

# Immediate Impact of Uninephrectomy in Bangladeshi Live Kidney Donors: BIRDEM General Hospital Experience

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# Background and Introduction

- Renal transplantation is the preferred treatment of end-stage kidney disease (ESKD)
- In developed world, 40% of renal transplant is from live donors
- In Bangladesh, renal transplant is exclusively from live donors
- Individuals with two healthy kidneys can donate kidney

# Background and Introduction

- Live kidney donation carries the risk of surgery in a normal individual for the benefit of the recipient
- Kidney donation increases risk of:
  - Hypertension
  - Dyslipidaemia
  - Chronic kidney disease
  - Stroke
  - Cardiovascular event

# Rationale

- No data available regarding impact of unilateral nephrectomy in healthy Bangladeshi people after kidney donation
- It is important to assess the immediate impact of uninephrectomy to keep a record of baseline effect to foresee the long term adverse effects in subsequent follow up visits.

# Objectives

- To describe the immediate impact of uninephrectomy on kidney donors during the period of post-transplant hospital stay.

# Materials and Methods

- **Type of study:** Cross-sectional study
- **Place:** Transplant Unit of BIRDEM, Dhaka, Bangladesh
- **Duration:** January 2006 to June 2010
- **Patients:** All kidney donors who had undergone graft nephrectomy in BIRDEM during the study period.

# Results

- Total number of patients was 81, male were 48 and female were 33
- Mean age  $36.3 \pm 9.9$  years
- Mean post-operative hospital stay was  $8.2 \pm 2.0$  days
- Mean measured glomerular filtration rate by Tc-99m DTPA ( $mGFR_{DTPA}$ ):  $99.54 \pm 19.06$  ml/min/1.73 m<sup>2</sup>
- Mean estimated glomerular filtration rate by CKD-EPI formula ( $eGFR_{CKD-EPI}$ ) was  $99.0 \pm 18.55$  ml/min/1.73 m<sup>2</sup>

# Results

	Before Nephrectomy	After Nephrectomy	<i>P</i> -value
Mean Urine output (ml/day)	2708.1±842.8	2228.4±702.4	0.000
Mean Systolic BP (mm of Hg)	120.3±12.5	115.6±9.2	0.000
Mean Diastolic BP (mm of Hg)	77.4±6.9	76.1±7.1	0.159
Mean Blood Urea (mg/dl)	19.7±5.7	30.4±9.5	0.000
Mean Serum Creatinine (mg/dl)	0.90±0.16	1.26±0.24	0.000

# Results

- Blood Urea level increased in: 7 (8.6%)
- Serum creatinine increased in: 39 (48.1%)
- Mean  $mGFR_{EDTA}$  of the non-nephrectomized kidney of the donor was  $49.18 \pm 9.50$  ml/min/1.73m<sup>2</sup>
- Mean  $eGFR_{CKD-EPI}$  of same kidneys was  $69.09 \pm 16.79$  ml/min/1.73m<sup>2</sup> (post-operative)
- Infections:
  - Wound infection in: 1 (1.2%)
  - Respiratory tract infection in: 1 (1.2%)

# Discussion

- First kidney transplantation from one human to other was done in 1954
- In Bangladesh, first kidney transplantation was done in 1982
- In our center, first kidney transplantation was done in 2004
- Living related donors supply 100% of renal allografts in our country

# Discussion

## **In Developed Countries:**

- Living donors supply approximately 40% of renal allografts in the United States
- Perioperative mortality after donor nephrectomy is approximately 3 per 10,000 cases
- Major and minor perioperative complications affect approximately 3%-6% and 22% of donors, respectively
- Donor nephrectomy increases ESRD risk among white donors

# Discussion

- Medical comorbidities such as hypertension and diabetes appears to be relatively higher among some donor subgroups, such as African Americans and obese donors
- In USA national follow-up of living donors is limited in scope, duration and completeness.

# Discussion

## In our study

- The mean  $mGFR_{DTPA}$  and mean  $eGFR_{CKD-EPI}$  showed no significant variation ( $p=0.855$ ) in pre-nephrectomy period
- There was significant decrease in urine output and increase in systolic blood pressure, blood urea and serum creatinine
- In post-nephrectomy period the mean  $eGFR$  as per CKD-EPI formula was way more than  $mGFR$  by DTPA renogram ( $p=0.000$ ).

# Limitations

- Small sample size, study period was restricted in post-operative hospital stay period.
- In post-nephrectomy period, GFR could not be measured by DTPA renogram due to increased risk of contrast induced nephropathy.
- Only eGFR was recorded as per CKD-EPI formula. But its limitations are-
  - It was formulated for CKD patients.
  - Its was formulated for patients with two kidneys.
  - Its accuracy in case of persons with normal renal function and solitary kidney is yet to be proven.

# Conclusion

- Complication related to surgery like infections
- Uninephrectomy has its impact on-
  - Urine output
  - Blood pressure
  - Renal function
- Central registry may be maintained from all centers
- Validity of different formulas for measuring GFR may be proposed

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Thank you all