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**Multi-detector row CT in the preoperative evaluation of the vascular and upper urinary tract anatomy of living renal donors**

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**Abstract**

**Objectives:** Preoperative evaluation of the living renal donors vascular and upper urinary tract anatomy with Multi-Detector CT (MDCT).

**Material and methods:** From Jan 2017 to August 2018, when carrying out a cross-sectional study at Cardiovascular Centre of Hue Central hospital, we have performed 64-MDCT with a three-phase enhancement CT scan using oral water as contrast medium of the renal vessels and upper urinary tract on 154 living donors and proceeded to nephrectomy. Renal vessels and upper urinary tract were compared with operational findings.

**Results:** 154 living renal donors (male/female: 83.77%/16.23%), mean age was  $30.72 \pm 8.21$  years (Range: 20-60 years). 154 chosen kidneys were proceeded to nephrectomy (right kidneys/left kidneys: 49.35%/50.65%), 76 right chosen kidneys (artery variation/vein variation: 20.51%/32.90%) and 78 left chosen kidneys (artery variation/vein variation: 10.53%/1.28%). CT findings all corresponded with the operation, and the sensitivity, positive predictive value, specialty, and negative predictive value of CT were all 100%. 100% of donors experience no contrast-induced artifacts in renal parenchyme. 70.78% of visualization of contrast media (CM) of entire upper urinary tract filling and 100% of that of top half upper urinary tract filling in both kidneys. The majority of donors have single collecting system (98.08% in right kidney and 99.36% in left kidney). The rest has partial or complete duplex collecting system. 100% of living donors have normal renal function in the excretory phase at 5 minute after CM and saline 0.9% injection bolus. This allows reducing examination time and radiation exposure with the highest effective dose 12.86mSv in unenhanced and three enhanced phases CT scan.

**Conclusions:** MDCT contributes into more accurate diagnosis of the vascular and upper urinary tract anatomy of renal living donors, helps surgeons make appropriate planning in the operation of chosen kidneys of living donors and transplanting into patients.

**Keywords:** Vascular anatomy, Upper urinary tract, MDCT, CT Urography