



## HISTOMORPHOLOGICAL EVALUATION OF LESIONS IN NEPHRECTOMY SPECIMENS.

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### ABSTRACT

**Background:** Nephrectomy either partial or radical has become a common procedure in surgical and urological practice. In this study pathological reports were interpreted for the following parameters: age, gender, pathological diagnosis. An indication of nephrectomy depends on type of lesion, extent of damage, general condition of patient and status of contralateral kidney. Method: The present ambiceptive data analysis has been carried out in Department of Pathology in tertiary care centre under Maharashtra University of Health Sciences by histopathological examination of nephrectomy specimens. **Results:** A total of 59 nephrectomy cases were included in the study. Non neoplastic and neoplastic cases were 44 (75%) and 15 (25%) respectively. Among non-neoplastic lesions, total of 32 cases (72%) were diagnosed as Chronic pyelonephritis with End Stage Renal Disease(ESRD) . Others Chronic Xanthogranulomatous Pyelonephritis with ESRD 9 cases (21%) and Chronic Glomerulonephritis with ESRD 3 cases (7%). Neoplastic lesions constitutes 15 cases with peak in 6th decade. Renal Cell Carcinoma(RCC) is the most common neoplastic lesion. The distribution among the neoplastic lesions include: Clear cell RCC (40%), Papillary RCC (13.34%), Mixed RCC (13.34%), Chromophobe RCC (13.34%), Multicystic nephroma (6.67%), Collecting duct carcinoma (6.67%) and Renal Medullary carcinoma (6.67%). Fuhrman's nuclear grade II is the most common among the RCC. Rare case such as Collecting Duct carcinoma, Renal Medullary carcinoma and Sarcomatoid RCC were diagnosed during the study period. On IHC, Collecting Duct carcinoma is positive for HMW CK, PAX8 and Renal medullary carcinoma is positive for Vimentin. **Conclusion:** The histopathological examination is essential to differentiate between benign and malignant neoplastic lesions and in grading of malignant lesions which help in treatment and further management of patients.

**KEYWORDS :** Nephrectomy, histopathological examination, neoplastic, renal cell carcinoma

### INTRODUCTION

Gustav Simon, in 1869 and 1870, performed planned nephrectomy for urinary fistula and partial nephrectomy for hydronephrosis respectively.<sup>1</sup> Renal tumours comprise wide spectrum of neoplastic lesions with patterns that are distinct for children and adults. A wide variety of benign and malignant tumours arises from the renal parenchyma.<sup>2</sup> Most common indications for nephrectomy are mass per abdomen and minimal excretory activity of kidney through procedures of intravenous pyelogram ( IVP) and ultrasound.<sup>3</sup> Surgery remains the standard treatment for localized Renal cell carcinoma(RCC). New techniques, such as cryoablation and radiofrequency ablation which are minimally invasive, have shown good results and the follow-up is still short.<sup>4</sup> With extensive use of imaging techniques in recent years, the number of nephrectomies have increased. In India management of chronic kidney diseases is a great challenge as dialysis and kidney transplantations are expensive.<sup>5</sup> Radiological techniques have failed to differentiate benign from malignant lesions accurately and all renal masses should be considered as malignant, unless it is proven benign by histopathological examination.<sup>6</sup> In addition, there is geographical variation in indications for nephrectomy as certain urological diseases are more prevalent in some countries.<sup>7</sup> Indications for nephrectomy in benign kidney conditions have been on increase in developing countries. Despite advancement in technology, many centres in developing countries are yet to acquire necessary human and material resources.

The objective of this study is to assess the patterns and morphology of lesions in nephrectomy specimens, observe variations if any from conventional pattern, and clinico-morphological correlation for appropriate postoperative management.

### AIMS AND OBJECTIVE OF THE STUDY:

1. To study histomorphological features in nephrectomy specimens.
2. To analyze frequency of non-neoplastic & neoplastic lesion of kidney according to age & sex wise distribution

### MATERIAL AND METHODS:

The present ambiceptive data analysis has been carried out in Department of Pathology in tertiary care centre . The relevant and required information pertaining to the study has been collected using

self designed proforma. Total number of 59 cases were subjected to cross sectional study design. The data is obtained from histopathological diagnosis of collected nephrectomy specimens and records. Statistical analysis is carried out and specific statistical test applied.

All specimens were fixed in 10% Neutral buffered formalin, then processed into paraffin embedded sections and stained with haematoxylin & eosin and Immunohistochemistry (IHC) for rare cases.

### RESULTS:

The present study conducted consists of total number of 59 nephrectomy specimens of which 75% are Non-Neoplastic and 25% are Neoplastic Lesions. The mean age is 43.3years. 13 years being the youngest and 75 years being oldest patient. Mode 40 years and median 42 years. Neoplastic lesions were predominantly seen in age group above 50years. Non-neoplastic lesions involved all age groups. 31-40years involved highest number of cases. Pain in abdomen is common clinical feature for almost all cases. Fever, burning micturition is associated with pus formation and nephritis. Weight loss and hematuria seen in predominantly neoplastic lesions.

The table before depicts cross tabulation of clinical diagnosis and histopathological diagnosis which shows clinical diagnosis of Non functioning kidney (NFK) and NFK with calculus were diagnosed histopathologically predominantly into non-neoplastic lesions of chronic pyelonephritis with ESRD, chronic glomerulonephritis with ESRD, Chronic Pyelonephritis with ESRD and nephrolithiasis, Chronic Xanthogranulomatous Pyelonephritis with ESRD. The clinical diagnosis of renal mass, renal cystic mass and NFK with tumor mass were diagnosed histopathologically predominantly as neoplastic lesions consisting of types of RCC, collecting duct carcinoma, nephroma and medullary carcinoma.

### DISCUSSION:

Histopathology is an important and useful learning tool in hands of pathologists to study the histopathological spectrum of diseases. In this study we came across 59 cases, non neoplastic and neoplastic lesions. Few rare cases of neoplastic lesions were also diagnosed and confirmed on IHC. Table 2 shows comparison of non neoplastic and neoplastic lesions with other studies.

**Table 1: Crosstabulation Of Clinical Diagnosis And Histopathological Diagnosis**

		Diagnosis							Total
			Chronic Glomerulo nephritis with ESRD	Chronic pyelonephritis with ESRD	Chronic Pyelonephritis with ESRD and nephrolithiasis	Chronic Xantholomatous Pyelonephritis with ESRD	RCC	Ca of Collecting Duct, Nephroma and Medullary Ca	
Clinical diagnosis	NFK	Count	2	11	1	5	0	0	19
		% within Clinical diagnosis	10.5%	57.9%	5.3%	26.3%	.0%	.0%	100.0%
		% within Diagnosis	66.7%	61.1%	6.7%	55.6%	.0%	.0%	32.2%
		% of Total	3.4%	18.6%	1.7%	8.5%	.0%	.0%	32.2%
	NFK with Renal Calculus	Count	1	6	13	3	2	1	26
		% within Clinical diagnosis	3.8%	23.1%	50.0%	11.5%	7.7%	3.8%	100.0%
		% within Diagnosis	33.3%	33.3%	86.7%	33.3%	18.2%	33.3%	44.1%
		% of Total	1.7%	10.2%	22.0%	5.1%	3.4%	1.7%	44.1%
	Rena	Count	0	0	0	0	2	1	3
		% within Clinical diagnosis	.0%	.0%	.0%	.0%	66.7%	33.3%	100.0%
		% within Diagnosis	.0%	.0%	.0%	.0%	18.2%	33.3%	5.1%
		% of Total	.0%	.0%	.0%	.0%	3.4%	1.7%	5.1%
	Renal Mass	Count	0	1	1	0	6	1	9
		% within Clinical diagnosis	.0%	11.1%	11.1%	.0%	66.7%	11.1%	100.0%
		% within Diagnosis	.0%	5.6%	6.7%	.0%	54.5%	33.3%	15.3%
		% of Total	.0%	1.7%	1.7%	.0%	10.2%	1.7%	15.3%
NFK with Stricture and Tumour	Count	0	0	0	1	1	0	2	
	% within Clinical diagnosis	.0%	.0%	.0%	50.0%	50.0%	.0%	100.0%	
	% within Diagnosis	.0%	.0%	.0%	11.1%	9.1%	.0%	3.4%	
	% of Total	.0%	.0%	.0%	1.7%	1.7%	.0%	3.4%	
Total	Count	3	18	15	9	11	3	59	
	% within Clinical diagnosis	5.1%	30.5%	25.4%	15.3%	18.6%	5.1%	100.0%	
	% within Diagnosis	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	5.1%	30.5%	25.4%	15.3%	18.6%	5.1%	100.0%	

The present study showed mean age 43.3years. 13years being the youngest and 75years being oldest patient. Mode 40years and median 42years. Neoplastic lesions were predominately seen in age group above 50years. Non-neoplastic lesions involved all age groups. 31-40years involved highest number of cases.As per Ghalayini IF11 mean age of patients with nephrectomy for benign conditions was 38.4 years (range, 0.4–90 years),while that for malignant diseases was 46.7 years (range,0.25–80 years). Suryanwanshi K(2015)1 showed maximum number of cases in age group 31-40 and 41-50years.

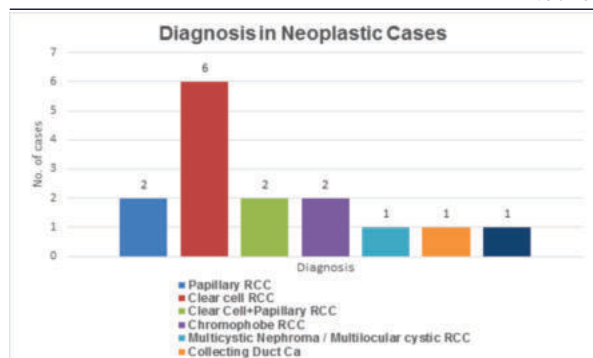
Thus, similarly correlating to our study. The present study showed Chronic nonspecific pyelonephritis- 54.23% to be the most common lesion followed by renal cell carcinoma(RCC) -22.03% which was similar to studies done by Aiman et al13 .Shaila et al10 showed chronic pyelonephritis to be the most common lesion with 60.3% followed by Tuberculous pyelonephritis and Renal cell carcinoma with 11.32% to be next common lesions. Chronic nonspecific pyelonephritis is the most common non neoplastic lesion and Renal cell carcinoma is most common neoplastic lesion in present study. The present study conducted diagnosed 15 neoplastic lesions , in which 40% are clear cell RCC, 13.33% of papillary RCC, 13.33% of mixed clear cell and papillary RCC, 13.33% of chromophobe RCC and 1 case of collecting duct carcinoma, renal medullary carcinoma and sarcomatoid RCC each. Abdulkareem AS et al14 showed 65.38%(17) of clear cell RCC,

15.38% (4) of Papillary RCC and 15.38% (4)cases of Chromophobe RCC. Kitamura et al15 had 87.6% clear cell RCC, 4.8% Papillary RCC and 1.9% Chromophobe.

**CONCLUSION:**

It may be concluded from the present study that, nephrectomy is most common in male, predominantly left sided and in 4th decade. A wide range of lesions were encountered when nephrectomy specimens were subjected to histopathological examination in which non neoplastic lesions were more common than the neoplastic lesions. Chronic pyelonephritis was commonest non-neoplastic lesion in this series and commonest additional finding being nephrolithiasis. The clinical presentation was pain in abdomen followed by fever.

Renal cell carcinoma was commonest neoplastic lesion with pain in abdomen, hematuria and weight loss. Clear cell RCC is most common neoplastic lesion followed by Papillary RCC. Rare Renal tumors such as Collecting Duct carcinoma, Renal Medullary carcinoma and Sarcomatoid RCC were diagnosed during the study period. The histopathological examination is essential to differentiate between benign and malignant neoplastic lesions and in grading of the malignant lesions which help in the treatment and further management of patients.



**Graph 1:** Neoplastic Lesions Found In Present Study And Its Frequency

**Table 2: Comparison Of Non Neoplastic And Neoplastic Lesions With Other Studies**

Sr No.	Author	Non Neoplastic(%)	Neoplastic(%)
1.	Ngairangbam S et al <sup>9</sup>	85.71	14.29
2.	Shaila et al <sup>10</sup>	77.36	22.64
3.	Divyasree BN et al. <sup>5</sup>	72.41	27.59
4.	Ghalayaini(2002) <sup>11</sup>	70.44	29.5
5.	Rafique(2007) <sup>7</sup>	76.6	23.4
6.	Mahesh KU(2012) <sup>12</sup>	54.54	45.45
7.	Aimanet al (2013) <sup>13</sup>	77.2	22.8
8.	Suryanwanshi K(2015) <sup>1</sup>	75.76	24.24
9.	Present study	74.57	25.42

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