

**Evaluation of multislice spiral ct angiography and three –  
dimensional magnetic resonance angiography in pre  
operative assessment of living kidney donors**

**Thesis**

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anatomic assessment of the donor kidney is performed prior to transplantation to aid in selection of which kidney to use and to plan the surgical approach. The increasing use of laparoscopic donor nephrectomy makes this preoperative diagnosis even more important since the details of arterial and venous anatomy may be more difficult to appreciate during laparoscopic surgery. In the past, urography or ultrasonography (us) was used to evaluate for renal masses , stones and ureteral anatomy, and an arteriogram was obtained to identify the number, position, and patency of the renal arteries, as well as to determine the presence of proximal branches of the main renal artery. These imaging techniques have been replaced largely by computed tomographic (ct) or magnetic resonance (mr) angiography. Replacing both arteriography and urography or us with a single ct or mr examination provides a less invasive evaluation of donor kidneys and less costly .

conventional angiography has remained the ‘gold standard’ for evaluating vascular renal anatomy for potential renal donors. Catheter angiography has many disadvantages being

invasive and an expensive technique . Also , it has local complications as haematoma , pseudo-aneurysm , arteriovenous fistula and systemic complications including contrast –induced nephropathy or embolization to the kidneys , bowel , or lower extremities ( **carman et al , 2001** ) .

both mra and cta have the potential to replace this because both are non invasive procedures that can be done on an outpatient basis. However, there has been concern about the accuracy of predicting renal vascular anatomy.

in preparation for interventions, such as living renal donation, vascular reconstruction, renovascular hypertension, or radical nephrectomy, the results indicate that preoperative renal imaging is necessary and that operative techniques with attention to multiple renal arteries should be considered.

multislice spiral ct angiography (cta) and mr angiography (mra) can be used to show both the arterial and venous anatomy, with multiplanar reconstructions. Both cta and mra can also depict

the structural anatomy of the urinary tract, and both are useful in evaluating living renal donors. These two modalities can also be used to detect incidental findings (e.g. Congenital, traumatic , inflammatory and neoplastic abnormalities ) .

from our study we were able to formulate some recommendations to improve the results of this studies as increasing the sample size , standerdizing the types of machines used and radiologists , which may finally improve results.

any differences in results between our study and other studies may be due to using different types of machines , different radiologists and differences in sample size between our study and other studies .

in our study, there was a learning curve for radiologists , as more accuracy was observed in the late cases rather than the early cases . Also , we observed a difference in the result between different radiology centers which may be due to the difference in

the types of machines used and the experience of radiologist working in these centers.

although there was substantial agreement between ct and mr angiographic findings, there were intermodality and intramodality differences in interpretation with regard to multiple renal arteries . These disagreements may result, in part, from anisotropic volume acquisition with lower z-axis resolution of ct data and lower anterior-to-posterior resolution of mr data . However, since intermodality agreement between ct and mr findings was similar to interobserver agreement within ct and within mr, our findings suggest that the choice of reviewer is at least as important as the choice of diagnostic modality.