

# Radiofrequency Ablation of RCC Metastasis to the Adrenal Gland

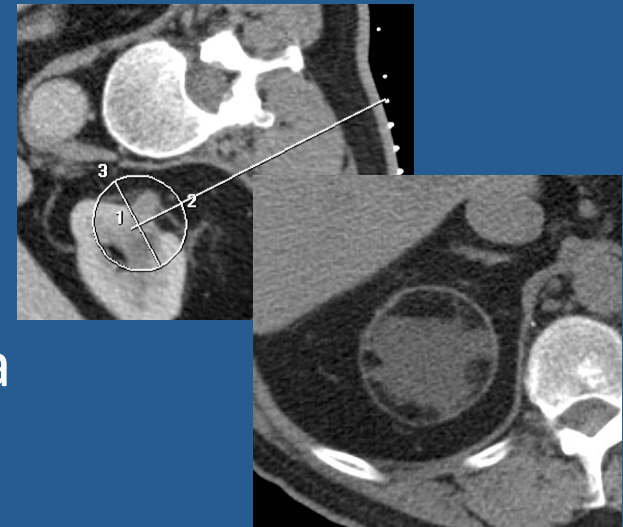
Florian Fintelmann, MD

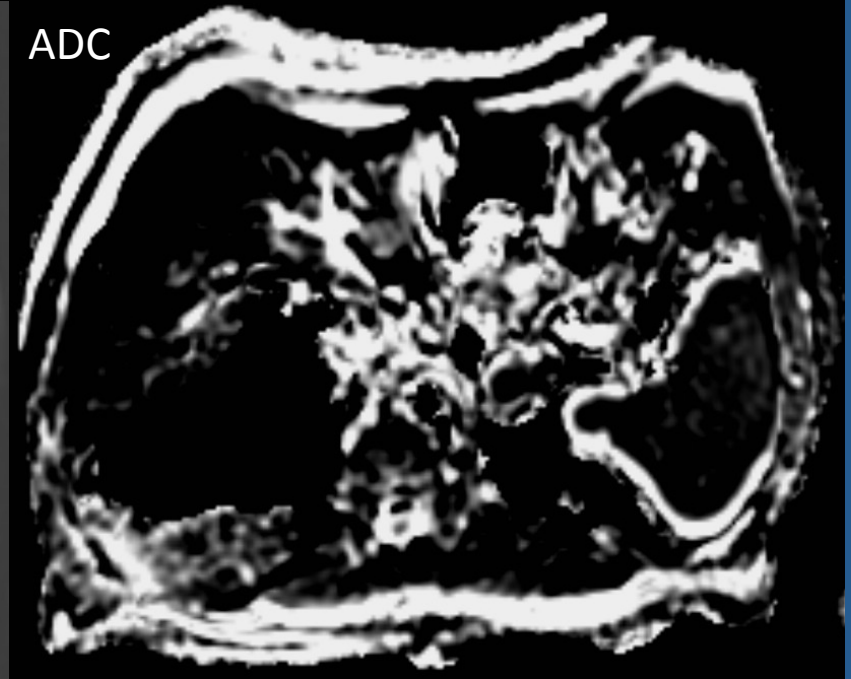
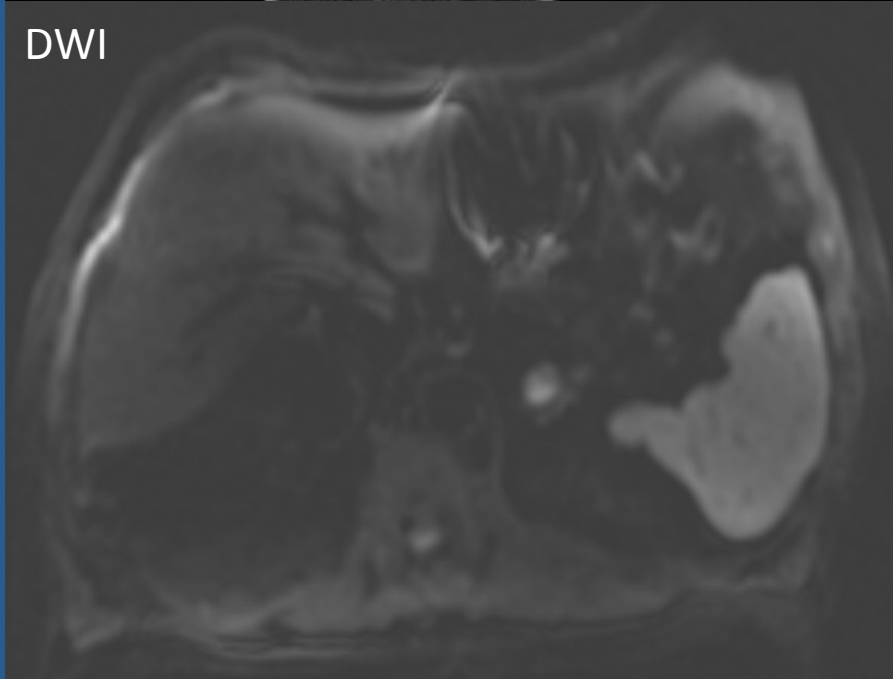
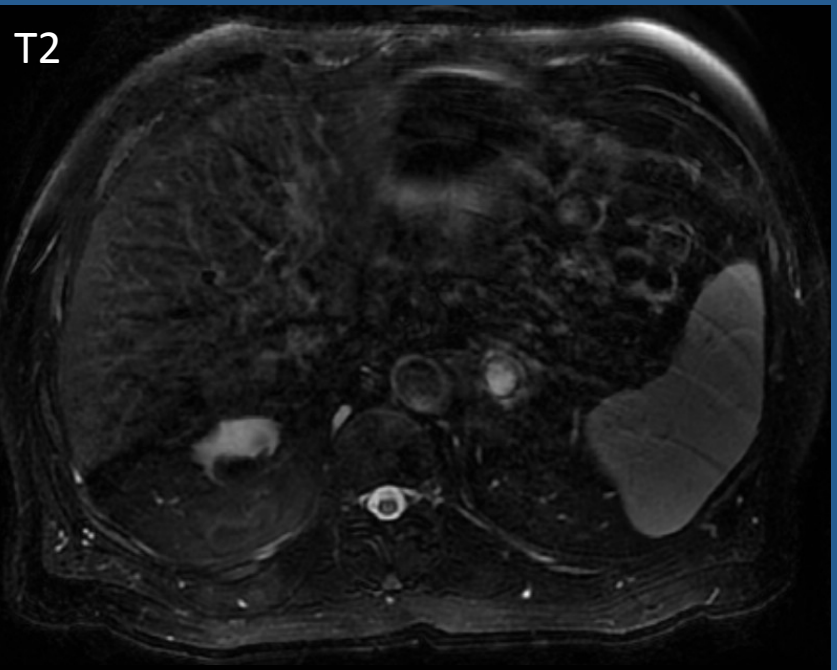
Fellow, Abdominal Imaging & Intervention,  
Massachusetts General Hospital



# Patient

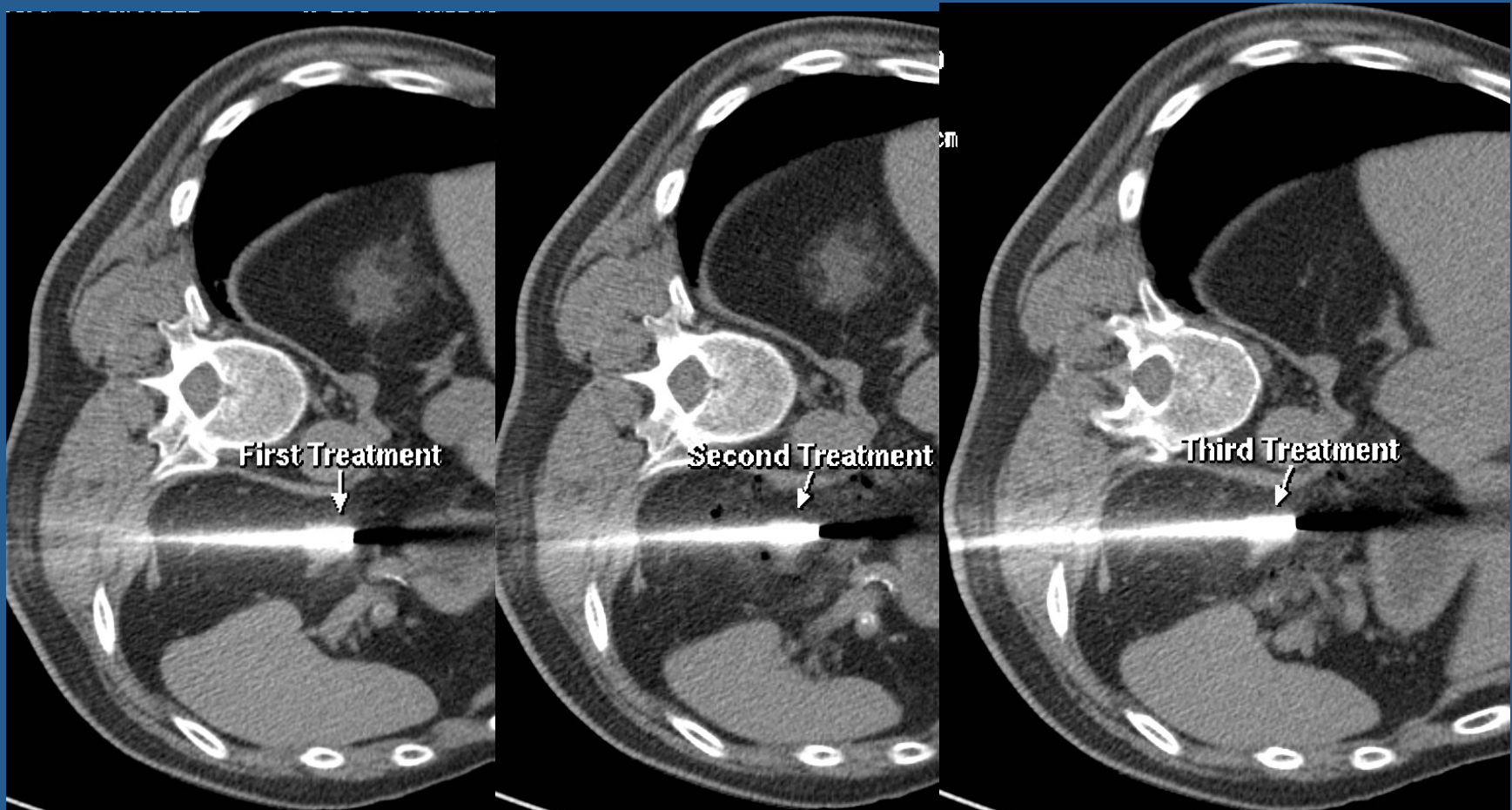
- 78 yo male
- Solitary RCC met to left adrenal [biopsied]
- ECOG 1
- PMH
  - Right RCC treated with RFA 2008
  - Metastatic Cecal Adenocarcinoma
  - DM
  - CAD s/p MI and stent 12/2008. EF 40%
  - HTN [on Norvasc, Lisinopril, Carvedilol]
  - HLD [on Statin]





# Procedure

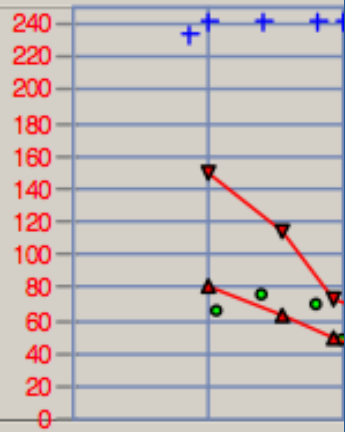
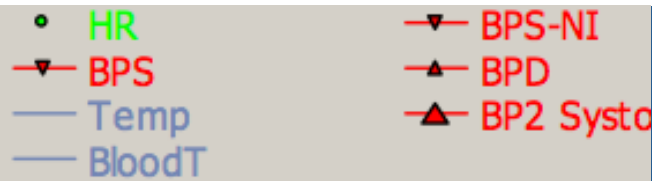
- Covidien Cool-Tip Cluster Electrode (15 cm)
- Three overlapping burns, 12 min each



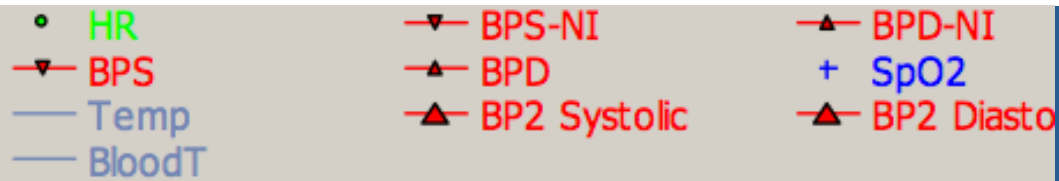
# Sedation

- Anesthesia consult for General Anesthesia
- ASA 3
- Plan for arterial line

	Blood Pressure	Heart Rate
Pre	149/80	65
Post	125/54	62

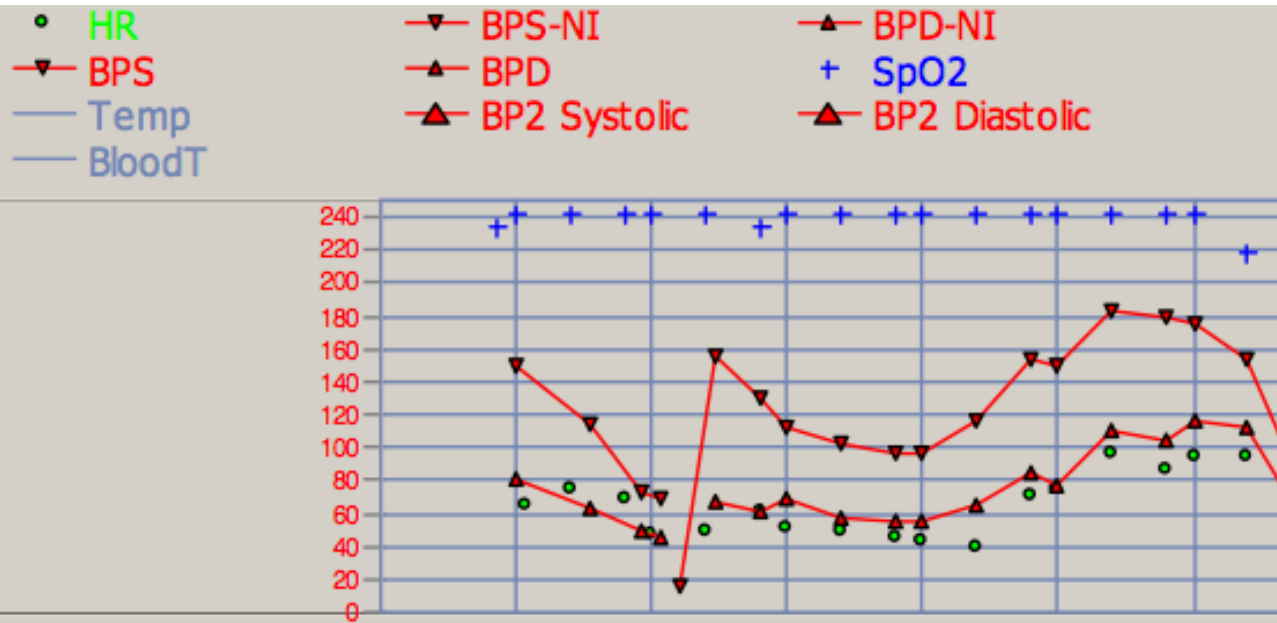


O2 fi	98	
N2O fi		
Sevoflurane fi	0.9	
CO2 et	32	
Neostigmine	[mg]	
Ephedrine	[mg]	
Esmolol	[mg]	
Glycopyrrolate	[mg]	
Metoprolol	[mg]	
Phenylephrine	[mcg]	
Nitroglycerin	[mcg/Min.]	
Phenylephrine	[mcg/Min.]	
Cisatracurium	[mg]	8
Midazolam	[mg]	2
Propofol	[mg]	150
Fentanyl	[mcg]	100



O2 fi	98	98	98	52
N2O fi			16.1	44.8
Sevoflurane fi	0.9	0.9	0.9	1
CO2 et	32	27	31	29

Neostigmine	[mg]				
Ephedrine	[mg]				20
Esmolol	[mg]				
Glycopyrrolate	[mg]				0.4
Metoprolol	[mg]				
Phenylephrine	[mcg]		40		
Nitroglycerin	[mcg/Min.]				
Phenylephrine	[mcg/Min.]		40		
Cisatracurium	[mg]		8		
Midazolam	[mg]	2			
Propofol	[mg]		150		
Fentanyl	[mcg]		100		



O2 fi	100	98	98	98	52	81	58
N2O fi				16.1	44.8	7.7	34.5
Sevoflurane fi		0.9	0.9	0.9	1	1.4	2.8
CO2 et		32	27	31	29	37	31

Neostigmine	[mg]						
Ephedrine	[mg]				20		
Esmolol	[mg]					10	
Glycopyrrolate	[mg]				0.4		
Metoprolol	[mg]						2
Phenylephrine	[mcg]		40				
Nitroglycerin	[mcg/Min.]					60	80
Phenylephrine	[mcg/Min.]		40				
Cisatracurium	[mg]		8			2	
Midazolam	[mg]	2					
Propofol	[mg]		150				30
Fentanyl	[mcg]		100				





# Literature

[« Previous](#)

Journal of Vascular and Interventional Radiology  
[Volume 20, Issue 7](#) , Pages 990-991, July 2009

[Next »](#)

## Hypertensive Crisis during Radiofrequency Ablation of the Adrenal Gland

[Aoife N. Keeling](#), FFRRCSI, MRCPI, MSc, [Tarun Sabharwal](#), FRCR, [Michael J. Allen](#), FRCA, [Nicholas J. Hegarty](#), FRCSI, [Andy Adam](#), FRCR, FRCS, FRCP

Cardiovasc Intervent Radiol (2012) 35:1422–1427  
DOI 10.1007/s00270-012-0348-6

CLINICAL INVESTIGATION

NON-VASCULAR INTERVENTIONS

## Incidence and Cause of Hypertension During Adrenal Radiofrequency Ablation

[Koichiro Yamakado](#) · [Haruyuki Takaki](#) · [Tomomi Yamada](#) ·  
[Takashi Yamanaka](#) · [Junji Uraki](#) · [Masataka Kashima](#) ·  
[Atsuhiro Nakatsuka](#) · [Kan Takeda](#)

# Literature

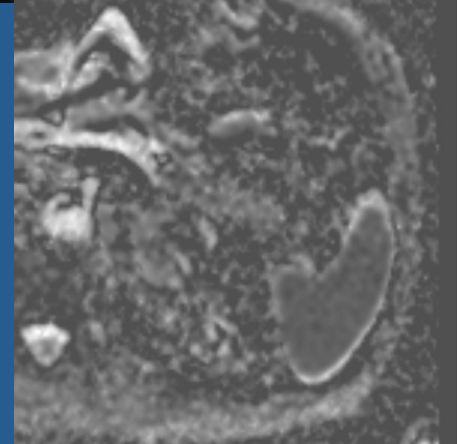
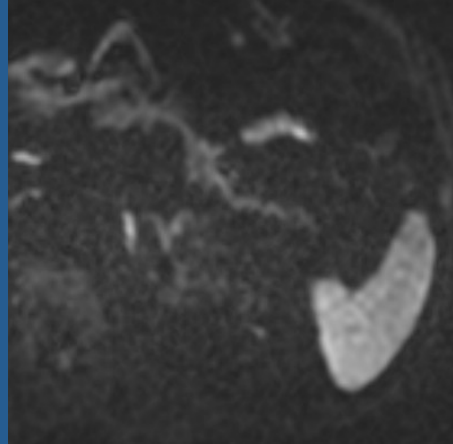
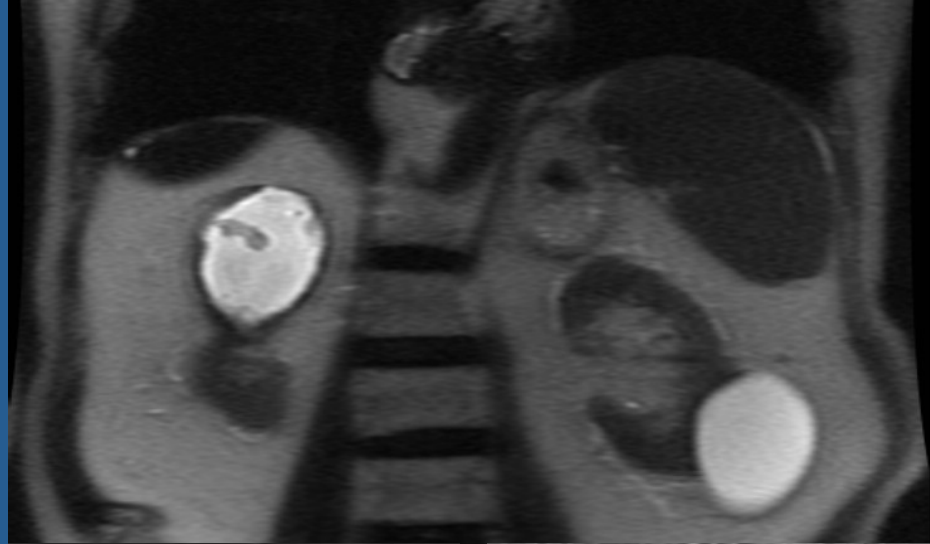
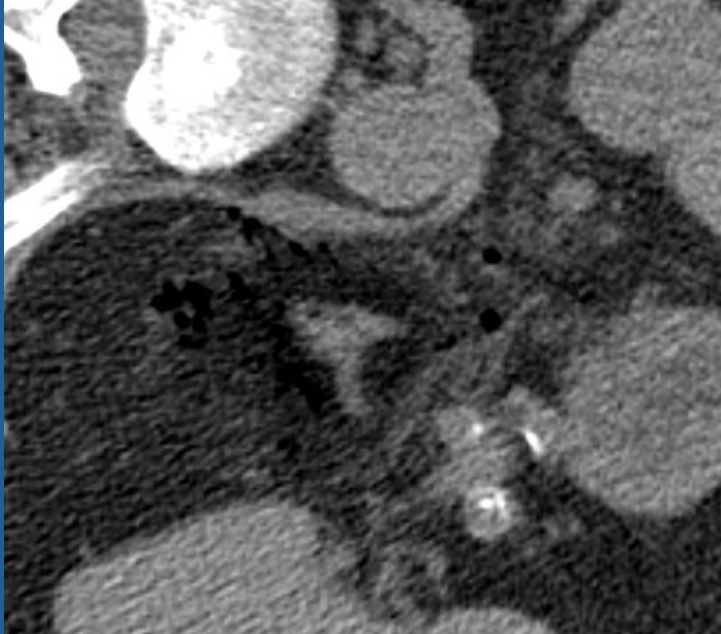
- Carrafiello G, Lagana D, Recaldini C, et al. Imaging-guided percutaneous radiofrequency ablation of adrenal metastases: preliminary results at a single institution with a single device. *Cardiovasc Intervent Radiol*. 2008;31:762–767
- Atwell TD, Wass CT, Charboneau JW, Callstrom MR, Farrell MA, Sengupta S. Malignant hypertension during cryoablation of an adrenal gland tumor. *J Vasc Interv Radiol*. 2006;17:573–575
- Mayo-Smith WW, Dupuy DE. Adrenal neoplasms: CT-guided radiofrequency ablation—preliminary results. *Radiology*. 2004;231:225–230
- Chini EN, Brown MJ, Farrell MA, Charboneau JW. Hypertensive crisis in a patient undergoing percutaneous radiofrequency ablation of an adrenal mass under general anesthesia. *Anesth Analg*. 2004;99:1867–1869
- Onik G, Onik C, Medary I, et al. Life-threatening hypertensive crises in two patients undergoing hepatic radiofrequency ablation. *AJR Am J Roentgenol*. 2003;181:495–497

# Good advice?

“Alpha blockade with phenoxybenzamine for several days prior to procedure. Add beta blockade if patient develops tachycardia.”

- Sudheendra D, Wood BJ. Appropriate premedication risk reduction during adrenal ablation. *J Vasc Interv Radiol*. 2006 Aug;17(8):1367-8.
- Welch BT, Atwell TD, Nichols DA, Wass CT, Callstrom MR, Leibovich BC, Carpenter PC, Mandrekar JN, Charboneau JW. Percutaneous image-guided adrenal cryoablation: procedural considerations and technical success. *Radiology*. 2011 Jan;258(1):301-7

# Post Treatment



Thank you