

Original Research Article

Indications and Results of Nephrectomys at the Urology Department of Zinder National Hospital (HNZ)

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Article History

Received: 09.04.2022

Accepted: 13.05.2022

Published: 27.05.2022

Journal homepage:

<https://www.easpublisher.com>

Quick Response Code



Abstract: *Aim:* To describe the indications and results of nephrectomy in the urology department of the National Hospital of Zinder (HNZ). *Materials and methods:* This is a retrospective, descriptive and analytical study over a period of six years on patients followed in the urology department of the National Hospital of Zinder. During this period, 33 indications for nephrectomy were made. The clinical and Para clinical parameters, the operative indication and postoperative data were studied. *Results:* 33 patient records were collected. Men (20) were more represented 61%. The average age of our series was 31.47 years with extremes of 3 to 60 years. Lumbar mass was the most common reason for consultation with 36% of cases, followed by lumbar pain (30%). All our patients had an ultrasound of the urinary tract which highlighted the lesion and the organ concerned. The Uro-Scanner completed the Para clinical assessment in 25 cases, i.e. 75.75%. % Nephrectomy was indicated for Hydronephrosis with destruction of the renal parenchyma in 76% of cases and for Renal tumor in 24% of cases. Simple nephrectomy was the most represented technique (25 cases) and extended nephrectomy concerned 8 cases. Peroperatively, a pleural breach was noted in 3 patients (9.09%) and a peritoneal breach in 5 others (15.15%). Postoperatively, two patients presented with parietal infection (6%), four patients (12%), present renal failure with créatinin between 455 $\mu\text{mol/l}$ to 646 $\mu\text{mol/l}$, and two patients (6%) died. *Conclusion:* Benign pathologies, especially obstructive, of the urinary tract leading to destruction of the renal parenchyma and therefore to nephrectomy. As reported in many developing countries, they were the most frequent indication in our study.

Keywords: Nephrectomy, lombar tumefaction, hydronephrosis, lombotomie, HNZ.

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INTRODUCTION

Nephrectomy is a standard therapeutic urological procedure for malignant tumors of the kidneys or damaged kidneys who does not contribute to the purification of the blood [1, 2]. Simple nephrectomy is often performed for kidneys destroyed by benign disease. While the radical nephrectomy is indicated in the case of malignant diseases. However, the indications for nephrectomy are multiple and sometimes difficult to identify preoperatively [3]. The geographical and socioeconomic variation of its indications has been reported by [2]. In developed countries, there is a decline in nephrectomies for benign renal pathologies. In these countries, the development of imaging techniques and the increase in the number of morphological examinations promotes the discovery of small kidney tumors. The development of surgical

techniques and qualitative technical platform, with in particular the laparoscopy and robotic surgery, have resulted in a better quality of care [4, 5]. Despite these technological advances, open and radical surgery retains all its value in developing countries where the technical platform and skills remain insufficient. In Niger, few studies concerned this question.

The objective of our study was to describe the epidemiological aspects, the indications and the results of nephrectomy in the urology department of the National Hospital of Zinder.

MATERIALS AND METHODS

This was a retrospective, descriptive and analytical study over a period of six years from August 1, 2015 to July 31, 2020 at the urology department of

the National Hospital of Zinder. Were included in this study, patients with usable records who underwent nephrectomy. The parameters studied were: age, sex, reason for consultation, affected side, indication, technique and surgical approach and post-operative complications.

Data were collected from patient records, hospitalization registers and the operating room register. They were analyzed using Microsoft Excel 2016 software.

RESULTS

During the study period, 33 patients file were collected. Men (20) were more represented, 61%. The average age of our series was 31.47 years with extremes of 3 to 60 years. The most represented age group was that of 21-30 years with 11 cases (33%). The lumbar mass was the most common reason for consultation with 36% followed by lumbar pain (31%) and total hematuria 12% Table I.

Table-I: Distribution of patients by reason for consultation

Reason for consultation	number of cases	Percentage (%)
Lower back pain	10	31
Lumbar mass	12	36
Hematuria	4	12
Pyuria	4	12
Acute obstructive renal failure	2	6
long term fever	1	3
Total	33	100

The right side was the most affected in our series with 20 cases (60.60%). All our patients had had an ultrasound of the urinary tract which highlighted the lesion of the organ concerned. The paraclinical assessment included the computed tomography in 25 cases (75.75%). It showed a renal tumor in 8 cases (24.24%) and hydronephrosis with destruction of the renal parenchyma in 17 cases (52%). A thoracic computed tomography completed the staging assessment in all cases of renal tumour.

Hydronephrosis with destruction of the renal parenchyma was the most frequent indication for nephrectomy in our series with 25 cases (75.75%). This was the consequence of pyonephrosis in 4 cases (12%), obstructive lithiasis in 11 cases (33.33%) (Figure 2), and pyelo-ureteral junction syndrome in 2 cases (6.06%). In 8 cases (24.24%) the precise etiology was not objectified.

Left lumbar mass over the abdominal middle line, scarifications and burns as treatment of renal colic in rural zones

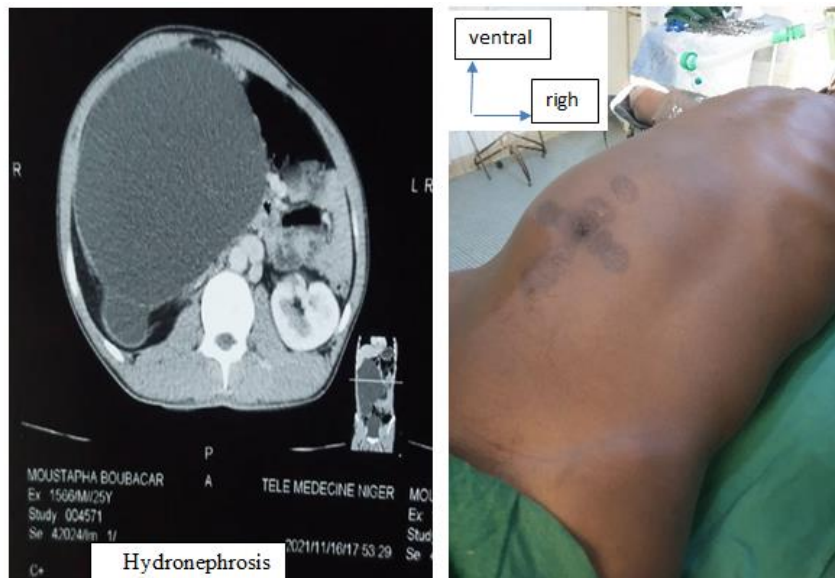


Fig-2: Computed tomography: Destruction of the renal parenchyma by a pyelic lithiasis

The renal tumor represented 24.24% (8 cases) of the indications for nephrectomy. The average age of patients with renal tumor was 32.25 years with

extremes of 4 to 57 years. Histology, showed 5 cases of renal cell carcinoma and 3 cases of nephroblastoma.

Simple total nephrectomy was the most common technique (25 cases) and extended nephrectomy involved 8 cases. No case of partial nephrectomy was performed in our department.

All patients had been operated by conventional open surgery. Midline xypho-pubic laparotomy was the main approach with 17 cases (52%) (cf Figure3)

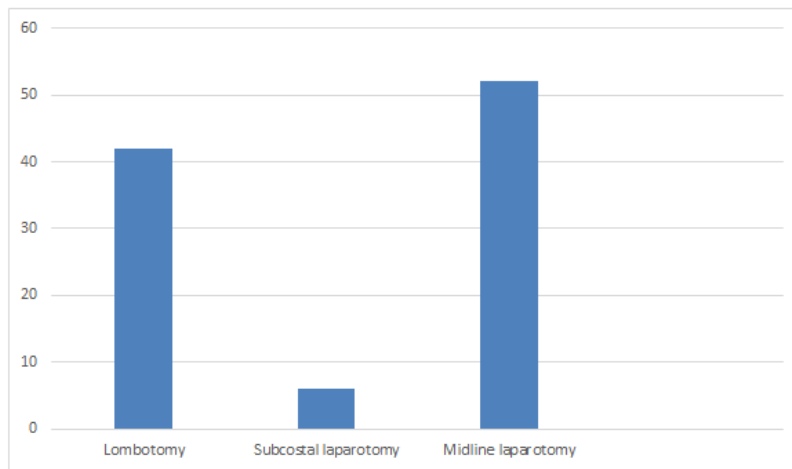


Fig-3: Surgical approach

The intraoperative incidents were a pleural breach in 3 patients (9.09%) and a peritoneal breach in 5 others (15.15%).

The postoperative post-operative follow-up was simple in 24 patients (73%). Complications were;

Two patients presented a parietal infection (6%), four patients (12%) presented renal insufficiency with serum creatinine ranging from 455 µmol/l to 646 µmol/l and two died (6%). The classification of complications were grade II (6%) and grade IVa (12%) according to the Clavien-Dindo classification (Table II).

Table-II: Post-operative complications; Clavien-Dendo classification.

Type of complication (Clavien-Dendo grade)	Number of cases	Percentage (%)
Parietal infection (Grade I)	2	6,06
Kidney failure (Grade IVa)	4	12,12
Death (Grade V)	2	6,06
Total	8	24,24

The average hospital stay was 16.75 days with extremes of 07 to 53 days.

Talic *et al.* [7], 2/42 patients (4.76%) had clinically presented the Triad.

DISCUSSION

Kidney pathologies are more frequent in our state, which is the largest in the south-east of Niger. This study is the first in our department to look at nephrectomy. We wanted, through this one, to make an inventory of nephrectomy in our department in order to situate our results in relation to those of the literature.

Lower back pain is the main warning sign of obstructive kidney disease. It is often associated with hematuria in tumor pathologies [3].

It represented 69% of the reasons for consultations in the series of El Fadil *et al.* [6]. In our series, however, it was (31%) and comes after the lumbar mass (36%) which was the most frequent symptom. The classic triad, lumbar pain-haematuria-lumbar mass was not founded in any case of renal tumor in our series. This was the same situation in Saudi Arabia in the series of El Fadil [6]. In the serie of

Nephrectomy, which is the removal of a kidney, is a therapeutic decision of last resort [8]. There are geographical variations in the indication of nephrectomy because certain urological diseases are more prevalent in certain countries. The causes of impaired renal function that can lead to nephrectomy also differ with age [2].

In developed countries, vesicoureteral reflux, is the main malformative uropathy, and first etiology of nephrectomy in children [9], while malignant tumors of the kidney and upper urinary tract were the most common etiology of nephrectomy in adults [10]. In developing countries, despite efforts to improve the quality of care, benign pathology ranks first in the indications for nephrectomy [3].

Indeed, total nephrectomy, in these countries, remains very frequent due to the high frequency of lithiasis pathology, urinary tract infection, late of

diagnosis or poorly treated uropathies and the absence of antenatal screening for malformations [8].

Our study, with 76% nephrectomy for benign renal pathologies, especially obstructive, confirms these data. Urolithiasis was the first obstructive cause in our study as in that of El Fadil *et al.* in Saudi Arabia [6].

This is due, in our country, to the insufficiency of health care structures, qualified agents and the low economic income of the populations which would be at the origin of the ignorance of this lithiasic pathology. The lithiasis is especially discovered at the stage of kidney destruction. For many authors [3, 6], the recent introduction of external lithotripsy and the adoption of endourological stone management techniques in their regions have had the impact of reducing this lithiasis complication leading to nephrectomy. We also believe that the introduction of these technologies will have the same result in Niger.

Despite the use of antibiotics, infectious pathology occupies a significant proportion of benign conditions leading to nephrectomy in our series As in those of Andualem *et al.* and Ndoye *et al.* [2,3].

This could be explain one side to the late discovery of obstructive pathology (lithiasis, syndrome of the pyelo-ureteral junction, post-bilharzia ureteral stenosis) which would be the etiology of microbial pullulation. On the other side, it could be an antibiotic resistance developed by antibiotics abuse [3]. The majority of these infections were discovered at the pyonephrosis stage (12.12%) in our series.

Although more frequent, the decision of nephrectomy for benign pathology is often difficult in our context. Indeed, the absence of renal scintigraphy is unfavorable for an objective evaluation of the residual function of the affected kidney, and the contralateral kidney evaluation. Several chronic pathologies can alter renal function [11, 12] and be the cause of postoperative renal failure [13]. Our main imaging and biology examinations were ultrasound to evaluate cortico-medullary index, computed tomography to search good renal secretion of contrast product, and serum creatinine values as done in of Ndoye *et al.* series[3]. Prior scintigraphic evaluation of each kidney individual function and the two kidneys overall function was mentioned by Duclos *et al.* [14] as a decisive argument in the event of partial nephrectomy. Two of our patients had kidney failure preoperatively, while four of them presented postoperatively. This argues strongly for the establishment of scintigraphy in our practice. Indeed it would have given us an idea of the function of the contralateral kidney which, if it is deteriorated, could modify our operative indication.

Renal and upper urinary tract tumor (24%) represented the second indication for nephrectomy in

our study as in that of El Fadil *et al.* [6] (22%) in Saudi Arabia. It was the leading cause (44.8%) in that of Ndoye *et al.* [3] in Senegal. In our series as in that of Ndoye *et al.* [3], enlarged nephrectomy was performed in all sizes of tumors. Although partial nephrectomy is the reference treatment for renal tumors of less than 7 to 10 cm according to Arnaud *et al.* [15], Despite progress in the technique of partial nephrectomy and its advantages in terms of the preservation of nephrons number, no partial nephrectomy was performed in our series for the same reasons reported by Fall *et al.* [16] such as the frequent alteration of the general condition of our patients, the advanced stage of the tumor and the inaccessibility of systemic treatment. In addition, the primary control of the renal pedicle before any manipulation of the tumor, as the principle of radical nephrectomy, was respected in all our approaches: anterior under rib (2 cases) and Median Xypho pubis (6 cases). This principle of Robson aims to prevent the dissemination of tumor cells [17]. Three of our patients aged 4 to 5 years had nephroblastoma. Several authors [18, 19] report that in children over the age of one year, tumor pathology and in particular nephroblastoma, represents 70% of nephrectomy etiologies.

Several complications had been described for nephrectomies and even deaths according to [6, 20]. Among other complications [21] recorded 10% pleural breach and Ali *et al.* [22] were forced to laparotomy in 2.3% for splenic involvement and 1% for intestinal obstruction. In our series, we had 2 deaths: all operated for Pyonephrosis. One had died on day 3 postoperatively of severe sepsis before the results of the antibiogram. The other presented on Day 2 with thrombophlebitis of the leg and had died on Day 8 despite proper management. An accidental breach of the pleura had occurred in 3 patients in our series. All these patients were approached by lombotomy without rib resection [2, 3, 22] found a correlation between the opening of the pleura and rib resection ($p = 0.0013$). This accidental opening, when unrecognized or poorly repaired, can be the cause of a liquid or air pleural effusion [3].

The average hospital stay in our series was 16.75 days, significantly above that of Ndoye *et al.* [3] (7.8 days) and that of Paparel *et al.* [23] who reported 5 days in patients who underwent laparoscopic nephrectomy. This long stay is linked to the fact that the majority of our patients, coming from rural areas, which often lack a health centers to continue dressing the wound and removing the sutures.

CONCLUSION

Our results confirm the predominance of benign obstructive pathologies of the urinary tract as etiologies in the destruction of the renal parenchyma and therefore nephrectomy. Improving the technical platform and the increase in health centers will help to earlier diagnostic and higher quality of care.

Ethical considerations

This study project in the Zinder hospital was submitted to the ethics committee of the advisory technical committee (CTC).

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Cite This Article: Halidou. M, Diongolé. H, ZAKOU. A.R.H, Kodo. A, Adamou H, Doucthi M, Djibo S, Amadou S (2022). Indications and Results of Nephrectomys at the Urology Department of Zinder National Hospital (HNZ). *East African Scholars J Med Surg*, 4(5), 118-122.