CASE BASED RENAL ABLATION: TOP 5 CLINICAL AND TECHNICAL PEARLS

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Disclosures

- Johnson and Johnson (Consultant, Medical Advisory Board)
- Boston Scientific (Medical Advisory Board)
- Terumo (Consultant)
- General Electric (Consultant)

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Anatomy

RIGHT

- **Anterior**

  <u>Upper pole</u>

  diaphragm, liver, duodenum, bowel

  <u>Interpole</u>

  diaphragm, liver, duodenum, bowel

  <u>Lower pole</u>

  bowel, ureter

- **Posterior**

  <u>Upper pole</u>

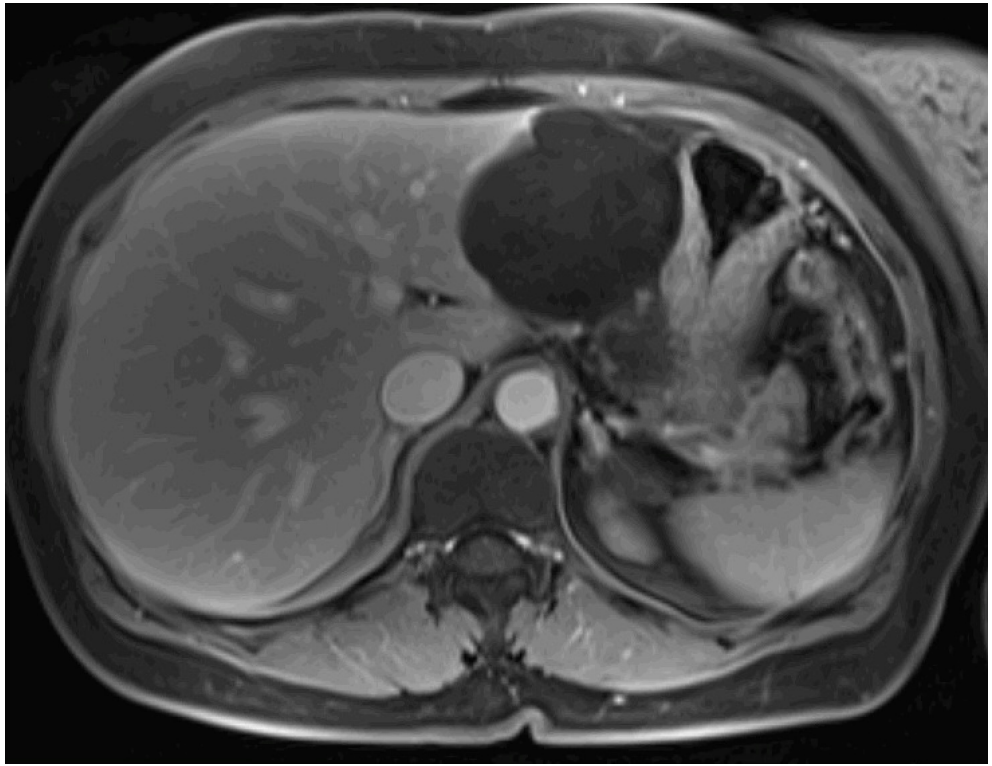
  diaphragm, large bowel, nerves

  <u>Interpole</u>

  diaphragm, nerves, colon collecting system

  <u>Lower pole</u>

  Nerves, colon, collecting system



Anatomy

LEFT

- **Anterior**

  <u>Upper pole</u>

  diaphragm, spleen, pancreas, bowel

  <u>Interpole</u>

  diaphragm, spleen, duodenum, bowel

  <u>Lower pole</u>

  bowel, ureter

- **Posterior**

  <u>Upper pole</u>

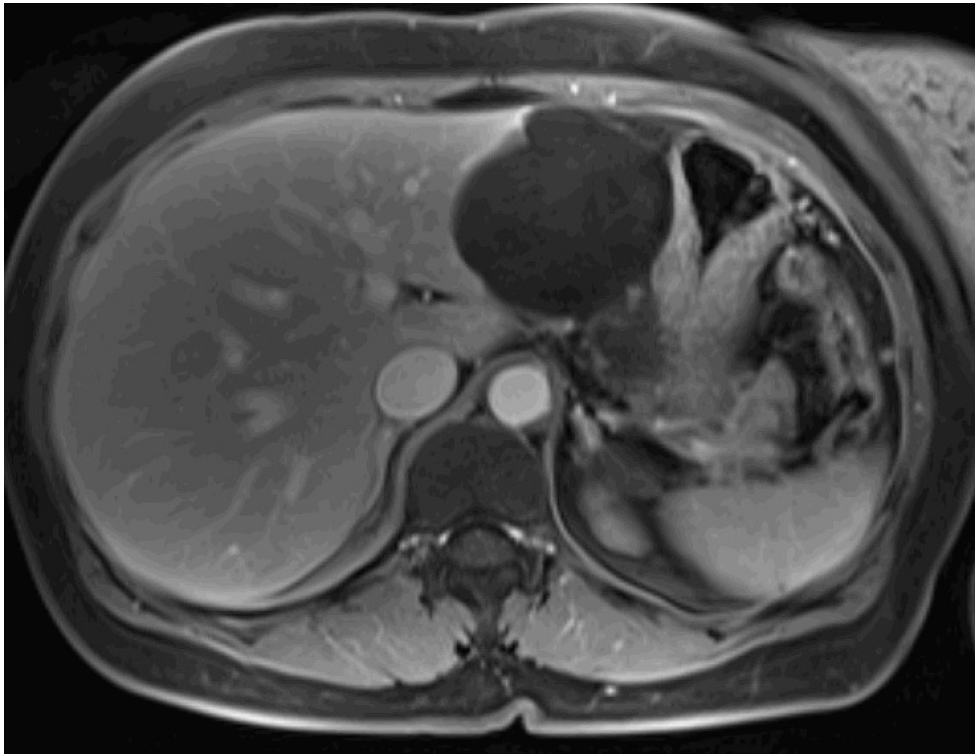
  diaphragm, large bowel, nerves

  <u>Interpole</u>

  diaphragm, nerves, colon collecting system

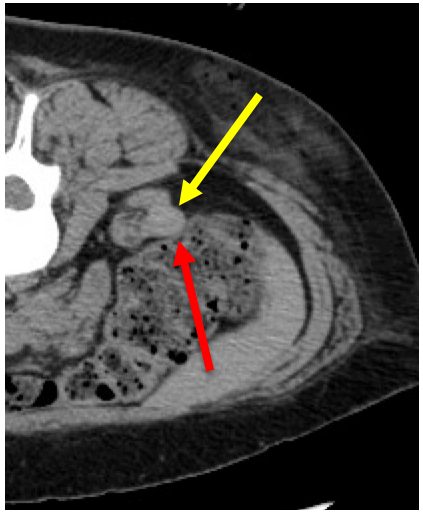
  <u>Lower pole</u>

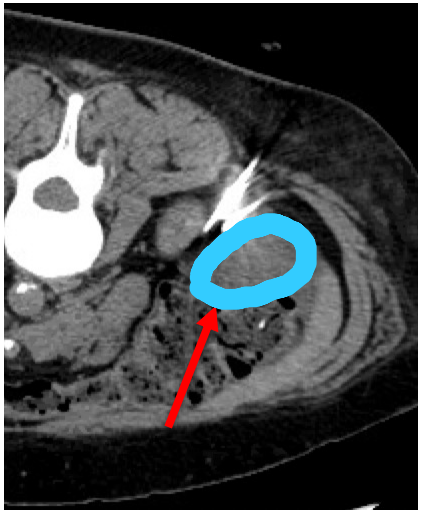
  Nerves, colon, collecting system



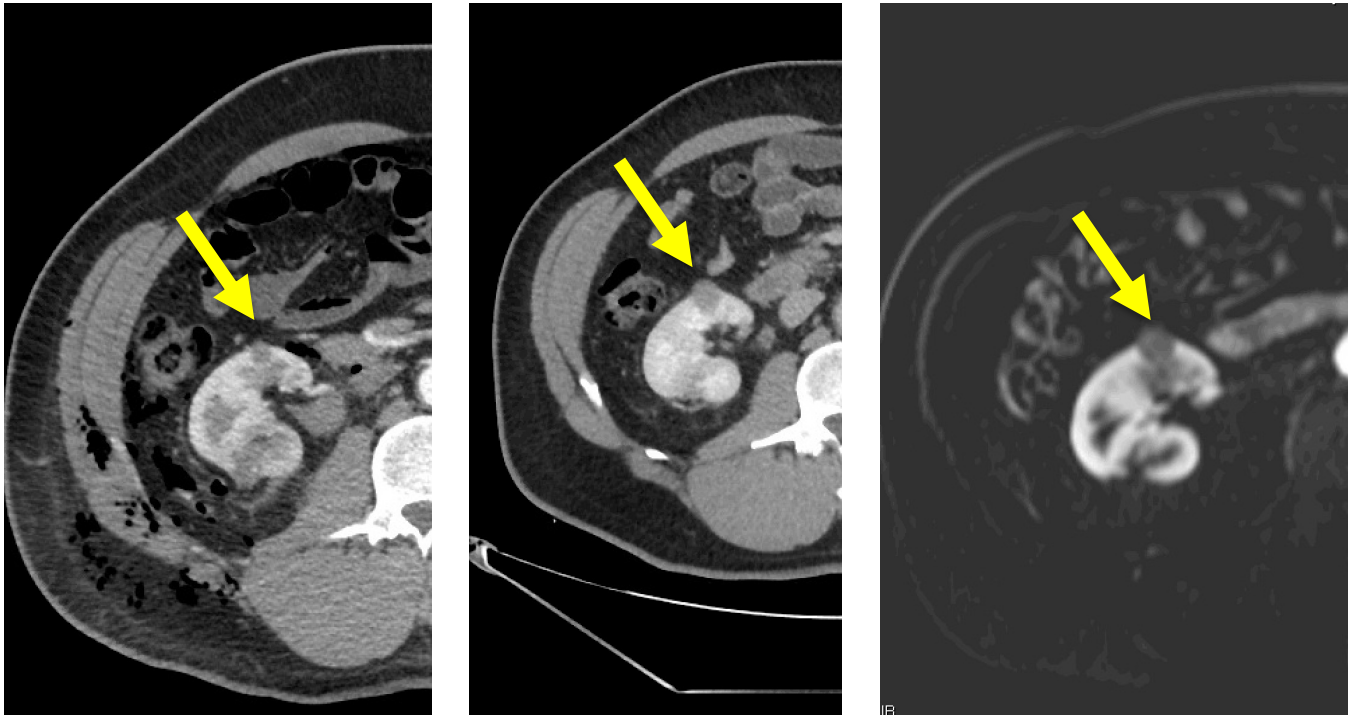
Interpole renal lesion with adjacent colon

Probe placement, then hydrodissect

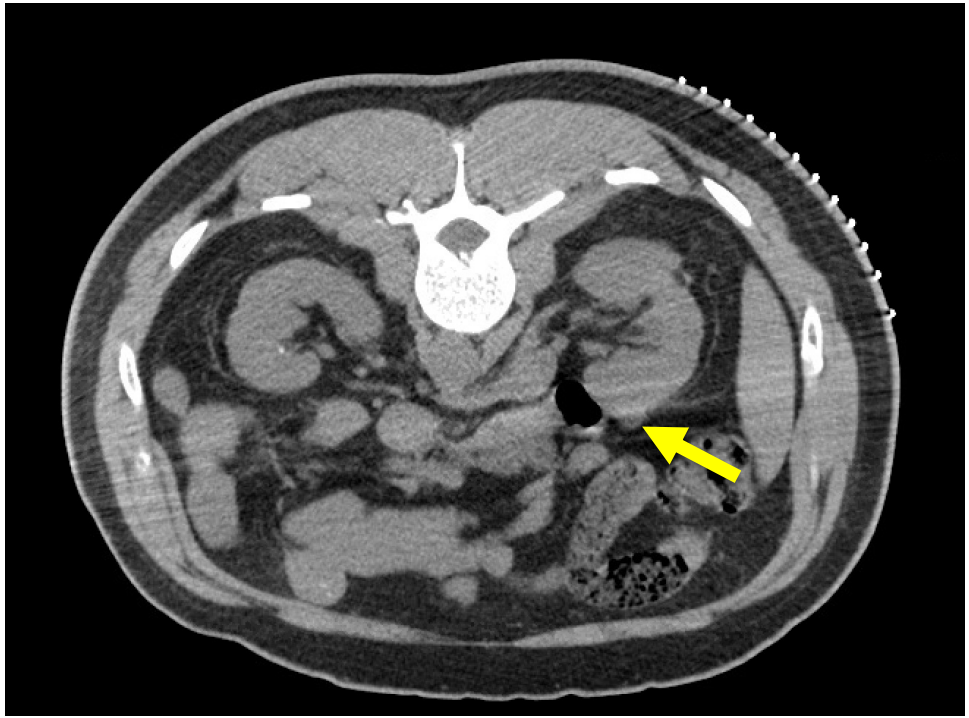




Growing right anterior, interpole renal mass



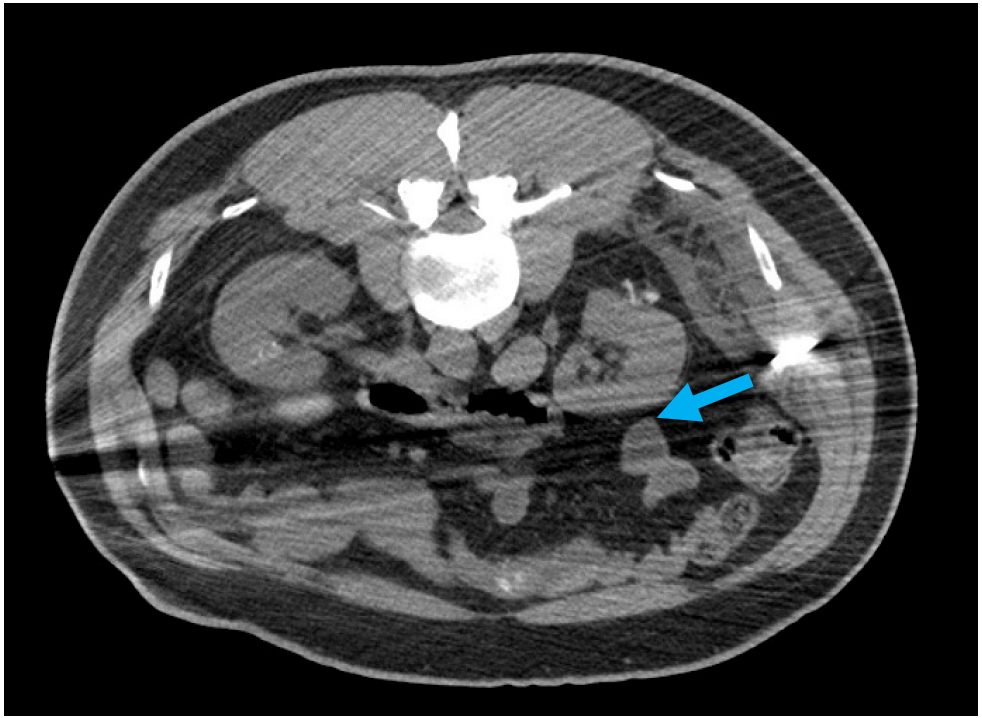
Liver and duodenum are in the way



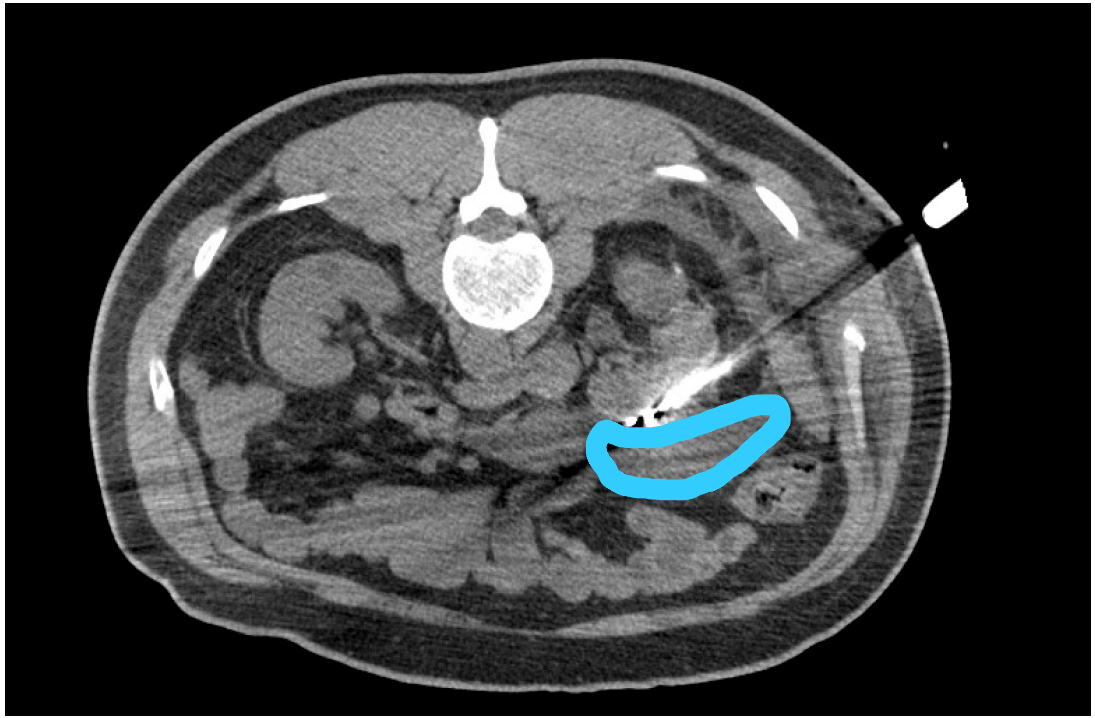
Hydrodissect the liver out of the way.

Probe positioned, now address the duodenum

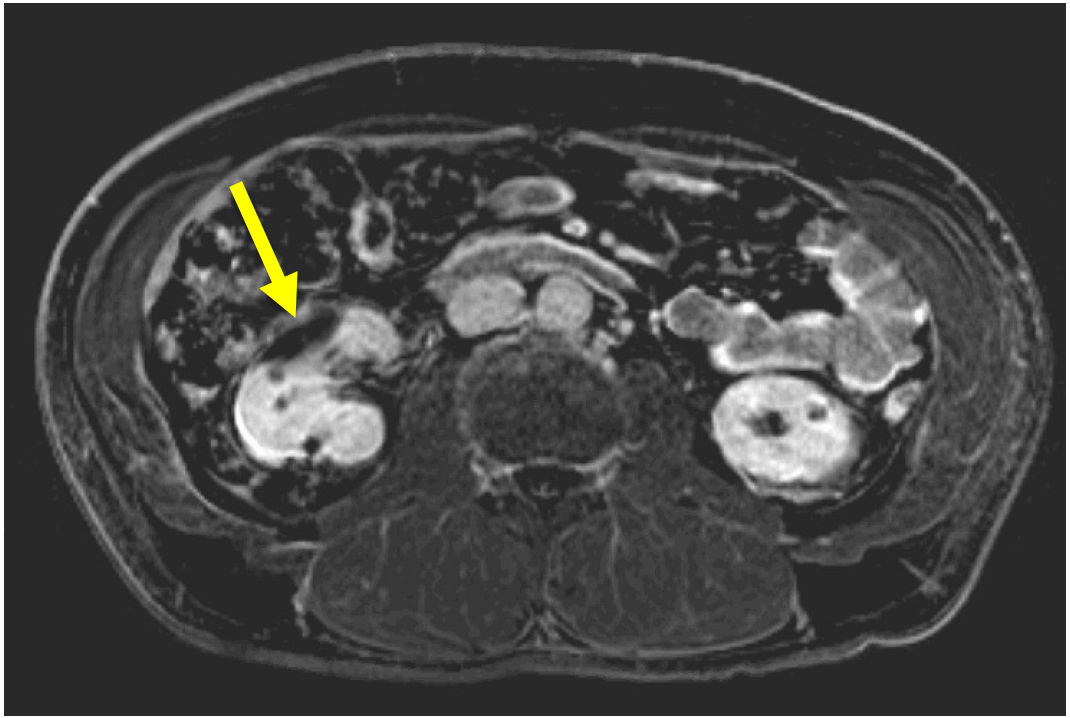
Position the hydrodissection needle within the anterior aspect of perinephric fat



Excellent displacement



Follow up scan's show no evidence of recurrence



Hydrodissect

- Hawkins 18 g needle or 5F Yueh
- D5 water
- Needle or catheter needs to be within perirenal fat (within Gerota's fascia)
- Usually after probe placement

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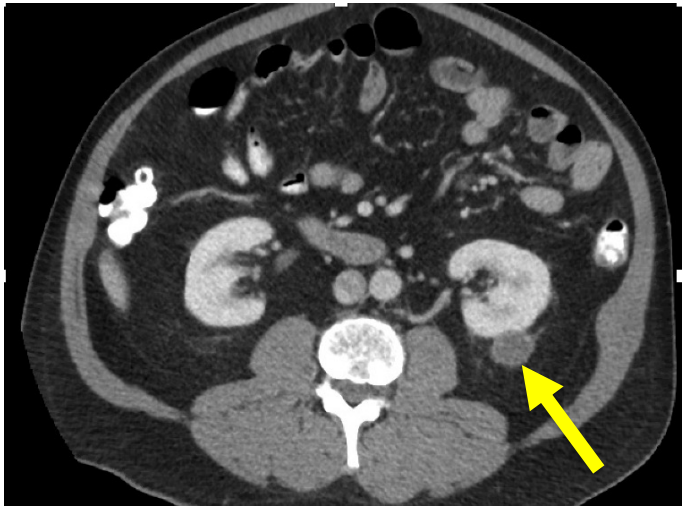
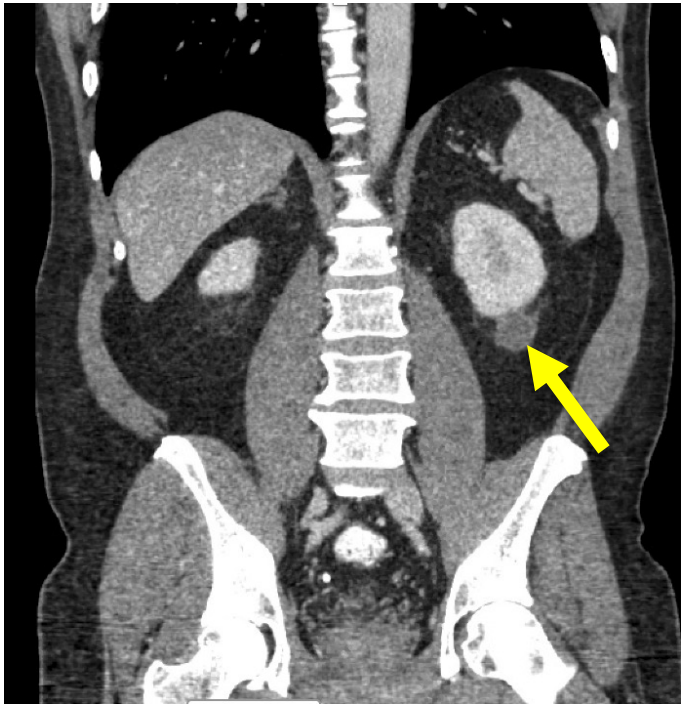
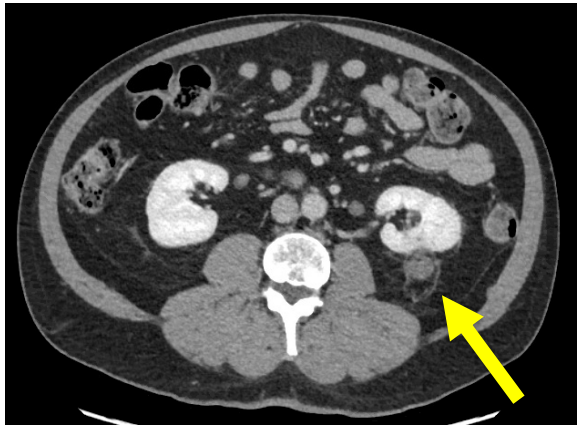
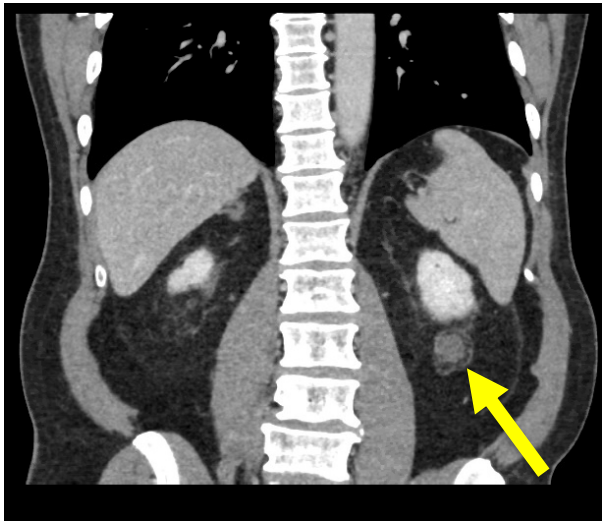




Ablation and biopsy at same time





Biopsy

- When biopsy and ablation at the same time – ablation probe first
- When treating smaller lesions – consider staging renal biopsy
- If need to know tissue diagnosis – stage

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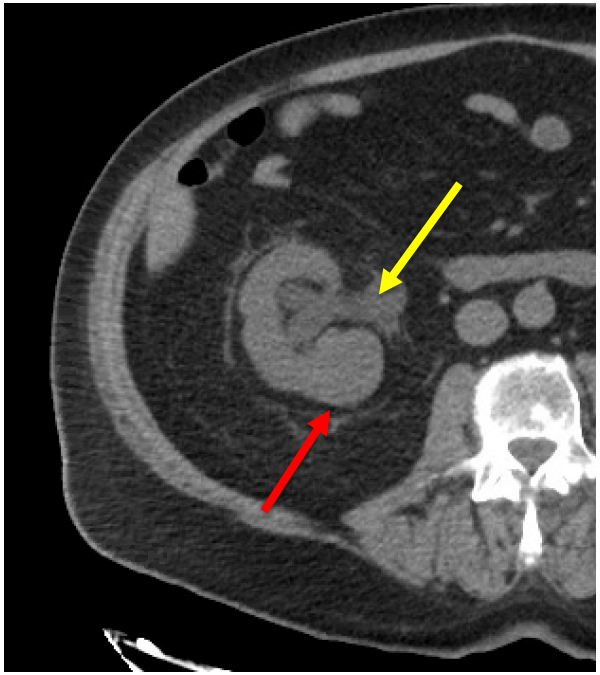
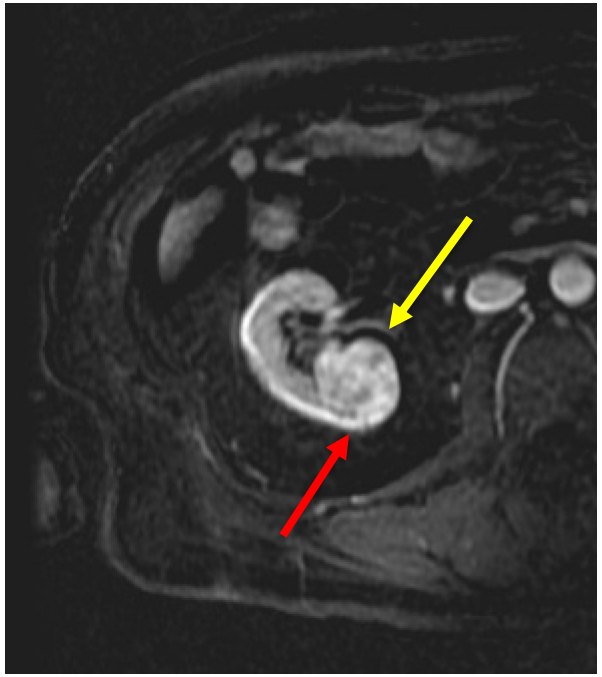
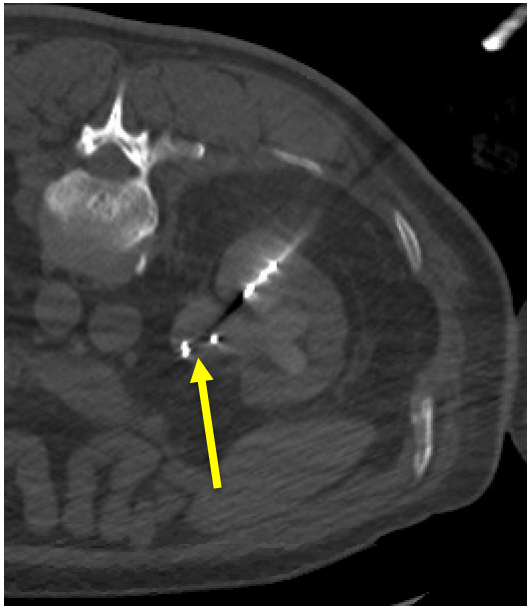
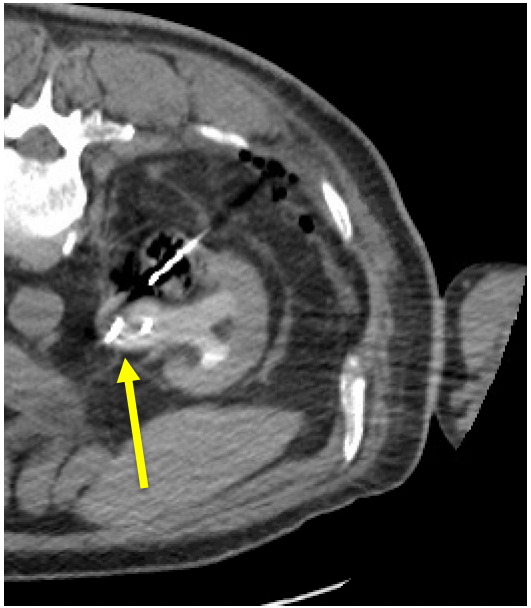


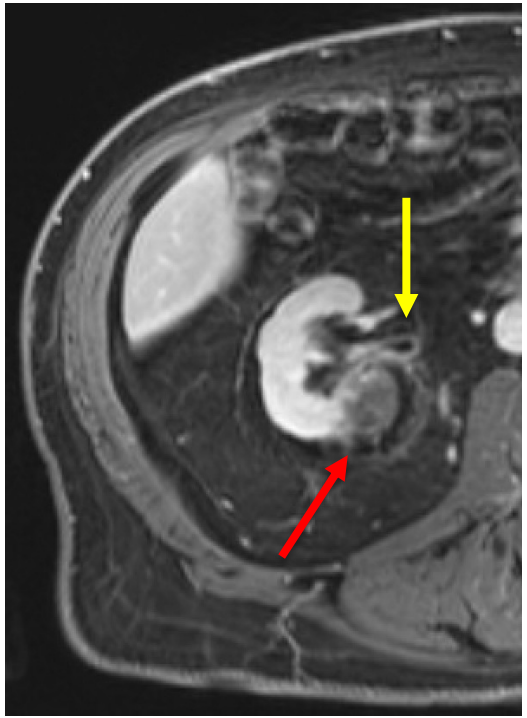


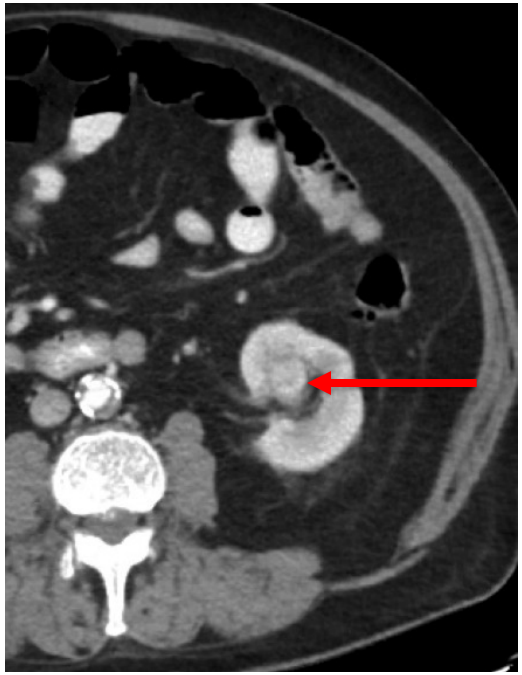
Protection of the ureteral with ureteral stenting



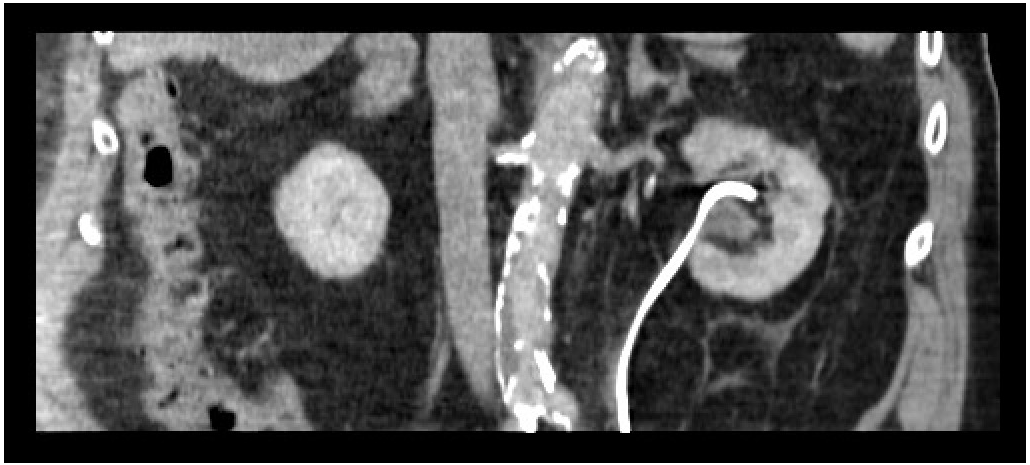


Follow up



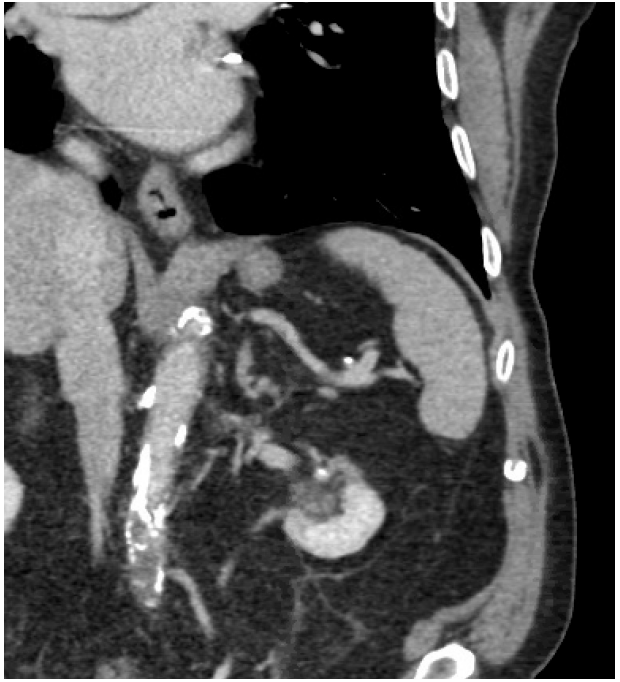


Underwent pre-operative ureteral stent placement to protect collecting system



Underwent pre-operative ureteral stent placement to protect collecting system

Subsequent follow up



Protect the ureter

- **Placement of ureteral stent (+/- pyeloperfusion)**
- **Stent stays in 8 weeks**
- **Understand the ablation probe zone of ablation with relation to probe**

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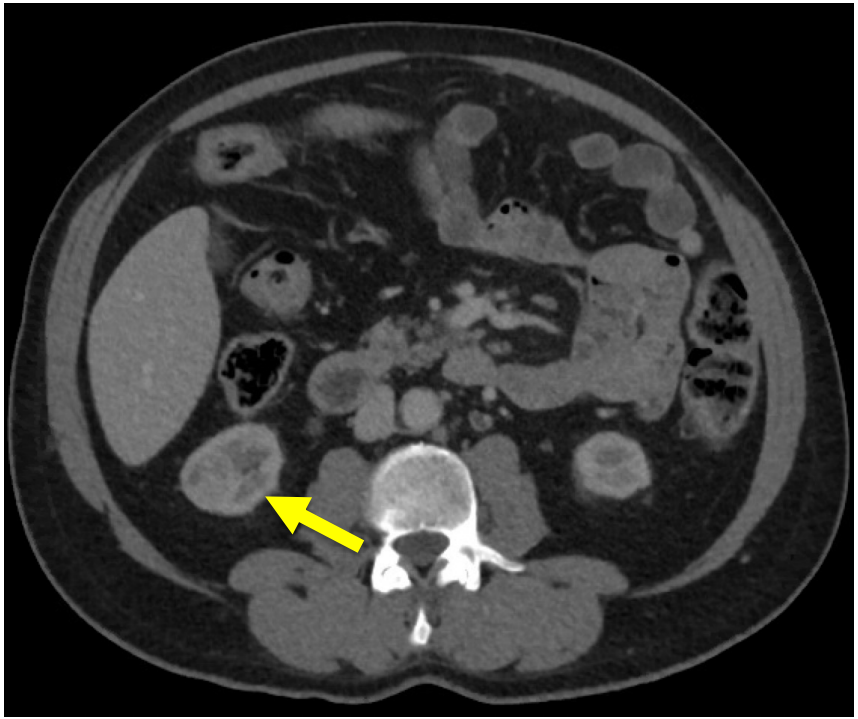

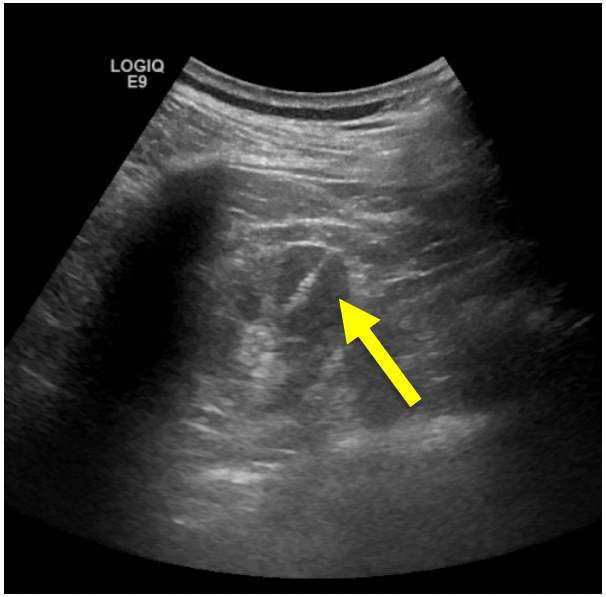
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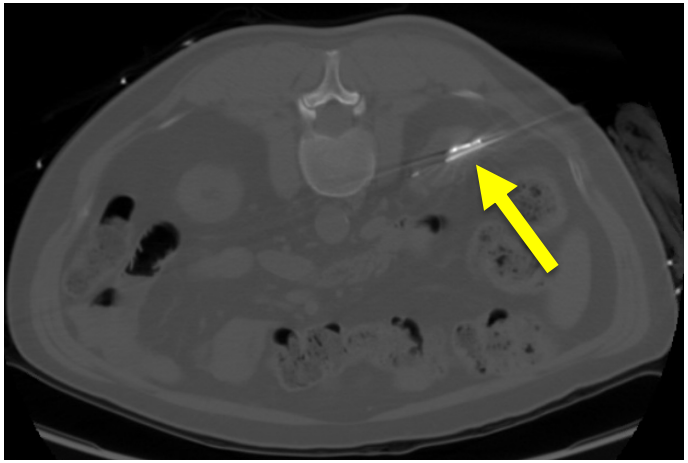
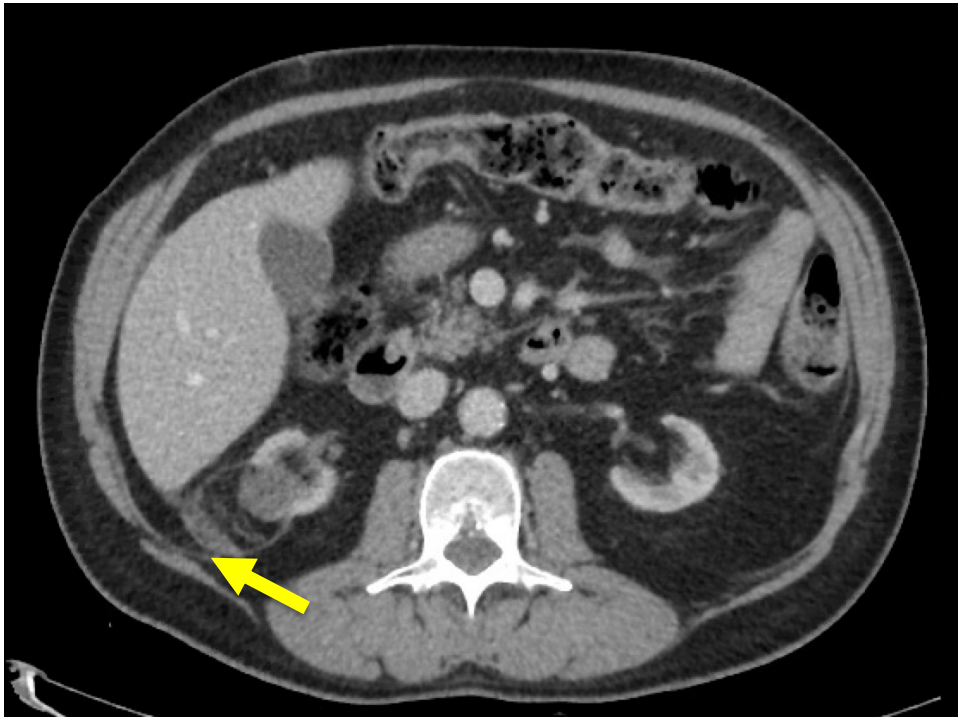
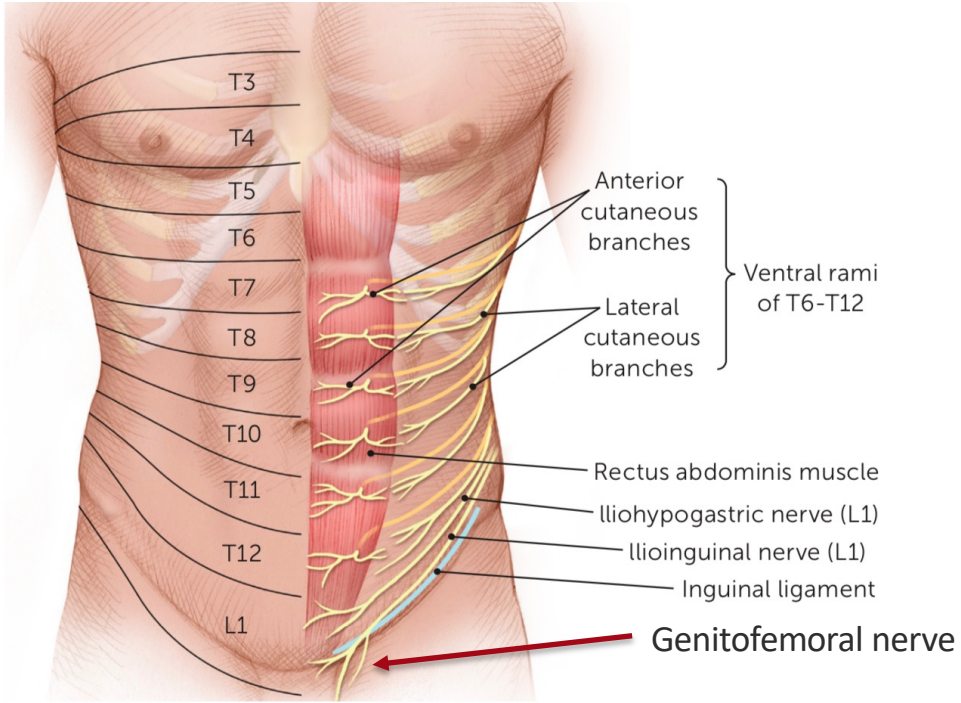




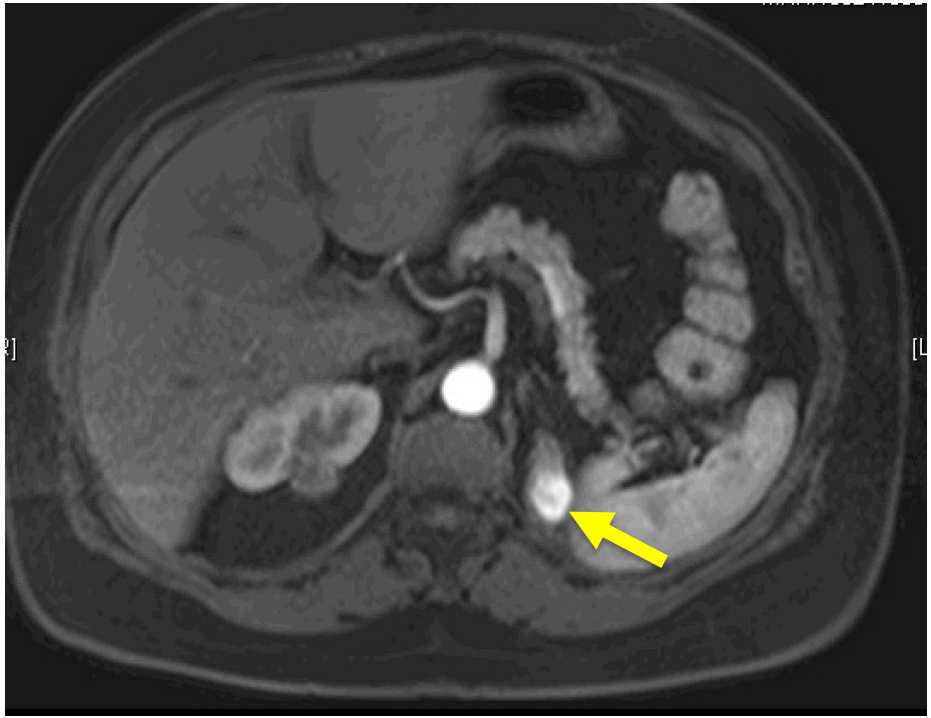


Shian B, Larson ST. AM Fam Physician 2018 Oct 1;98(7):429-436.

Know your ablation zone

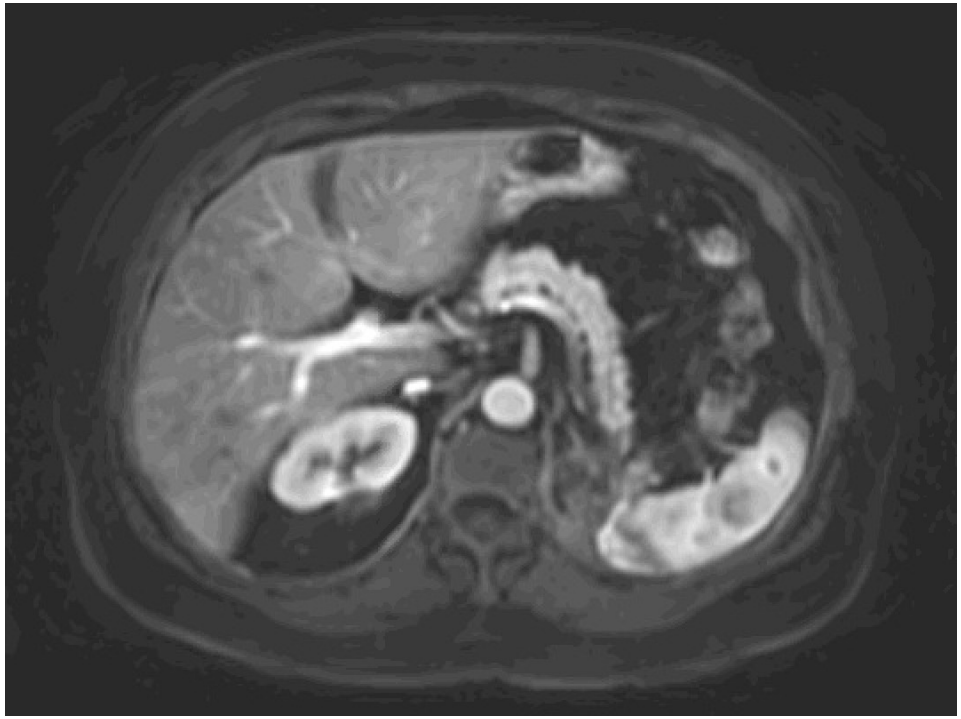
- Be aware of burn back or freeze back
- Hydrodissect to protect
- If does happen 2 week course of
  - NSAID
  - Celebrex
  - Steroids

Recurrence in nephrectomy bed



Lateral decubitus to keep lung out of ablation approach

18 month follow up



Ablation choice

- **If can’t hydrodissect off the nerve, rib, or diaphragm to protect the nerve - cryoablation**

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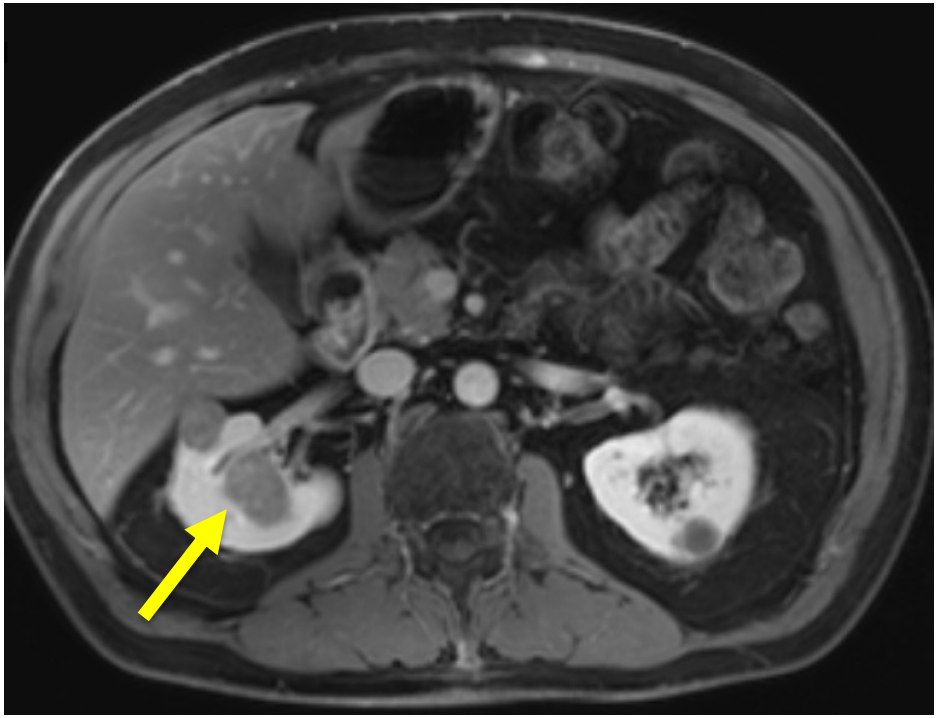

Don’t focus just on the ablation

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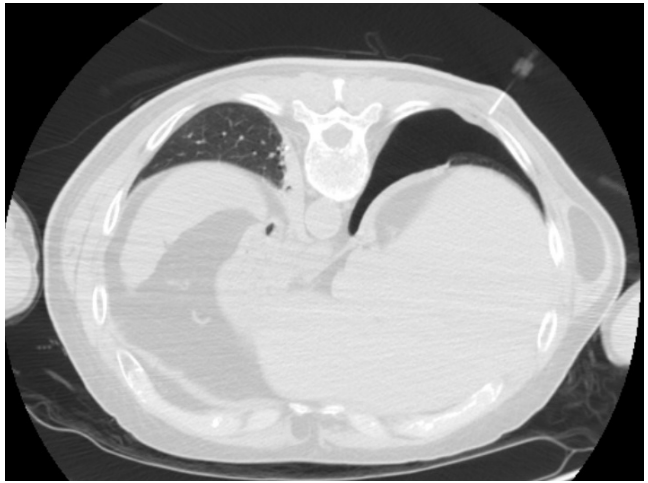
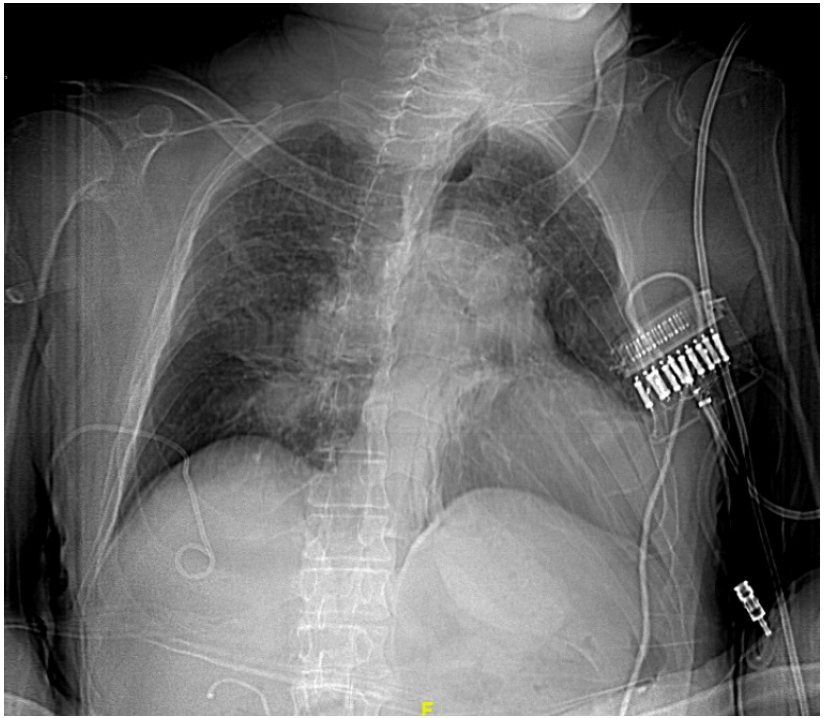


Don’t focus just on the ablation



THANK YOU

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CURRENT GUIDELINES: WHEN IS RENAL MASS INDICATED?

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Assistant Professor of Radiology in Urology

Disclosures

- Johnson and Johnson (Consultant, Medical Advisory Board)
- Boston Scientific (Medical Advisory Board)
- Terumo (Consultant)
- General Electric (Consultant)

Objectives

- National Comprehensive Cancer Network
- American Society of Clinical Oncology
- American Urologic Association
- European Association of Urology

WHEN IS RENAL MASS BIOPSY JUSTIFIED?

National Comprehensive Cancer Network®

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

Kidney Cancer

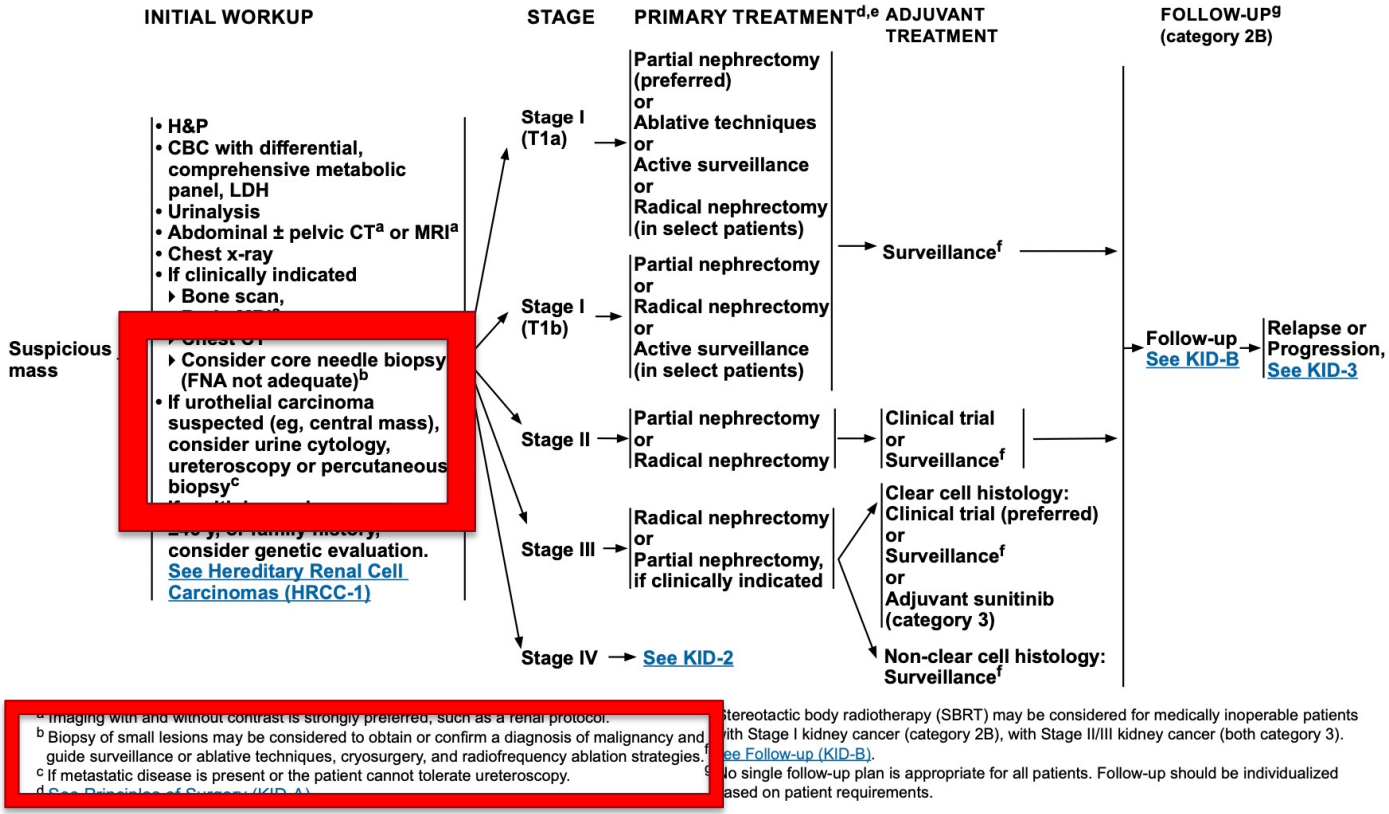
Version 2.2022 — September 8, 2021

NCCN.org

NCCN Guidelines for Patients® available at www.nccn.org/patients

Continue

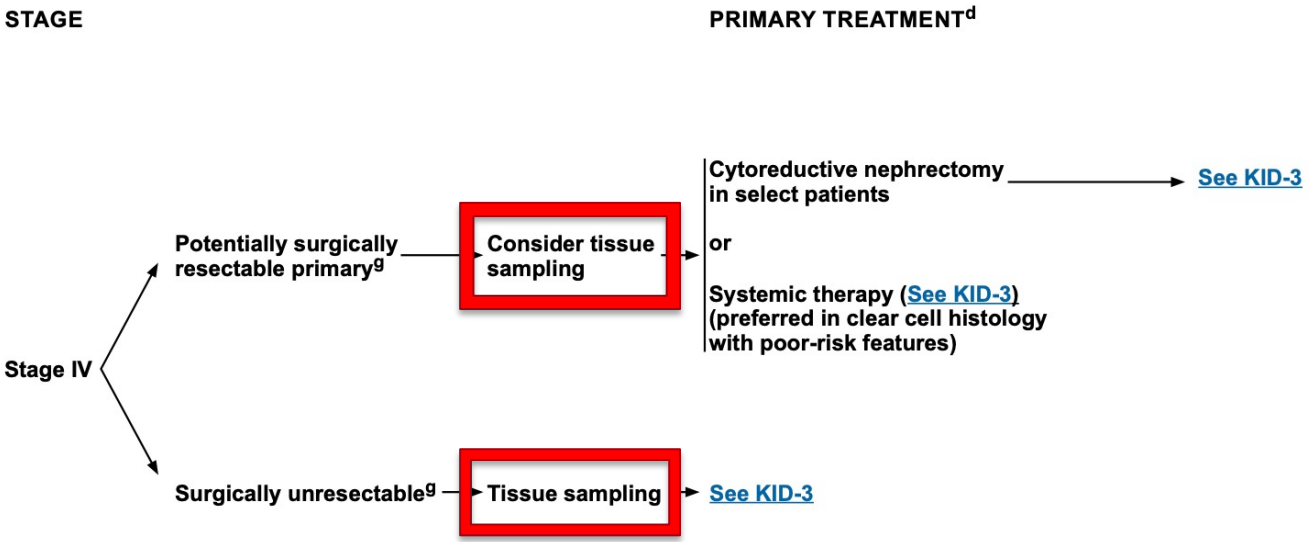
National Comprehensive Cancer Network



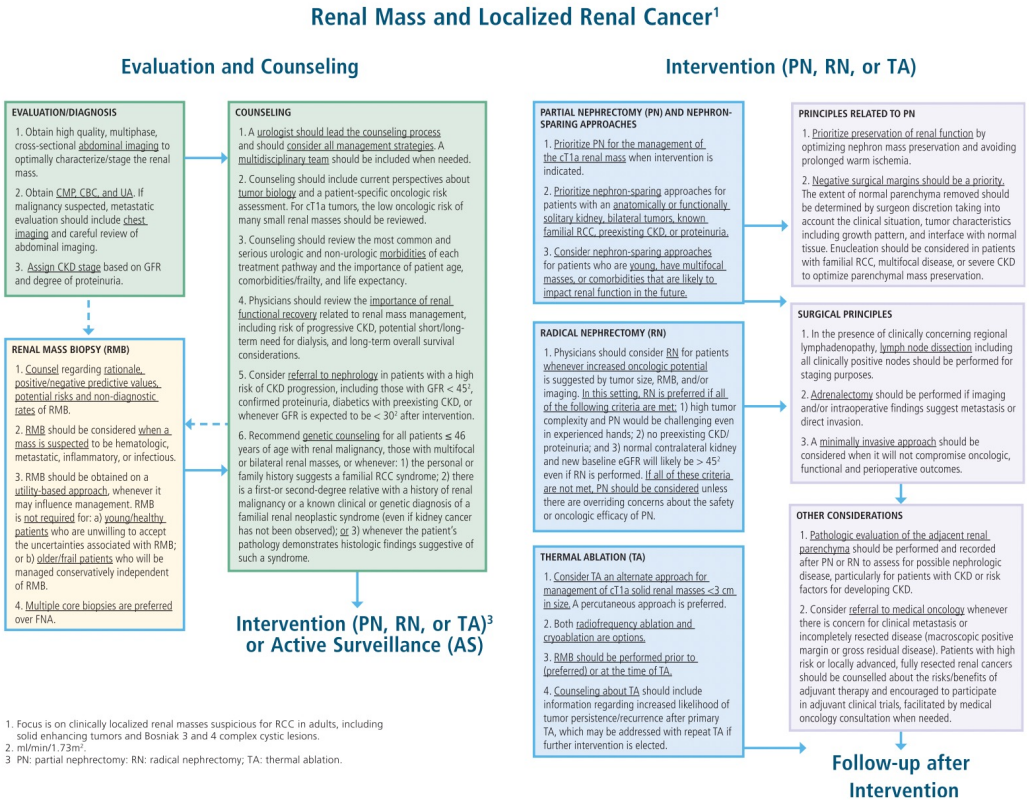
[a] Imaging with and without contrast is strongly preferred, such as a renal protocol.
[b] Biopsy of small lesions may be considered to obtain or confirm a diagnosis of malignancy and guide surveillance or ablative techniques, cryosurgery, and radiofrequency ablation strategies.
[c] If metastatic disease is present or the patient cannot tolerate ureteroscopy.
[d] See Principles of Surgery (KID-A)

Stereotactic body radiotherapy (SBRT) may be considered for medically inoperable patients with Stage I kidney cancer (category 2B), with Stage II/III kidney cancer (both category 3).
See Follow-up (KID-B).
No single follow-up plan is appropriate for all patients. Follow-up should be individualized based on patient requirements.

NCCN – Pathology dictates systemic therapy



American Urologic Association 2021



American Urologic Association: When to biopsy

- Renal mass biopsy should be considered if there is concern the enhancing mass could be
  - Hematologic
  - Metastatic
  - Inflammatory
  - Infectious
- In patients undergoing thermal ablation
- In patients with solid or Bosniak 3/4 complex cystic masses who are considering active surveillance but who are considered to have a high oncologic risk

American Urologic Association: When not to biopsy

- Young or healthy patients who are unwilling to accept the uncertainties associated with biopsy
- Older or frail patients who will only be managed conservatively regardless of biopsy findings

American Urologic Association

- Safe with low complications
  - renal hematoma (4.9%)
  - risk clinically significant pain (1.2%)
  - risk gross hematuria (1.0%)
  - pneumothorax (0.6%)
  - hemorrhage requiring transfusion (0.4%)
- No reported cases of tumor seeding using contemporary techniques.
- A diagnosis of malignancy of RCC on biopsy is highly accurate with
- Non diagnostic rate of 8%

American Urologic Association: What type of biopsy

- CT or US
- At least 2-3 cores with 16-18 gauge
- Core biopsy is preferred
- Avoid FNA

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JOURNAL OF CLINICAL ONCOLOGY

ASCO SPECIAL ARTICLE

Management of Small Renal Masses: American Society of Clinical Oncology Clinical Practice Guideline

Antonio Finelli, Nofisat Ismaila, Bill Bro, Jeremy Durack, Scott Eggener, Andrew Evans, Inderbir Gill, David Graham, William Huang, Michael A.S. Jewett, Sheron Latcha, William Lowrance, Mitchell Rosner, Bobby Shayegan, R. Houston Thompson, Robert Uzzo, and Paul Russo

American Society of Clinical Oncology

- “On the basis of tumor-specific findings and competing risks of mortality, all patients with an SRM should be considered for RTB when the results may alter management”

Limitations of renal mass biopsy

- Concerns over low negative predictive value of 63%
- Non diagnostic rates ~8% (although reported up to 20%)
- Oncocytic neoplasm – differentiating oncocytoma from chromophobe

Survey says…

	If will help guide therapy	Core Biopsy	FNA	Non-diagnostic rate	Major Complications	Tumor Seeding?	Prior to Ablation
NCCN	Yes	-	-	-	-	-	Yes
AUA	Yes	Yes	No	14%	Low <1%	No	Yes
ASCO	Yes	Yes	No	10-20%		No	Yes

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When is renal mass biopsy indicated?

When is Renal Mass Justified?

- Surveillance
- Ablation
- Advanced disease
- Small Renal Mass?

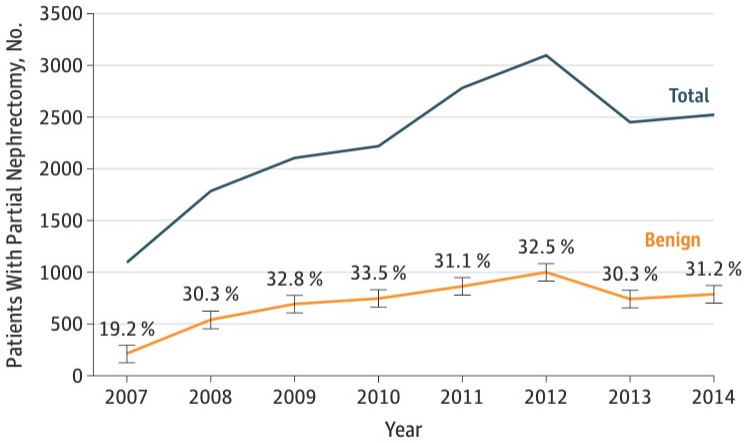
A significant population of small renal masses are benign!

Tumor Size (cm)	No. Benign (%)	No. RCC (%)
0.0–Less than 1.0	37 (46.3)	43 (53.8)
1.0–Less than 2.0	38 (22.4)	132 (77.7)
2.0–Less than 3.0	75 (22.0)	266 (78.0)
3.0–Less than 4.0	71 (19.9)	285 (80.1)
4.0–Less than 5.0	37 (9.9)	336 (90.1)
5.0–Less than 6.0	40 (13.0)	267 (87.0)
6.0–Less than 7.0	11 (4.5)	232 (95.5)
7.0 or Greater	67 (6.3)	998 (93.7)

J Urol. 2003 Dec;170(6 Pt 1):2217-20.

Nearly 1/3 of partial nephrectomies are done for BENIGN tumors!

Figure. Annual Prevalence of Benign and Malignant Findings From 2007 to 2014



Percentages represent the annual proportion of benign prevalence among total patients who underwent PNx.

JAMA Surg. 2019;154(3):225-231.

Renal mass biopsy in high-risk patients could reduce direct costs by 20%

- Established a primary goal to avoid immediate extirpative surgery in benign renal tumors:
  - Elderly (>70 y) with very low-risk tumors
  - High renal functional risks (≥ CKD3b)
  - Competing risks (ASA ≥ 3),
- RMB could have reduced direct costs by approximately 20%

Urol Oncol 2021 Jul 20;S1078-1439(21)

When is renal mass biopsy indicated?

- Always
- A significant proportion of small renal masses are benign
- Operating on benign tumors is not justified
- Morbidity of biopsy is extremely low
- Cost savings associated with biopsy

THANK YOU

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