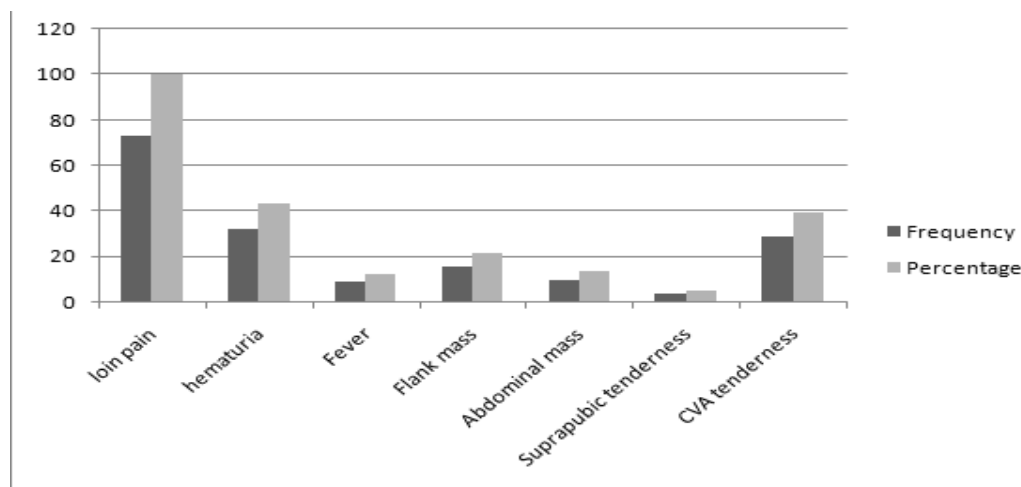


Figure 1. Clinical Presentation of Patients who Underwent Nephrectomy

Among patients who underwent nephrectomy, 38(51.2%) had none or poor functioning kidney due to obstructive uropathy. Pyonephrosis, renal Tuberculosis and benign renal mass were indications for nephrectomy for 2(2.7%), 3(4.1%) and 1(1.4%) patients respectively (Figure 2).

Twenty seven (37%) of nephrectomy was done for malignant conditions (Figure 2). Radical nephrectomy was done for all patients with malignant disease (Figure 3). Of all our patients who underwent nephrectomy for malignant disease, 16 (59.3%) patients presented with triad clinical manifestations (liver pain, haematuria and liver or abdominal mass). The mean age of patients with nephrectomy for benign conditions was 40 years (range from 15 to 65 years) while that of malignant disease was 50.5 years (range from 26 to 75 years).

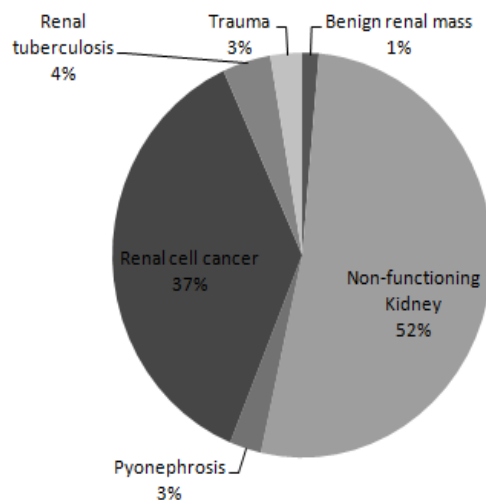


Figure 2. Indications for Nephrectomy

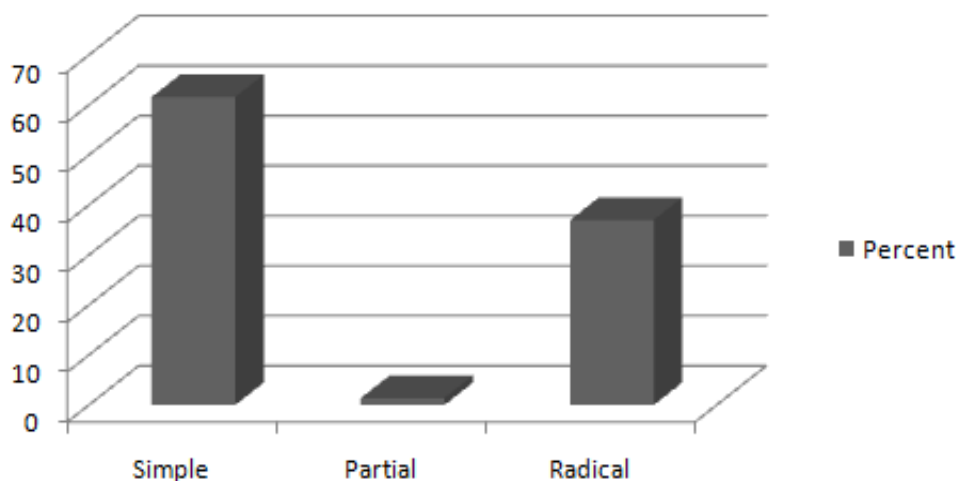


Figure 3. Types of nephrectomy done for patients

Postoperative complications occurred only in 3(4.1%) patients (Table 2). All the complications were in patients who underwent nephrectomy for non functioning kidney. Two patients had wound infection and one had bleeding (intra-operative). There was no patient death related to nephrectomy. The average

hospital stay for patients was 19.5 days (range from 7 to 45 days). Nephrectomy for 2(2.7%) patients was done for renal trauma secondary to blunt abdominal injury. One is done for a male sport's man after he sustained blunt trauma to the flank region on the field and presented with gross haematuria. The patient was admitted and put on conservative management. Despite, haematuria persisted and patient explored and ends up in simple nephrectomy. The other patient was female patient who had been admitted for renal injury secondary to road traffic accident and was successfully treated conservatively, but after a month patient returned back with rebleeding, manifested by haematuria. The patient was explored and ends up in simple nephrectomy. Thirty patients who were operated for non functioning kidney had IVP study which showed no excretion (14 on the right side and 16 on the left side). The others (8 patients) underwent nephrectomy with ultrasound result and intraoperative findings. In addition almost all patients had ultrasound suggestive of severe hydronephrosis due to obstructiveuropathy. All patients who underwent nephrectomy for malignant condition (27 patients) had CT scan imaging suggestive of malignant mass.

Table 2. Postoperative Complications of Patients who Underwent Nephrectomy

Postoperative complications	Frequency	Percent
Bleeding	1	1.4
Wound infection	2	2.7
Total	3	4.1

Discussion

From the literatures that we have reviewed, there is definitely a geographic variation regarding the indications for nephrectomy. The socioeconomic condition and availability of health care facility is the main factor behind it. In spite of the introduction of minimal invasive techniques in urology, renal preserving surgeries, and development of better medical facilities, the total number of nephrectomy performed in every decade in a large European centre does not seem to have changed much over the three decades, from 1960 to 1990⁵. However in the same centre, with advancement of years, malignant diseases of the kidney had become the more frequent causes for nephrectomy. The number of nephrectomy for chronic pyelonephritis has significantly reduced because of early diagnosis and modern antibiotic therapy⁵.

Glazier et al⁸ reported a 12 years experience with 347 nephrectomy and found renal tumours is the most frequent condition requiring nephrectomy. Beisland et al⁷ published the historical series of 20 years with 646 consecutive nephrectomy performed between 1978-1997. Of these 209 (33% of total) nephrectomy were performed for benign conditions and malignant disease led to operation in 437 cases (67.7%). They also noticed a gradual decline in number of nephrectomy for benign conditions from 75 in the first five years to 32 in the last; this change was attributed by improvement on living status, early diagnosis and introduction for modern antibiotics and minimally invasive techniques. Although this change of decrease in the incidence for nephrectomy performed in benign non-functioning disease was observed worldwide, it is still lacking in third world countries because of the non-availability of free health services and of course the lack of awareness of the gravity of the disease which results in late presentation.

Rafique⁹ in his publication from Pakistan reported outcome of 154 nephrectomy from 2001 to 2005 that showed 76.6% nephrectomy being performed for benign conditions with the mean age at presentation of 32 years. Datta et al¹⁰ published analysis of 88 nephrectomy in a rural tertiary centre of India that showed 62.5% of nephrectomy was for benign conditions. Apart from Nigeria^{11, 12}, in most of the reported series^{13,14, 15} from developing countries, benign diseases of the kidney were the leading causes of nephrectomy.

From our study 46 (63%) patients underwent nephrectomy for benign conditions, which is comparable with the series reported from developing countries like Pakistan, India, Jordan, Saudi Arabia and Sudan. Most of our patients had non-functioning kidney secondary to obstruction due to stone disease. Most of these

patients with stone obstruction presented late and intravenous urography evaluations showed non-excreting kidney and ultrasound evaluations depicted thinned out cortex. Sometimes renal explorations found out kidneys as just bag of urine. The studies from Pakistan⁹, India¹⁰ and Jordan¹⁵ have shown that renal Tuberculosis accounted for 7.6%, 10.8% and 3% nephrectomy done for benign conditions respectively. In our study out of 46 nephrectomy done for benign conditions, three (4.1%) patients had nephrectomy for renal Tuberculosis.

The second common cause of nephrectomy done for patients according to the literatures we reviewed was renal cell carcinoma. Renal cell carcinoma is primarily a disease of the elderly patients, typically presenting in the sixth and seventh decades of life^[16] With a slight male preponderance (male female ratio of 3:2)^[17]. In our series, mean age of the patients with renal carcinoma was 50.5 years and male female ratio was 1.5: 1, which is almost comparable with studies from Pakistan, India and Nigeria.

Loin pain was the leading presenting symptom of patients in our study as it was in almost all other reports. In our study 32(43.8%) patients had haematuria, of which 26(35.6%) were proved to have malignant renal mass. This finding is also comparable with the other studies done in Pakistan and India.

Ultrasound has long been hailed for its superiority in the diagnosis of hydronephrosis^{18, 19}. In this study it proved its value in the diagnosis of chronic obstruction²⁰. IVP helped evaluating the level of renal function in the affected kidney. CT scan provided a correct diagnosis of all our patients underwent nephrectomy for malignant condition. Radionuclide renal scan was not optimally used in our study because of inadequate availability and inconsistency.

Postoperative complications occurred only in 4.1% patients. All the complications were in patients who underwent nephrectomy for non functioning kidney. Two patients had wound infection one had bleeding (intra-operative). There was no patient death related to nephrectomy. The morbidity and mortality in this series is by far better as compared to other studies^{6, 7} where mortality rate was ranging from 0.8% to 3.1%

Conclusion

There is a higher rate of nephrectomy performed for benign conditions in TAGSH. Late presenting obstructive uropathy due to stone causing loss of renal function was common in our study. Taking results of the studies done in other developing countries, we can conclude that still benign conditions of the kidney are the leading reasons for nephrectomy in developing countries, even though most of nephrectomy is performed for malignant disease in developed countries.

Our study suggests that the number of nephrectomy performed for non-traumatic kidneys disease is not significantly decreasing even with advent of modern antibiotics and modern minimally invasive techniques for early diagnosis and treatment. This suggests the dire urgency to provide better health services at a basic level and increasing awareness by education to decrease the rate of nephrectomy for preventable conditions, like renal stone disease.

Urolithiasis was by far the leading pathology associated with obstruction. It remains to be seen whether the recent introduction of ESWL in this region and the adoption of endourological stone management techniques will have their long-term impacts on this complication.

All nephrectomy specimens should be subjected to histopathological examination. Open nephrectomy, which remains our local practice, is safe and unilateral nephrectomy is compatible with normal life.

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