

Nephrectomy for Non-traumatic Benign Renal Diseases: Its indications and outcomes in a developing country

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ABSTRACT

Objective: To find out indications and outcomes of nephrectomy for non-traumatic benign renal disease in a developing country.

Design: Retrospective observational study.

Place and duration of study: Department of Urology Mayo Hospital Lahore for the from January 1996 to December 2010

Patients and methods: All patients who had nephrectomy performed for benign renal disease were included in the study. The affect of individual co-morbid factors on patient's outcome were recorded. Student t test and Cox regression test were used to observe individual or combined affects of co-morbid factors on outcome. P value of less than 0.05 was considered significant. SPSS statistical software programme was used statistical analysis.

Results: Indications for the nephrectomy in benign renal diseases varied from pain full non-functioning kidney secondary to stone disease (n=99) with good functioning contralateral kidney, symptomatic polycystic renal disease (n=24), chronic pyelonephritis with recurrent episodes of pain, haematuria and infections (n=21), resistant tuberculosis pyelonephritis (n=21), renal cartico-medullary abscess with pyonephrosis (n=15) and renal tuberculosis with fistula formation (n=09).

Conclusion: The number of nephrectomies performed for non-traumatic kidneys disease is not significantly decreasing. So there is dire urgency to provide better health services at a basic level and increasing awareness by education.

Key words: Non-traumatic, benign renal disease, indications & outcome

INTRODUCTION

The spectrum of the diseases in the kidney can range from a simple urinary tract infection to chronic renal failure and from a simple benign cyst to an aggressive neoplasia. The treatment of kidney diseases have been completely revolutionised with the development of early diagnostic techniques¹ and advances in interventional radiology². There are far fewer nephrectomies performed for hydronephrosis, stones infection, trauma or vascular diseases^{3,4,5}. Even for malignant diseases some surgeons now prefer nephron-sparing surgery^{6,7} than nephrectomy. Nonetheless, many indications still exist for performing a nephrectomy.

A simple nephrectomy is indicated with an irreversibly damaged kidney because of symptomatic chronic infection, obstruction, calculus disease, or severe traumatic injury^{8,9,10}. It is also relatively indicated in the treatment of renovascular hypertension due to non-correctable renal artery disease or severe parenchymal damage from nephrosclerosis, pyelonephritis, reflux or dysplasia of the kidney¹¹. Although nephron sparing surgery is becoming more and more popular radical nephrectomy is still a treatment of choice for patients with localized renal cell carcinoma^{7,12}.

The number of nephrectomies performed has not significantly changed over the last fifty years¹³ but the incidence of nephrectomies for benign nonfunctioning kidney has significantly reduced¹⁴. According to a study by Kubba et al¹⁵, it was found that there was significant decrease in the number of partial nephrectomies and increases in the number of nephrectomies for tumors. The number of nephrectomies for chronic pyelonephritis has significantly reduced because of early diagnosis and modern antibiotics¹⁶. Likewise nephrectomies performed for tuberculosis has significantly decreased particularly in late 1980's^{17,18}. Diagnostic and therapeutic laparoscopic techniques have further reduced the number of nephrectomies preformed for benign diseases^{19,20}. Although this change of decrease in the incidence for nephrectomy performed in benign nonfunctioning disease was observed worldwide but 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.

This present study describes our experience with surgical treatment of benign renal diseases over the last fifteen years. It highlights different indications, etiologies and associated co-morbid factor for the surgical management of benign kidney diseases.

MATERIAL AND METHODS

This retrospective observational study was carried out in the Department of Urology Mayo Hospital Lahore for the period of fifteen years from January 1996 to December 2010. We collected the data for all the patients who had nephrectomy performed for benign renal disease. We recorded there etiology, co-morbid factors and outcome after the procedure. The co-morbid factors included patient’s socioeconomic status, availability of health care services and the interference by non-medical personnel at any level of their treatment. The investigations were checked (where available) including, genitourinary ultrasonography, plain X-ray KUB, intra-venous pyelogram and DTPA renal scan. The operation notes were reviewed; the biopsy records were also checked for definitive diagnosis.

The affect of individual co-morbid factors on patient’s outcome were recorded. Student t test and Cox regression test were used to observe individual or combined affects of co-morbid factors on outcome. P value of less than 0.05 was considered significant. SPSS statistical software programme was used statistical analysis.

RESULTS

Between January 1996 and December 2010 a total of 189 nephrectomies were performed for benign renal diseases. Most of the patients were in their third and fourth decade of life with the median age of 37.5years (Table 1). There was a male predominance with the male to female ratio of 2:1.

Table 1: Age related incidence of nephrectomy for BRD (n=189)

Age Range	=n	%age
< 20 years	09	4.76
21-30 years	33	17.46
31-40 years	87	46.03
41-50 years	51	26.98
>50 years	09	4.67

Table 2: Indications for nephrectomy

Indications	=n	%age
Stone disease	99	52.4
Polycystic kidney (symptomatic)	24	12.6
Chronic pyelonephritis (Other than renal TB)	21	11.11
Resistant renal tuberculosis	21	11.11
Pyonephrosis/renal cartico-medullary abscess	15	7.9
Renal tuberculosis with fistula	9	4.7

Indications for the nephrectomy in benign renal diseases varied from pain full non-functioning kidney secondary to stone disease (n=99) with good

functioning contralateral kidney, symptomatic polycystic renal disease (n=24), chronic pyelonephritis with recurrent episodes of pain, haematuria and infections (n=21), resistant tuberculosis pyelonephritis (n=21), renal cartico-medullary abscess with pyonephrosis (n=15) and renal tuberculosis with fistula formation (n=09) (Table 2).

Pain in the nonfunctioning kidney was the single most common symptom for which nephrectomy was performed; followed by pain with haematuria, pain less haematuria and non-healing fistula (Table 3).

Table 3: Symptoms in patient

Symptom	=n	%age
Pain	147	77.7
Pain with haematuria	24	12.6
Painless haematuria	09	4.7
Non- healing fistula	09	4.7

Poor socioeconomic status was the most significant factor responsible for delayed presentation to the hospital (p<0.05). Because of the limited resources of the patient’s family, lack of awareness of the severity of disease and insufficient basic health services infrastructure the presentation is delayed until very late. Medical practice by non-medically qualified personnel (quacks) is another significant factor (p<0.05). Lack of provision of basic health services (p<0.05) was responsible for the progression of the benign disease to end stage non-functioning kidney. Resistance to antibiotics, poor compliance, and irregular intake of medication and lack of follow up were the other contributory factors (Table 4)

Table 4: Comorbid factors

Factors	=n	%age
Major factors		
Socioeconomic (Poverty)	171	90.5
Quack practice	87	46
Lack of health services	81	42
Minor factors.		
Poor compliance	51	26.5
Lack of follow-up	57	30
Irregular in take of medication	42	22
Drug resistance	21	11

DISCUSSION

In 1869 Gustav Simon performed the first planned nephrectomy for the treatment of uretero-vaginal fistula. Thereafter many changes have occurred in the procedure of nephrectomy from anterior transperitoneal nephrectomy through a midline incision performed by Kocher in 1878 to Clayman who performed the first laparoscopic nephrectomy at Washington University in 1990²¹.

Recent advances in early diagnosis and management of renal disease have miraculously reduced the number of nephrectomies performed for renal diseases in general and for benign renal diseases in particular^{22,23,24}. Advances in antibiotics preparation with their broad spectrum of antimicrobial activity the incidence of infection related morbidity and mortality has significantly reduced²⁵ particularly anti-tuberculosis medication²⁶. Early diagnosis, prophylactic measures and minimally invasive management of nephrolithiasis has reduced the incidence of nephrectomy²⁷, likewise with the modern interventional radiological support for trauma patients there are far less nephrectomies performed for haemorrhage²⁸. Although these changes are noticed worldwide but they are more pronounced in developed countries and far less in developing and under developed countries.

Beisland et al²⁹ published the historical series of 20 years with 646 consecutive nephrectomies performed between 1978-1997. Of these 209 (33% of total) nephrectomies were performed for benign conditions. 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.

Kubba et al¹⁵ published their UK experience of 1470 nephrectomies performed between 1960 to 1990 they also have shown a significant decline in nephrectomies for benign diseases except for polycystic kidney disease and trauma. Rogers³⁰ has recently published a comprehensive editorial review over the expanding indications for nephrectomy which has not only shown a worldwide reduction in indications of nephrectomies for benign disease but also for malignant diseases. These changes however were more noticeable in developed countries.

Chabchoub et al³¹ presented their experience from Tunisia showing a reduction in number of nephrectomies performed for urolithiasis from 42.5% between 1982 to 1994 to 25.6% from 1995 to 2007.

Rafique³² in his publication from Pakistan reported outcome of 154 nephrectomies from 2001 to 2005 that showed 76.6% nephrectomies being performed for benign conditions with the mean age at presentation of 32 years.

Our present study describes 52.5% of the non-traumatic benign nephrectomies were performed for stone diseases, this huge incidence is directly related to delayed presentation of the patients when most of the times the kidney is not only full of stones but also has associated pyonephrosis, frank haematuria and are often non-functioning. This delayed presentation is mainly attributed to the limited resources of not

only the patient but also of the healthcare providing agencies. This leads to the cheap options for the family which leaves them with non-medically qualified people who dispense them with unlimited number of non-steroidal anti-inflammatory drugs, steroids and other traditional non-medical agents. Although all these measures temporarily relief the pain but they mask the symptoms and cause delayed presentation and diagnosis. A recent study by Kanchanachitra et al³² showed the gravity of the problem because of the lack of qualified medical personnel.

Socioeconomic status is a major barrier to get early medical advice. According to international monetary fund³³ 40% of population in Pakistan lives below the poverty line and the per capita income \$2721 as compared to US \$46860, UK \$35059 and Saudi Arabia \$22607.

CONCLUSION

Our study suggests that the number of nephrectomies 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. It also highlights the need for the development of more rigid medical regulatory organizations to avoid mal-practice from non-medically qualified personnel's.

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