



Multidisciplinary Approaches to Cancer Symposium

Treatment of Small Renal Mass: Surgery, Ablation, or Stereotactic Body Radiation Therapy (SBRT)

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October 1, 2026

Disclosures

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This presentation and/or comments will provide a balanced, non-promotional, and evidence-based approach to all diagnostic, therapeutic and/or research related content.

This presentation has been peer-reviewed and no conflicts were noted.



Cultural Linguistic Competency (CLC) & Implicit Bias (IB)

STATE LAW:

The California legislature has passed Assembly Bill (AB) 1195, which states that as of July 1, 2006, all Category 1 CME activities that relate to patient care must include a cultural diversity/linguistics component. It has also passed AB 241, which states that as of January 1, 2022, all continuing education courses for a physician and surgeon **must** contain curriculum that includes specified instruction in the understanding of implicit bias in medical treatment.

The cultural and linguistic competency (CLC) and implicit bias (IB) definitions reiterate how patients' diverse backgrounds may impact their access to care.

EXEMPTION:

Business and Professions Code 2190.1 exempts activities which are dedicated solely to research or other issues that do not contain a direct patient care component.

This presentation is dedicated solely to research or other issues that do not contain a direct patient care component.



Surgery(Robotic Partial Nephrectomy)



Clinical frame: what is cT1 RCC?

Localized renal tumor confined to the kidney; treatment is intended to be curative.

cT1a

≤4 cm

Often amenable to partial nephrectomy, ablation, or—selected patients—active surveillance.

cT1b

>4–7 cm

Partial nephrectomy is preferred when feasible; non-surgical approaches require more selective use.

Key staging point

cT1 = tumor limited to kidney and ≤7 cm; N0/M0 assumed for this deck.

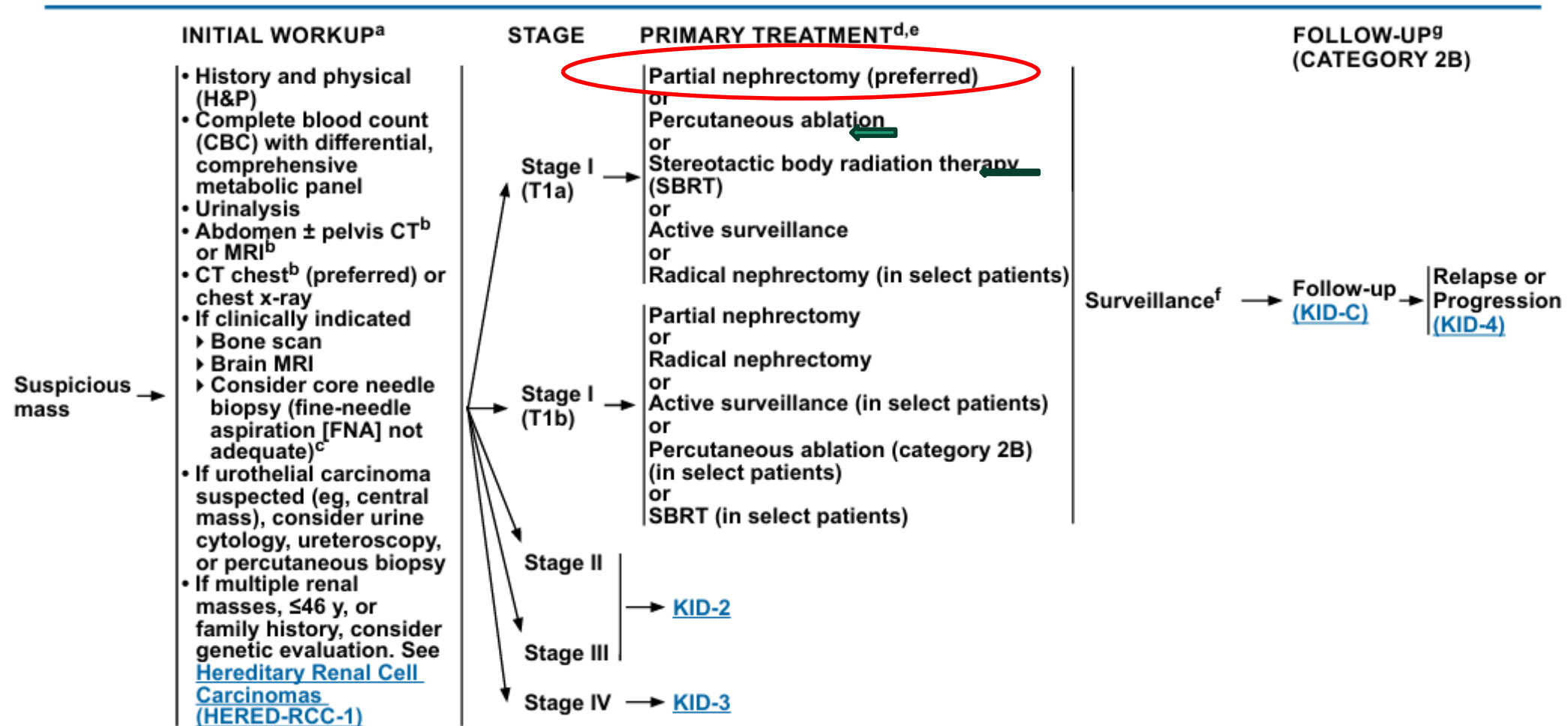
Treatment choice is driven by tumor biology, anatomy, patient fitness, renal reserve, competing mortality, and patient preferences.

For T1 tumors, current EAU guidance strongly recommends partial nephrectomy when technically feasible.

Thermal ablation and SABR are guideline-supported alternatives when treatment is indicated but surgery is unsuitable; the evidence base is less mature than for surgery.

NCCN Guidelines Version 1.2027

Kidney Cancer



Robotic partial nephrectomy (RAPN)

RAPN

Nephron-sparing excision remains the reference surgical strategy for T1 RCC.

What it delivers

- Histologic diagnosis and grade
- Direct tumor excision + margin assessment
- Broad applicability across tumor locations
- Mature long-term oncologic experience

Key trade-offs

- General anesthesia and operative morbidity
- Bleeding/urine leak/collecting-system injury risks
- Temporary renal ischemia may occur
- Greater procedural burden than percutaneous therapy

Why robotic?

- Minimally invasive access
- Precise suturing and tumor excision
- Facilitates complex nephron-sparing surgery
- Contemporary evidence supports favorable perioperative profiles

T1

EAU: offer PN

R0

Margin-focused excision

Nephron

Preserve parenchyma

MDT

Complexity matters

The oncologic advantage is direct removal of the tumor; the functional goal is maximal preservation of functioning parenchyma.

The robotic platform is a technical delivery method—not a separate oncologic disease strategy.



SUO 2024

SAME-DAY DISCHARGE AFTER ROBOTIC-ASSISTED PARTIAL NEPHRECTOMY: A MULTI- INSTITUTIONAL ANALYSIS

Category

Kidney Cancer > Other

Description

Poster #182

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SDD Partial Nephrectomy SUO 2024

Retrospective review of Robotic Partial Nephrectomy (COH -132, Cornell NYP- 51)

RAPN (1/2021-5/24), excluded Multiple lesion surgery and Solitary kidneys

Demographically similar in age, race, gender and ASA.

Similar Renal Nephrotomy Score

RNS	SDD	IP	P=0.093
Low	45.5%	41%	
Mod	40.9%	54%	
High	13%	6%	

- Higher percentage of SDD patients undergoing a transperitoneal approach (79.6% vs. 63.3%, $p = 0.046$)
- Higher percentage of SDD patients with XI -90.9%
- Mean procedure time was shorter for SDD patients (161.7 vs. 184.3 minutes, $p = 0.0287$),
- No differences were found between warm ischemia time or estimated blood loss.
- **The 30-day complication rate was lower for SDD patients (9.1% versus 23.0%, $p = 0.05$). However, these groups did not significantly differ in unscheduled office/ED visits, readmissions, or phone calls**



4. Percutaneous thermal ablation

Cryoablation and radiofrequency ablation are the best-established thermal modalities.

Strengths

- Often outpatient/short stay
- Avoids abdominal surgery in many cases
- Low blood loss and procedural morbidity
- Useful in older/frail/high-risk patients
- Repeat ablation can be feasible

Best-supported niche

- cT1a, especially smaller lesions
- Favorable percutaneous access
- Patients prioritizing lower procedural burden
- Solitary kidney / limited renal reserve when surgery is undesirable

Limitations

- Higher local recurrence than PN in pooled comparative studies
- Size/location can limit technical success
- Requires rigorous imaging surveillance
- EAU: avoid routine RFA >3 cm and cryoablation >4 cm

Evidence signal	RAPN	Percutaneous ablation
Local control	More durable	Higher local recurrence / retreatment
Peri-procedural burden	Higher	Lower
Renal function	Generally preserved	Often favorable; comparative results vary





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Evidence-Based Review

Partial Nephrectomy versus Thermal Ablation for Clinical Stage T1 Renal Masses: Systematic Review and Meta-Analysis of More than 3,900 Patients

J. Ricardo Rivero MD ^a, Jose De La Cerda III MD, MPH ^a, Hanzhang Wang MD, MPH ^a, Michael A. Liss MD ^{a b}, Ann M. Farrell MLS ^d, Ronald Rodriguez MD, PhD ^{a b}, Rajeev Suri MD ^c, Dharam Kaushik MD ^{a b} [Show more](#)

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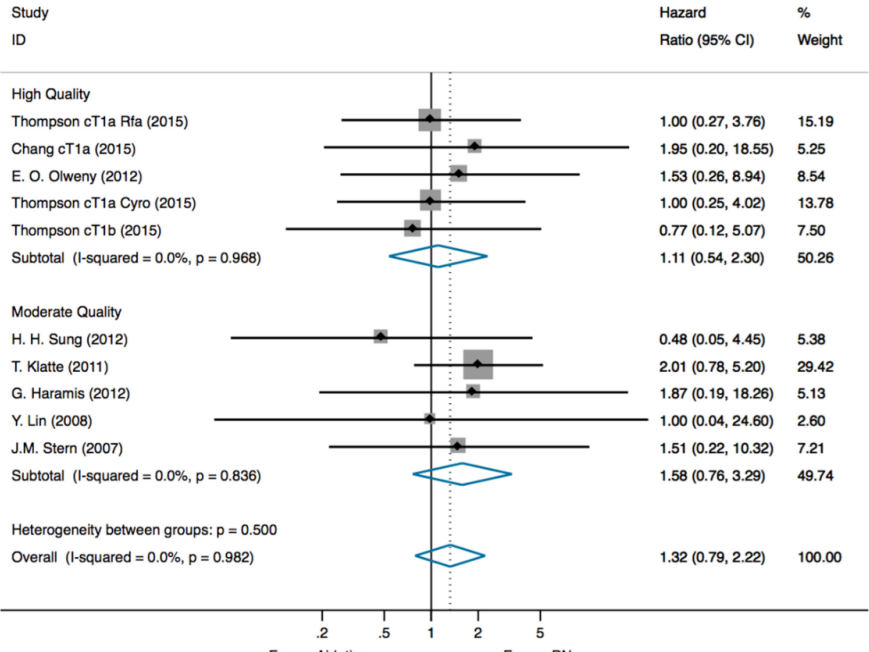
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Abstract

[Outline](#)

[Abstract](#)

Hazard Ratio of Local Recurrence: Ablation versus Partial Nephrectomy



-Not statistically significant , however in LR

-However trend higher rates of recurrence in Ablation
HR, 1.32 955 CI, 0.79-2.22



SBRT / SABR

SBRT

Non-invasive definitive local therapy with rapidly maturing prospective evidence.

What is it?

Highly conformal, image-guided external-beam radiation delivered in 1–5 fractions. No incision or ablation probe.

FASTRACK II regimen

26 Gy × 1 for tumors ≤4 cm; 42 Gy in 3 fractions for tumors >4 cm in the prospective phase II trial.

2026 long-term signal

70 treated patients; median follow-up 62 months; 100% local control at 36, 60, and 84 months; 10% had ≥1 grade-3 treatment-related AE; no grade-4 events or treatment-related deaths.

100%

Local control at 3–7 years in FASTRACK II

10%

Grade ≥3 treatment-related AE

62 mo

Median follow-up

FASTRACK II was single-arm and enrolled patients who were medically inoperable, high risk, or declined surgery; it does not establish equivalence to PN in fit surgical candidates.

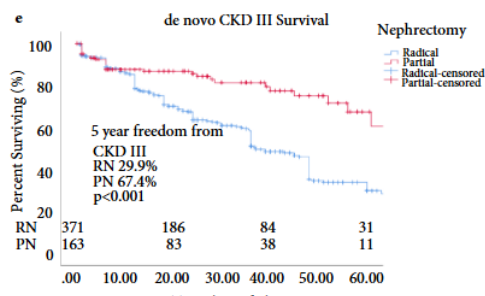
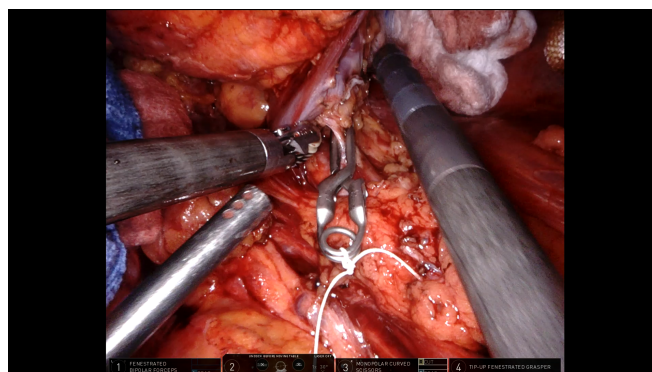
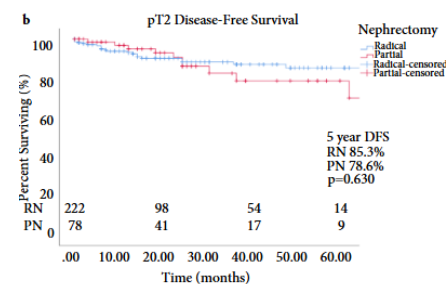
Renal function is a key planning issue; dose-response analyses demonstrate clinically meaningful ipsilateral renal-function loss.



Robotic partial nephrectomy vs minimally invasive radical nephrectomy for clinical T2a renal mass: a propensity score-matched comparison from the ROSULA (Robotic Surgery for Large Renal Mass) Collaborative Group

Correction(s) for this article

Aaron W. Bradshaw, Riccardo Autorino, Giuseppe Simone, Bo Yang, Robert G. Uzzo, Francesco Porpiglia, Umberto Capitanio, James Porter, Riccardo Bertolo, Andrea Minervini, Clayton Lau, Kenneth Jacobsohn, Akbar Ashrafi, Daniel Eun, Alexandre Mottrie, Wesley M. White, Luigi Schips, Benjamin J. Challacombe, Ottavio De Cobelli, Carmen M. Mir, Alessandro Vecchia, Alessandro Larcher, Alexander Kutikov, Monish Aron, Prokar Dasgupta, Francesco Montorsi, Inderbir S. Gill, Chandru P. Sundaram, Jihad Kaouk, Ithaar H. Derweesh ... See fewer authors



- Most cT2 undergo Radical Nephrectomy
- ROSULA Collaborative Group(Europe/US)

- ❑ Retrospective, Propensity Score matched -Comparison RARPN and MIS_RN
- ❑ Primary Outcomes-DFS
- ❑ Secondary Outcome-OS, Complication rate
- ❑ Median FU 36 months

• No Significant Difference in DFS or OS(PN vs RN)

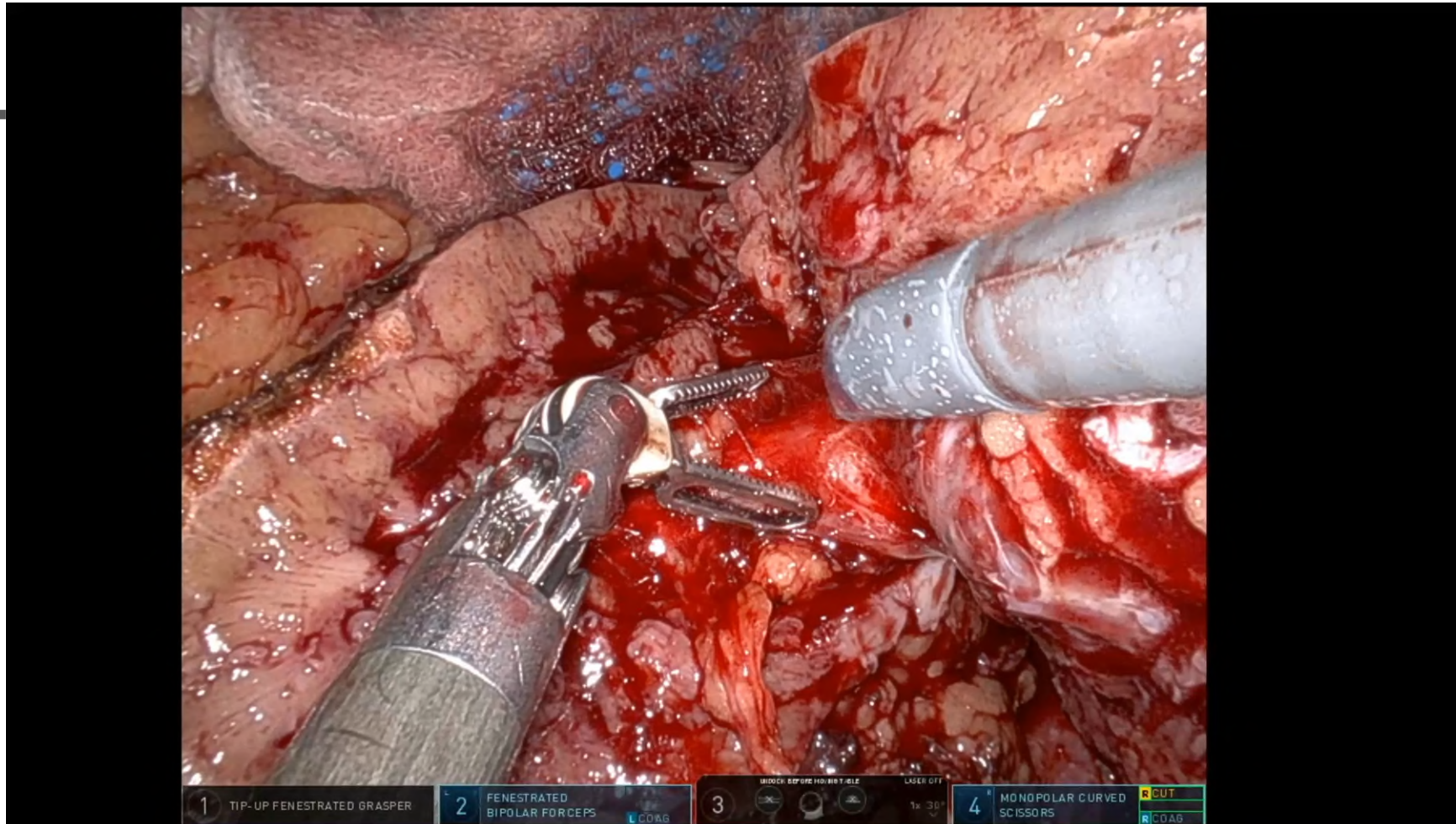
• 5 Years freedom from “de novo CKD 3” was 91.6% RAPN vs 68.9% MIS_RN (P<0.001)

• RAPN should be considered for cT2 Renal Masses

BJU Int March 2020

Complex and Large Lesions

Large 8cm mass with Vascular Thrombus



Counseling points & evidence gaps

The key issue is not whether each modality can control T1 RCC—it is how confidently we can compare them.

What is well established

- PN is the guideline anchor for T1 disease when feasible
- Ablation reduces procedural burden in selected patients
- SABR has strong prospective local-control signals in non-surgical patients

What remains uncertain

- No mature randomized comparison of RAPN vs ablation vs SABR
- Selection bias strongly affects observational comparisons
- Long-term renal-function and quality-of-life trade-offs need more direct comparison

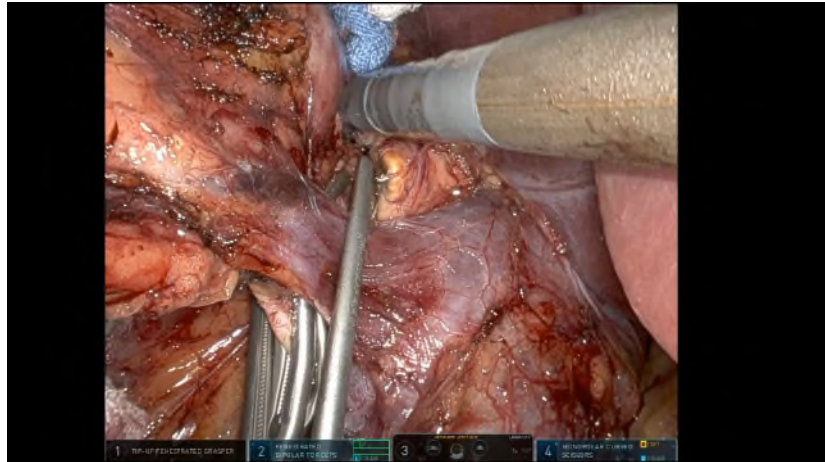
What to tell patients

- Local control ≠ identical evidence level
- Ablation may require closer surveillance/retreatment
- SABR can cause delayed renal-function loss
- Choice should reflect priorities and procedural risk

For ablation: explain the higher likelihood of local persistence/recurrence relative to surgery and the possibility of repeat treatment.

For SABR: explain that strongest prospective data come from patients unsuitable for surgery, not randomized comparisons with PN.

For all modalities: long-term imaging surveillance remains essential.

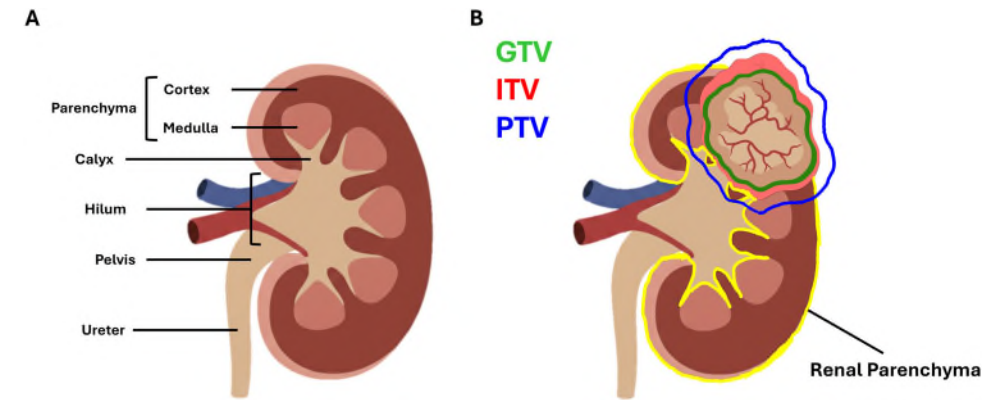


Stereotactic Body Radiation Therapy (SBRT)



Why SBRT?

- **Effective local therapy**
- **Existing and growing prospective evidence base**
- **Completely non-invasive**
- **Does not require anesthesia**
- **Logistically reasonable: Usually 1-3 treatments**
- **Tolerable toxicity burden**
- **Complementary to other modalities**
 - evidence base for >4cm lesions, central lesions, after ablative recurrences



Role of SBRT: Guidelines

NCCN

- Consider for T1-T2a ($\leq 10\text{cm}$) tumors for non-surgical candidates
- Category 2A (deemed appropriate by $\geq 85\%$ consensus of panel)

EAU

- Offer ablation or SBRT in patients with cT1 lesions who have an indication for treatment but are unfit for surgery. (weak strength)

Renal SABR



Size	T1a-b	$\geq \text{T2a}$
Location/Complexity	Central (renal pelvis, hilum)	Bowel (broad contact)
Kidney Function (eGFR)	$\geq 30\text{-}60\text{ mL/min}$	$< 30\text{ mL/min}$
Biopsy	ccRCC or non-ccRCC	Unbiopsied

Absolute contraindications:

- Inability to achieve safe dose delivery

Relative contraindications:

- $\text{eGFR} < 30\text{ mL/min/1.73 m}^2$
- Active Crohn's disease or ulcerative colitis (unless very far from bowel)

FASTRACK II: prospective multicenter evidence

Single-arm study of SBRT

Population:

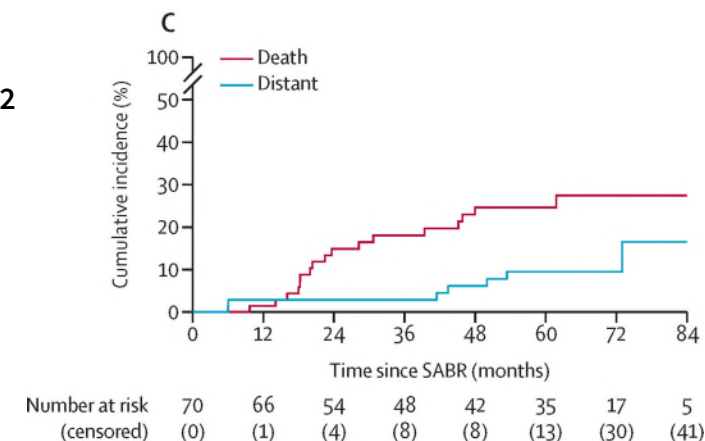
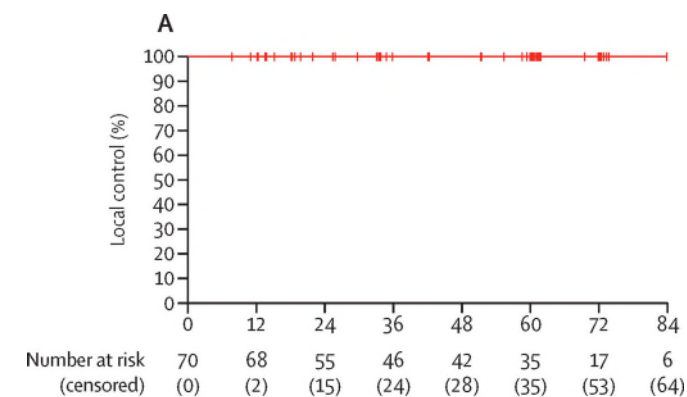
- N=70
- Biopsy proven RCC
- Medically inoperable, high risk, or declined surgery
- Median age 77
- Tumor size $\leq 10\text{cm}$
 - 37-55mm enrolled
- eGFR ≥ 30
- 70% previously progressed on active surveillance

5- year Outcomes:

- 100% LC
- 88% distant PFS
- 100% CSS
- 70% OS

Toxicity:

- Baseline Mean eGFR: 61.1 mL/min per 1.73 m²
- 5 year Mean eGFR: 42.9 mL/min per 1.73 m²
- 1/70 required dialysis
 - Pt with baseline eGFR 34, 59mm central tumor
- 10% G3 toxicity
 - Vomiting
 - abdominal pain
 - bowel obstruction



IROCK Consortium Retrospective

Multi-center real-world generalizability

Population:

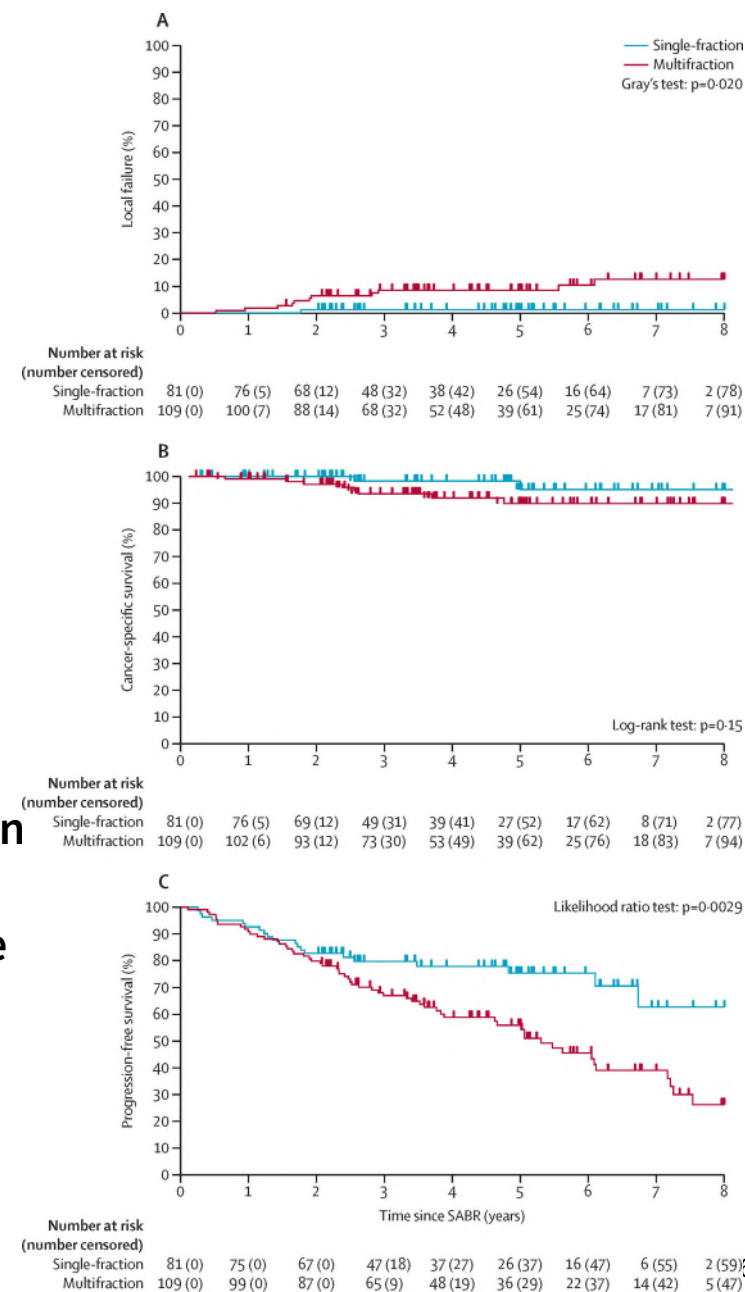
- N=190
- Median age 73.6 years
- 75% deemed medically inoperable
- Median Tumor size 4.0 (2.8-4.9)
- Pre-treatment eGFR: Median 60.0, IQR (42.0–76.0)

5- year Outcomes:

- 94.5% LC
- 87.3% freedom from distant progression
- 92% CSS

Toxicity:

- Baseline Median eGFR: 60.0 mL/min per 1.73 m²
- 5 year median eGFR decrease: 14.2 mL/min
- 7/190 required dialysis (4%)
- 1/190 grade 4 duodenal ulcer, 1/190 grade 4 gastritis
- 0% G3 toxicity

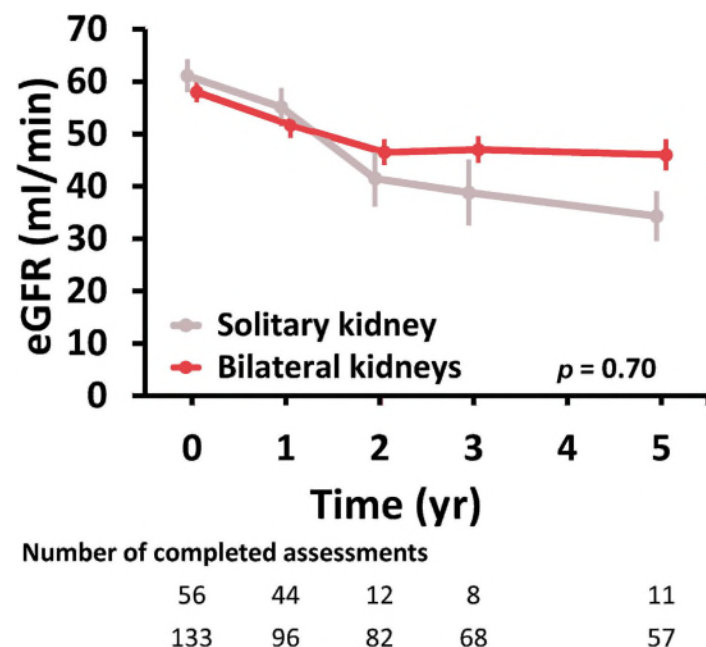


What about solitary kidney?

IROCK Retrospective experience of 12 institutions

Population:

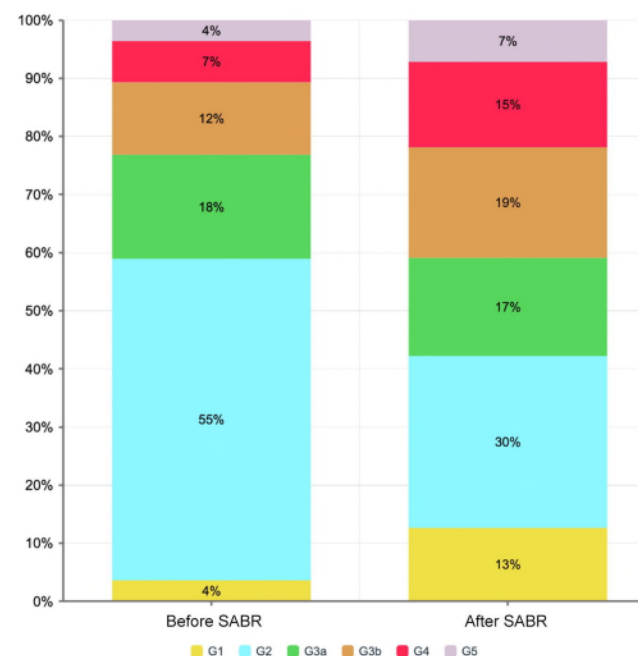
- 190 patients
 - 56 solitary kidney
 - 134 bilateral kidneys
- Median tumor size: 3.97cm



Change in eGFR 5-years after SBRT:

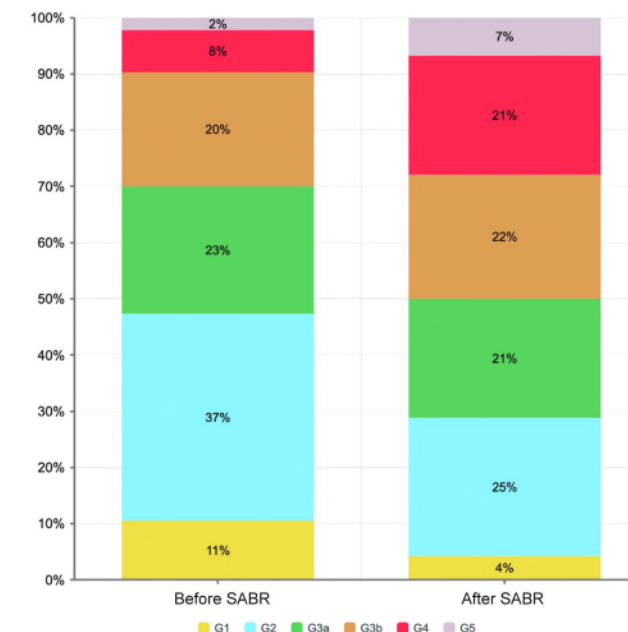
- Solitary kidney: -14.5 ml/min
- Bilateral kidney: -13.3 ml/min

A



Solitary

B



Bilateral

Dialysis rates after SBRT ($p>0.99$):

- Solitary kidney: 3.6%
 - [n = 2/56]
- Bilateral kidney: 3.7%
 - [n = 5/134]

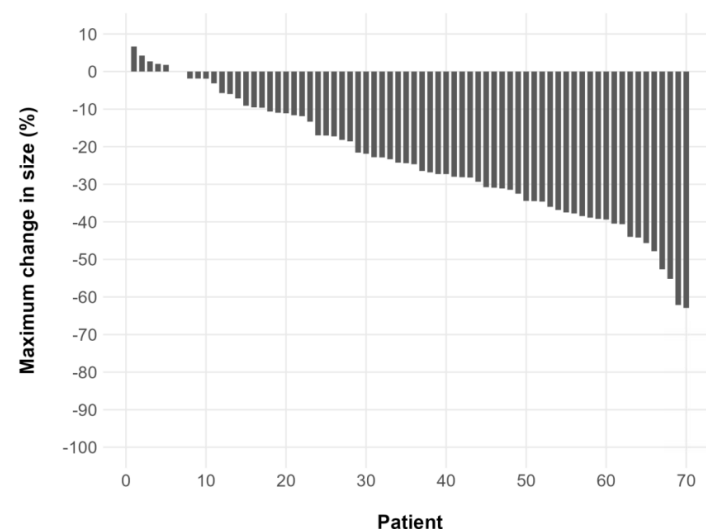


Follow-up pearls after SBRT

Imaging changes are slow/variable:

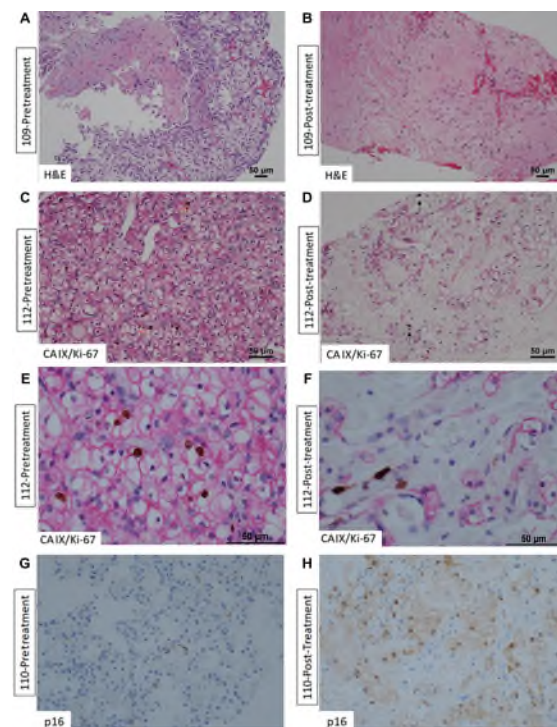
- Median time to 30% volume reduction: 7 months
- 20-25% pseudoprogression within 6-12 months before regressing
- Contrast enhancement not a reliable predictor of viable disease

Figure S5: Waterfall plot for largest change in tumour size (maximum diameter) per patient



Questionable utility of biopsy:

- Hanna et al. obtained scheduled biopsies at 1 year after SBRT
- 11/12 had viable tumor present, but only 1 progressed based on RECIST at 36 months

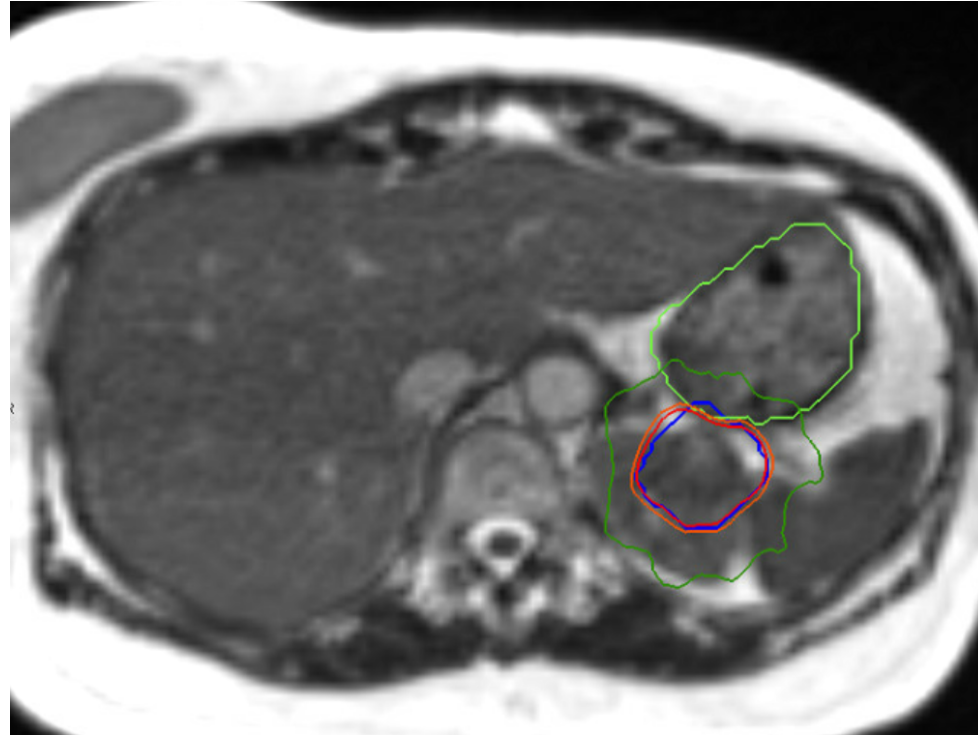


Follow-up schedule:

- •Imaging: CT/MRI every 3-6 months × 2 years, then annually to 5 years.
- •Renal function: eGFR every 3 months (year 1), then spaced out.
- •Do not obtain routine post-SABR therapy biopsy; rely on imaging.

Case 1

- 55 year old female physician with metastatic ALK+ NSCLC, 2.2cm L renal mass presumed RCC
- Deemed high risk biopsy
- Did not want to hold alectinib perioperative, requested SBRT rather than active surveillance
- Prescribed 20gy/1 fx SBRT

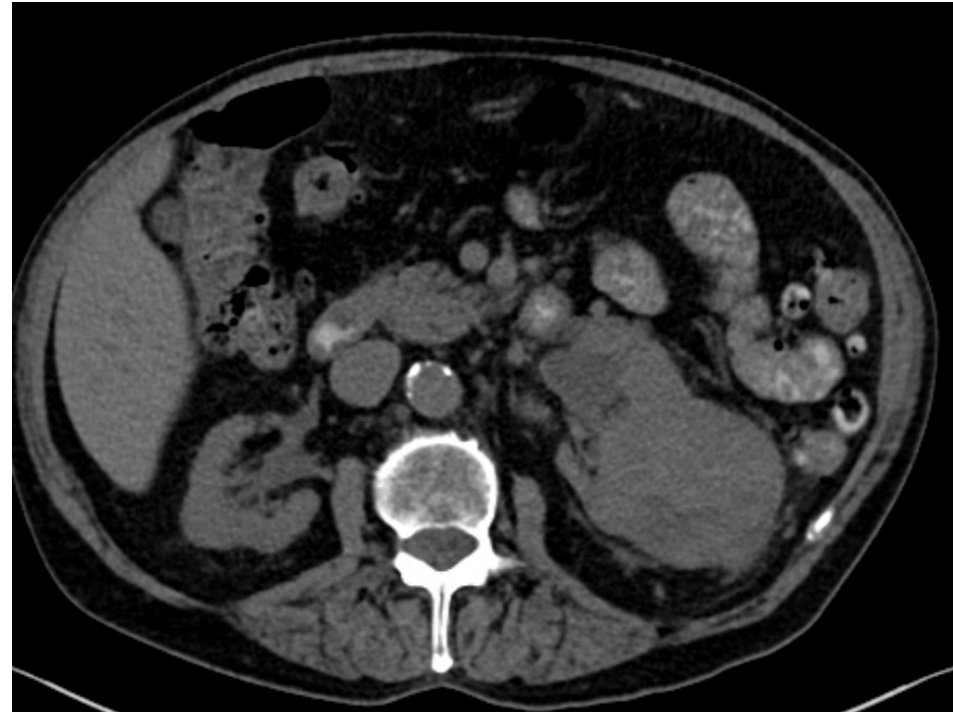


- 18 months after SBRT: stable 1.9cm mass
- eGFR stable ≥ 60

Case 2

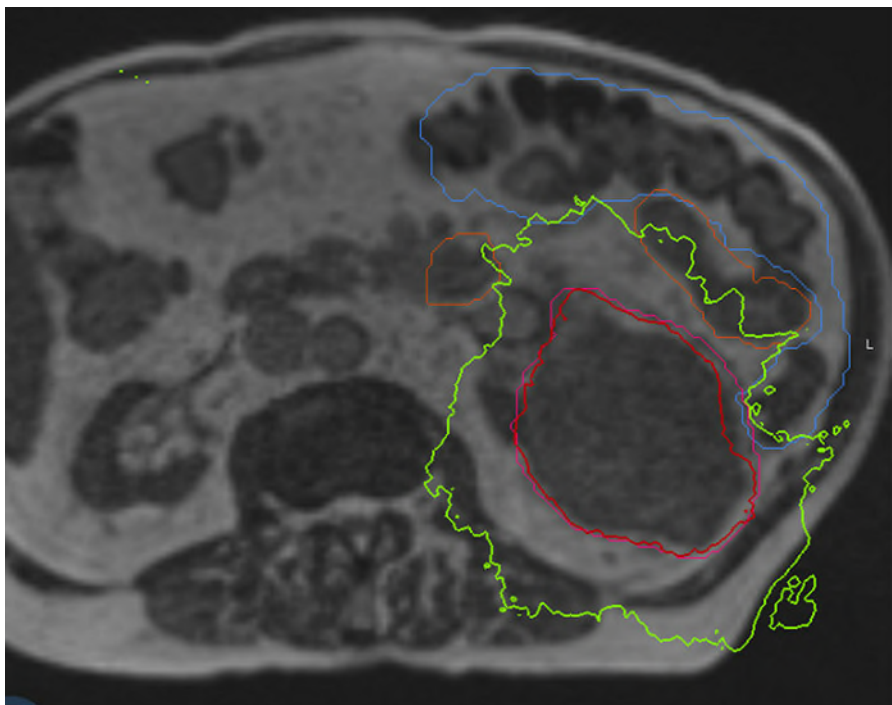
78 year old man with L renal mass

- Multiple medical comorbidities: HTN/HLD/mild dementia, BPH/obstructive uropathy, atrophic R kidney
- Baseline CKD: eGFR 24
- Found to have a 7cm renal mass, biopsy proven clear cell RCC
- Progressed to 8.5cm in 6 months, considered for surgery and systemic therapy options
- Ultimately recommended SBRT given comorbidities, prescribed 42Gy/3fx with adaptive MRI-based treatment
- Also initiated pembrolizumab



Case 2

- Treated with online-adaptive MRI guided linear-accelerator
- Adaptive plan created to adjust for bowel movement – balance toxicity and tumor dose
- Real-time imaging to gate treatment during breath hold



- 6 months after SBRT: mass increased to 9.1cm
- 8 months after SBRT: Pembrolizumab discontinued, ?pembrolizumab induced nephrotoxicity
- 12 months after SBRT: mass decreased to 6.7 cm
- 14 months after SBRT, required hemodialysis due to progressive CKD
- 24 months after SBRT: stable mass

Table 1 Suggested OAR constraints for renal SABR therapy planning

	1 Fraction	3 Fraction	5 Fraction
Spinal canal	D0.03cc < 12 Gy	D0.03cc < 18 Gy	V23Gy < 0.35 cc V14.5Gy < 1.2 cc PRV Dmax < 25.3 Gy
Skin	D1.5cc < 18 Gy	D1.5cc < 30 Gy	Dmax < 39.5 Gy V36.5Gy < 10 cc
Small bowel PRV	D0.03cc < 26 Gy D5cc < 22.5 Gy Dmax covering full circumference of bowel wall ≤12.5 Gy	D0.03cc < 30 Gy D30cc < 12.5 Gy Dmax covering full circumference of bowel wall ≤22.5 Gy	Dmax < 35 Gy D5cc < 19.5 Gy
Large bowel PRV	ALARA D1.5cc < 26 Gy	ALARA D1.5cc < 42 Gy	Dmax < 38 Gy V25Gy < 20 cc
Stomach PRV	D1.5cc < 15.4 Gy D5cc ≤ 22.5 Gy	D0.03cc < 30 Gy D5cc ≤ 22.5 Gy	Dmax < 32 Gy V25Gy < 5 cc V18Gy < 10 cc
Liver	None	D700cc < 15 Gy	Liver-PTV Dmean < 18 Gy
Ipsilateral kidney	ALARA (minimize 50% isodose)	ALARA (minimize >50% isodose)	ALARA (minimize >50% isodose)
Contralateral kidney	V10Gy ≤ 33%	V10Gy ≤ 33%	V10Gy ≤ 33% Dmean < 11.3 Gy
“Uninvolved” renal parenchyma			CV 200cc ≤ 17.5 Gy
Bilateral kidneys			V16.8Gy < 67%

Abbreviations: ALARA = as low as reasonably achievable; CV = critical volume; D XX% or DXXcc = dose in Gy to the hottest XX cc of the volume; Gy = gray; OAR = organ-at-risk; PRV = planning risk volume, expansion of 3 mm; PTV = planning target volume; V YY% or VYYGy = volume receiving at least YY Gy.

Suitable candidates for SBRT

REVIEW

Renal SABR: Implementation of a New Standard of Care

Rohann J.M. Correa, MD, PhD, FRCPC,^a Muhammad Ali, MBBS, FCPS, FRANZCR,^b Vivian S. Tan, MD, FRCPC,^a and Shankar Siva, MD, PhD, FRANZCR^b

^aLondon Health Sciences Centre, London, Ontario, Canada; and ^bDepartment of Radiation Oncology and Sir Peter MacCallum Department of Oncology, Peter MacCallum Cancer Centre, University of Melbourne, Victoria, Australia

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Patient selection	• Biopsy-proven, nonmetastatic RCC; medically inoperable or declines surgery. • Ideal: T1-T1b (select T2a), either exophytic or central/peri-hilar lesions. • Safe: solitary kidney RCC; caution if eGFR <30 mL/min.
Special scenarios	• Large tumors: no absolute size limit; feasibility depends on OAR constraints. • Non-ccRCC: outcomes comparable to clear cell RCC. • Salvage after TA: excellent local control with low toxicity. • IVC thrombus: SABR therapy investigational; palliative/neoadjuvant role. • Metastatic RCC: cytoreductive SABR therapy for oligoprogression in renal primary, or in trial.
Contraindications	• Prior high-dose overlapping RT, active IBD near the bowel, and inability to meet OAR constraints. • Solitary kidney is NOT a contraindication.



Ablation



What is a Gold Standard?

- **The gold standard must deliver:**
 - Metastasis-free and cancer-specific survival that is equal or superior to the alternatives
 - Lowest morbidity (hospitalization, bleeding, renal fnx, etc)
 - Mature, long-term survival data across large patient numbers
 - Cost effective
- **Older isn't better**
- **No randomized head-to-head trials exist, so the winner can't be settled by level 1 evidence.**



Ablation: Durable Oncologic Control

Metastasis-free and cancer-specific survival across seven biopsy-proven RCC series (n≈579) (included t1a and t1b)

Oncologic outcomes

Author / Year	N	Tumor size cm (range)	Median FU (mo)	MFS	CSS
Schmit '12	116	3.4 (1.3–8.9)	21	100%	100%
Larcher '15	109	≤4	21	100%	100%
Breen '18	220	3.4 (1.3–6.2)	21	94.4%	NR
Gobara '21	33	2.1 (1–3.4)	60.1	100%	100%
Abdelsalam '24	30	2.2 (1–4)	54	100%	100%
Atwell '15	46	4.8 (1.6–6.4)	54	NR	94%
Abdelsalam '26	25	4.5 (4.1–6.8)	24	96%	100%

Bottom line: metastasis-free and cancer-specific survival sit at 94–100%.



Partial Nephrectomy vs Ablation for cT1a RCC

Design

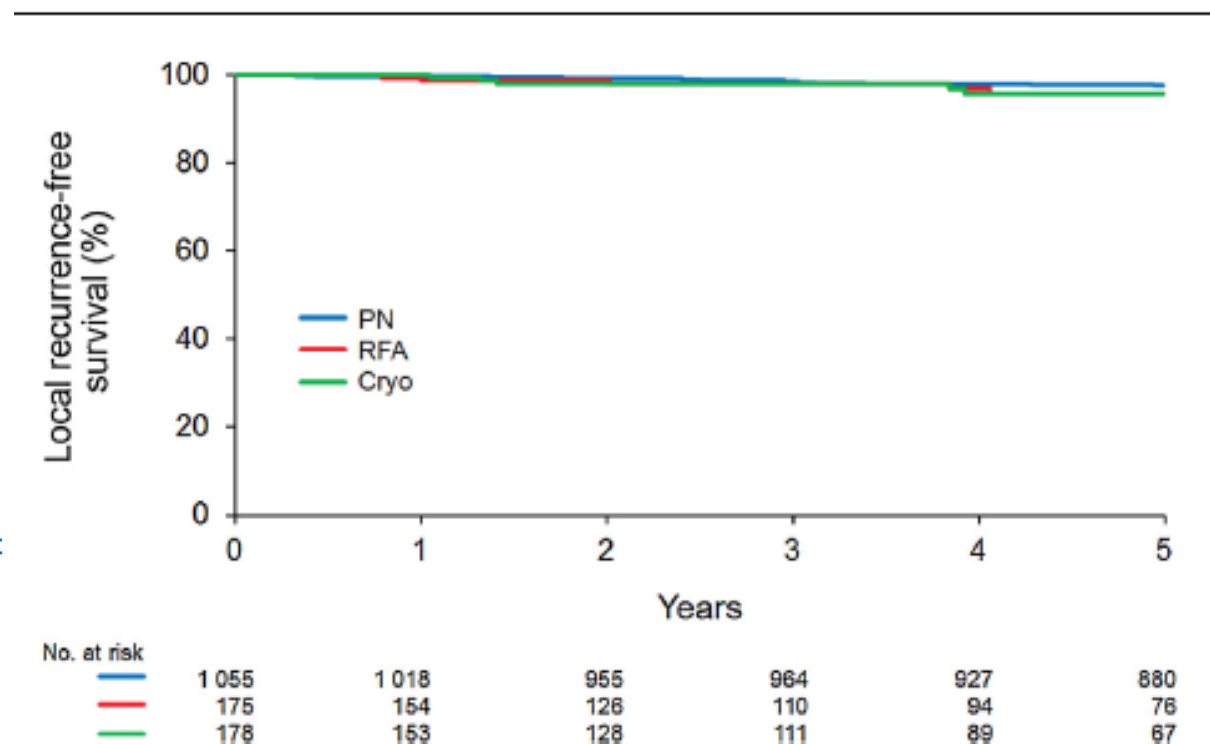
- Retrospective single-institution cohort (Mayo Clinic), cT1a renal masses
- 1,422 patients: partial nephrectomy 1,055, percutaneous RFA 180, percutaneous cryoablation 187
- Median clinical follow-up 9.4 / 7.5 / 6.3 years (PN / RFA / cryo)
- Endpoints: local recurrence, distant metastases, death from RCC

Results

- 5-year local recurrence-free survival: PN 97.7%, RFA 95.9%, cryo 95.9%
- Metastases and death from RCC: non-significant difference after adjustment

Conclusion:

- cT1a: no clinically relevant oncologic differences between PN and ablation



Meta-analysis of Management for cT1 Renal Masses

Methods

- Systematic review and meta-analysis: 107 studies across 110 articles
- Strategies compared: radical nephrectomy (RN), partial nephrectomy (PN), thermal ablation (RFA and cryoablation), and active surveillance (AS)
- Median follow-up ~60 months for RN/PN and 48.6 months for thermal ablation

Results — oncologic

- Cancer-specific survival 95–100% across all strategies, with no significant differences; median 5-year CSS ~95%
- Metastasis-free survival 90.5–100%, with no differences in any comparison
- Local recurrence-free survival inferior for ablation after a single treatment: median 93.0% vs 98.9% for PN; pooled OR 0.37 (0.15–0.89)
- After retreatment (secondary efficacy) ablation reached 97–100% and the difference vs PN disappeared: OR 1.21 (0.58–2.5)



Thermal ablation: perioperative advantages

Blood transfusion rate



Ablation vs partial nephrectomy

- Lower rates of acute kidney injury and cardiovascular, hematologic, and respiratory complications
- Less estimated blood loss/fewer blood transfusions
- No conversions to open or radical surgery
- Shorter length of stay



Cost-effectiveness: Cryoablation vs Partial Nephrectomy

Study design

- Decision-analytic Markov model comparing percutaneous cryoablation (PCA) with minimally invasive partial nephrectomy (PN) for cT1a RCC
- US healthcare payer perspective, 5-year horizon with 1-year cycles
- States modeled: major complication, no evidence of disease, local recurrence, metastasis, and death
- Outcomes in QALYs against a \$100,000/QALY threshold; 10,000 Monte Carlo simulations plus sensitivity analyses

Expected 5-year cost per patient

Cryoablation		\$20,491
Partial nephrectomy		\$26,478

- **PCA is the dominant strategy: slightly better health benefit at substantially lower cost (3.68 vs 3.67 QALYs), saving roughly \$6,000 per patient**
- PCA was more cost-effective in 84.78% of probabilistic simulations

Bottom line: cryoablation delivers equivalent 5-year outcomes at about \$6,000 less per patient and stays economically dominant across nearly all plausible scenarios.

AUA Guidelines



GUIDELINE STATEMENT 25

Clinicians should consider TA as an alternate approach for the management of cT1a solid renal masses <3 cm in size. For patients who elect TA, a percutaneous technique is preferred over a surgical approach whenever feasible to minimize morbidity. (Moderate Recommendation; Evidence Level: Grade C)

GUIDELINE STATEMENT 26

Both radiofrequency ablation (RFA) and cryoablation may be offered as options for patients who elect TA. (Conditional Recommendation; Evidence Level: Grade C)

GUIDELINE STATEMENT 28

Counseling about TA should include information regarding an increased likelihood of tumor persistence or local recurrence after primary TA relative to surgical excision, which may be addressed with repeat ablation if further intervention is elected. (Strong Recommendation; Evidence Level: Grade B)

What about SBRT?



SBRT vs Ablation

Systematic review and meta-analysis comparing SBRT with thermal ablation for primary localized RCC

- Four modalities compared: stereotactic body radiotherapy (SBRT), radiofrequency ablation (RFA), microwave ablation (MWA), and cryoablation
- 133 studies included in the pooled analysis
- 8,910 patients across all modalities
- SBRT represented n=612 (7%)

Huang et al. *Lancet Oncol.* 2025;26:387-398.

Local control, tumours <4 cm

	SBRT	Radiofrequency	Microwave	Cryoablation
1 year	98% (93–100; 0%)	97% (94–98; 74%)	97% (95–99; 77%)	96% (95–97; 48%)
2 years	95% (90–99; 0%)	96% (93–98; 77%)	96% (93–98; 79%)	95% (93–97; 62%)
5 years	98% (91–100; 0%)	95% (91–97; 65%)	92% (72–100; 61%)	91% (88–94; 75%)



Histology-specific Growth Rates of Small Renal Masses

Study design

- Biopsy-characterized active surveillance cohort: 134 patients with 136 biopsy-proven RCC small renal masses
- Prospective multicenter Canadian trial (8 centers)
- cT1aN0M0 masses, median diameter 2.3 cm; serial imaging at 3, 6, and 12 months, then annually
- Median follow-up 5.8 years; growth modeled by histologic subtype

Growth in maximal diameter (cm/yr)

All RCC overall		0.19
Clear cell		0.25–0.28
Papillary type 1		0.017–0.02

- Overall growth was slow: 0.19 cm/yr in diameter
- Clear cell grew at 0.25–0.28 cm/yr
- Papillary type 1 was essentially flat at 0.017–0.02 cm/yr

SBRT vs Ablation

- **Single-center randomized feasibility trial**
- **24 patients randomized 1:1 to SBRT or RFA**
 - Eligibility: renal mass ≤ 4 cm, biopsy-proven
- **Interventions**
 - **SBRT:** 25 Gy in a single fraction
 - **RFA:** percutaneous under conscious sedation, single session, 5 mm ablation margin
 - 1 year Biopsies performed in 95.2% of patients

Cassim et al. *Urology*. 2025;200:118-124.

RADSTER: 12-month outcomes, SBRT vs RFA

Per-protocol analysis

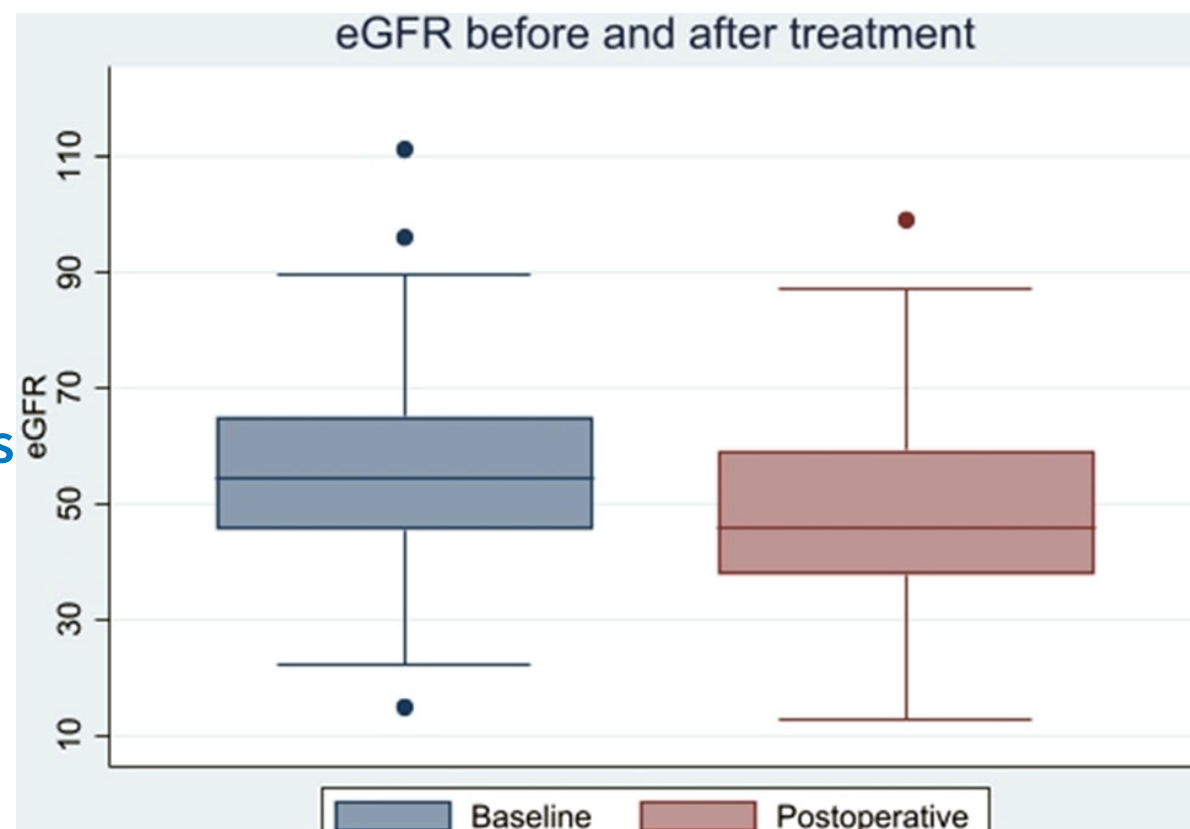
	SBRT	RFA	P
Pathologic response	33.3%	100%	.01
RECIST local failure at 1 year	0%	0%	—
Change in tumour size	−0.4%	−14.3%	.3
Metastasis or death at 1 year	0%	0%	—
eGFR change (mL/min/1.73 m ²)	−5.2	−3.0	.70



Ablation and Renal Function

Multicenter analysis of the EuRECA registry
(16 centers, 7 European countries, 1,672
patients enrolled 2014–2020)

- Subgroup: 70 patients with RCC in a solitary kidney treated with a single percutaneous CT-guided cryoablation
- eGFR compared at baseline vs ~3 months post-procedure
- 11% reduction in eGFR
- No patients changed chronic kidney disease group to severe or end-stage chronic kidney disease (stage IV or V).
- No patients required post-procedure dialysis

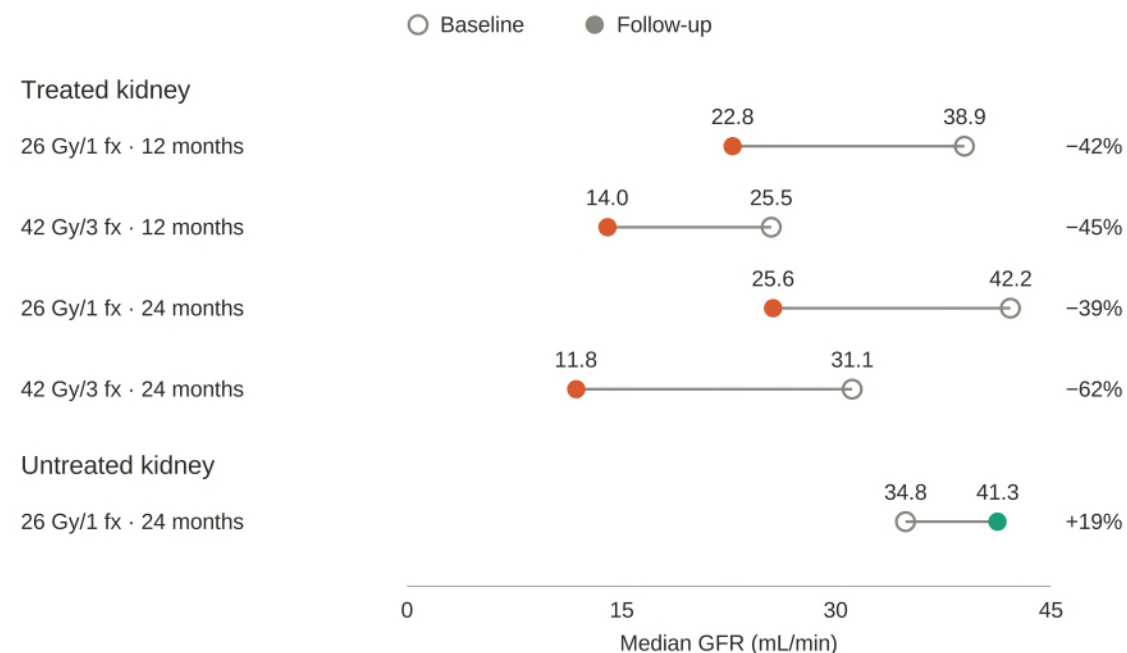


SBRT and Renal function

FASTTRACK II trial

Gaudreault et al. *Int J Radiat Oncol Biol Phys.* 2024;120(3):648-654.

- Prospective multicentre single-arm phase II trial of SABR RCC
- 71 patients
- 26 Gy in 1 fraction for tumours ≤ 4 cm, 42 Gy in 3 fractions for >4 cm
- ^{99m}Tc -DMSA SPECT/CT at baseline, 12, and 24 months



The Final Verdict: Three Ways to Treat a Small Renal Mass

Partial nephrectomy

Good tumor control, risks, complications, and a hospital bed.
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Excellent operation. Shame about the recovery and cost.

SBRT

No proven advantage, possible higher renal complications, questionable effectiveness.

Looks good, just don't read the fine print.

Ablation

Long-term efficacy, get tissue confirmation, home the same day, lowest complications and most economic.

The winner every time!

Bottom line: cheaper and safer than the surgeon, better than the radiation oncologist. Refer early, refer often.



Thank You

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