

CT renal mass protocols v1.0

Society of Abdominal Radiology Disease Focused Panel on Renal Cell Carcinoma

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The below protocols represent recommendations from the Disease Focused Panel (DFP) on Renal Cell Carcinomas which consists of 13 Abdominal Radiologists from 10 academic institutions. The recommended protocols were 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.

Intravenous Contrast Material type, volume and injection rate:

Type: Low osmolar or iso-osmolar contrast material

Volume: 35-52.5 gram iodine equivalent (i.e. for contrast material that contains 350 mg of iodine/ml, the corresponding dose would be 100-150ml), or weight-based dosing

-Injection rate: 2-5cc/second

Protocol 1

Indications: Indeterminate renal mass

Recommended scan series:

Pre-contrast: kidneys only, axial, 3mm reconstruction section thickness with or without 50% overlap

Nephrographic phase: kidneys only, axial, 3mm reconstruction section thickness with or without 50% overlap, at 100-120 second delay

Optional additional scan series:

Corticomedullary phase: kidneys only, axial, 3mm reconstruction section thickness with or without 50% overlap, at 40-70 seconds delay. This phase may be helpful in sub-typing renal cell carcinoma (RCC).

Excretory phase: diaphragm to iliac crests, axial, 3mm reconstruction section thickness with or without 50% overlap, at 7-10 minute delay. This phase may be helpful to differentiate urothelial cancer from RCC, parapelvic or peripelvic cysts from hydronephrosis, and to diagnose calyceal diverticula.

Recommended additional reformats:

Coronal and sagittal of each post contrast scan series, 3mm reconstruction section thickness without overlap.

Protocol 2

Indications: Pre-partial nephrectomy or pre-ablation planning for renal masses that have been previously completely characterized

Recommended scan series:

Arterial phase: kidneys only, axial, 3mm reconstruction section thickness with or without 50% overlap, at 30 seconds delay. This is to better depict the arteries and their relationship to the renal mass.

Nephrographic phase: diaphragm to iliac crests, axial, 3mm reconstruction section thickness with or without 50% overlap, at 100-120 second delay.

Excretory phase: diaphragm to iliac crests, axial, 3mm reconstruction section thickness with or without 50% overlap, at 7-10 minute delay. This is to better depict the relationship between the collecting system and the mass.

Recommended additional reformats:

Coronal and sagittal of each post contrast scan series, 3mm reconstruction section thickness without overlap.

Protocol 3

Indications: 1) Active surveillance; 2) Post ablation surveillance; 3) Post partial nephrectomy surveillance

Recommended scan series:

Pre-contrast: kidneys only, axial, 3mm reconstruction section thickness with or without 50% overlap (may be omitted for active surveillance if the primary goal is to determine renal mass size change)

Nephrographic phase: diaphragm to iliac crests, axial, 3mm reconstruction section thickness with or without 50% overlap, at 100-120 second delay

Optional additional scan series:

Excretory phase: diaphragm to iliac crests, 3 axial, mm reconstruction section thickness with or without 50% overlap, at 7-10 minute delay. This phase may be helpful following ablation or partial nephrectomy when collecting system injury is suspected.

Recommended additional reformats:

Coronal and sagittal of each post contrast scan series, 3mm reconstruction section thickness without overlap.

Protocol 4

Indications: 1) Post radical nephrectomy surveillance; 2) Systemic therapy surveillance

Recommended scan series:

Portal venous phase: diaphragm to iliac crests, 3-5mm reconstruction section thickness with or without 50% overlap, 60-90 seconds delay

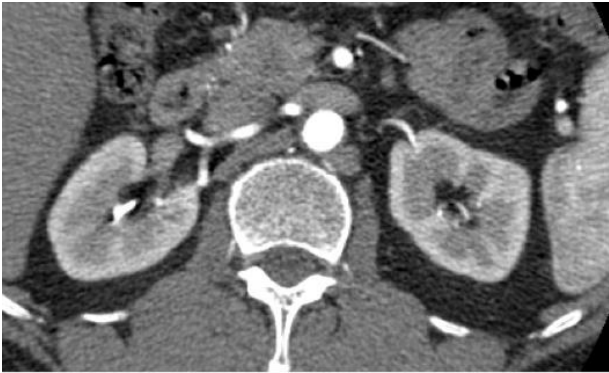
Optional additional scan series:

Late arterial phase: diaphragm to iliac crests, axial, 3mm reconstruction section thickness with or without overlap, 40-50 seconds delay. This phase can be included in patients at high risk of metastatic disease to improve detection of liver and pancreatic metastases.

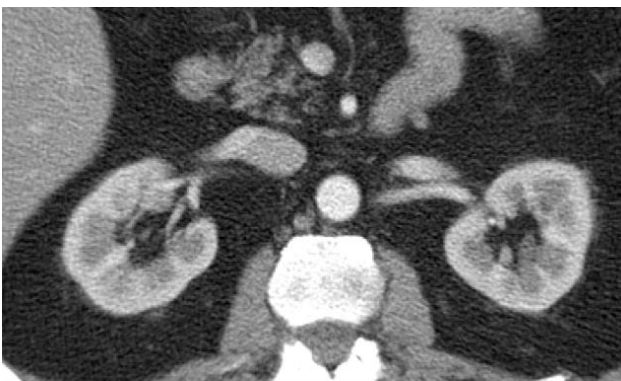
Recommended additional reformats:

Coronal and sagittal of post contrast scan series, 3mm reconstruction section thickness without overlap.

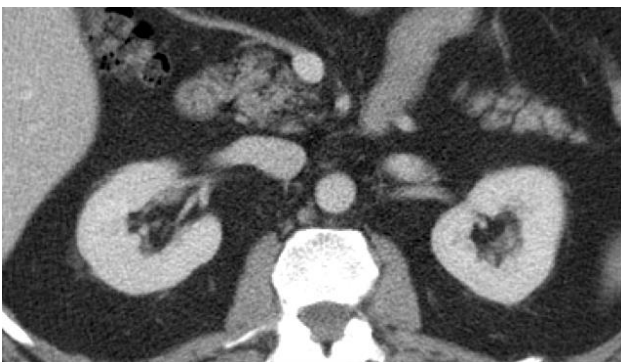
Examples images at different phases following contrast administration



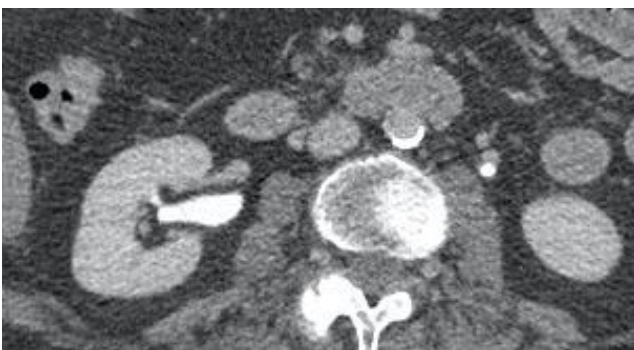
Arterial phase



Corticomedullary phase



Nephrographic phase



Excretory phase