CKCis
Canadian Kidney Cancer Information System

Post-nephrectomy upstaging of cT1a to pT3a renal tumour: Is renal tumour biopsy a predisposing factor?

Charles Asselin, Rodney H. Breau, Ranjeeta Mallick, Anil Kapoor, Antonio Finelli, Ricardo A. Rendon, Simon Tanguay, Frédéric Pouliot, Adrian Fairey, Luke T. Lavallée, Franck Bladou, Jun Kawakami, Alan I. So, Patrick O. Richard

Centre Hospitalier Universitaire de Sherbrooke

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UNIVERSITÉ DE SHERBROOKE
Faculté de médecine et des sciences de la santé

KCRNC KIDNEY CANCER RESEARCH NETWORK OF CANADA
RRCRC RÉSEAU DE RECHERCHE SUR LE CANCER DU REIN DU CANADA

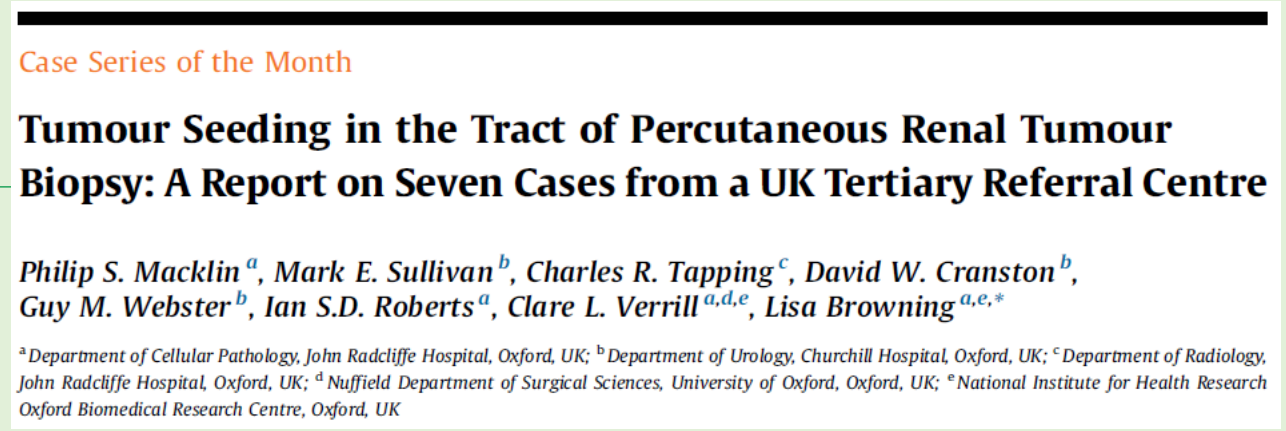
Potential conflict of interest

None

Context

- The management of small renal masses (SRMs) is associated with considerable overtreatment.
- Renal tumour biopsy (RTB) is an accurate tool that can be used to guide management of SRM and may be used to improve shared-decision making.
- Although there is a growing body of evidence surrounding its use, adoption of RTB remains low across Canada due to several concerns, including the risk of seeding along the biopsy tract.
- The risk of seeding was previously reported as rare, but recent evidence suggest that it might be more common than previously believed.

Context



Case Series of the Month

Tumour Seeding in the Tract of Percutaneous Renal Tumour Biopsy: A Report on Seven Cases from a UK Tertiary Referral Centre

Philip S. Macklin [a], Mark E. Sullivan [b], Charles R. Tapping [c], David W. Cranston [b], Guy M. Webster [b], Ian S.D. Roberts [a], Clare L. Verrill [a,d,e], Lisa Browning [a,e,]*

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Macklin et al, 2018

- Case series – 2014 to 2017
- Reported 7 cases of tumour seeding along the biopsy tract
- All were subsequently upstaged to pT3a

Salmasi et al, 2018

- Large retrospective cohort study of 24 548 patients with RCC cT1a who underwent surgery.
- Rate of upstaging to pT3a perinephric fat : **1.2% v.s 2.1%** ($p<0.01$)
- Association between pT3a perinephric fat and RTB : **OR 1.71** (95% CI : 1.13 – 2.60)

Objectives

1. To evaluate the risk of tumour upstaging to pT3a and tumour recurrence following pre-operative RTB.

2. To evaluate factors associated with upstaging and tumour recurrence.

Method

Retrospective cohort study

Canadian Kidney Cancer Information System

Population :

Patients who underwent surgery for malignant renal tumour ≤ 4 cm (cT1a) between January 1st, 2011 and September 31st, 2018 were identified through the Canadian Kidney Cancer Information System (CKCIS).

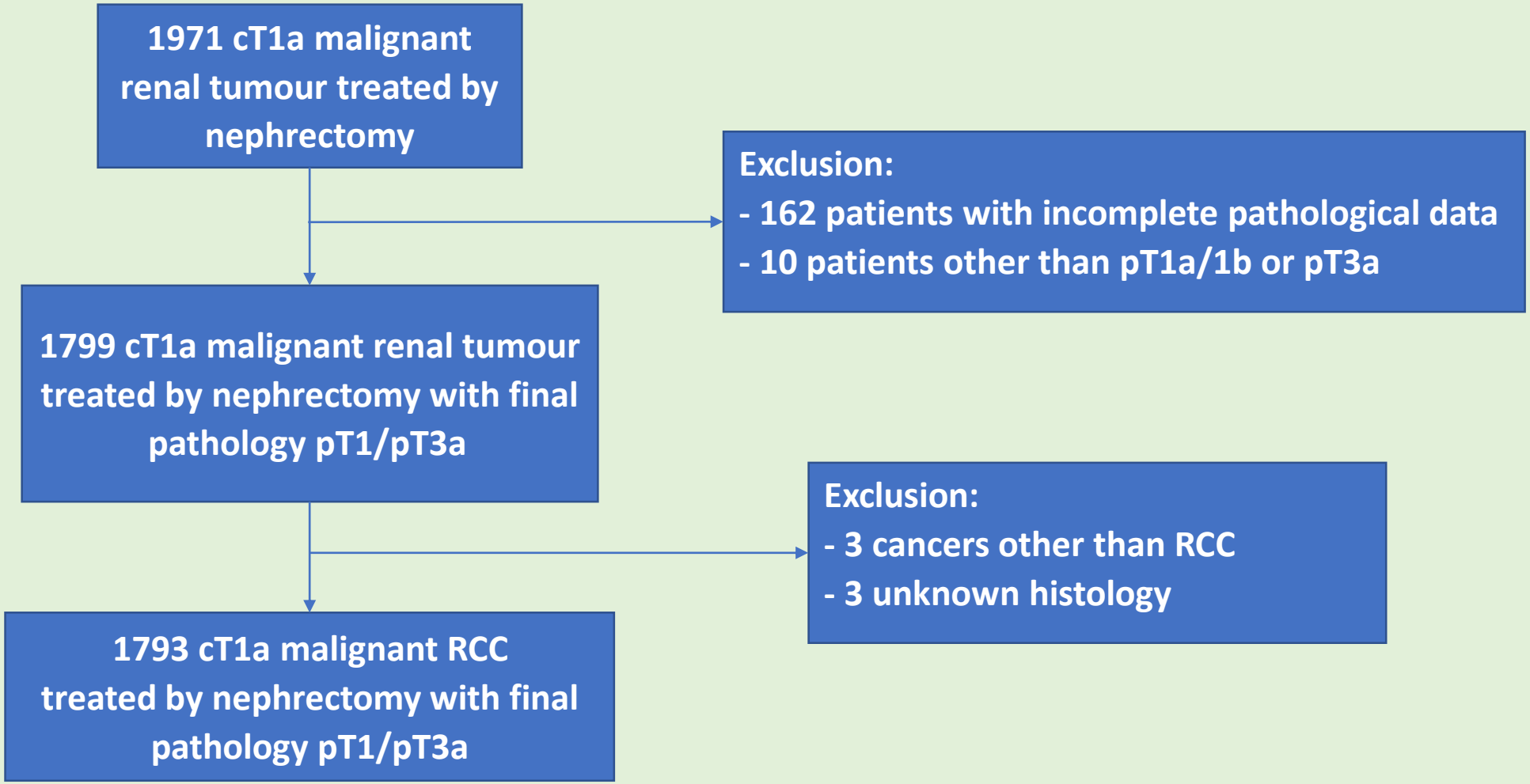
Exclusion :

- Non-RCC histology
- Pathological stages other than pT1a/1b or pT3a
- Incomplete pathological data

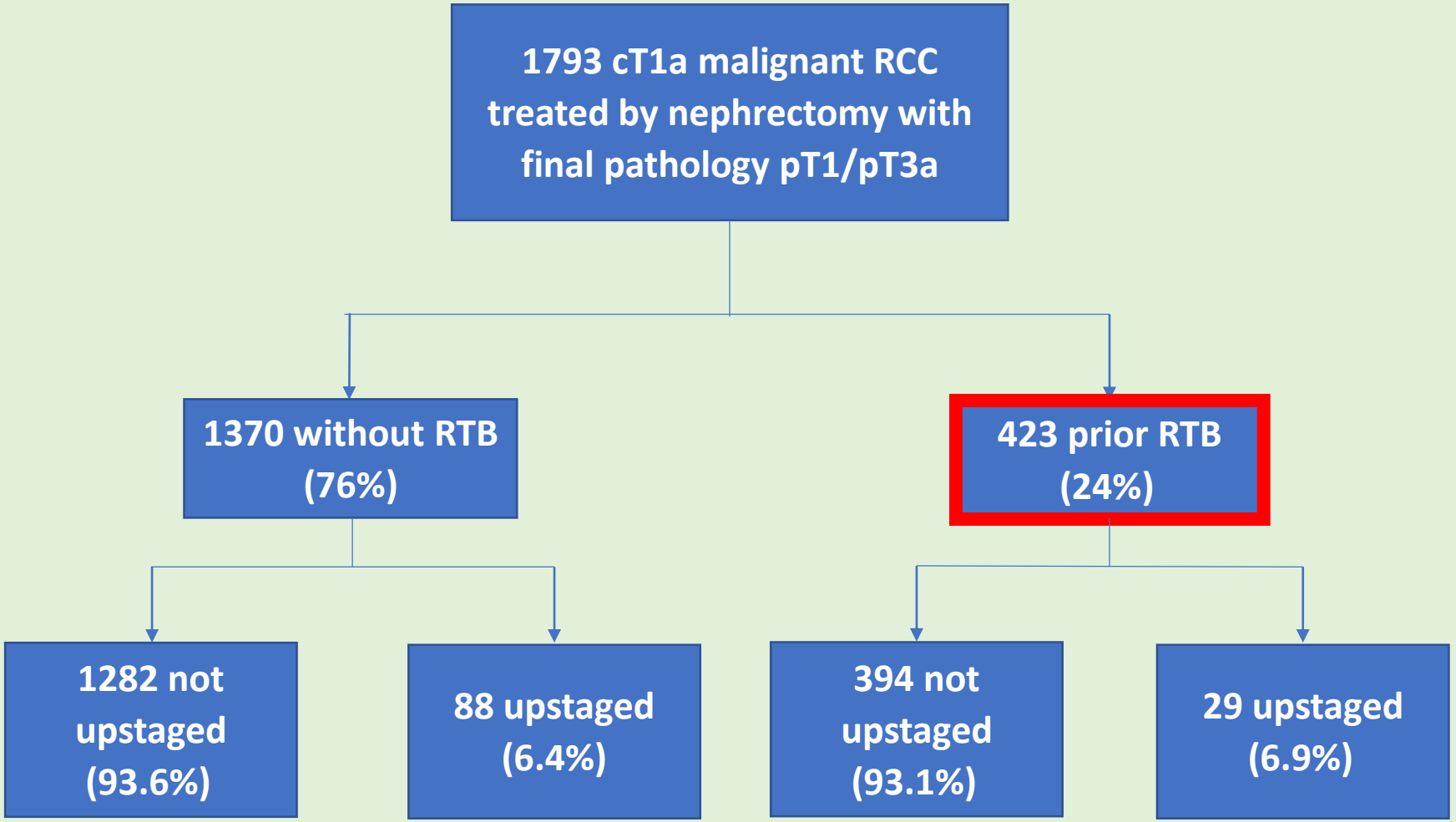
Definitions:

- Upstaged : pT3a
- Non-upstaged : pT1a/1b
- Recurrence : local or distant

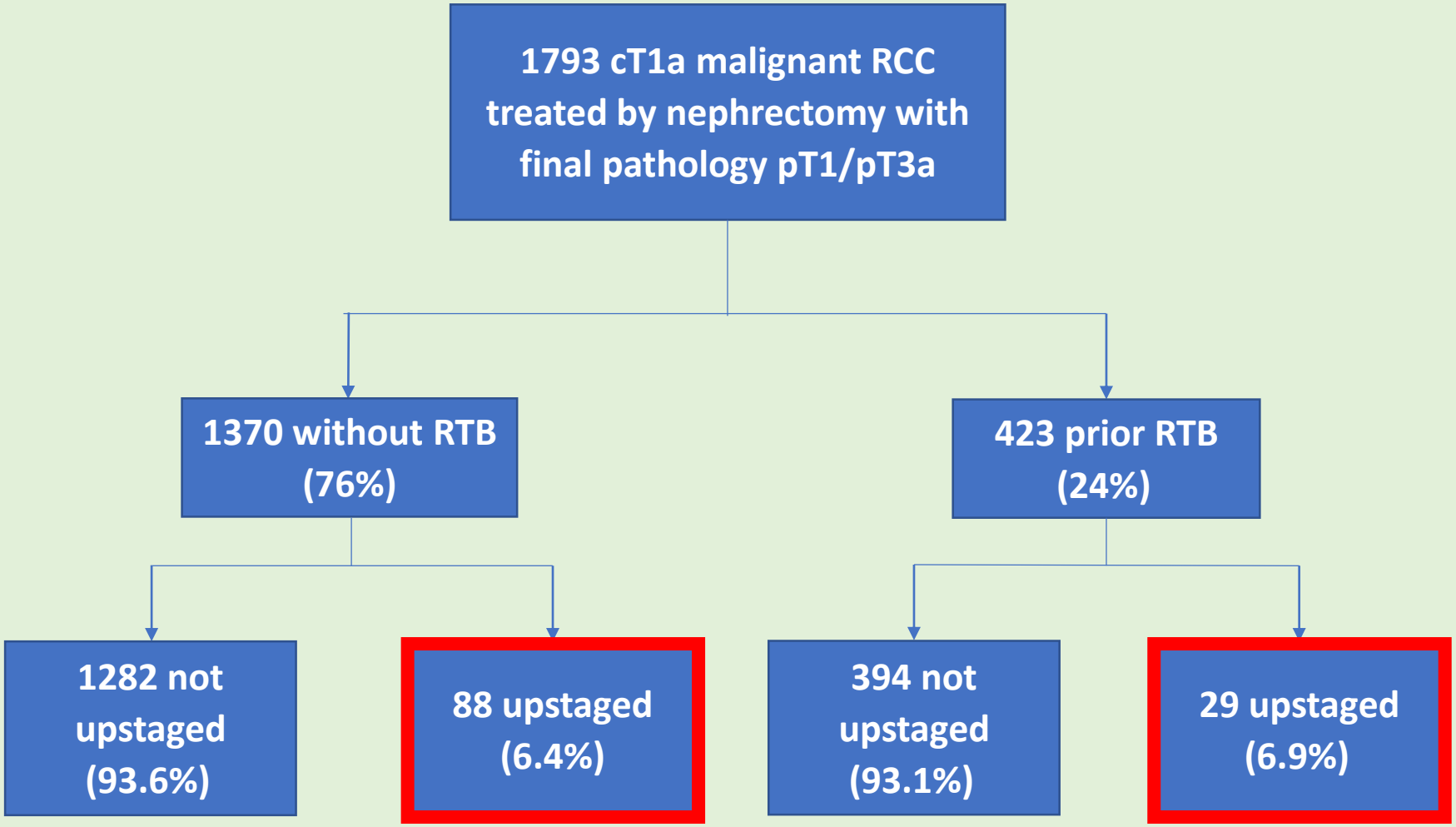
Results


1971 cT1a malignant renal tumour treated by nephrectomy
Exclusion:
- 162 patients with incomplete pathological data
- 10 patients other than pT1a/1b or pT3a
1799 cT1a malignant renal tumour treated by nephrectomy with final pathology pT1/pT3a
Exclusion:
- 3 cancers other than RCC
- 3 unknown histology
1793 cT1a malignant RCC treated by nephrectomy with final pathology pT1/pT3a

Results


1793 cT1a malignant RCC treated by nephrectomy with final pathology pT1/pT3a
1370 without RTB (76%)
423 prior RTB (24%)
1282 not upstaged (93.6%)
88 upstaged (6.4%)
394 not upstaged (93.1%)
29 upstaged (6.9%)

Results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394 not upstaged (93.1%)
29 upstaged (6.9%)

p = 0,8

Results

Upstaging – Baseline charact.

Variables	Overall	Not upstaged	Upstaged	p-value
	n = 1793 (%)	n = 1676 (%)	n= 117 (%)	
CLINICAL				
Gender, n (%)				0.2
Male	1111 (62)	1032 (62)	79 (68)	
Female	682 (38)	644 (38)	38 (32)	
Age at surgery, years				<0.001
Median (IQR)	59 (52-67)	59 (51-67)	63 (57-70)	
BMI, kg/m2				0.9
Median (IQR)	28.9 (25.6-33.0)	29.1 (25.6-33.9)	28.9 (25.9-33.2)	
ASA				0.03
1	189 (11)	183 (11)	6 (5)	
2	706 (39)	664 (40)	42 (36)	
3	406 (23)	368 (22)	38 (32)	
4	39 (2)	36 (2)	3 (3)	
Missing	453 (25)	425 (25)	28 (24)	
RTB				0.8
Yes	423 (24)	394 (24)	29 (25)	
No	1370 (76)	1282 (76)	88 (75)	
Maximum size (cm)				<0.001
Mean (IQR)	2.6 (2.0-3.3)	2.6 (2.0-3.2)	2.9 (2.4-3.6)	
INTERVENTION				
Nephrectomy type				< 0.001
Partial	1535 (86)	1458 (87)	77 (66)	
Radical	258 (14)	218 (13)	40 (34)	
Approach				0.08
Open	662 (37)	609 (36)	53 (45)	
Laparoscopic	792 (44)	743(44)	49 (42)	
Robotic	323 (18)	309 (18)	14 (12)	
Missing	16 (1)	15 (1)	1 (1)	
Margin				0.006
Positive	120 (7)	105 (6)	15 (13)	
Negative	1626 (91)	1527 (91)	99 (85)	
Missing	47 (3)	44 (3)	3 (3)	

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Results

Upstaging - MVA

Variables	Odds ratio	95% CI	P value
Age	1.04	1.02-1.06	< 0.001
Ethnicity			
White	REF		
Non-white	1.42	0.60-3.37	0.4
Gender			
Male	REF		
Female	0.82	0.49-1.37	0.4
Comorbidities			
ASA 1	REF		
ASA 2	1.42	0.34-5.97	0.6
ASA ≥ 3	1.72	0.32-9.34	0.5
Renal tumour biopsy			
No	REF		
Yes	0.90	0.55-1.45	0.7
Nephrectomy type			
Partial	REF		
Radical	2.96	1.29-6.76	0.01
Margin status			
Negative	REF		
Positive	0.72	0.25-2.05	0.5
Tumour grade			
I-II	REF		
III-IV	3.53	1.85-6.74	< 0.001
Tumour histology			
Clear cell	REF		
Papillary	1.39	0.56-3.46	0.5
Other	0.89	0.26-3.12	0.7
Tumour size			
< 2 cm	REF		
2-3 cm	1.52	0.65-3.56	0.3
3-4 cm	1.58	0.59-4.25	0.4

Results

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Age	**1.04**	**1.02-1.06**	**< 0.001**
Ethnicity			
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Tumour size			
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2-3 cm	1.52	0.65-3.56	0.3
3-4 cm	1.58	0.59-4.25	0.4

Results

Tumour recurrence

Median fup : 19,4 months

Tumor recurrence :

- RTB : 1,9%
- No-RTB : 3,9%

p = 0.08

Median time-to-recurrence :

- RTB : 11,8 months
- No-RTB : 14,3 months

p = 0.4

Variables		Odds ratio	95% CI	P value
Tumor grade				
	I-II	REF		
	III-IV	2.63	0.97-7.14	0.06
Size				
	< 2 cm	REF		
	2-3 cm	1.12	0.33-3.83	0.9
	3-4 cm	0.81	0.81-2.34	0.7
Margin status (Positive vs. Negative)		1.31	0.56-3.05	0.5
T3a upstage (Yes vs. No)		**6.74**	**3.85-11.8**	**<0.001**
Renal tumor biopsy (Yes vs. No)		1.19	0.57-2.48	0.6

Results

Tumour recurrence

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Tumor recurrence :

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Variables		Odds ratio	95% CI	P value
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	I-II	REF		
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Size				
	< 2 cm	REF		
	2-3 cm	1.12	0.33-3.83	0.9
	3-4 cm	0.81	0.81-2.34	0.7
Margin status (Positive vs. Negative)		1.31	0.56-3.05	0.5
T3a upstage (Yes vs. No)		6.74	3.85-11.8	<0.001
Renal tumor biopsy (Yes vs. No)		1.19	0.57-2.48	0.6

Limitations

- pT3 subtypes were not available
- Specific type of tumour recurrence were not available for all
- Information on the use of coaxial sheet
- Small number of events (upstage and recurrence) which make us underpowered to detect a small difference.

Conlusions

- Although possible, needle tract seeding is likely a rare event.
- In our study, RTB did not prove to be associated with an increase rate of tumour upstaging or recurrence.
- The potential risk of seeding should not be a clinical deterrent to offer RTB to patients in which its results could alter management.

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