

# MRI renal mass protocol v1.0

## Society of Abdominal Radiology Disease Focused Panel on Renal Cell Carcinoma

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The below protocol represents recommendations from the Disease Focused Panel (DFP) on Renal Cell Carcinomas which consists of 13 Abdominal Radiologists from 10 academic institutions. The recommended protocol was developed by reviewing and identifying common key elements in all of the members' institutional renal mass protocols, and by iterative consensus by the DFP members. The panel's collective expertise was utilized where evidence was not available.

### Protocol

#### Indications: indeterminate renal mass; active surveillance; post-ablation surveillance; post nephrectomy surveillance

#### **Intravenous Contrast Material type, volume and injection rate:**

Type: Extracellular gadolinium-based contrast material

Volume: 0.1 mL/kg body weight.

Injection rate: 1-2 mL/second followed by 10-20 mL saline flush.

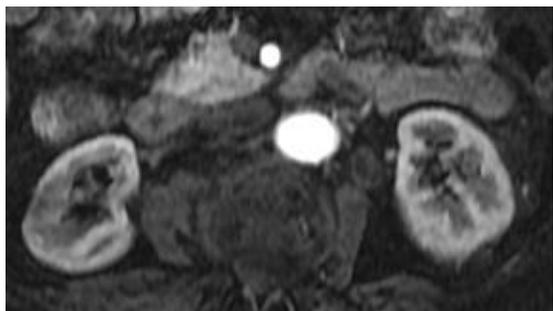
#### **Recommended sequences:**

Sequence	Plane	Slice thickness/gap	Comments
2D T2w single shot fast spin echo	Axial and/or coronal	Axial: 4-5mm/no gap Coronal: 5-6mm/no gap	<u>Alternative:</u> 2D axial T2w fast spin echo, 4-5mm/no gap
2D T1w gradient echo in/out phase	Axial	5-6mm/0.5-1mm	<u>Alternative:</u> 3D Dixon technique for in/out phase, 3-4mm/no gap
3D T1w SPGR with fat saturation pre-contrast	Axial and/or coronal	3-4mm/no gap	
* 3D dynamic T1w SPGR with fat saturation post-contrast	Axial or coronal (same as pre)	3-4mm/no gap	Dynamic timing: 30 seconds, 90-100 seconds, 180-210 seconds. <u>Note:</u> pre- and dynamic post-contrast imaging can be obtained in the axial or coronal plane. After the dynamic series is acquired, obtain the other plane at 240 seconds. Obtain routine subtraction imaging with the dynamic series.

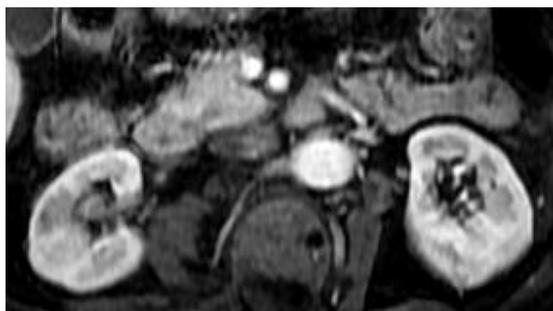
Optional additional sequences			
3D T1w SPGR with fat saturation delayed post contrast	Axial or coronal	3-4mm/no gap	5 – 7 minute delayed post contrast scan: perform in the axial plane if the dynamic images are coronal; perform in the coronal plane if the dynamic images are axial; additional sagittal acquisition through the kidneys can also be obtained
Diffusion weighted imaging	Axial	5-6mm/no gap	Suggested b-values: 0-50, 400-500, 800-1000 s/mm <sup>2</sup> . May be helpful for nodal and metastatic disease evaluation

\*: Obtain the pre- and dynamic post-contrast images in the same plane and with identical acquisition parameters, and acquire preferably at end expiration to facilitate subtraction imaging. Maintain constant receiver gain for all dynamic acquisitions before and after contrast material (i.e. set up entire dynamic series with a single pre-scan before the pre-contrast acquisition). Fat saturation can be performed with frequency-selective fat saturation strategies or using water-only reconstructed images from Dixon-based acquisitions. The latter provides in-phase/opposed-phase/fat-only reconstructions in the same breath-hold.

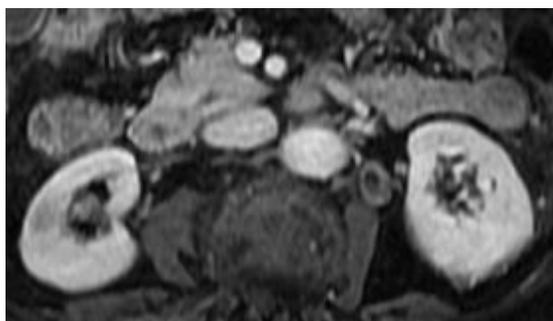
### Examples of images at different phases following contrast administration



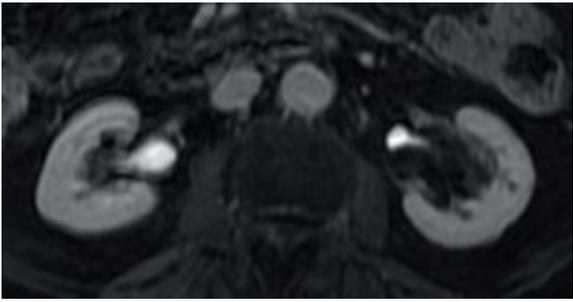
Arterial phase



Corticomedullary phase



Nephrographic phase



Excretory phase