MR adrenal mass protocols v1.0
Society of Abdominal Radiology Disease Focused Panel on Adrenal Neoplasm

James T. Lee, Project Leader
Michael Corwin, Co-chair
Elaine Caoili, Co-Chair
Eric Remer
Nicola Schieda
Dan Glazer
Joanie Garrat
Jorge Abreu
Julie Song
Khaled Elsayes
Michael Blake
Myles Taffel
Olga Brook
Robert Petrocelli
Ryan Chung
William Mayo-Smith
Wendy Tu
Kedar Sharbidre

The below protocols represent recommendations from the Disease Focused Panel (DFP) on Adrenal Neoplasm which consists of 17 Abdominal Radiologists from 16 academic institutions. The recommended protocols were developed by reviewing and identifying common key elements in all of the members' institutional adrenal 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 adrenal mass; active surveillance; surgical planning.
Optional Intravenous Contrast Material:
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.

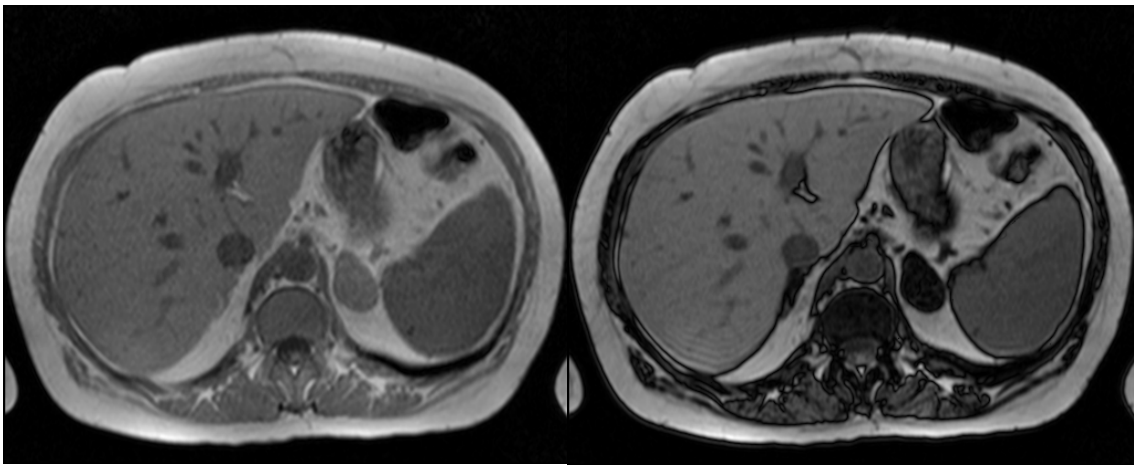
Recommended Sequences

Sequence	Plane	Slice thickness/gap	Comments
2D T1w gradient echo in/out phase*	Axial and/or coronal	3-4 mm/0	• Single Breath hold to avoid misregistration • TE of OP **MUST** precede IP

			• 3D technique for in/out phase, 3-4mm/no gap* • as close to the true in and opposed phase resonance as possible (i.e. 2.2 and 4.4 msec for 1.5T) • Dixon Technique¥
2D T2w single shot fast spin echo	Axial and/or coronal	Axial: 3 mm/no gap Coronal: 5mm/no gap	Alternative: 2D axial T2w fast spin echo.
3D T1w SPGR with fat saturation pre-contrast	Axial and/or coronal	3-4mm/no gap	
Optional			
3D dynamic T1w SPGR with fat saturation post-contrast	Axial and/or coronal (same as pre)	3-4mm/no gap	Dynamic timing: 30 seconds, 90-100 seconds, 180-210 seconds.
Diffusion weighted imaging	Axial	5-6mm/no gap	Suggested b-values: 0-50, 400-500, 800-1000 s/mm^2
PDFF/Fat Quantification	Axial	3-4 mm/no gap	Preliminary Data only

* Advantages of 2D include better in plane resolution, less artifact, better overall image quality

¥ if using the 'fat only' images to diagnose microscopic fat, users must review the source IP/OP images to confirm that the 'bright' signal on 'fat only' images is not due to macroscopic fat (both micro and macro fat will appear bright on this sequence) or susceptibility artifact (2point dixon display only the magnitude and does not consider the phase, so iron could appear bright on a 'fat only' image)



Example of 2D T1w gradient echo in/out phase demonstrating homogenous signal loss in a left adrenal adenoma.