Needle tract seeding after percutaneous biopsies of pediatric renal masses: valid concern or unfounded fear? A systematic review and call for change.

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DISCLOSURES

- No disclosures to report

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INTRODUCTION

- Renal tumors form 6-7% of all childhood malignancies[1]
  - 80-90% - Nephroblastoma/Wilms tumor[1]
- COG (US) vs SIOP (EU) treatment approaches differ
- Pre-op diagnosis largely based on imaging - 5-12% misdiagnosis[2-4]
- Biopsies typically done for the indeterminate lesions and leads to upstaging/radiation therapy.
  - Beneficial to avoid under/over treatment
  - Percutaneous vs open

1. Howlader, N., et al., *SEER Cancer Statistics Review, 1975-2010.* Bethesda, MD: National Cancer Institute, 2013.
2.de Kraker, J., et al., *Reduction of postoperative chemotherapy in children with stage I intermediate-risk and anaplastic Wilms' tumour (SIOP 93-01 trial): a randomised controlled trial.* Lancet, 2004. 364(9441): p. 1229-35.
3. Vujanic, G.M., et al., *The role of biopsy in the diagnosis of renal tumors of childhood: Results of the UKCCSG Wilms tumor study 3.* Med Pediatr Oncol, 2003. 40(1): p. 18-22.
4. Miniati, D., et al., *Imaging accuracy and incidence of Wilms' and non-Wilms' renal tumors in children.* J Pediatr Surg, 2008. 43(7): p. 1301-7.

OBJECTIVE

- Determine true incidence and outcomes associated with NTR with PCNB of renal masses in children

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METHODS

- Systematic Review
- MEDLINE and EMBASE
- 1990 - 2018
- Criteria:
  - Pediatric patients (age 0-18 years)
  - PCNB for evaluation of renal masses
  - Excluded other biopsy approaches (i.e. laparoscopy)

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RESULTS

- 90 publications reviewed
- 25 publications included

Overall incidence of PCNB tract recurrence: 0.003% (3/808)

- Median time to recurrence: 4.3 months
- Follow up time: 5 months - 9 years
- All patients alive at time of the respective reports

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	PATIENT	BIOPSY	RECURRENCE
1	12 mo F, bilateral masses + lung (1995)	US guided PCNB, lateral direction; Path: FH Wilms	4 wks – 2x3 cm mass at bx site, along tract
2	2 yo F, left mass (1996)	18g tru-cut, anterior Path: FH Wilms	8 months from bx – 7x3 cm mass at bx site
3	Unk demo, bilateral masses (2018)	2-3x 16Fr core biopsy needle, posterior Path: FH Wilms	4 mo while on chemoradiation

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Biopsy techniques have evolved

- Old methods:
  - Open
  - Laparoscopic
  - Mutliple passes, large bore, no sheath
- Modern method:
  - Biopsy needle passed through coaxial sheath
    - Single entry point

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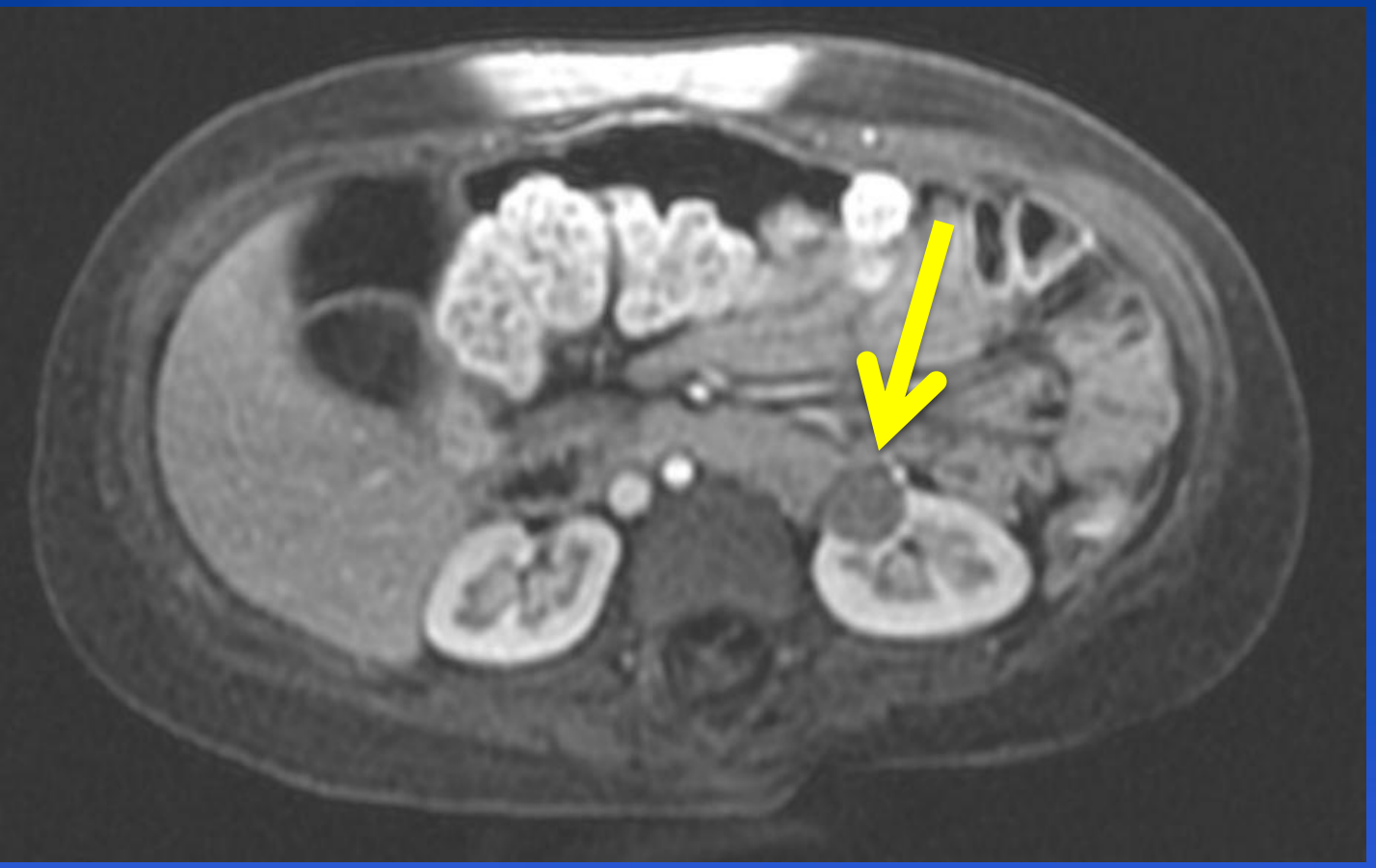
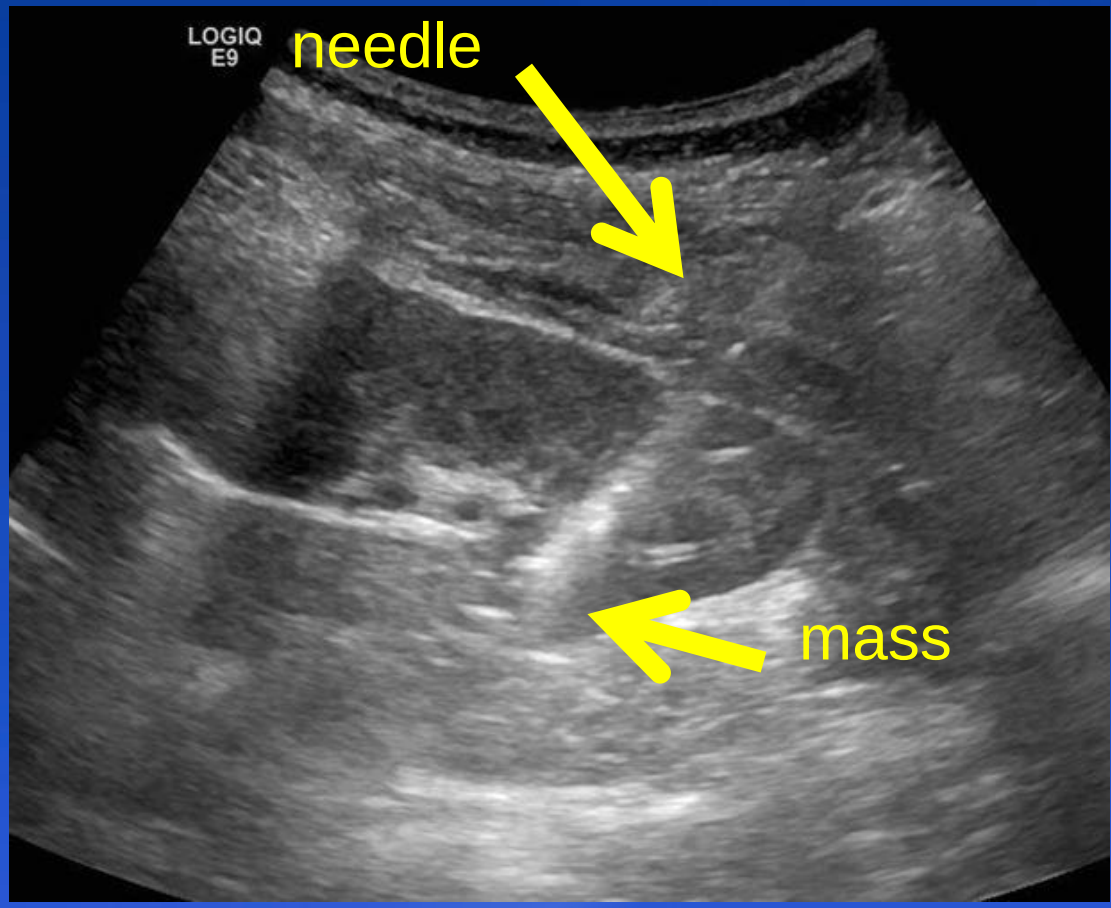
1.2cm tumor, FH Wilms

"Spillage" from biopsy? Upstage? Abdominal radiation?





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CONCLUSIONS

- There is an extremely low incidence of NTR following PCNB of pediatric renal masses at **0.003%**
- Biopsy techniques have evolved.
- Proposal: The role of PCNB in diagnosis of pediatric renal tumors should be revisited in cancer protocols.
  - Upstaging → overtreatment has long-term consequences.

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