Canadian Urological Association guideline: Management of small renal masses

Patrick O. Richard, Philippe D. Violette, Bimal Bhindi, Rodney H. Breau, Wassim Kassouf, Luke T. Lavallée, Michael Jewett, John R. Kachura, Anil Kapoor, Maxime Noel-Lamy, Michael Ordon, Stephen E. Pautler, Frédéric Pouliot, Alan I. So, Ricardo A. Rendon, Simon Tanguay, Christine Collins, Maryam Kandi, Bobby Shayegan, Andrew Weller, Antonio Finelli

Originally published in Can Urol Assoc J 2022;16(2):E61-75.
http://dx.doi.org/10.5489/cuaj.7763

Disclosures

Advisory Board	Speaker's Bureau	Payment / Honoraria	Grants / Research Support	Clinical Trials	Founder / Investments	Patents
11 Authors	2 Authors	4 Authors	3 Authors	4 Authors	1 Author	0 Authors

12 out of 21 authors reported conflicts of interest

Conflicts of interest were reported with 22 different companies

Background

- The incidence of small renal masses (SRMs) is increasing around the world, largely due to the increasing use of abdominal imaging.
  - SRMs: suspicious, solid, enhancing renal masses measuring ≤4 cm on cross-sectional imaging.
- 10–30% of all SRM are benign, but even the malignant ones have an excellent prognosis.

Background (cont'd)

- There are many well-accepted management strategies for SRM, but the best strategy remains debated.
- Choice of treatment should be personalized using shared decision-making, after proper counselling and while taking into account tumor characteristics, patient factors, and patient preferences and values.

Methods

- A comprehensive literature search was completed in Medline, Embase, and PubMed to identify existing systematic reviews, meta-analyses, relevant observational or randomized controlled studies.
- All final recommendations were reviewed and approved by all members of the guideline panel.

Recommendations

- The strength of each recommendation was rated as ***strong*** or ***conditional*** (weak) as per GRADE:
  - ***Strong:*** When desirable benefits of treatment outweigh undesirable consequences; worded as *recommends.*
  - ***Conditional:*** When benefits of treatment probably outweigh harms; worded as *suggests.*
  - When ***insufficient evidence*** was available for a recommendation, the panel reported information as *clinical principle* or *expert opinion*.

Diagnostic evaluation – Bloodwork

1. Patients diagnosed with a SRM should undergo routine laboratory investigations, including at a minimum a serum creatinine (Cr) and glomerular filtration rate (GFR) **(*Clinical principle*).**

Diagnostic evaluation – Imaging

2. Patients with SRM incidentally discovered on routine imaging should be investigated with a multiphasic, contrast-enhanced, abdominal CT or MRI *(**Clinical principle**).*
   - Not only is contrast-enhanced CT or MRI mandatory to characterize the mass, it is also useful to exclude the presence of metastases and tumor thrombus.
3. For patients with suspected malignancy, chest X-ray is suggested to assess for metastases *(**Conditional recommendation**).*
4. Patients with pre-existing renal dysfunction and in whom a radical nephrectomy is being considered may be offered renal scintigraphy when the result may alter management *(**Clinical principle**)*.

Diagnostic evaluation – Renal mass biopsy

5. Patients with SRM should be offered a renal mass biopsy when the result of the biopsy may alter management (***Expert opinion***).
   - Before proceeding with a renal mass biopsy, it is important to inform the patients of its benefits and harms, including the non-diagnostic rate and the unknown false-negative rate.

Genetic assessment

6. Patients with features suspicious of hereditary RCC should be offered genetic counselling (***Expert opinion***).

Table 1. Criteria that should prompt genetic counselling
Patients with any renal tumor AND any of the following: a. Bilateral or multifocal tumors b. Early age of onset (≤45 years of age) c. 1st or 2nd degree relative with any renal tumor d. History of pneumothorax, lymphangiomyomatosis or childhood seizure disorder* e. Presence of skin leiomyomas or fibrofolliculomas/ trichodisomas* f. Concomitant tumors*: Pheochromocytoma, paraganglioma, hemangioblastoma (retina, brainstem, cerebellum or spinal cord), early one onset of multiple uterine fibroids *Personal history or presence in 1st degree relative
Patients with non-clear-cell carcinoma with unusual associated features (e.g., chromophobe, oncocytic, or hybrid tumors)
Patients who report a family member with a known clinical or genetic diagnosis that renders him/her at higher risk of being diagnosed with kidney cancer

Adapted from Reaume et al.

Management of small renal masses

7. For patients with significant comorbidities and/or limited life expectancy, observation (or watchful waiting) is recommended *(**Strong recommendation**).*
8. For patients with a SRM measuring <2 cm, active surveillance is suggested *(**Conditional recommendation**).*
   - This is based on slow growth rate, low probability of aggressive histology, and studies demonstrating similar cancer-specific survival between active surveillance and other treatment strategies (after short- to mid-term followup).
   - Immediate, definitive treatment remains an option and should be discussed with patients to ensure they are fully informed.

Management of small renal masses (cont'd)

9. For patients with a suspected malignancy of 2–4 cm, active surveillance and definitive treatment (partial nephrectomy or percutaneous thermal ablation) are suggested *(**Conditional recommendation**).*
   - Although the panel recognized that active surveillance should be offered as an option to these patients, nearly 40% felt definitive treatment (surgery or thermal ablation) should be considered as the option of choice.

Management of small renal masses (cont'd)

- The choice of treatment should be personalized using a shared decision-making approach, while taking into account a number of factors.

Table 2. Characteristics that may influence treatment decision

Patient	Tumor	Hospital-level
Patient preferences Age Comorbidities, including renal function Frailty index score Medical history Surgical history Familial history Presence of symptoms	Size Location Number of lesions Renal mass biopsy histology Renal tumor complexity (nephrometry score)	Access to healthcare Access to thermal-ablative therapies locally Access to minimally invasive surgery locally

Management of small renal masses (cont'd)

Surgery vs. percutaneous thermal-ablation

10. For patients with suspected malignancy who prefer upfront, definitive treatment, surgery *or* percutaneous thermal ablation are suggested *(**Conditional recommendation**).*
    - Observational studies suggest thermal ablation yields similar oncological outcomes compared to surgery.
    - Patients with SRM should be informed of the higher uncertainty surrounding the data on the efficacy and harms of thermal ablation treatment compared to surgery *(**Expert opinion**).*
    - Patients who opt to be treated by thermal ablation should have a renal mass biopsy before or at the time of treatment *(**Expert opinion**).*

Management of small renal masses (cont'd)

Partial vs. radical nephrectomy

11. For patients undergoing surgery, partial nephrectomy is recommended over radical nephrectomy *(**Strong recommendation**)*.
    - This is supported by the overwhelming number of observational studies demonstrating equivalent oncological outcomes, increased renal function preservation, and comparable significant harms.
    - Radical nephrectomy should be reserved for patients in whom alternatives cannot be performed even in experienced centers or for patients who are unwilling to accept the short-term risks of partial nephrectomy/thermal ablation.
12. When feasible and oncologically safe, a minimally invasive approach is suggested over an open approach *(**Conditional recommendation**)*.

Management of small renal masses (cont'd)

Percutaneous cryotherapy vs. radio-frequency ablation

13. For patients undergoing thermal ablation, cryoablation and radio-frequency ablation are both suggested *(**Conditional recommendation**).*
    - Reports suggest that both techniques yield similar oncological outcomes.
    - The choice should be based on availability, provider's experience, and tumor-related factors (size, location, adjacent structures, etc.).
    - A renal tumor biopsy should be performed before ablation, as this will achieve histological confirmation and help tailor frequency of followup imaging.

Management of small renal masses (cont'd)

Indications for definitive treatment while on active surveillance

14. Patients under active surveillance should be monitored until the oncological risk increases, they select intervention, or the benefits of treatment no longer outweigh the competing risks *(**Clinical principle**).*
    - The most well-accepted factors that define oncological risk are: growth of tumor to >4 cm, consecutive growth rate >0.5 cm/year, progression to metastases, and patient's choice.
    - Patients with suspected tumor growth on ultrasound should undergo cross-sectional imaging to confirm growth before intervention *(**Expert opinion**).*

Followup

<u>During active surveillance</u>

15. Followup with abdominal ultrasound and chest X-ray is suggested until definitive treatments are no longer considered (i.e., watchful waiting) *(**Conditional recommendation**).*
    - If tumor growth is suspected on ultrasound or the mass cannot be reliably identified by ultrasound, an abdominal cross-sectional imaging (CT or MRI) is required.
    - No consensus on frequency of abdominal imaging: from at least once every 3–6 months for the first year and then once every 6–12 months if lesion remains stable *(**Expert opinion**).*
    - No consensus on frequency of chest imaging: from for-cause to once a year *(**Expert opinion**).*

Followup (cont'd)

<u>After definitive treatment</u>

16. Patients with RCC should be followed with routine chest and abdominal imaging to rule out recurrence or progression to metastasis *(**Expert opinion**)*.
17. Patients with an eGFR <45 ml/min/1.73m^2 should be considered for a referral to a nephrologist (or their general practitioner), especially if associated with proteinuria ***(Conditional recommendation).***

Summary

- The incidence of SRM is increasing and many of these incidentally found lesions will be either benign or of low metastatic potential.
- Immediate, invasive treatment of all patients with SRM leads to significant overtreatment.
- Most of the evidence on management options for patients with SRM is based on observational data, which are subject to many biases.
- Most recommendations presented here are based on evidence with low certainty of effect.

Appendix:

Algorithm for the management of small renal masses