

# Piccole masse renali





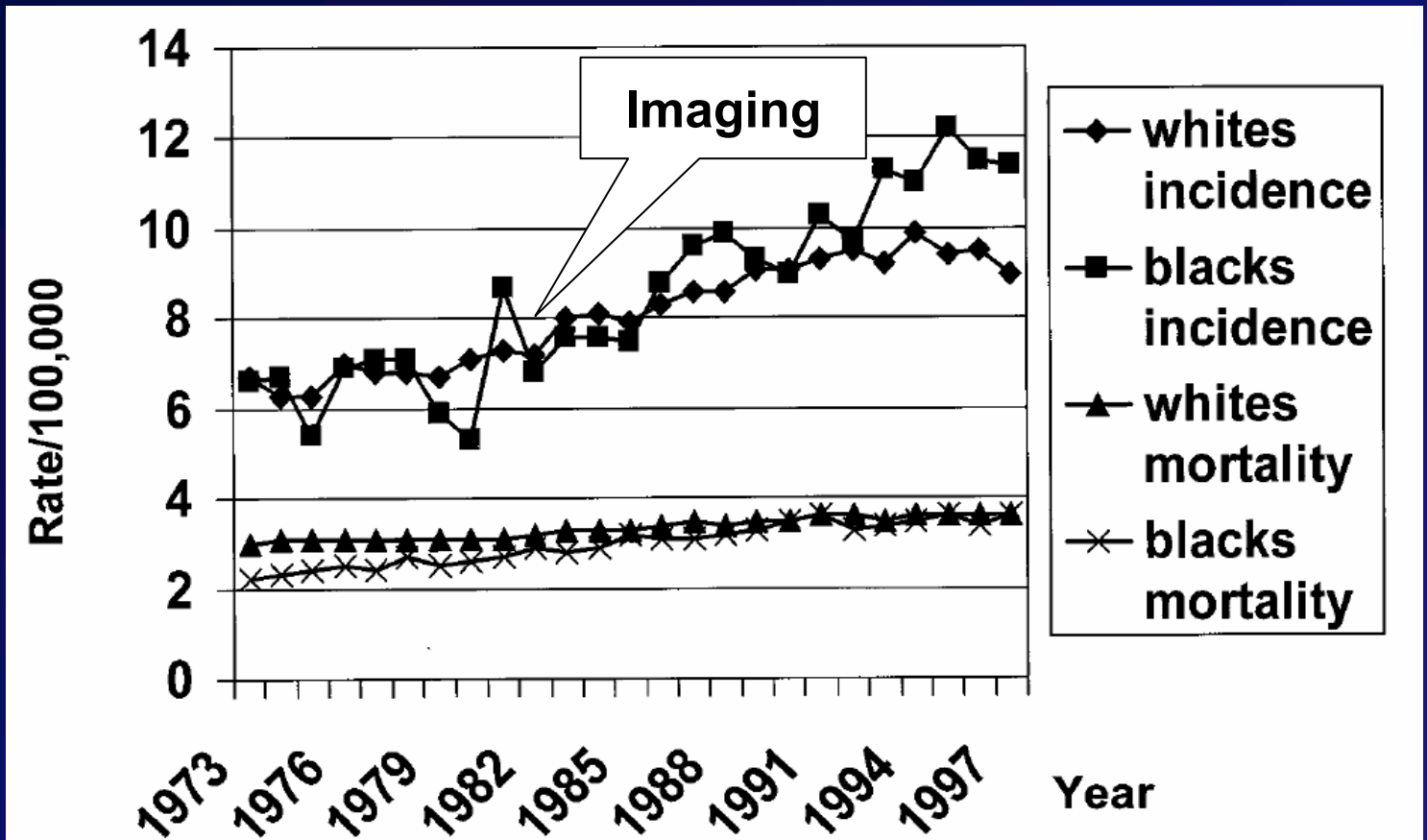
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# EPIDEMIOLOGY

- **3% ALL CANCERS**
- **51.000 NEW DIAGNOSIS/YEAR (2007)**
- **INCIDENCE ↑ 2% / YEAR**
- **13.000 DEATHS / YEAR**



# Trends in annual incidence and mortality rate of RCC in USA



**LEAD TIME BIAS?**



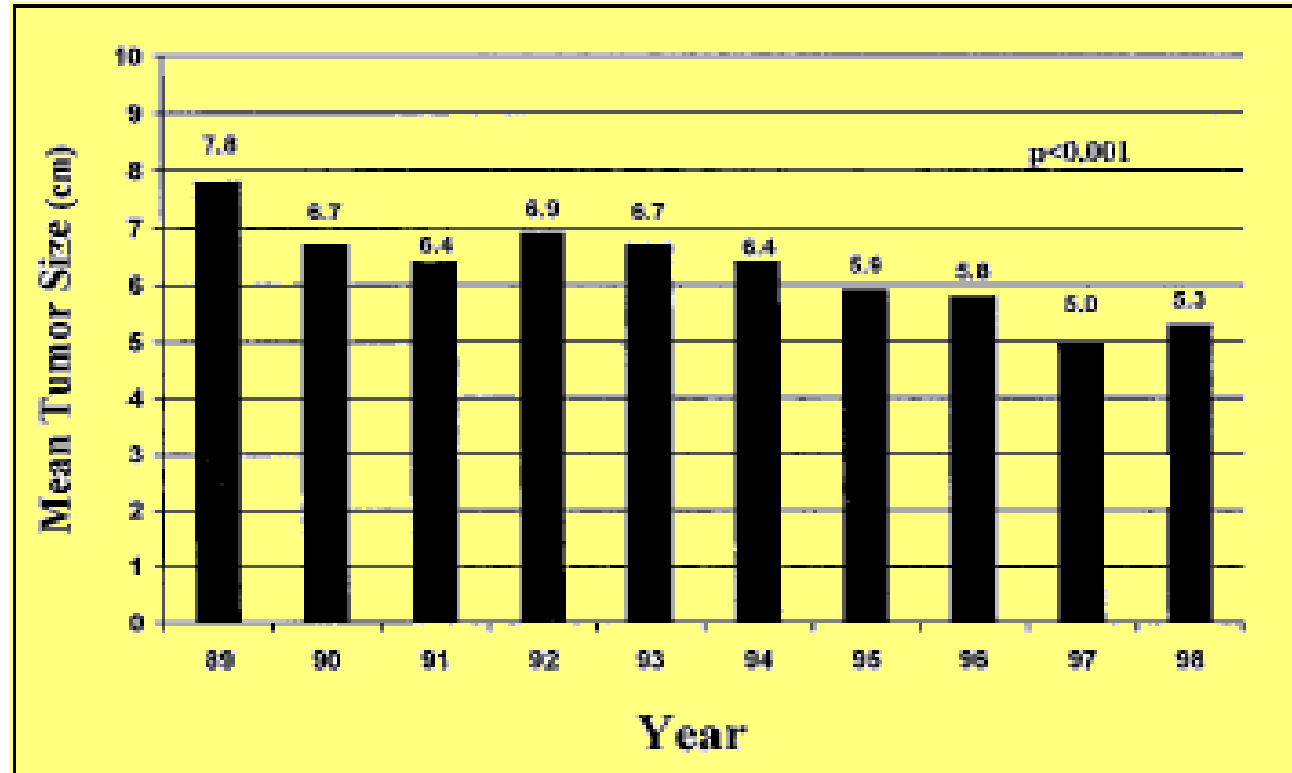
# ACCIDENTAL FINDINGS

- **IN THE 70'S** → **7%**
- **IN THE 80'S** → **25-48%**
- **NOW** → **50-70%**



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# STAGE MIGRATION



**MEDIAN AGE AT DIAGNOSIS → 65 YEAR**

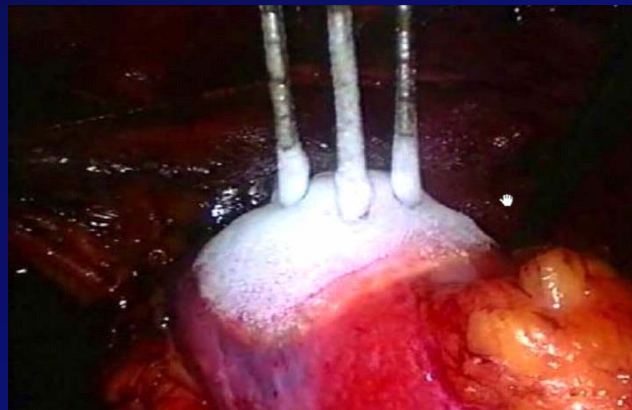
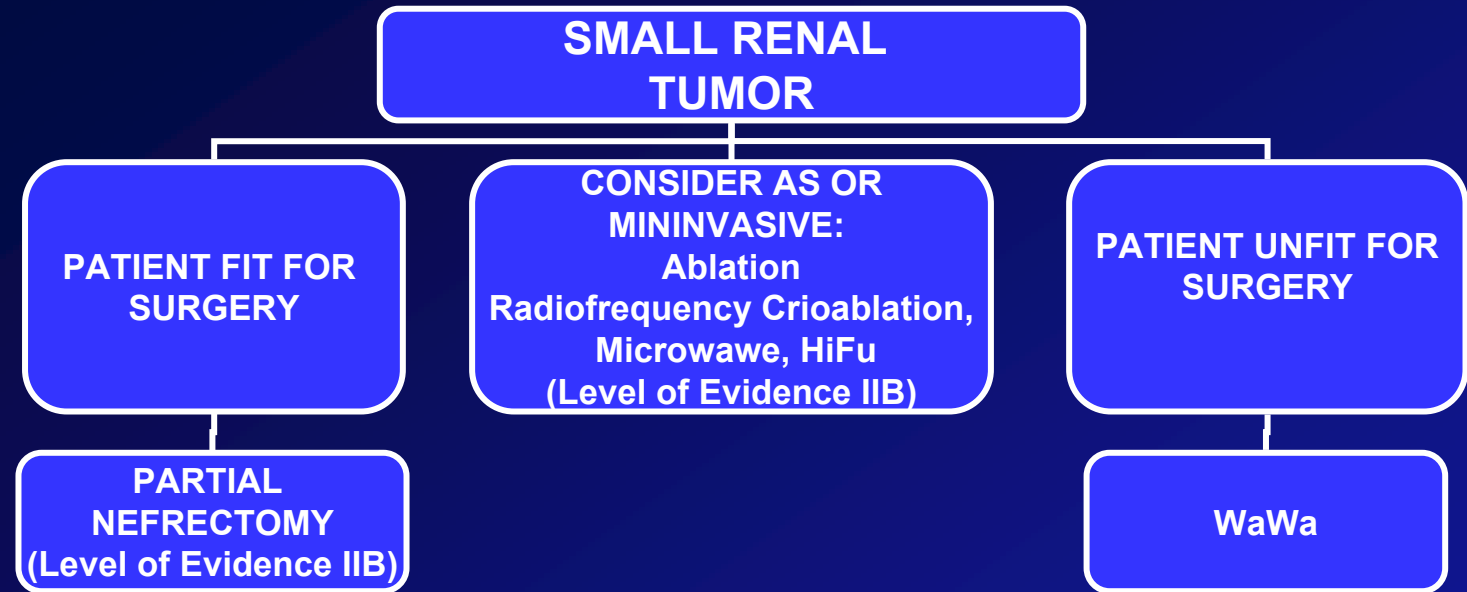


***More and more elderly patients in 2008  
with  
small renal masses found accidentally***  
***The problem is***

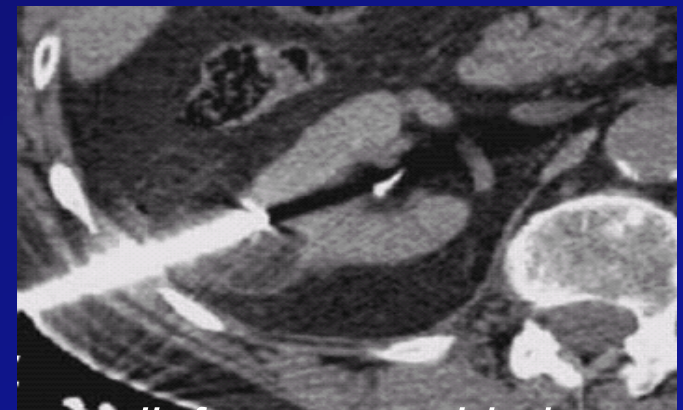
- **When do we overtreat by operating them?**
- **When do we undertreat if not operating?**



# SMALL RENAL MASS (<4CM): The 2008 Policy



crioablation



radiofrequencyablation



# ***Small renal masses in 2008 looking to pathological and functional characterization***

***The question is***

- **Benign or malignant**
- **If malignant what malignancy**
- **If malignant how fast will grow**
- **If malignant how many chance to give metastasis**





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# Benign tumours in recent series, confirmed by hystology from operative specimens

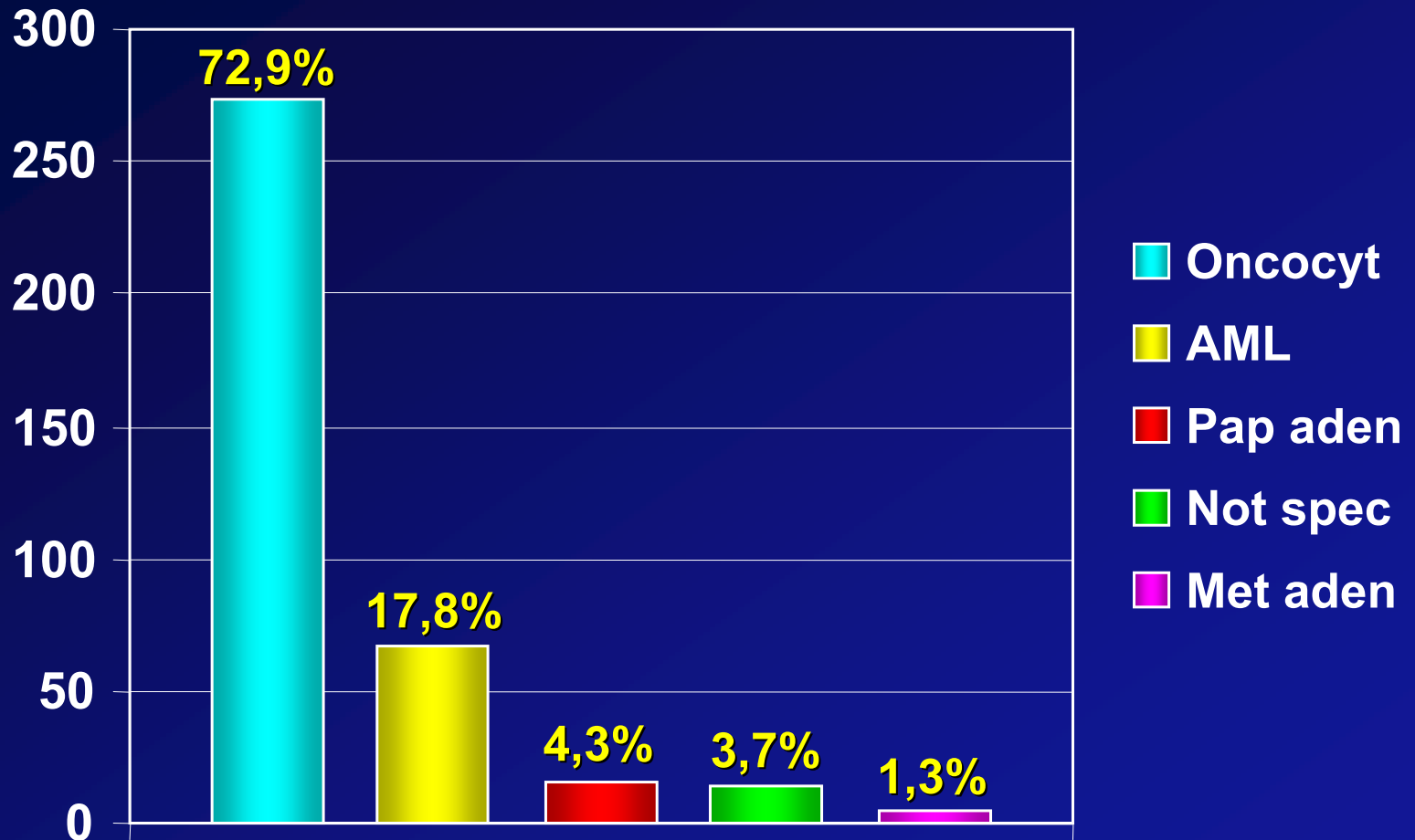
Year	Author	Nr of cases	% benign
2003	Frank	2770	12.8
2006	Remzi*	287	19.5
2006	Schlomer	349	16
2007	v Poppel	541	11.6

\* Only tumours  $\leq$  4 cm



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# Character of 376 benign renal tumours



Modified by Frank I et al, *J Urol* 2003



# Impact of tumour size in 2270 cases

Size (cm)	Nr benign (%)	Nr RCC (%)
0.0 - <1.0	37 (46.3)	43 (53.8)
1.0- <2.0	38 (22.4)	132 (77.7)
2.0- <3.0	75 (22.0)	266 (78.0)
3.0- <4.0	71 (19.9)	285 (80.1)
4.0- <5.0	37 (9.9)	336 (90.1)
5.0- <6.0	40 (13.0)	267 (87.0)
6.0- <7.0	11 (4.5)	232 (95.5)
≥7.0	67 (6.3)	998 (93.7)

**Each 1 cm increase in tumor size was associated with a 17% increase in the odds of malignancy.**



# Proportion of clear cell, papillary and chromophobe RCC by tumor size

Tumor Size (cm)	No. Clear Cell (%)	No. Papillary (%)	No. Chromophobe (%)
0.0–Less than 1.0	11 (25.6)	32 (74.4)	0 (0.0)
1.0–Less than 2.0	79 (59.9)	51 (38.6)	2 (1.5)
2.0–Less than 3.0	186 (70.2)	69 (26.0)	10 (3.8)
3.0–Less than 4.0	203 (72.0)	69 (24.5)	10 (3.6)
4.0–Less than 5.0	268 (80.2)	47 (14.1)	19 (5.7)
5.0–Less than 6.0	218 (82.0)	40 (15.0)	8 (3.0)
6.0–Less than 7.0	192 (83.5)	30 (13.0)	8 (3.5)
7.0 or Greater	813 (83.0)	98 (10.0)	68 (7.0)

Among RCC tumors each 1 cm increase in tumor size was associated with:

- + 17% clear cell vs. papillary RCC
- 9% clear cell vs. chromophobe RCC
- 19% papillary vs. chromophobe RCC



## Proportion of low grade versus high grade tumors by RCC histological subtype and tumor size

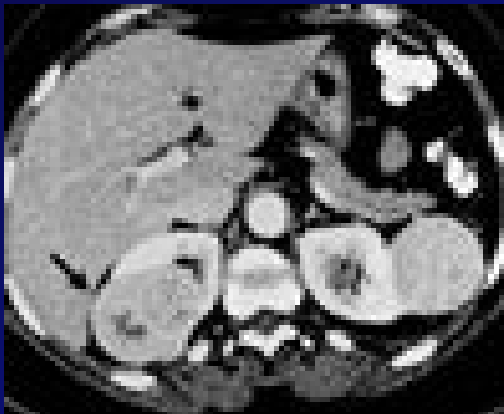
	No. Clear Cell (%)	
	Low Grade	High Grade
<b>Tumor size (cm):</b>		
0.0–Less than 1.0	10 (90.9)	1 (9.1)
1.0–Less than 2.0	70 (88.6)	9 (11.4)
2.0–Less than 3.0	174 (93.6)	12 (6.5)
3.0–Less than 4.0	165 (81.3)	38 (18.7)
4.0–Less than 5.0	208 (77.6)	60 (22.4)
5.0–Less than 6.0	151 (69.3)	67 (30.7)
6.0–Less than 7.0	117 (60.9)	75 (39.1)
7.0 or Greater	308 (37.9)	505 (62.1)
Totals	1,203	767

- Each 1 cm increase in tumor size increased the odds of a high grade compared to a low grade clear cell tumor by 32%

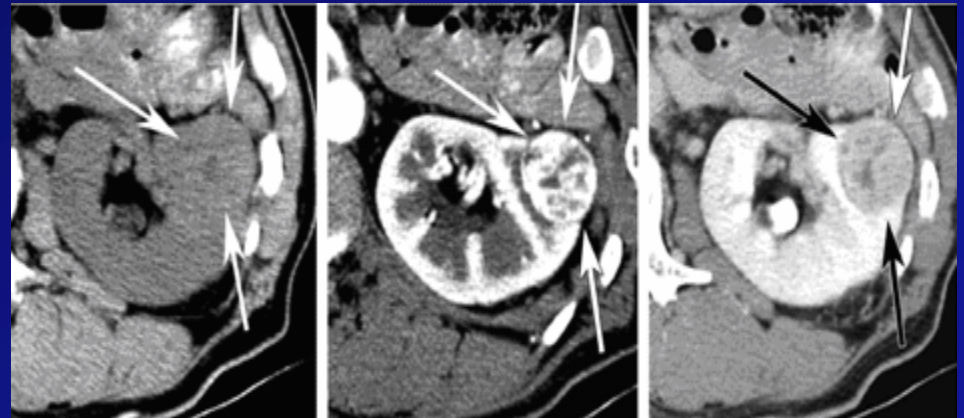


# Can imaging recognize benign and malignant renal tumours?

- Angiomyolipoma can most often be reliably diagnosed by CT or MRI, if it contains fat. (5% of AMLs do not contain fat)
- Oncocytoma is often hypovascular homogeneous and may or may not have a central scar. It can not be reliably diagnosed by imaging.



angiomyolipoma



oncocytoma



# Can imaging recognize different histological types of RCC?

- Clear cell – hypervascular, heterogenic
- Papillary – hypovascular, homogenic
- Chromophobe – homogenic, sometimes central scar

***Do not rely on this!***  
***Much overlapping exists...***



# When biopsy?

## *If it might change the treatment policy*

- Benign – operation can be avoided
- RCC with low malignant potential in elderly patient
- Other primary – suspicion of metastasis in kidney
- Histology before mini-invasive treatment





# Percutaneous biopsy

## Cutting needles

- 14-20 gauge, usual recommendation 18 g
  - Side or tip cutting edge
  - Manual, semi-automatic, automatic

***Good histological core samples can be obtained***



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# Renal tumour biopsy Results

	Time period	Nr of biopsies	Final dg 1st sample	Failed/ not diagnostic	False positive
<b>Wood et al</b>	<b>1988-96</b>	<b>79</b>	<b>94 %</b>	<b>7 %</b>	<b>0</b>
<b>Lechevallier et al</b>	<b>1995-97</b>	<b>73</b>	<b>76 %</b>	<b>23 %</b>	<b>0,4 %</b>
<b>Neuzillet et al</b>	<b>1995-2003</b>	<b>88</b>	<b>91 %</b>	<b>9 %</b>	<b>0</b>
<b>Somani et al</b>	<b>1996-2006</b>	<b>70</b>	<b>87 %</b>	<b>13 %</b>	<b>0</b>
<b>Shah et al</b>	<b>1999-2005</b>	<b>66</b>	<b>77 %</b>	<b>23 %</b>	<b>0</b>
<b>Vasudevan et al</b>	<b>2000-05</b>	<b>92</b>	<b>68 %</b>	<b>31 %</b>	<b>0</b>



# Complications of percutaneous biopsy

Bleeding in 1/3 of the cases, most often subclinical

Rare complications:

- ❖ Haematuria
- ❖ Arteriovenous fistula, pseudoaneurism
- ❖ Pneumothorax
- ❖ Bowel perforation
- ❖ Seeding of the tract



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# Watchful Waiting

## Review Articles

### The Natural History of Observed Enhancing Renal Masses: Meta-Analysis and Review of the World Literature

Sam N. Chawla, Paul L. Crispen, Alexandra L. Hanlon, Richard E. Greenberg, David Y. T. Chen and Robert C. Hendry

*From the Department of Urology, University of Pennsylvania School of Medicine, Philadelphia, PA*

### Are Small Renal Tumors Harmless? Analysis of Histopathological Features According to Tumors 4 Cm or Less in Diameter

Mesut Remzi,<sup>\*,†</sup> Mehmet Özsoy,<sup>†</sup> Hans-Christoph Klingler,<sup>†</sup> Martin Susani,<sup>†</sup> Matthias Waldert,<sup>†</sup> Christiaan A. de Voer

*From the Department of Urology, University of Groningen, Groningen, The Netherlands*

### Watchful Waiting for Solid Renal Masses: Insight Into the Natural History and Results of Delayed Intervention

Erik Kouba, Angela Smith, Daniel McRackan, Eric M. Wallen and Raj S. Pruthi\*

*From the Department of Urology, University of North Carolina*

*at Chapel Hill, North Carolina*



European Association of Urology

### Review – Kidney Cancer

### Is Surveillance an Option for the Treatment of Small Renal Masses?

*Hendrik Van Poppel, Steven Joniau*

*Department of Urology, University Hospital, K.U. Leuven, Leuven, Belgium*



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# Meta-analysis of available data on the natural history of observed masses

## 26-33% no growth

References	No. Pts	Mean Lesion Size (cm)	Mean Growth Rate (cm/yr)	Mean Followup (mos)
Fujimoto et al	6	2,47	0.47	29
Bosniak et al	40	1,73	0.36	39
Kassouf et al	26	3,27	0,09	32
Volpe et al	32	2,48	0,1	35
Wehle et al	29	1,83	0,12	32
Kato et al	18	1,98	0,42	27
Sowery and Siemens	22	4,08	0,86	26
Present series	61	2,97	0,20	36
<b>Totals (median)</b>	<b>234</b>	<b>2,60</b>	<b>0,28</b>	<b>34</b>



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# Progression to M+ in empiric surveillance series

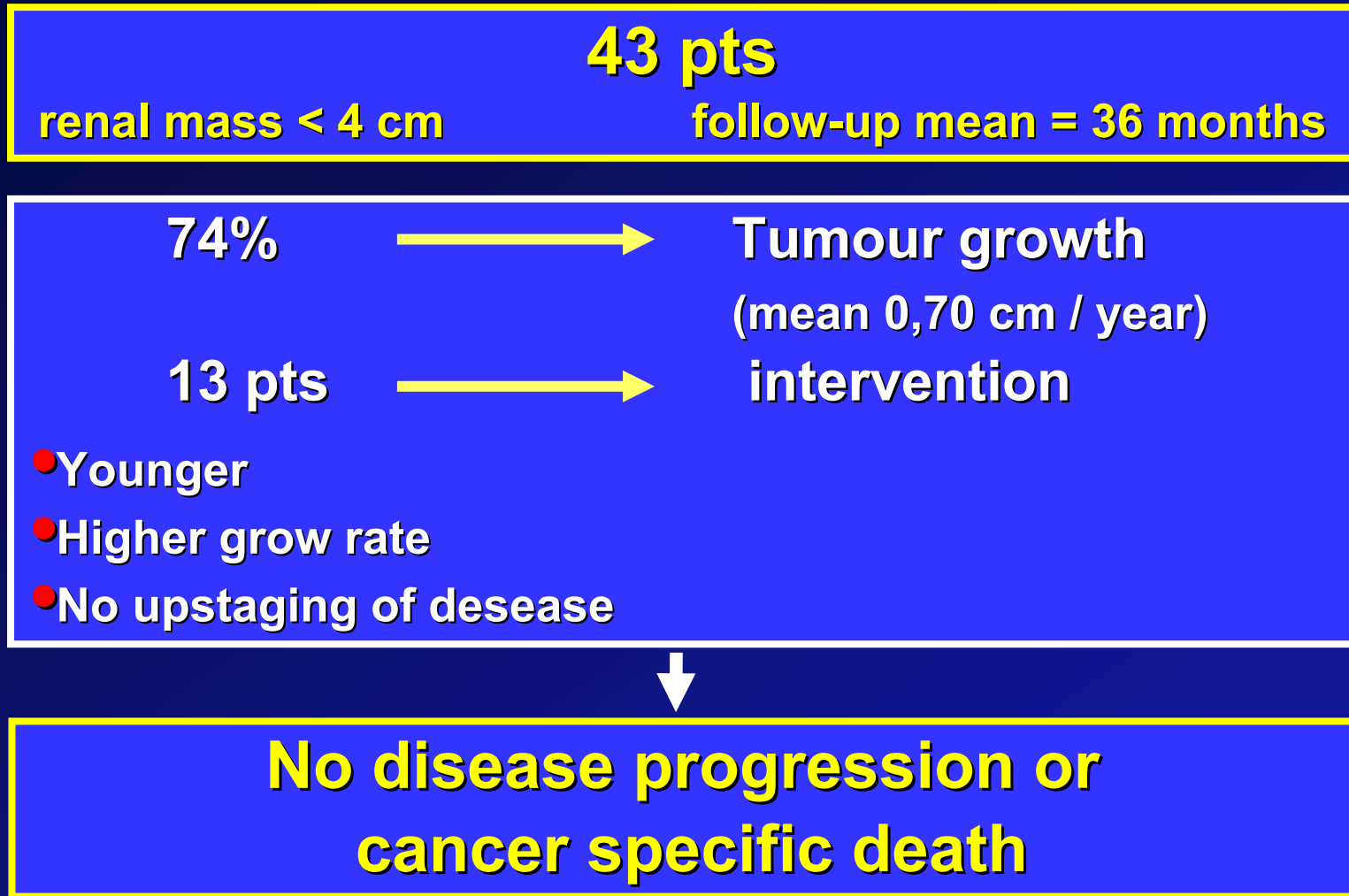
<b>Author</b>	<b>Year</b>	<b>Nr. of lesions</b>	<b>Mean follow-up (months)</b>	<b>M+</b>
<b>Chawla (meta-anal.)</b>	<b>2006</b>	<b>286</b>	<b>34 months</b>	<b>3</b>
<b>Kouba</b>	<b>2007</b>	<b>46</b>	<b>36</b>	<b>0</b>
<b>Abou Youssif</b>	<b>2007</b>	<b>44</b>	<b>47.6</b>	<b>2</b>



## Watchful Waiting for Solid Renal Masses: Insight Into the Natural History and Results of Delayed Intervention

Erik Kouba, Angela Smith, Daniel McRackan, Eric M. Wallen and Raj S. Pruthi\*

*From the Division of Urologic Surgery, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina*



# **Tumor Size Does Not Predict Risk of Metastatic Disease or Prognosis of Small Renal Cell Carcinomas**

**Tobias Klatter, Jean-Jacques Patard, Michela de Martino, Karim Bensalah, Gregory Verhoest, Alexandre de la Taille, Clément-Claude Abbou, Ernst Peter Allhoff, Giuseppe Carrieri, Stephen B. Riggs, Fairouz F. Kabbinavar, Arie S. Beldegrun and Allan J. Pantuck\***

**Volume 179, Issue 5, Pages 1719-1726 ([May 2008](#))**



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Universitaire Henri Mondor,  
Créteil, France***

**1,208 PATIENTS**





# Patient and tumour characteristics

(*J Urol*, May 2008)

**1208 pts (surgical extirpation)**  
renal mass < 4 cm                      diagnosis mean age = 62 yrs

RCC = 88%		BENIGN = 12%	
Clear Cells	81%	Oncocytoma	53%
Papillary	14%	Angiomyolipoma	23%
Chromophobe	5%	Complex Cyst	11%



RCC and SIZE	
0,1 - 1,0 cm	85%
1,1 - 2,0 cm	86%
2,1 - 3,0 cm	86%
3,1 - 4,0 cm	92%

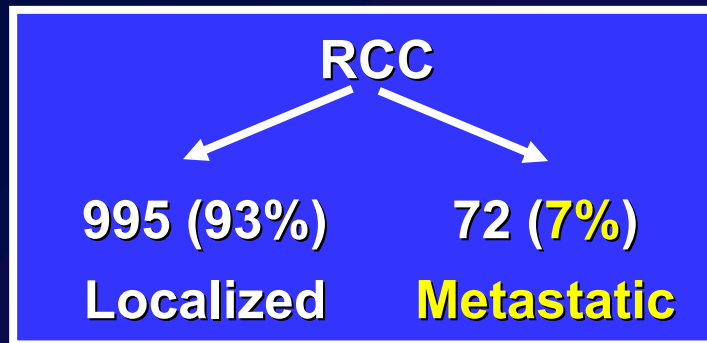
Grouping statistics:  
- The first three size categories (0,1 - 1,0 cm, 1,1 - 2,0 cm, 2,1 - 3,0 cm) are grouped with a bracket and a p-value of  $p = 0,387$ .  
- The last two size categories (2,1 - 3,0 cm, 3,1 - 4,0 cm) are grouped with a bracket and a p-value of  $p = 0,0001$ .



# Tumour Metastasis

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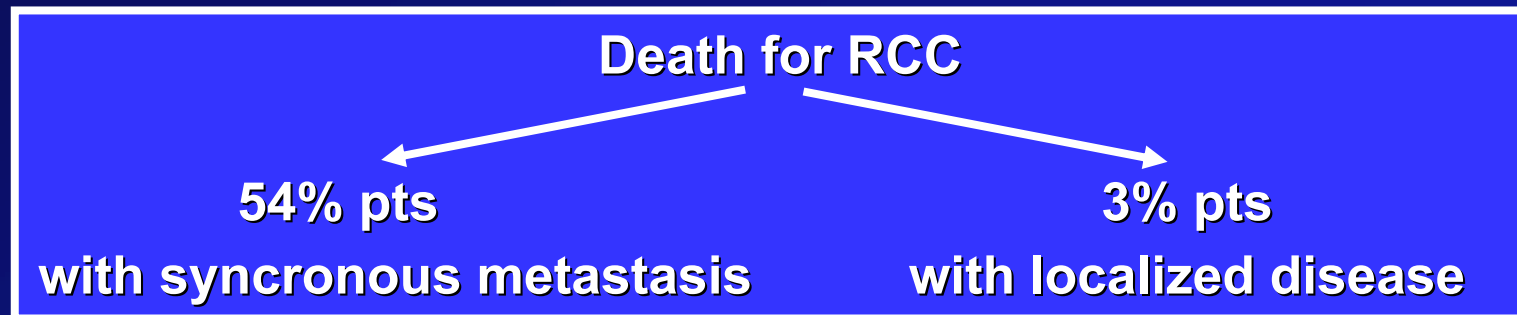
(*J Urol*, May 2008)



METASTATIC RCC	
0,1 - 1,0 cm	7%
1,1 - 2,0 cm	6%
2,1 - 3,0 cm	5%
3,1 - 4,0 cm	8%

}  $p = 0,322$

<u>Factor associated with metastasis</u>	
ECOG PS $\geq 1$	Higher Grades
Presentation with symptoms	Histological Types
Higher T Stage	

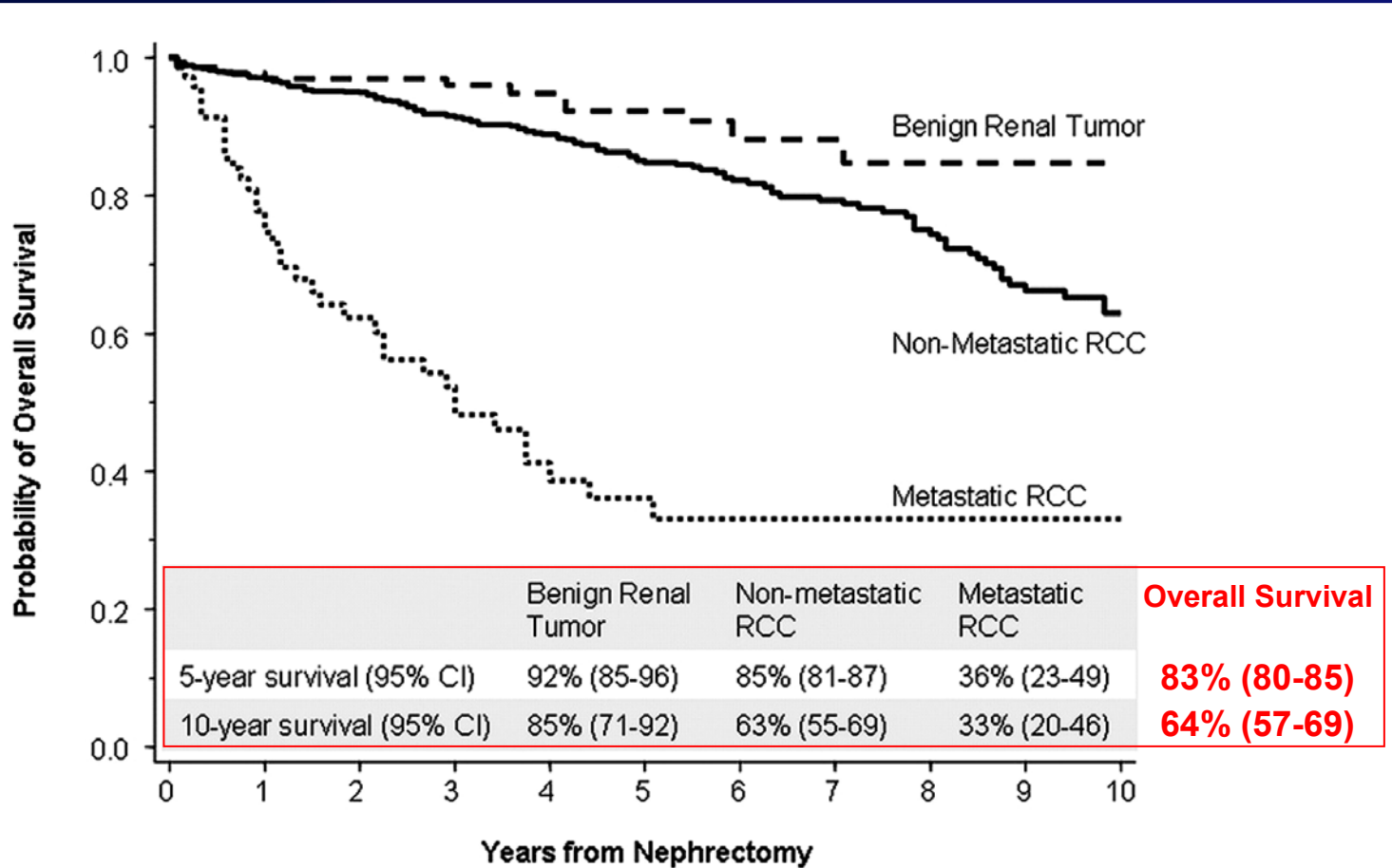




# Overall Survival

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(*J Urol*, May 2008)



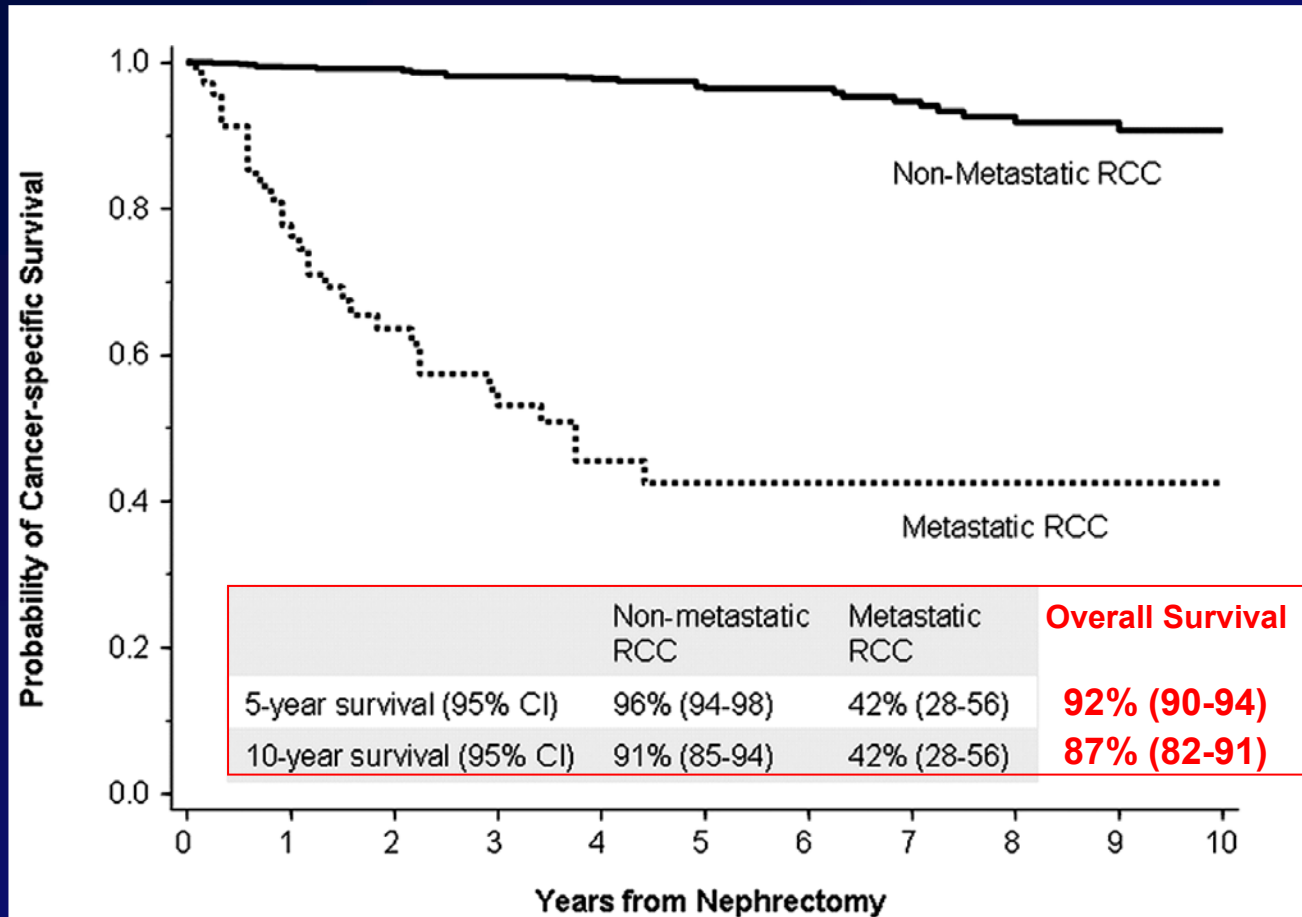
**Patients with benign renal tumors had significantly better survival than patients with localized RCC ( $p=0.008$ )**



# Cancer-specific survival

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(*J Urol*, May 2008)



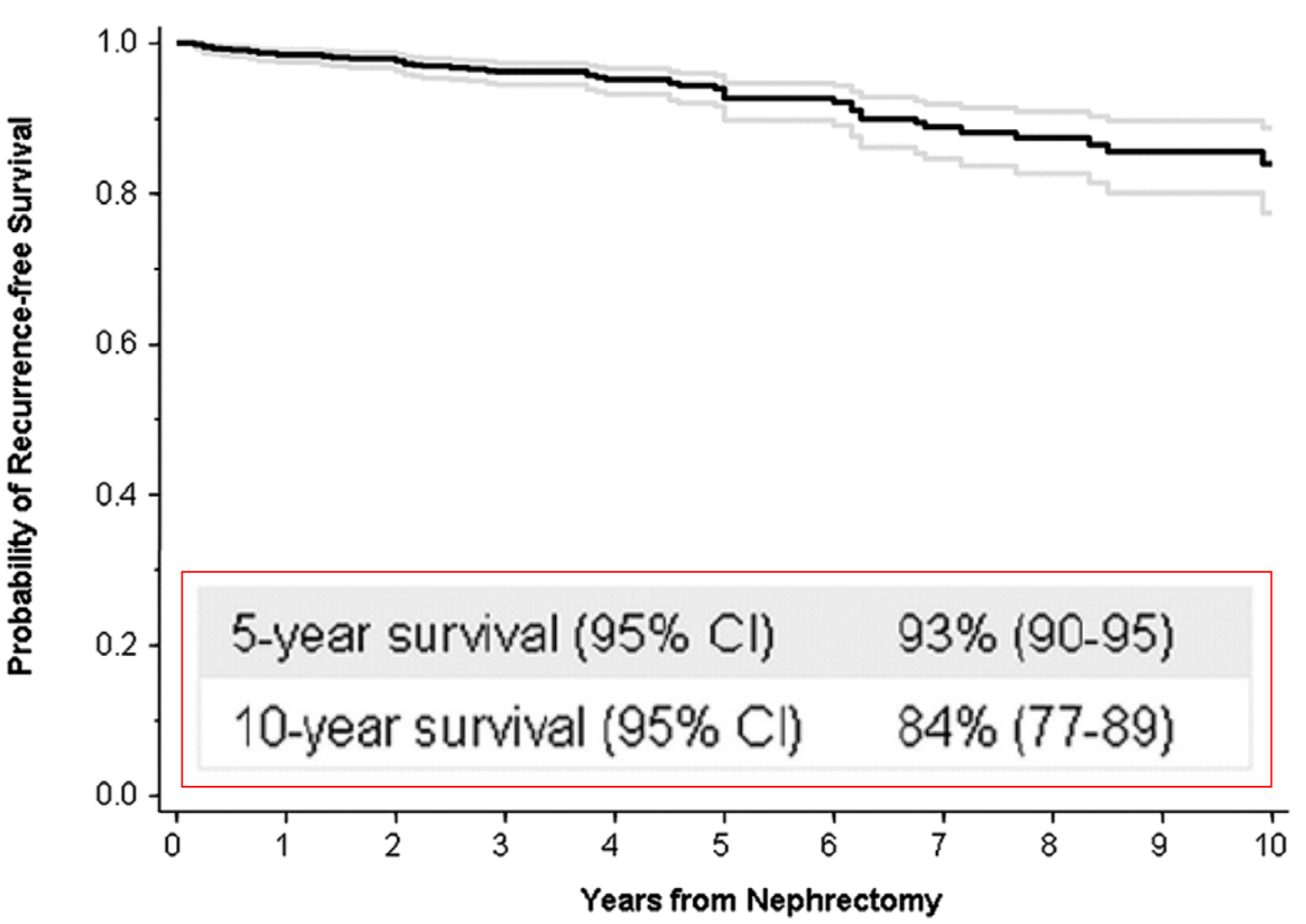
**Patients with non-metastatic RCC had significantly better survival than patients with metastatic RCC**



# Recurrence-free survival

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(J Urol, May 2008)





# Concluding Remarks (1)

- ✓ Most small (< 4 cm) renal tumours are malignant
- ✓ Majority of these small cancers grow very slowly and the likelihood of metastasis is low
- ✓ Imaging methods are unreliable in diagnostic of small renal masses
- ✓ Renal biopsy should be used more often than traditionally for indetectable tumours



## Concluding Remarks (2)

- ✓ **Partial nephrectomy is the golden standard of treatment**
- ✓ **Mini-invasive ablative methods are very promising, but still need longer follow-up to be fully validated**
- ✓ **Active surveillance is a good option for elderly patients or patients with limited life expectancy due to comorbidity**

***“Il dubbio non è piacevole,  
ma la certezza è ridicola.  
Solo gli imbecilli son sicuri  
di ciò che dicono”***

***Voltaire***

