**PRE TRANSPLANT NEPHRECTOMY, OUR EXPERIENCE IN PRINCE HUSSEIN CENTER OF UROLOGY AND ORGAN TRANSPLANTATION**

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**ABSTRACT**

**Introduction:** The aim of our study is to review our experience in the indications, causes and outcome of pre renal transplant nephrectomy and to compare our data with the international data in the published literatures and to discuss the best timing to perform the native nephrectomy wither to be done prior or during or post transplantation. **Methods:** This is a prospective study which was carried out in Prince Hussein Center Of Urology and Organ Transplantation in the period from 2010 to 2015. Twenty eight patients underwent pre transplant nephrectomy for various indications. data were collected from the patient file and from direct communication with patient. **Results:** Out of the 28, patients there were 18 patients had pre-transplant nephrectomy due to polycystic kidney disease (PCKD), six patients had nephrectomy due to recurrent Urinary tract infection (UTI) with renal stones and four patients due to vesicouretral reflux. Two complications were reported out from 28 cases, one patient had splenic injury treated with splenectomy and one patient had bowel injury treated with primary repair. **Conclusion:** polycystic kidney disease was the most common indication for pre transplant nephrectomy which is the same reported in literature. Also we found that there is decrease in developing of UTI or pyelonephritis after this procedure in patients who had recurrent urinary tract infections. We recommend doing Pre transplant native nephrectomy in patients symptomatic polycystic kidney disease and patients with recurrent infection with renal stones.

**KEYWORDS:** Kidney Transplant, Nephrectomy, PCKD.

**INTRODUCTION**

General indications for nephrectomy can be divided into two large groups: benign and malignant causes, benign causes as irreversible damaged kidney due to: chronic infection, obstruction, trauma, renal tuberculosis, renovascular hypertension, polycystic kidney disease, donation… etc. Malignant causes like renal cell carcinoma, wilms tumor and chromophobe carcinoma.\[^{1,2}\]

Kidney transplant is usually performed to treat renal failure due to or end stage renal disease caused by: diabetes, hypertension, lomerulonephritis, cystic kidney, focal segmental glomerulosclerosis, etc.\[^{3,4}\] pre transplant nephrectomy is indicated in several cases, the most common cause is symptomatic polycystic kidney disease (most common) other indications include recurrent Urinary tract infection and pyelonephritis due to renal stones, vesicoureteral reflux and others.\[^{5,6}\]

Native nephrectomy with kidney transplantation can be divided into three categories concerning the timing for transplant, there is a Pre - Transplant Nephrectomy, Post -Transplant Nephrectomy and native nephrectomy with kidney transplant at same session.\[^{5}\]

As mentioned above the most common cause for native nephrectomy and kidney transplant is a polycystic kidney disease which is an autosomal dominant disease occurring in 1-700 to 1-1000 individuals, it is one of the most common inherited diseases world wide.\[^{5,6}\]

Polycystic renal disease started by the Development of multiple epithelial – lined kidney cysts results in progressive enlargement of the kidney that leads to chronic renal disease (CRD) in 50% of the patients by the 6th decade. Cysts can develop in different organs as the liver (80 %), pancreas(10 %) and, rarely, the spleen and seminal vesicles. Adult polycystic kidney disease is responsible for almost 6 – 10 % of chronic renal
disease cases in North America and Europe. Patients presented complaining from haematuria, an abdominal mass, a urinary tract infection (UTI), loin pain, hypertension and end stage renal disease.\(^{5}\)[6]

Other indications for pre transplant nephrectomy is vesicoureteral reflux during which the urine going backward from the urinary bladder to ureter and kidney. Normal person has a non anatomical uretero vesical valve manifested by the oblique entrance of ureter into the bladder which prevent back ward movement of urine, in case of failure of this valve like mechanism the urine can go backward to ureter and kidney. vesico ureteral reflux seen more in pediatric age group than adults. Most of patients are asymptomatic but it can associated with recurrent urinary tract infection, pyelonephritis which lead to end stage renal disease.\(^{7}\)[8]

Renal stones and the complication which associated with it like recurrent urinary tract infection, obstructive uropathy that’s lead to pyelonephritis and end stage renal disease which need definitive treatment by nephrectomy and kidney transplant.\(^{9}\)[10]

MATERIALS AND METHODS
This prospective study carried out in Prince Hussein Center Of Urology and Organ Transplantation from 2010 to 2015 on 28 patients who underwent nephrectomy pre transplant for different causes. Data collected from patients files and patient followed up for one year after surgery.

All donors were living donor and Midline incision or flank incision is done for nephrectomy. Dialysis done one day before surgery for all patients. The interval between native nephrectomy and transplant surgery was three months. Bilateral native nephrectomy done in eight patients of 24 one.

RESULTS
Out of 28 patients there was 18 patients had nephrectomy pre transplant due to polycystic kidney disease, six patients had nephrectomy to prevent recurrent Urinary tract infection due to renal stones or to prevent pyelonephritis and four patients due to vesicouretral reflux.[table 1].

<table>
<thead>
<tr>
<th>Causes</th>
<th>Number of patients</th>
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<tbody>
<tr>
<td>Polycystic kidney disease</td>
<td>18</td>
</tr>
<tr>
<td>renal stones</td>
<td>6</td>
</tr>
<tr>
<td>Vesicouretral reflux</td>
<td>4</td>
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Complications reported in two patients, one of them had splenic injury during surgery and treated with splenectomy, one patient had bowel injury during surgery and treated with primary repair.

DISCUSSION
First of all there is a lack in researches in international journals for pre transplant native nephrectomy for causes except than polycystic kidney disease. So here we going to compare and discuss our results about patients who underwent native nephrectomy who was suffering from polycystic kidney disease.

The most important question in these patients and this method of treatment is which time is the best to perform kidney transplant and native nephrectomy wither to be done before or after or same session surgery.

In Our center we prefer the Pre - Transplant nephrectomy with almost three months interval before proceeding for kidney transplant surgery. Our results support this timing for native nephrectomy, there was no mortality and all transplantations were successful.

At Guy's and St Thomas' hospitals in England from 1988 to 2008 they perform 31 native nephrectomy (28 cases bilateral) with transplant to patients who had polycystic kidney disease, the most common indication for nephrectomy was urinary tract infection in 14 patients, 12 patients their main complaints was pain, the indication in three patients was suspected malignancy, one patient due to no space for the transplant kidney.\(^{11}\)

Concerning the timing of native nephrectomy, ten patients were Pre – Transplant, 20 patients were Post – Transplant and one patient in same session. They had 3% mortality and 65% surgical morbidity. There was two patients with renal cell carcinoma.\(^{11}\)

Their conclusion was that the best timing of native nephrectomy is variable and dictated by indication.\(^{11}\)[Table 2]
Table 2: Comparing between our center and two other centers.

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<tbody>
<tr>
<td>Common complaints with PCKD</td>
<td>UTI(14 patients) Pain(12 patients) Suspected tumor(3 patients) Hematuria(1 patient) No space(1 patient)</td>
<td>Pain No space Hematuria Recurrent infection</td>
<td>No space (10 patients) Pain (3 patients) Hematuria (2 patients) Infected cyst (1 patient)</td>
</tr>
<tr>
<td>Timing of native nephrectomy</td>
<td>Pre transplant (10 patients) Post transplant (20 patients) In same session (1 patient)</td>
<td>Pre transplant (20 patients) Post transplant (12 patients) Sandwichtechnique (3 patients)</td>
<td>Pretransplant nephrectomy (regardless the indication)</td>
</tr>
<tr>
<td>Outcome</td>
<td>Mortality 3 % Morbidity 65 %</td>
<td>Mortality (3 patients, 2 in pre transplant group and 1 in post transplant group)</td>
<td>No mortality Splenic injury (1 patient) Bowel injury (1 patient)</td>
</tr>
<tr>
<td>Conclusion</td>
<td>The timing of Native nephrectomy is variable and dictated by indication.</td>
<td>Post - Transplant unilateral nephrectomy appears to be the safest approach.</td>
<td>As the most common indication is no space, Pre Transplant nephrectomy is the preferred timing.</td>
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In another study, at Renal Transplant Unit in Central Manchester University Hospital from 2003 to 2009 they had 35 cases of native nephrectomy and kidney transplant for patients who had polycystic kidney disease. The timing of native nephrectomy was Pre transplant in 20 patients, 12 patients Post transplant and three patients had sandwich technique. most common causes for native nephrectomy were pain, no space for kidney transplant, hematuria, recurrent infection and early satiety.\[12\]

These group of patients had three patients who died (two patients who underwent Pre Transplant nephrectomy and one patient who had Post Transplant nephrectomy), there was few surgical morbidities.\[12\]

Their conclusion was that the Post - transplant unilateral nephrectomy appears to be the safest approach for these patients.\[12\][Table 2]

Other study underwent at Mayo Clinic in Rochester from 1984 to 2014 on 114 patients suffering from polycystic kidney disease and underwent native nephrectomy and transplant, 35 (31 %) patients had pre transplant and 79(69 %) patients post transplant native nephrectomy. after 2008 they preformed all nephrectomies post transplant. the most common indications for pre transplant nephrectomy were hematuria (28.6%), no space (25.2 %), and back pain (22.9 %). In the post transplant nephrectomy group, the most common indications were back pain (39.2%), abdominal pain (22.8 %), and hematuria (21.5 %). It is important to note in this study, however, that lack of space has not been an indication for nephrectomy since 2004.\[13\]

The complications were lower in patients who underwent nephrectomy post transplant than those with nephrectomy pre transplant(26.6 % vs. 48 %), most common complications were ileus, arrhythmia, wound infection.\[13\]

As conclusion in this study was the post transplant nephrectomy has less complication than the pre transplant and it is the preferred method.\[13\]

As known, the Systemic heparinisation is advocated during kidney transplant surgery to prevent thrombosis during warm ischemic interval. So this can lead to increase risk of bleeding after native nephrectomy in patients with huge polycystic kidney, for this reason we don’t recommend to perform a native nephrectomy and kidney transplant in same session.\[14\]

In other hand patients after kidney transplant have to be on immunosuppressant medications which increase the risk of infection during performing a major surgery and could be cause of delayed graft rejection. that is why our center don’t support the PostTransplant surgery.\[15\]

CONCLUSION

1- PCKD is the most common cause of native nephrectomy and kidney transplant.

2- Preferred Timing for the native nephrectomy still controversial, our policy is Pre - Transplant nephrectomy in all cases, the international literature support the Post - Transplant nephrectomy.

3- Our outcome and results the same with international centers.

4- For the reasons mentioned in discussion and the high positive outcome in our center we suggest that best timing for native nephrectomy is Pre Transplant.

5- Native nephrectomy don’t affect the survival of the graft or the patient.

REFERENCES


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