Amsterdam UMC
University Medical Centers

Niercelcarcinoom diagnostiek en behandeling met verschillende lokale en chirurgische technieken

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No disclosures

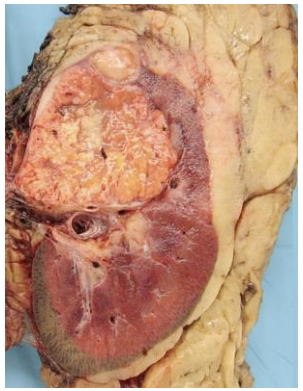
- Voorzitter van nierkanker werkgroep NVU
- Bestuur van de landelijke tumorwerkgroep nierkanker
- Nierkanker netwerk Amsterdam NKNA (AUMC/AVL/OLVG/Spaarne

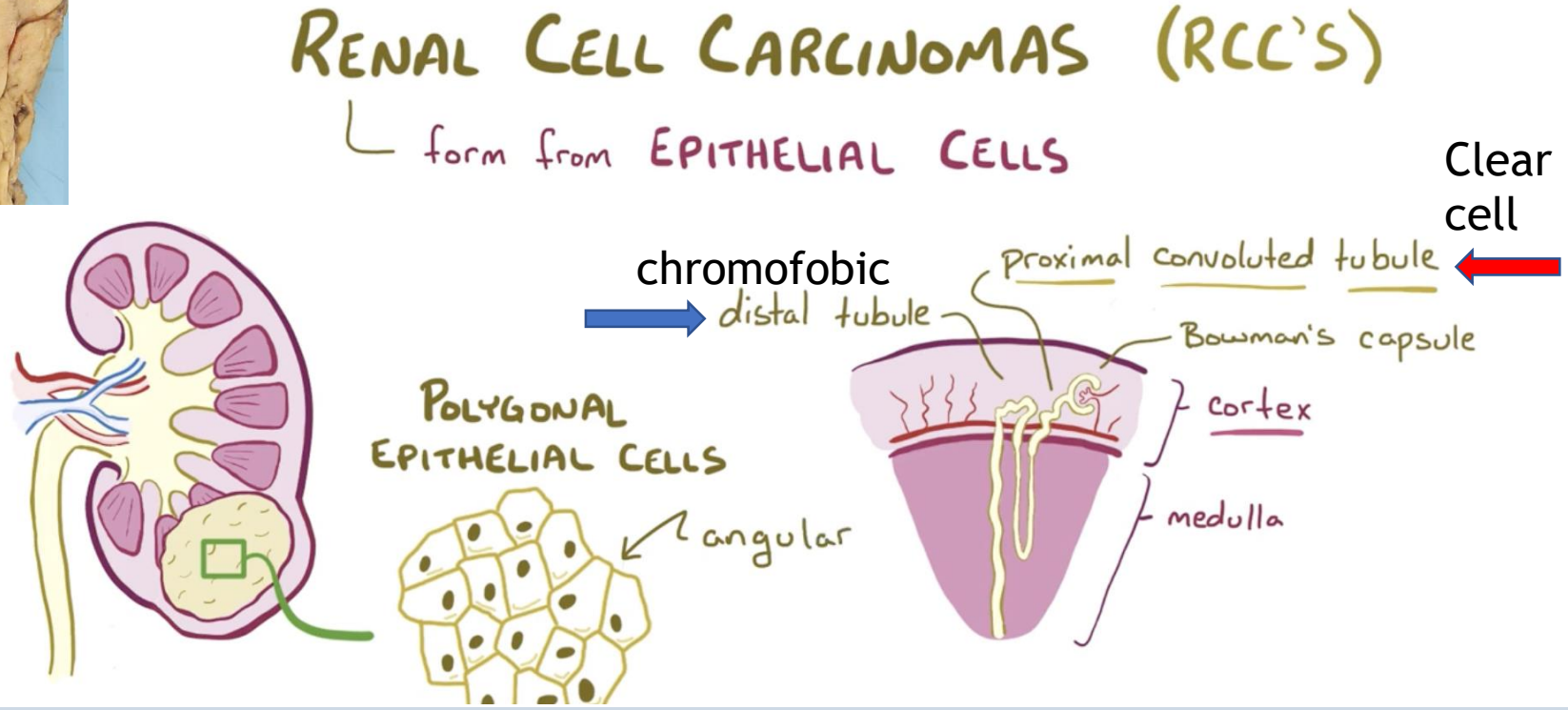
nierkanker netwerk amsterdam

Nierkanker

Diagnose	Treatment decisions	Treatments
• Etiologie • Incidentie • Erfelijk • Symptomen • Diagnostiek	• Key decisions & elements	• Locaal RCC • Advanced

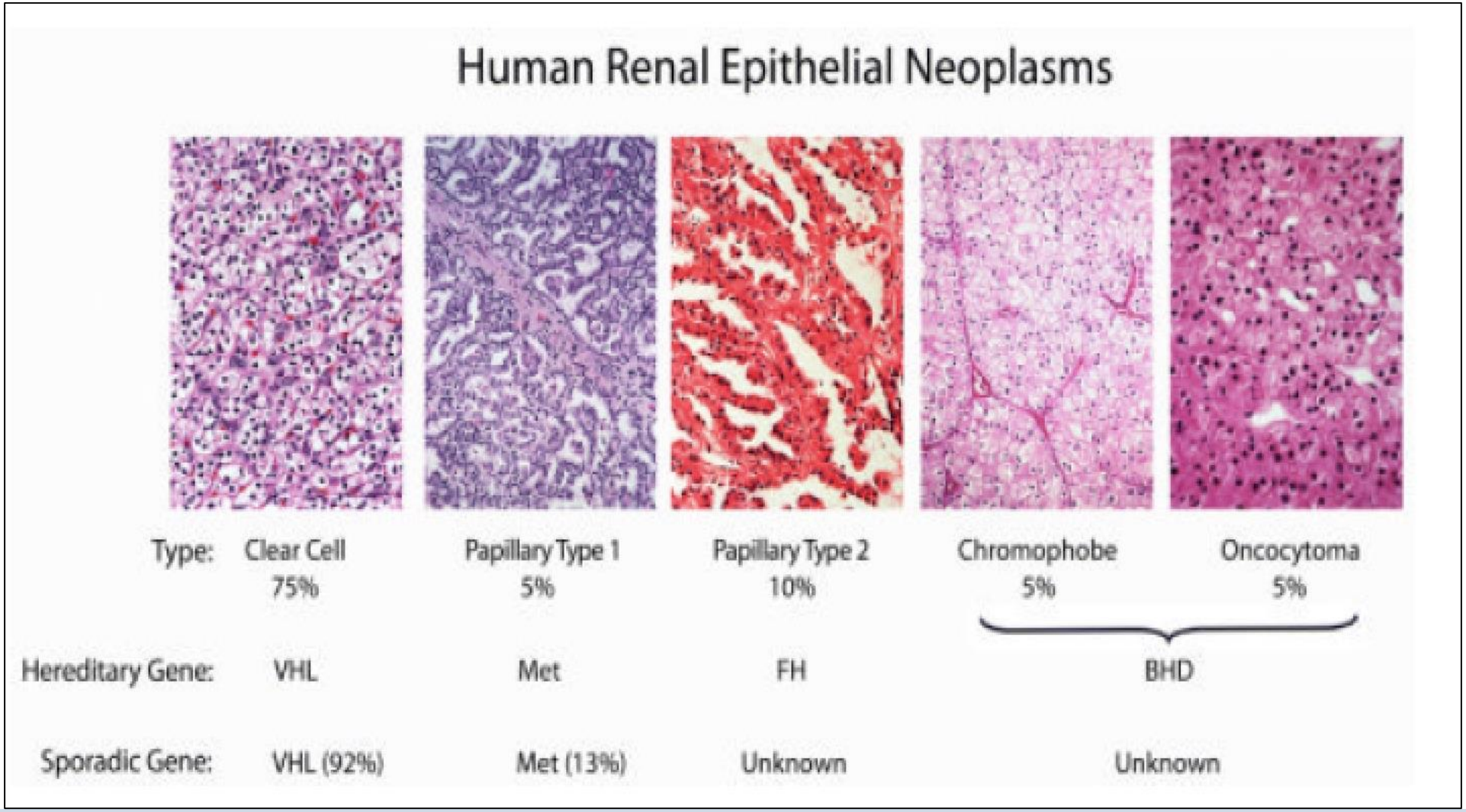
Kidney Cancer (renal cell carcinoma)





*papillary RCC originate form both distal and proximal tubules

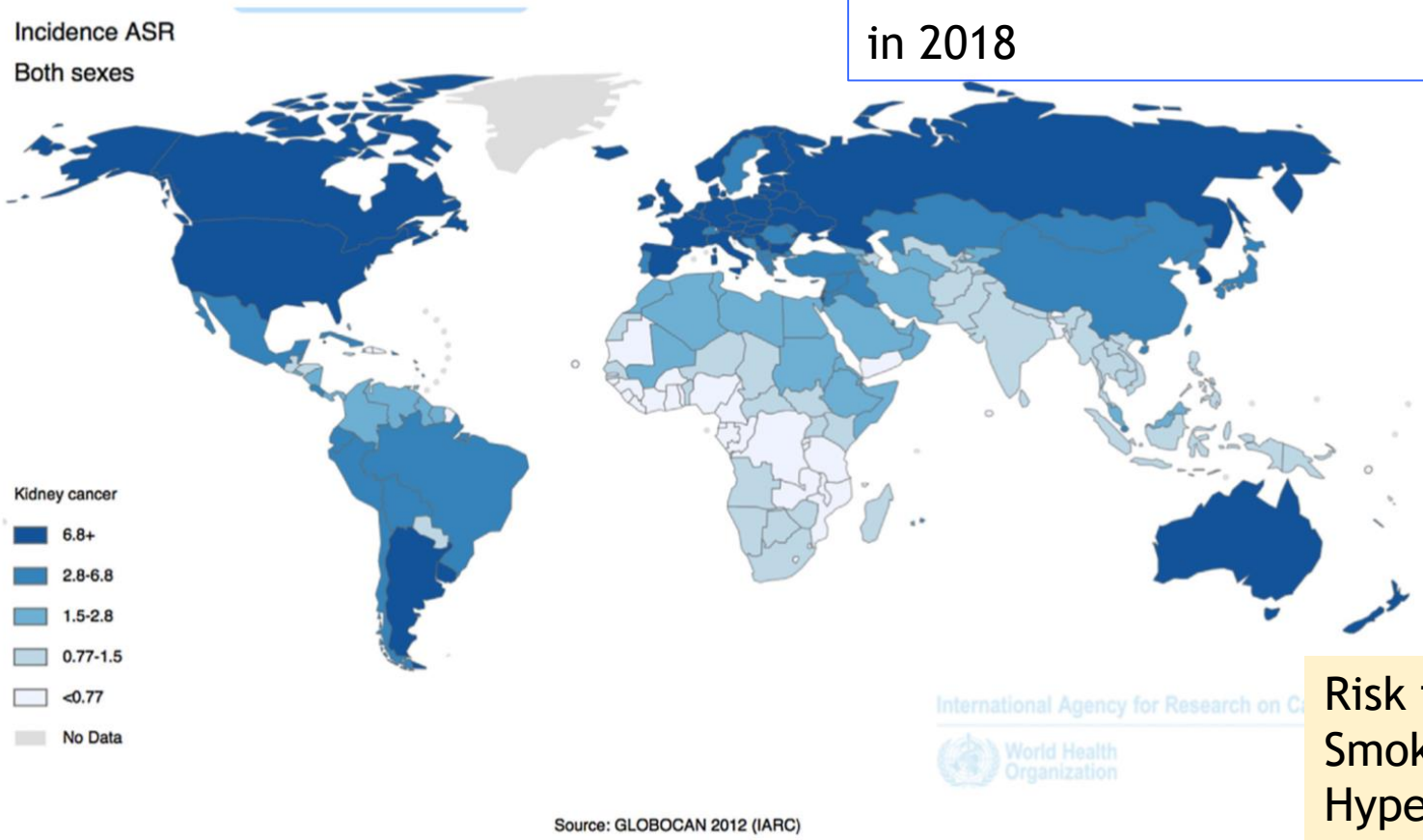
Different types of RCC



Hereditary Renal Neoplasma(5-8%)

Wereld incidentie RCC

WHO 2018: 403.262 new cases
175.098 deaths
in 2018



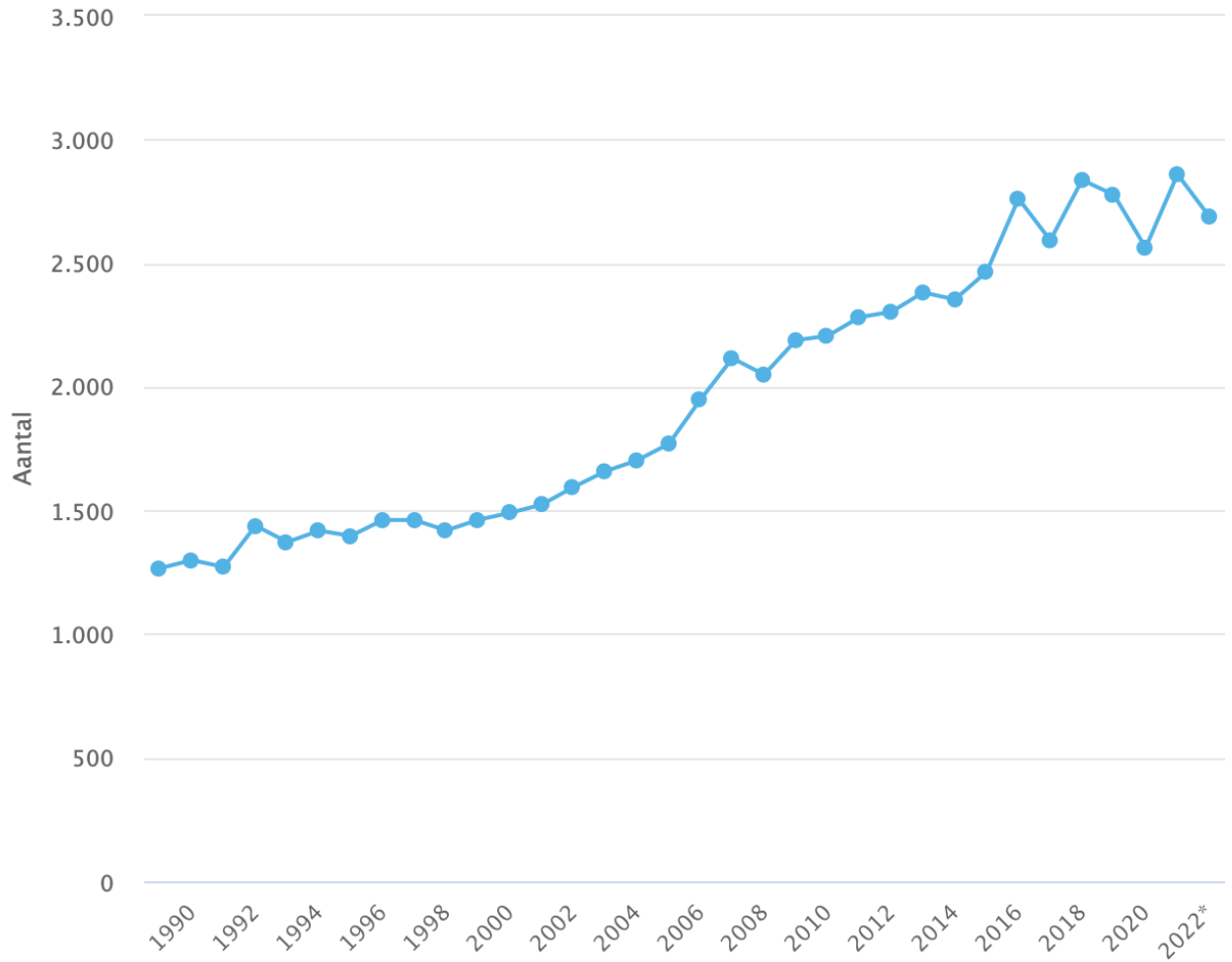
Risk factors:
Smoking
Hypertension
DM

sixth most diagnosed cancer in men and the 10th most diagnosed cancer in women

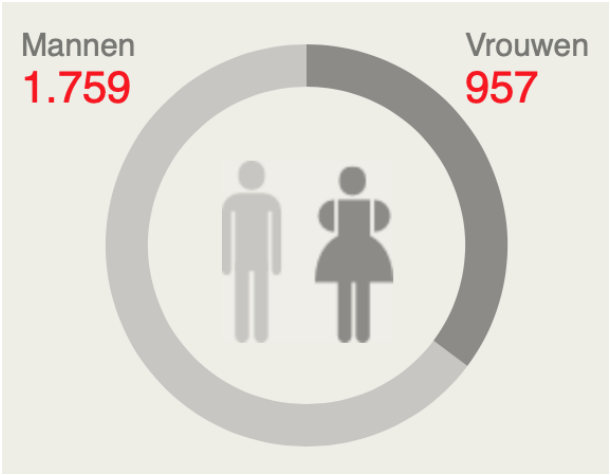
Incidentie per jaar, Aantal

Nierkanker

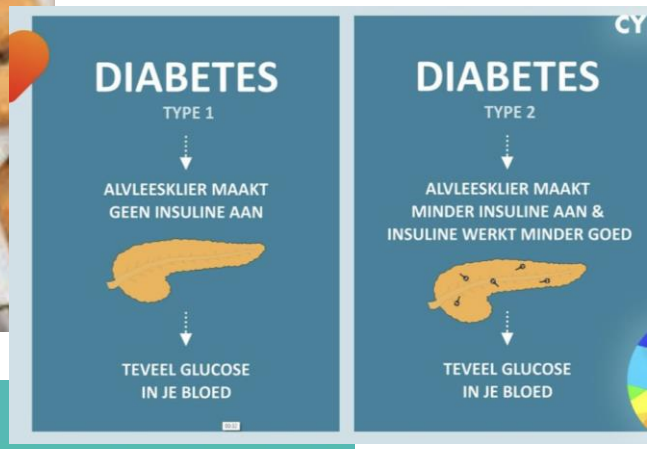
Geslacht: Man en vrouw | **Leeftijdsgroep:** Totaal | **Regio:** Nederland

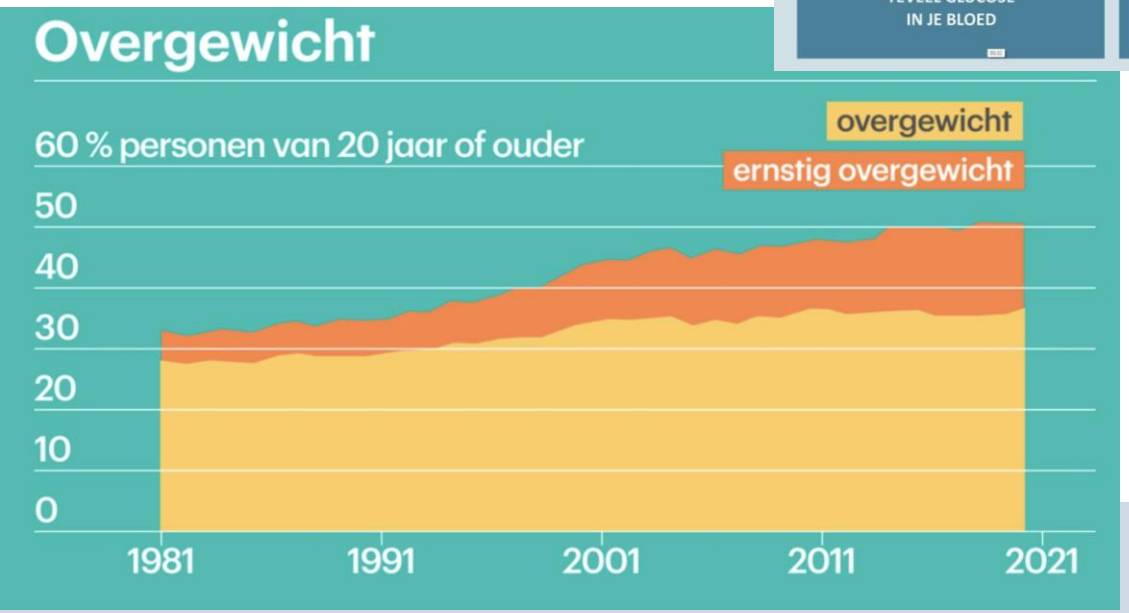


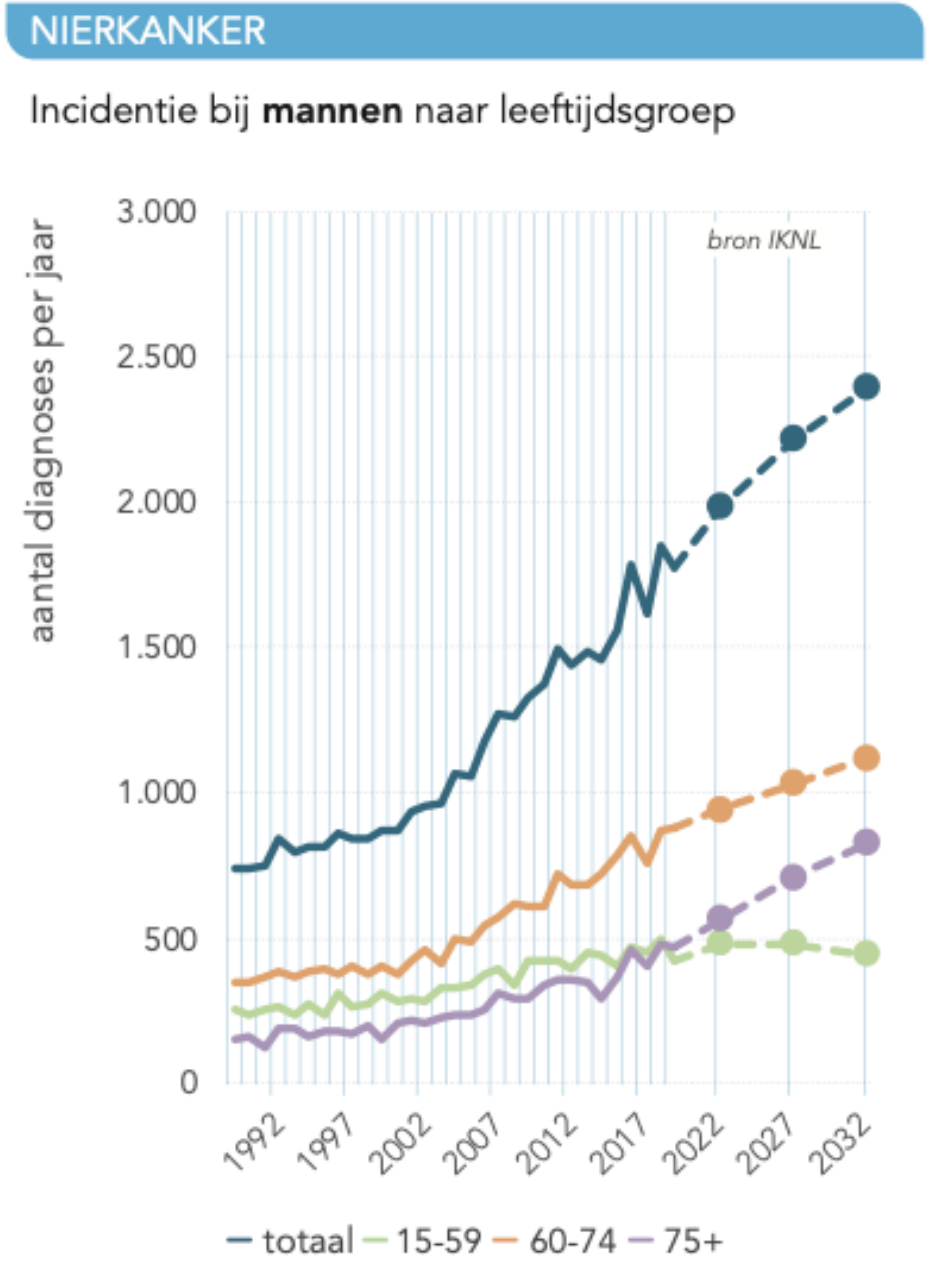
2700 nieuwe RCC/jr (2%)



Voorspelling voor 2032





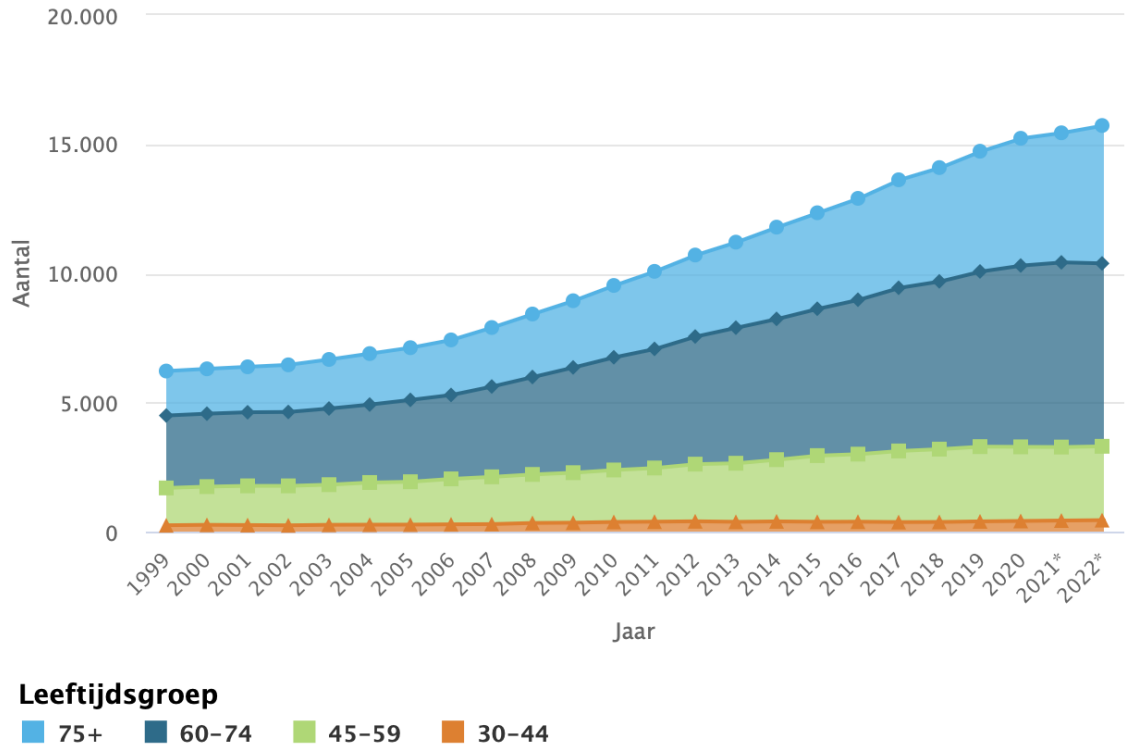


De 10-jaarsprevalentie van nierkanker is de afgelopen decennia gestegen. In Nederland leven bijna 16.000 mensen met of na nierkanker.

Prevalentie per jaar, 10-jaarsprevalentie

Nierkanker

Geslacht: Man + Vrouw | **Regio:** Nederland



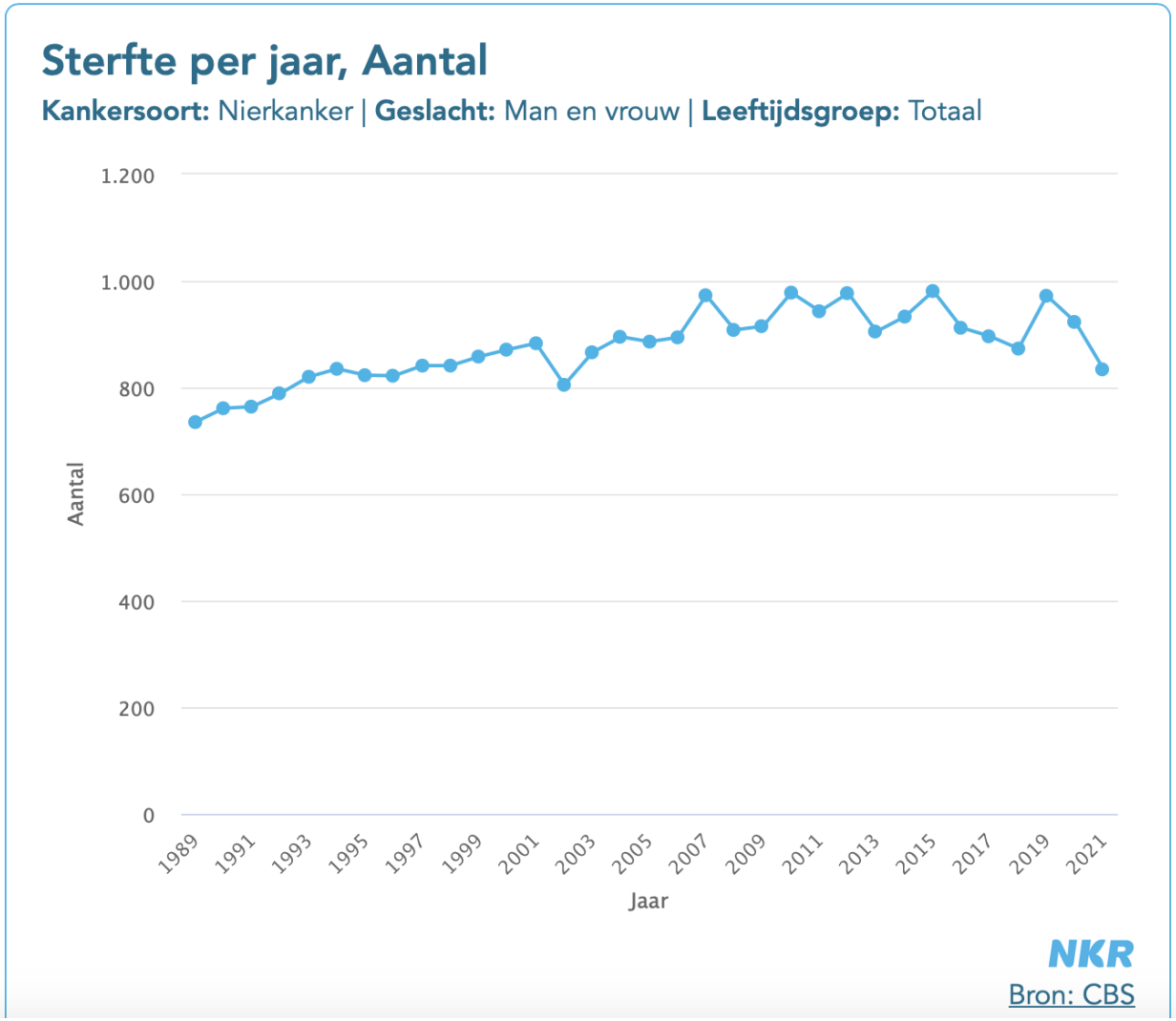
NKR

*Deze cijfers betreffen voorlopige gegevens.

Bron: iknl.nl/nkr-cijfers

Sterfte nierkanker

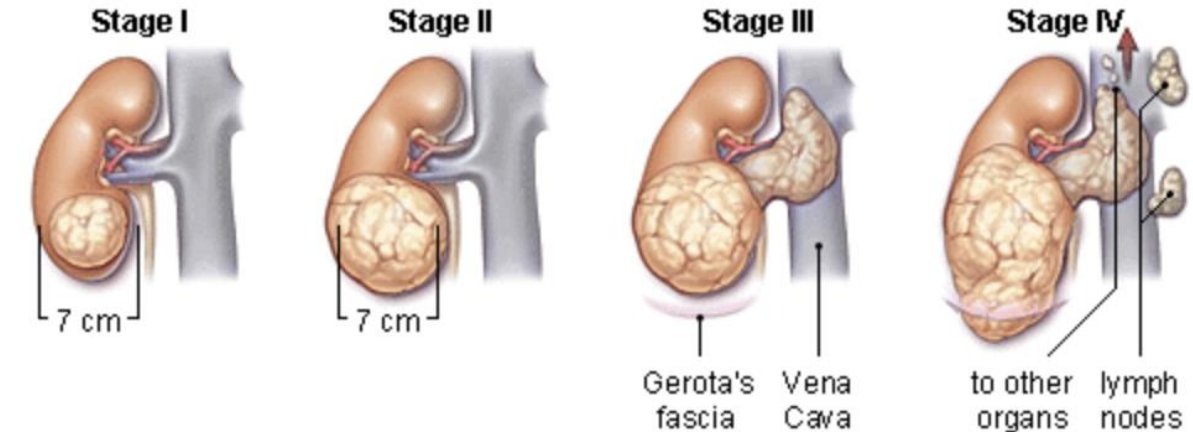
Jaarlijks overlijden er in Nederland ongeveer 800-900 mensen aan nierkanker.



- 873 patienten overlijden aan nierkanker/jr
- 66% 5 jrs overleving
- 53% 10 jrs overleving

TNM stadiering

Nierkanker stadia



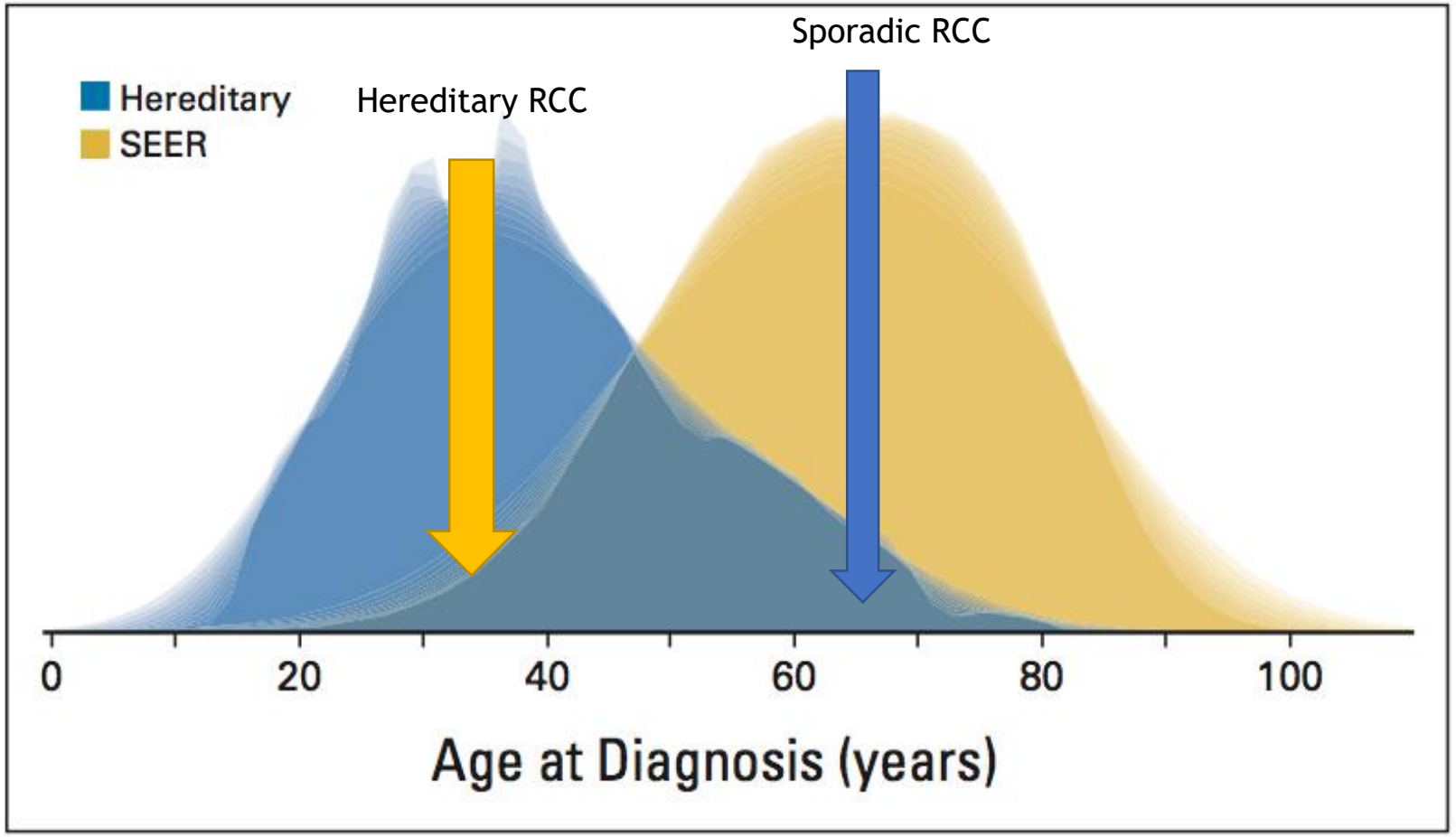
UROLOOG

oncoloog

T0	No evidence of primary tumour.
T1	Tumour ≤7 cm in greatest dimension, limited to the kidney.
T1a	Tumour ≤4 cm in greatest dimension, limited to the kidney.
T1b	Tumour >4 cm but not >7 cm in greatest dimension, limited to the kidney.
T2	Tumour >7 cm in greatest dimension, limited to the kidney.
T2a	Tumour >7 cm but ≤10 cm in greatest dimension, limited to the kidney.
T2b	Tumour >10 cm, limited to the kidney.
T3	Tumour extends into major veins or perinephric tissues but not into the ipsilateral adrenal gland and not beyond Gerota fascia.
T3a	Tumour grossly extends into the renal vein or its segmental (muscle containing) branches, or tumour invades perirenal and/or renal sinus fat but not beyond Gerota fascia.
T3b	Tumour grossly extends into the vena cava below the diaphragm.
T3c	Tumour grossly extends into the vena cava above the diaphragm or invades the wall of the vena cava.
T4	Tumour invades beyond Gerota's fascia (including contiguous extension into the ipsilateral adrenal gland).

N = Lymfeklieren M = Metastasen

Epidemiologie- leeftijd



ref. Shuch 2014

Erfelijke nierkanker syndromen 5-8%

400 families in NL

Von Hippel Lindau

TABLE 1. von Hippel-Lindau Summary

von Hippel-Lindau: extrarenal manifestations
- Hemangioblastoma (retinal, cerebellar, spinal)
- Pancreatic serous cystadenoma
- Pancreatic endocrine tumors (some with cytoplasmic clearing)
- Endolymphatic sac tumors of inner ear
- Epididymal cystadenomas
- Pheochromocytoma

von Hippel-Lindau: key diagnostic points
- Multiple clear cell RCCs (bilateral)
- Multiple renal cysts (bilateral) with clear cell lining
  - Cyst lining may have epithelial tufting or papillary growth
- Microscopic foci of clear cell RCC (tumorlets)
- May suspect possibility of syndrome based on constellation of pathologic renal findings (or associated extrarenal lesions)
- Definitive confirmation by testing patient for germline inactivating alterations in VHL

RCC indicates renal cell carcinoma.

VHL

VHL tumour suppressor gene 3p25-26

Autosomal dominant

Prevlence 2-3 / 100.000

Symptoms: mainly
- Hemangioblasoma cerebral
- Pancreatic cysts
- RCCs (20-40%-70%)

3 cm rule for treatment

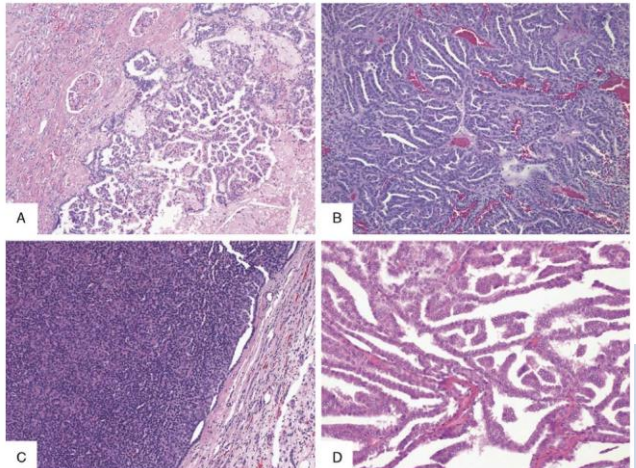
STOET: 15 yrs age 1/yr MRI

Verine, et al, 2010
Przybycin et al, 2013
*STOET richtlijn

Hereditary Papillary RCC

TABLE 2. Hereditary Papillary Renal Cell Carcinoma Summary

Hereditary papillary RCC: extrarenal manifestations
No known extrarenal manifestations
Hereditary papillary RCC: key diagnostic points
Numerous Type I papillary renal cell carcinomas (bilateral)
Kidneys may contain over one hundred tumors
Background kidney frequently shows innumerable microscopic papillary neoplasms similar to sporadic papillary adenoma
Definitive confirmation by testing patient for germline activating mutation in *c-met* proto-oncogene



HPRC
C-MET mutation proto-oncogene 7q31
Autosomal dominant
Around age 41-42 yrs
Symptoms: • RCCs, type 1 • Bilateral & multifocal
3 cm rule for treatment
Yearly imaging for sruveillance

Przybycin et all, 2013

Hereditary Leiomyomatosis-RCC !!!

TABLE 3. Hereditary Leiomyomatosis-RCC Summary

Hereditary leiomyomatosis-renal cell carcinoma: extrarenal manifestations
- Leiomyomas of skin
  - Most patients develop cutaneous leiomyomas
- Leiomyomas uterus
  - In women, early hysterectomy for leiomyomas is common
  - Leiomyomas may have a nuclear morphology similar to that seen in the associated renal cell carcinomas with distinct perinucleolar halos
  - Most uterine leiomyomas would be considered cellular leiomyoma or atypical leiomyoma by WHO definitions
- Adrenal cortical hyperplasia also reported

Hereditary leiomyomatosis-renal cell carcinoma: key diagnostic points
- Unique feature for hereditary renal tumor: renal cell carcinoma is often unilateral and solitary
- Renal tumors have distinctive morphologic features[3]
  - Large neoplastic cells with abundant eosinophilic cytoplasm
  - Papillary architecture common, but tubulopapillary, tubular, cribriform, and solid may be seen
  - *Most important*: distinctive macronucleoli and perinucleolar halos impart a "viropathic-like" appearance
  - Background cysts in adjacent kidney may be lined by identical eosinophilic epithelial cells

HLRCC
FH gene
Autosomal dominant
Symptoms: • Leiomyomas skin • Leiomyomas uterus • RCC papillary type 2/clearcell (15%)
50 families in NL
Immediate treatment! NO 3cm rule!!
Yearly MRI imaging for sruveillance

Przybycin et al, 2013
*STOET richtlijn

Birt-Hogg-Dube

TABLE 4. Birt-Hogg-Dube Summary

Birt-Hogg-Dubé syndrome: extrarenal manifestations
- Cutaneous lesions
  - Fibrofolliculoma
  - Trichodiscoma
  - Acrochordon
- Spontaneous pneumothorax
  - Unique pulmonary cysts: basilar in location
- Colorectal polyposis/neoplasia (controversial)
- Medullary thyroid carcinoma
- Lipomas

Birt-Hogg-Dubé syndrome: key diagnostic points
- Multiple renal neoplasms with oncocytic histologic features
  - Oncocytoma
  - Chromophobe renal cell carcinoma
  - Hybrid oncocytic tumors with scattered clear cells
- Rare RCCs with clear cell features
- Background renal oncocytosis may be seen
- Renal features may not be pathognomonic: need correlation with clinical features
- Definitive confirmation by testing patient for germline mutation in *BHD* gene

RCC indicates renal cell carcinoma.

BHD
Mutation in FLCN gene
Autosomal dominant
Prevalence 1:200.000
Symptoms: • Cutaneous fibrofolliculoma • Pneumothorax • Pulmonary cysts • Colorectal neoplasia • Hybrid oncocytic RCCs (25%)
STOET: from 20 yrs yearly US (starting with MRI)

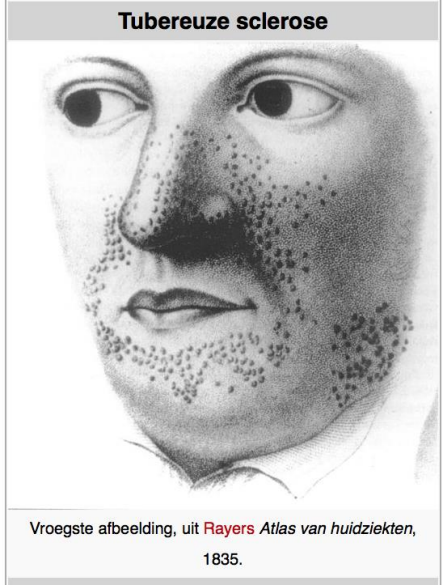
Przybycin et al, 2013
*STOET richtlijn

Tubereuze Sclerose Complex

TABLE 5. Tuberous Sclerosis Complex Summary

Tuberous sclerosis: extrarenal manifestations (highly variable)
- Other PEComa family neoplasms at various sites
  - Lymphangioleiomyomatosis
  - Clear cell "sugar" tumor
  - Angiomyolipoma
- Skin lesions
  - Angiofibroma
  - Periungual fibroma
  - Hypomelanotic macules
- Neurological symptoms
  - Epilepsy
  - Intellectual disability
  - Behavioral disability
- Cardiac rhabdomyoma
- Retinal hamartoma
- Pulmonary micronodular pneumocyte hyperplasia
- Central nervous system lesions
  - Tubers
  - Subependymal giant cell astrocytoma

Tuberous sclerosis: key diagnostic points
- Multiple renal angiomyolipomas (often bilateral)
  - Epithelioid morphology and small microscopic tumorlets of angiomyolipoma are common
  - May have background renal epithelial cysts with eosinophilic lining cells
  - Combination of epithelioid morphology in angiomyolipoma, angiomyolipoma tumorlets, and eosinophilic renal cysts seems to be fairly specific for tuberous sclerosis
- Less commonly, concomitant RCC present (must exclude epithelioid AML!!)
  - Clear cell-like pattern
  - Chromophobe-like pattern
  - Unclassified type with intratumoral cysts and eosinophilic cytoplasm
  - Associated AML with epithelial cysts common in our experience
- Definitive confirmation by testing patient for germline mutation sin *TSC1* or *TSC2* genes



Vroegste afbeelding, uit Rayers *Atlas van huidziekten*, 1835.

TSC

Mutation in TSC1 (9q34) TSC2 (16p13.3)

Autosomal dominant (60-70% sporadic)

Prevalence 1: 10.000-30.000

Symptoms:
- Skin lesions
- Neurologic: epilepsy, IQ
- AML, less frequent RCC

STOET: from 10 yrs yearly US, from 20 yrs CT/MRI

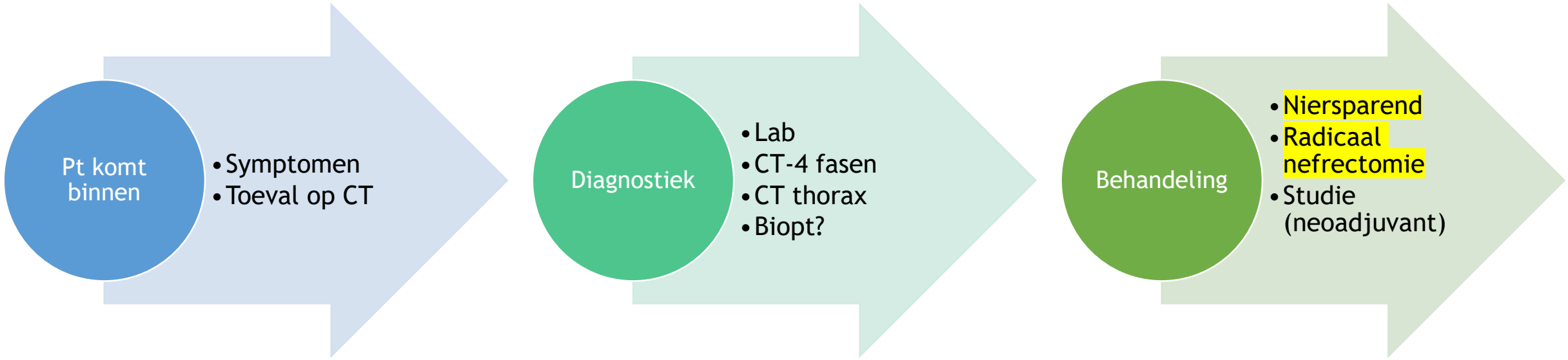
*STOET richtlijn

Verwijzen naar klinisch geneticus?

Criteria
RCC < 45 jr
RCC & 1 andere kanker <60 jr
Bilateraal en multifocaal RCC, elke leeftijd
Papillary type RCC, elke leeftijd
RCC bij 2 of meer 1st graads familielid < 70 jrs

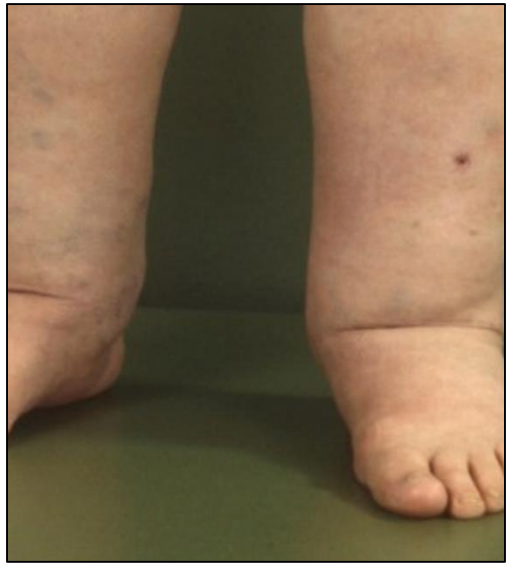
* STOET richtlijnen 2022

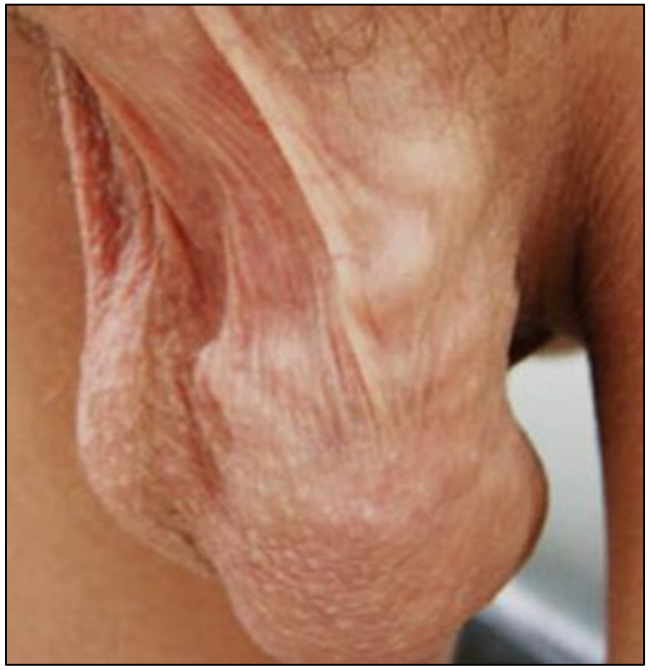
Patient journey



1.Symptomen RCC

Incidenteel
Lokale tumor groei Hematurie Flank pijn Abdominale massa Perirenaal hematoom
Metastasen Persisterende hoest Botpijn Cervicale lymfadenopathie Gewichtsverlies, Koorts, Malaise
Obstructie Vena Cava Inferior Bilateraal oedeem onderste extremiteiten Niet-reduceerbare of **rechtszijdige** Varicocele
Paraneoplastich syndroom Hypercalciemie Hypertensie Polycythemia Stauffers Syndroom

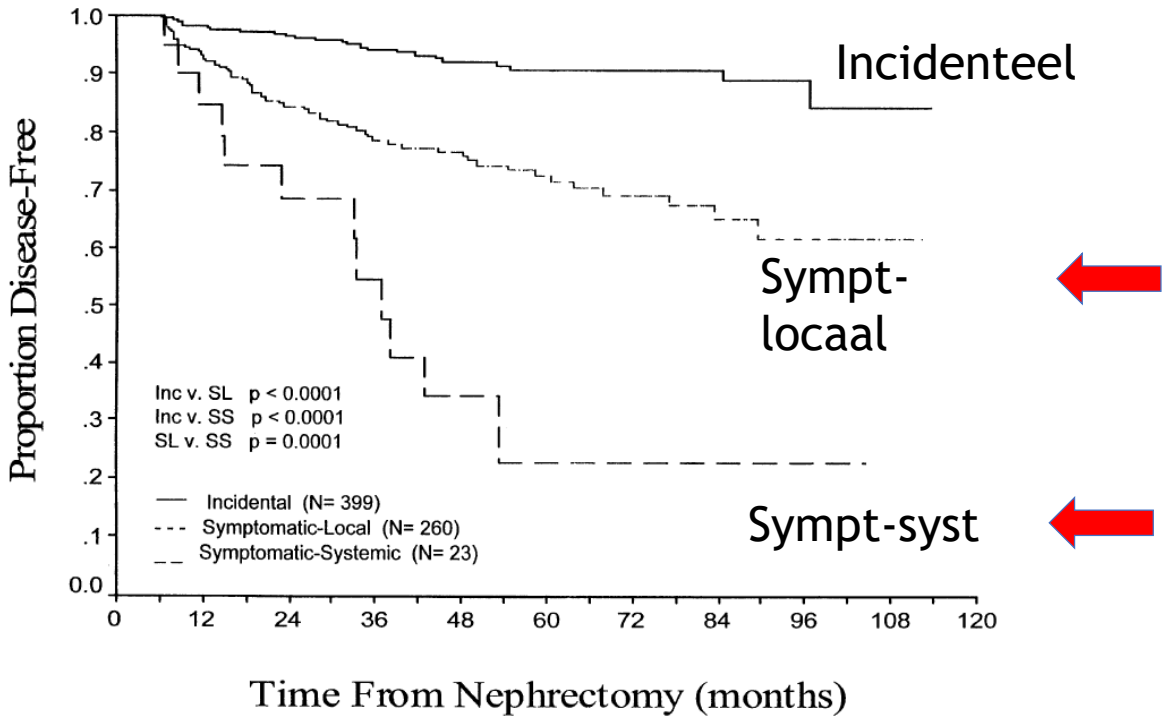




Symptomen = Survival

Klassieke trias: 6-10%

- Hematurie
- Pijn
- Palpabele massa



Disease Free Survival

Patard 2003, Lee 2002

Paraneoplastische syndromen

Syndrome	%
BSE verhoogd	55.6
Hypertensie	37.5
Anemie	36.3
Cachexie, afvallen	34.5
Pyrexie	17.2
Afwijkende leverwaarden	14.4
Hypercalcemie	4.9
Polycythemia	3.5
Neuromyopathie	3.2
Amyoloidosis	2.0

Table 10.2 Common paraneoplastic syndromes associated with renal cell cancer (RCC).

Paraneoplastic syndrome associated with RCC	Cause
Hypertension	Ectopic secretion of renin
Hypercalcaemia	Ectopic secretion of parathyroid hormone-like substance
Anaemia	Haematuria, chronic disease
Polycythaemia	Ectopic secretion of erythropoietin
Stauffer's syndrome (abnormal liver function tests, white blood cell loss, fever, areas of hepatic necrosis)	Unknown: resolves in most patients after nephrectomy

Refs:
Campbell 10th ed
Kim et al 2003

laboratorium

IMDC score voor gemetastaseerd RCC

- Hb
- Gecorrigeerd calcium
- Neutrofielen
- Trombocyten

- Kreatinine / eGFR
- CRP, Hb, Leverenzymen

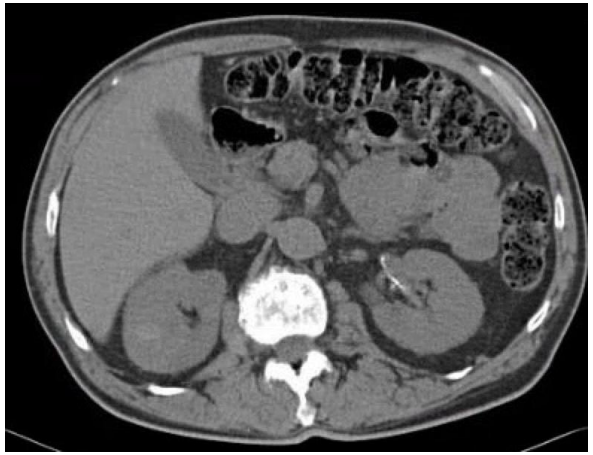
Performance scores

- Karnofsky
- ECOG
- WHO
- ASA

Gouden Standaard: 4 fase CT

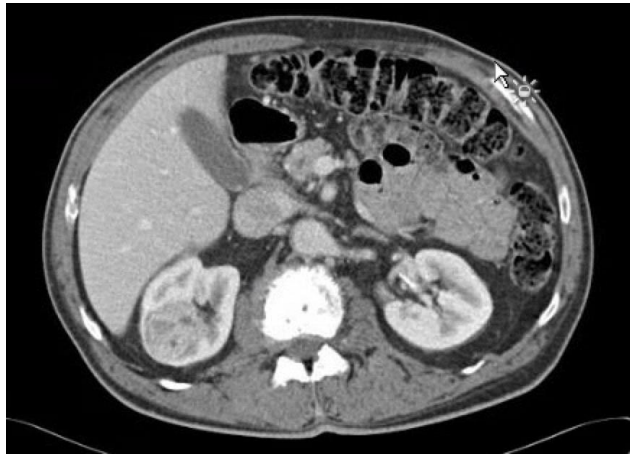
CT is niet 100% zeker

- >15 HU contrast aankleuring (cave papillair RCC 10 HU)

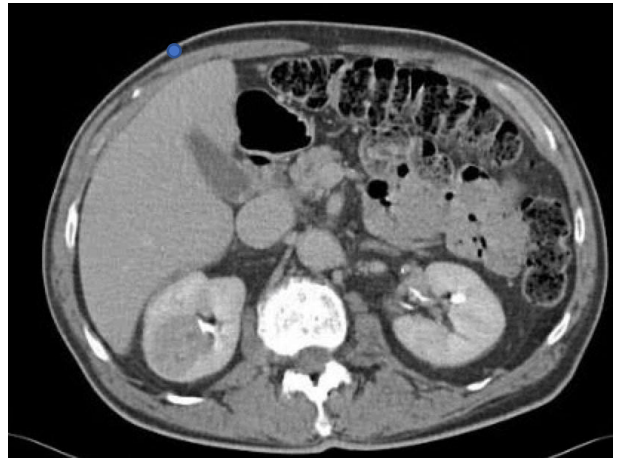


blanco

Corticomedulair of arterieel na 45 sec



Nefrogeen of veneus na 90 sec



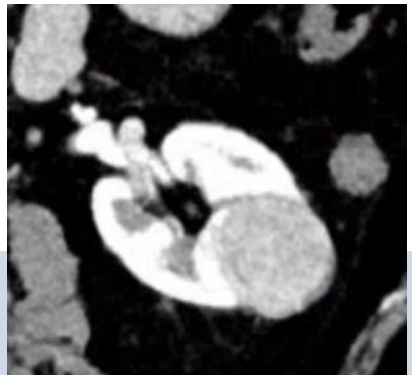
Uitscheidings fase na 10 minutes

Des te groter nierlesie, des te groter kans op kanker

TABLE 3. *Proportion of benign versus RCC tumors according to tumor size*

Tumor Size (cm)	No. Benign (%)	No. RCC (%)
0.0–Less than 1.0	37 (46.3)	43 (53.8)
1.0–Less than 2.0	38 (22.4)	132 (77.7)
2.0–Less than 3.0	75 (22.0)	266 (78.0)
3.0–Less than 4.0	71 (19.9)	285 (80.1)
4.0–Less than 5.0	37 (9.9)	336 (90.1)
5.0–Less than 6.0	40 (13.0)	267 (87.0)
6.0–Less than 7.0	11 (4.5)	232 (95.5)
7.0 or Greater	67 (6.3)	998 (93.7)

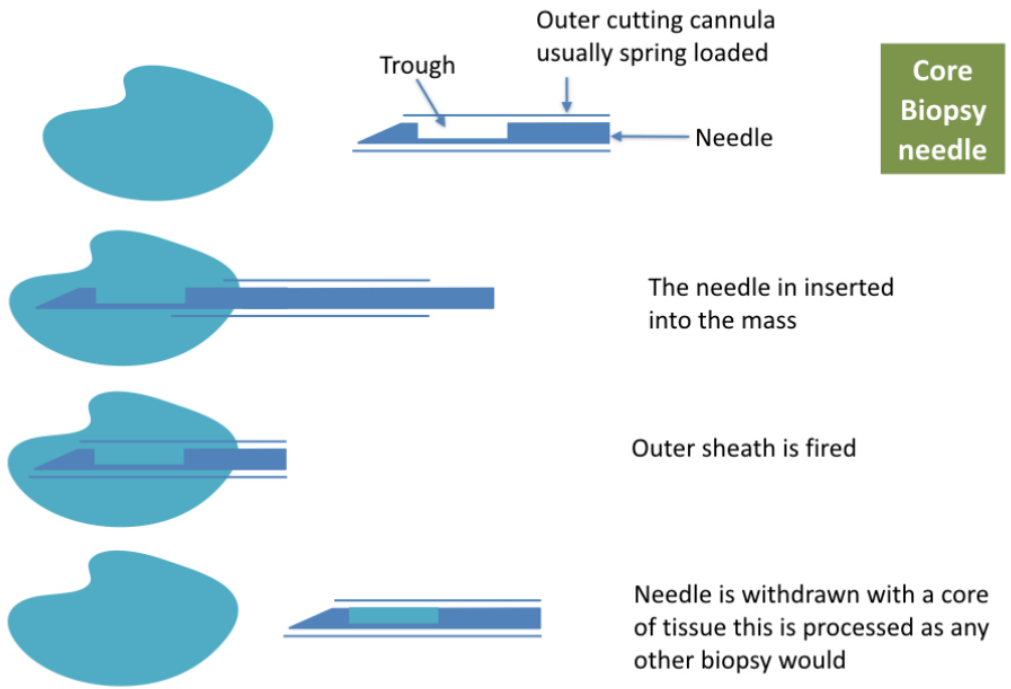
Percentages indicate the proportion of tumors in each size category that are benign or RCC, respectively.



Ref: Frank et al, J Urol 2003

Niertumor Biopt (echo of CT-geleid)

18 Gauge **Core Needle Biopsy**



- Onduidelijke lesies
- Pt die AS willen
- Vooraf aan ablatie
- Bij mRCC

Histologie & gradering (1-4)

Abdominal Radiology (2021) 46:373–379
https://doi.org/10.1007/s00261-020-02613-4

KIDNEYS, URETERS, BLADDER, RETROPERITONEUM

Renal biopsies performed before versus during ablation of T1 renal tumors: implications for prevention of overtreatment and follow-up

Christiaan V. Widdershoven[1] · Brigitte M. Aarts[2,3] · Patricia J. Zondervan[1] · Michaël M. E. L. Henderickx[1] · Elisabeth G. Klompenhouwer[2] · Otto M. van Delden[4] · Warner Prevoo[2,5] · Alexander D. Montauban van Swijndregt[5] · Reindert J. A. van Moorselaar[1] · Axel Bex[6,7] · Brunolf W. Lagerveld[8]

* Ref EAU guidelines

Diagnostische accuraatheid van niertumorbiopt

EUROPEAN UROLOGY 69 (2016) 660–673

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European Association of Urology

Platinum Priority – Review – Kidney Cancer

Editorial by Roger Kockelbergh and Leyshon Griffiths on pp. 674–675 of this issue

Systematic Review and Meta-analysis of Diagnostic Accuracy of Percutaneous Renal Tumour Biopsy

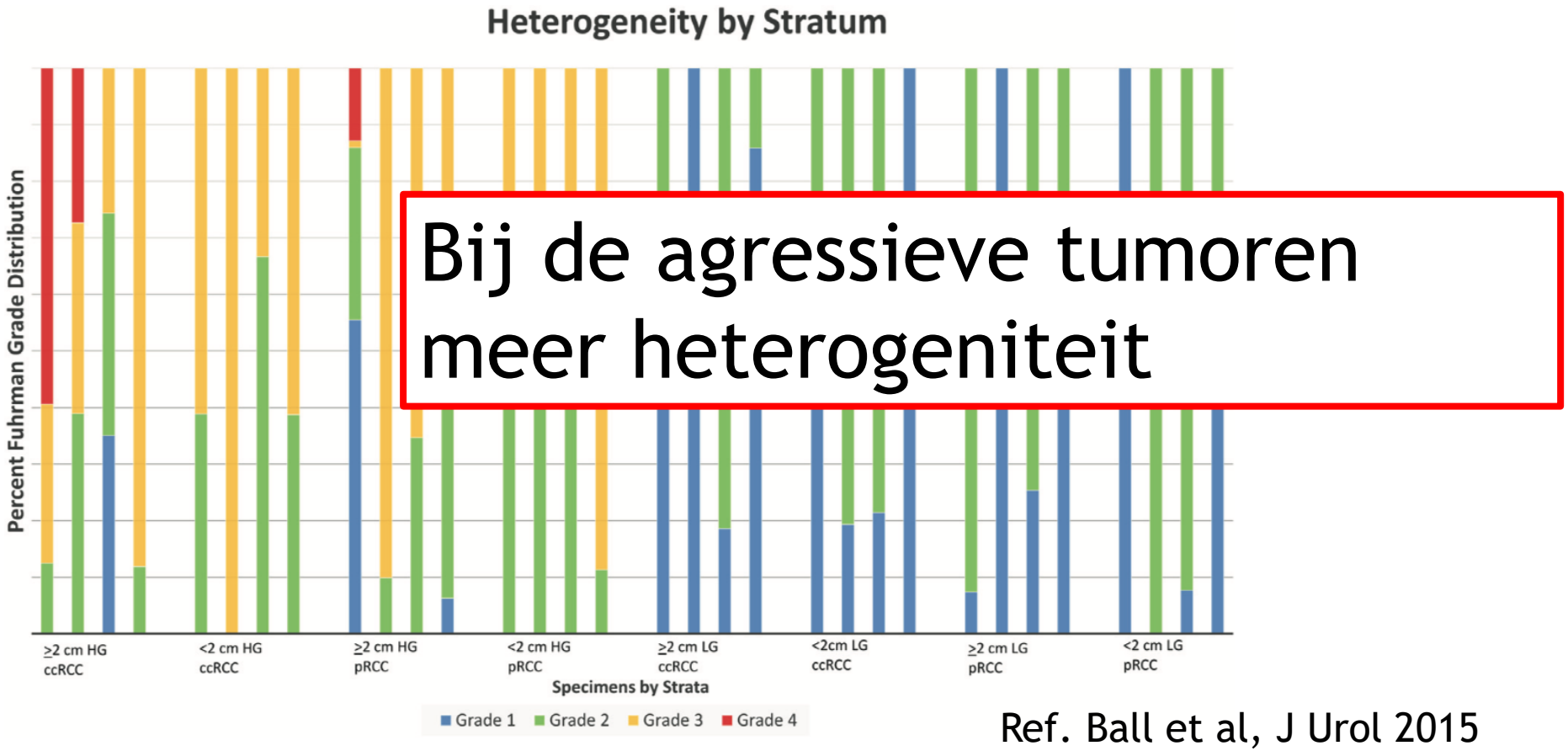
Overall Median Rate of diagnostic RMBs
92% (IQR: 80.6-96.8%)

Median overall Complication rate
8.1% (IQR: 2.7-11.1%)
Haematomas 4.3%
Lumbar pain 3%

Ref: Marconi et al, Eur Url 2016

Gradering Heterogeniteit

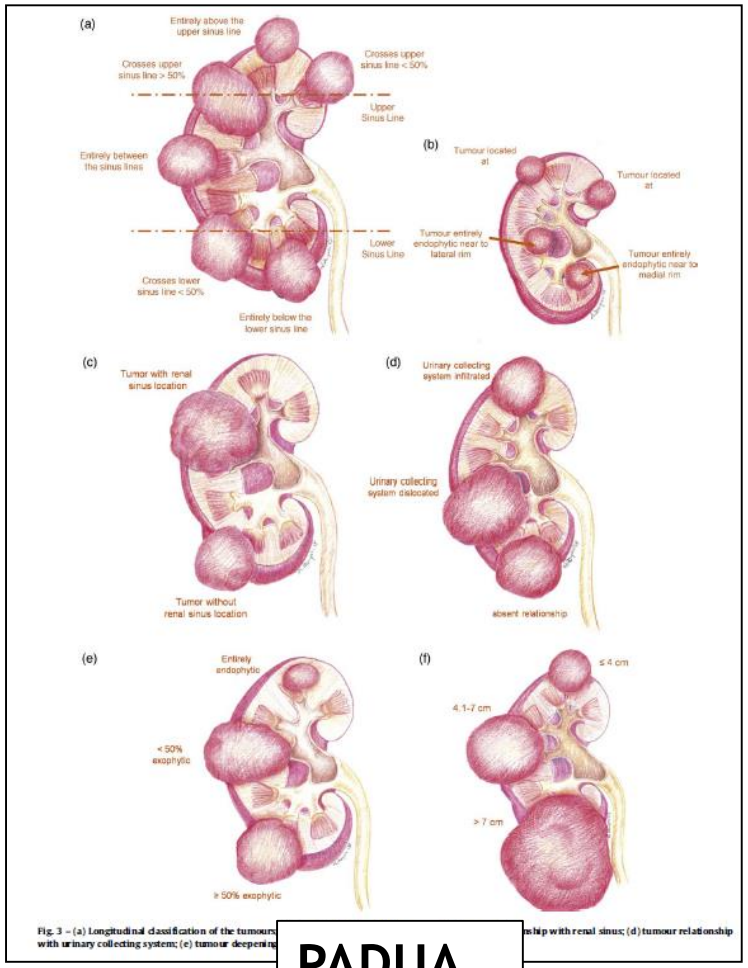
Meeste heterogeniteit in agressieve tumoren



Bij de agressieve tumoren meer heterogeniteit

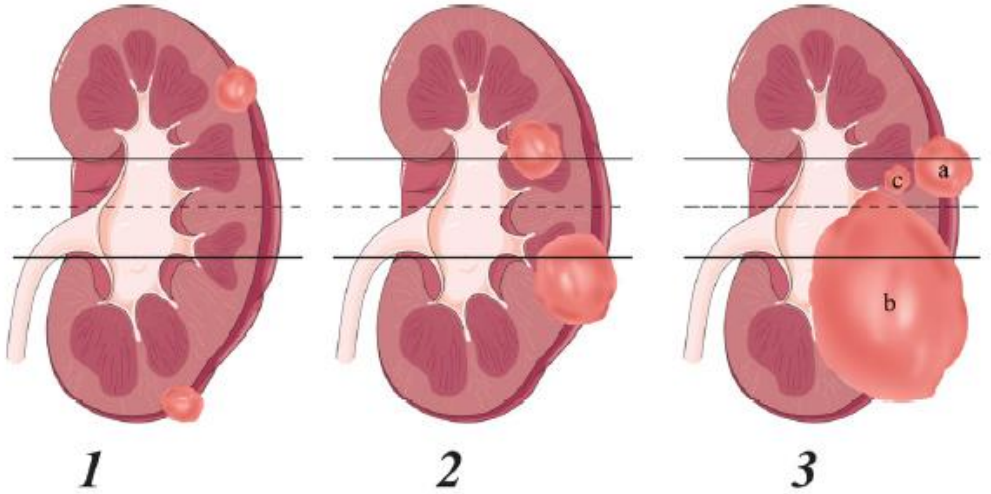
Ref. Ball et al, J Urol 2015

Anatomische Classificatie



PADUA

	1pt	2pts	3 pts
(R)adius (maximal diameter in cm)	≤4	>4 but < 7	≥ 7
(E)xophytic/endophytic properties	≥ 50%	<50%	Entirely endophytic
(N)earness of the tumor to the collecting system or sinus (mm)	≥7	>4 but <7	≤4
(A)nterior/Posterior	No points given. Mass assigned a descriptor of a, p, or x		
(L)ocation relative to the polar lines* * suffix "h" assigned if the tumor touches the main renal artery or vein	Entirely above the upper or below the lower polar line	Lesion crosses polar line	>50% of mass is across polar line (a) or mass crosses the axial renal midline (b) or mass is entirely between the polar lines (c)

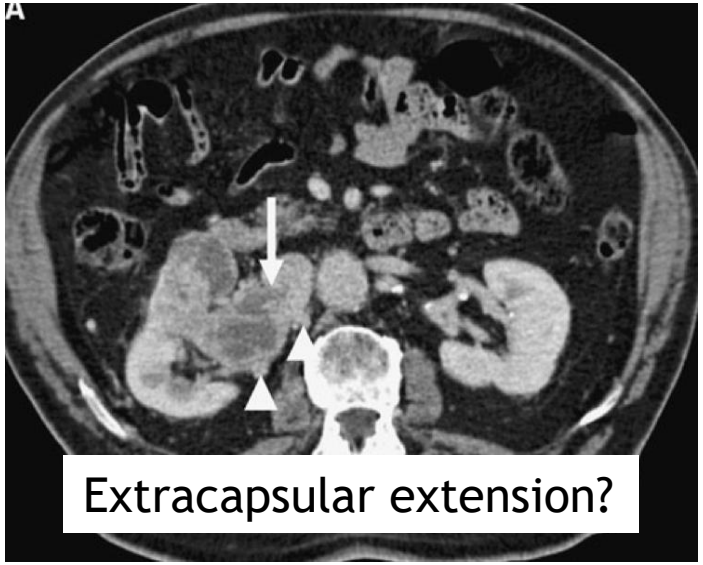


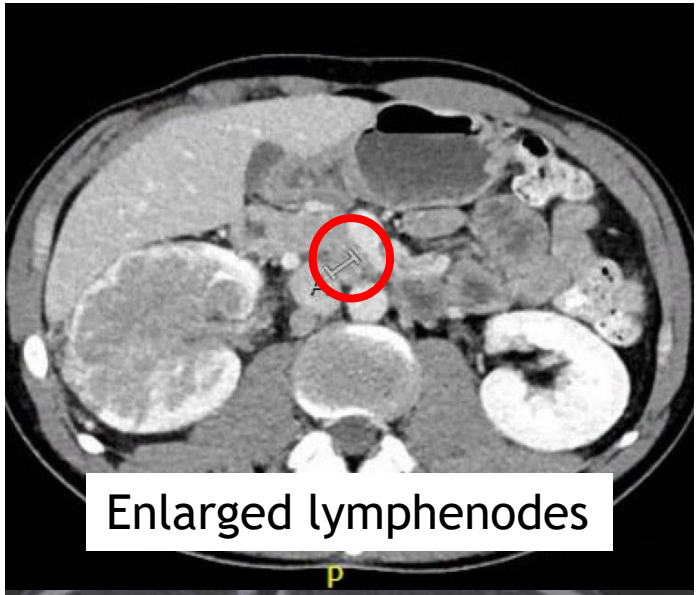
RENAL

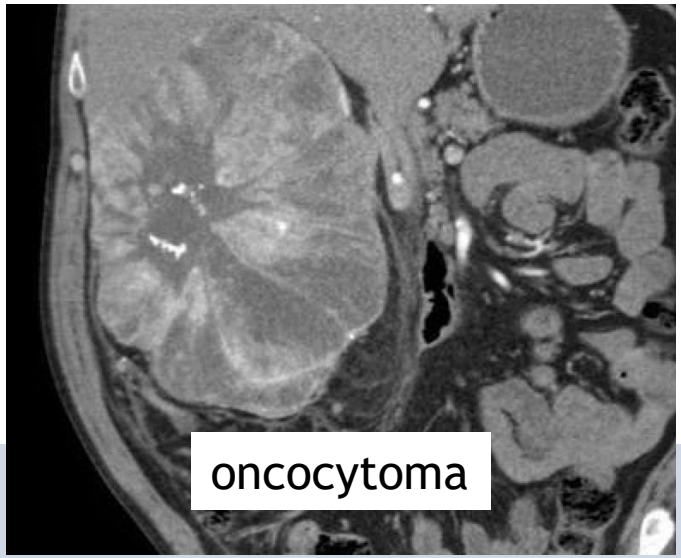
Gerelateerd aan de moeilijkheidsgraad van operatie van een niertumor

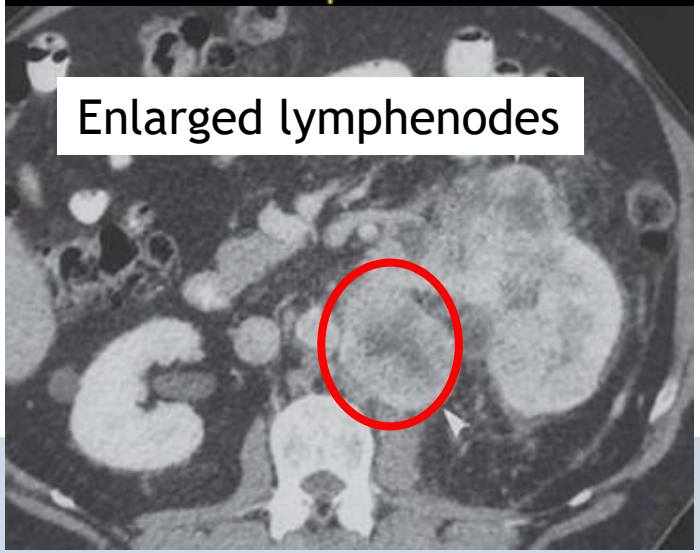
Klatte 2016, kutikov 2009, ficarra 2009

Additionele waarde van CT

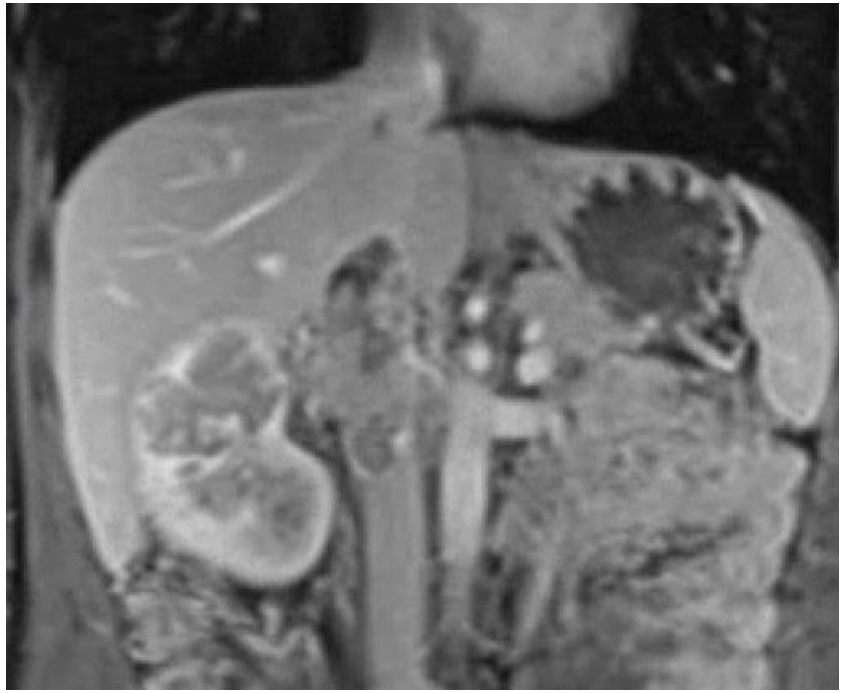








Additionele waarde van MRI in cT3b&c

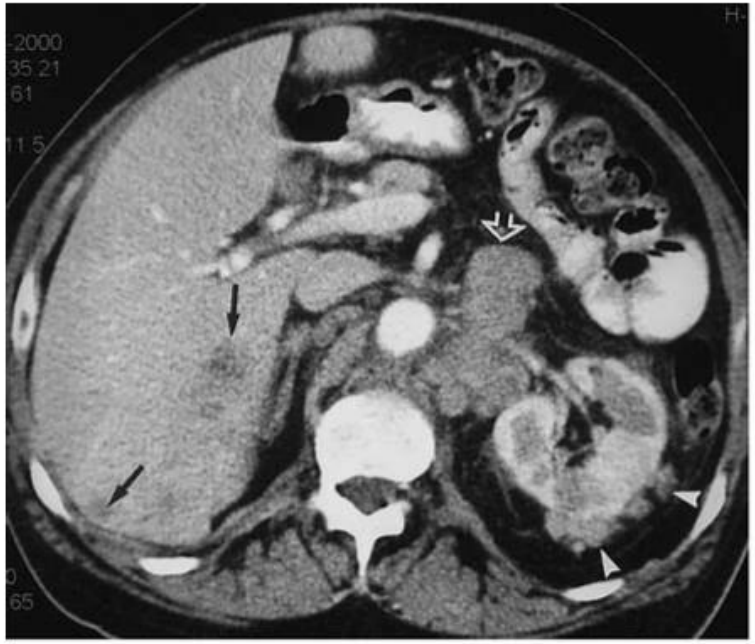


extent of VTT, in addition to assessing for the presence of bland thrombus inferior to the tumor thrombus, most authors recommend obtaining an abdominal MRI within 1–2 weeks of surgery given the propensity for VTT to progress rapidly [Boorjian *et al*. 2007; Wotkowicz *et al*. 2008; Boorjian and Blute, 2009;

CT-scan

MRI

Metastase Lever en Bot

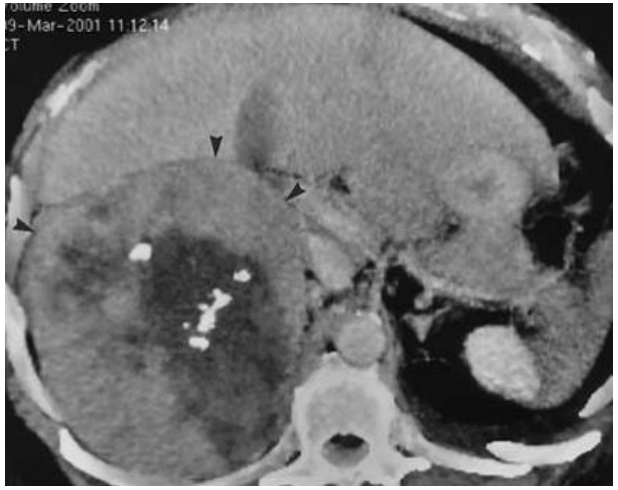


Levermetastase

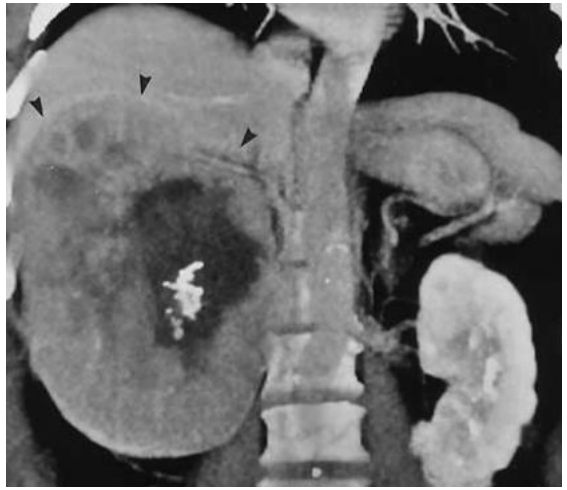
Lytische botmetastase

Sheth et al 2001

Ingroei in Lever?



Transversal

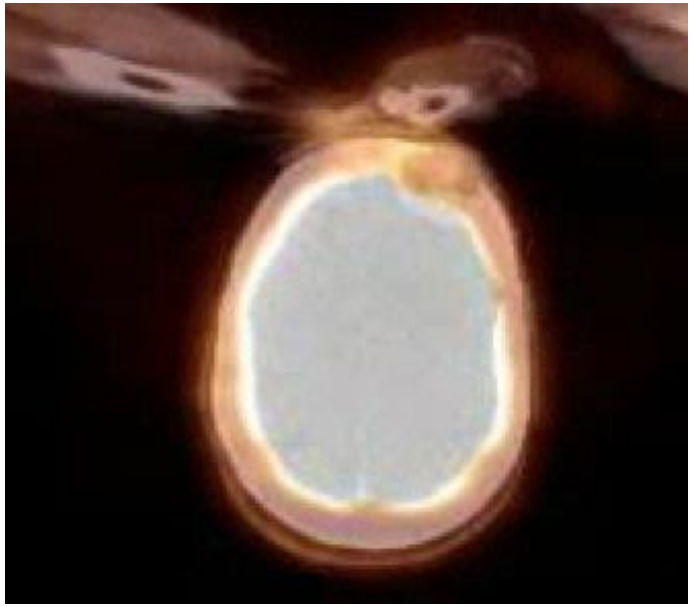


Coronal

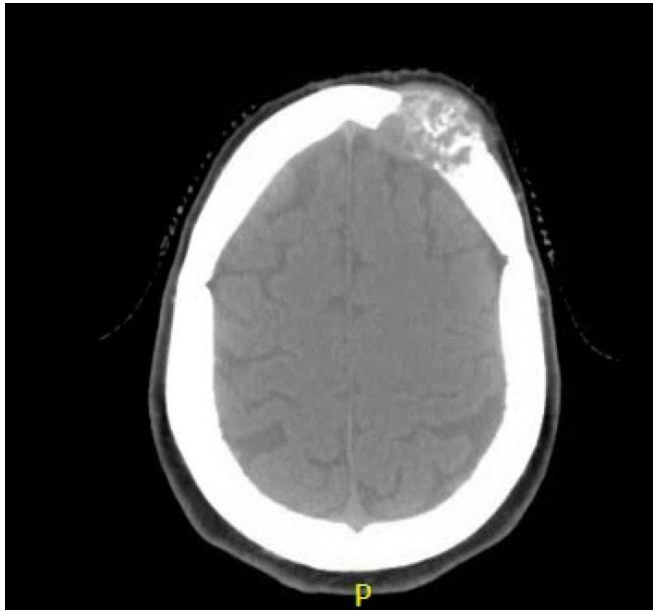
Sagital

Sheth et al 2001

PET als diagnosticum?



FDG-PET



CT-scan

Patient journey

Gedeelde besluitvorming!!!

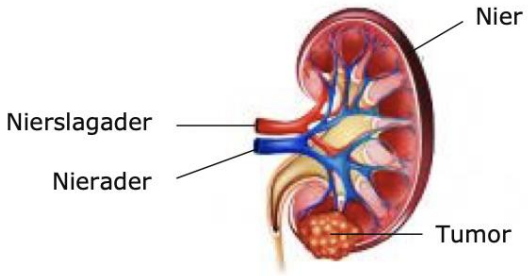
Pt komt binnen
- Symptomen
- Toeval op CT

Diagnostiek
- Lab
- CT-4 fasen
- CT thorax
- Biopt?

Behandeling
- Niersparend
- Radicaal nefrectomie
- Studie (neoadjuvant)

Stadiumverdeling van nierkanker

Op basis van de grootte van de tumor (T1-T4) en de groei wordt het **stadium** van de ziekte bepaald. Het **ziektestadium** van de nierkanker is een belangrijke factor bij het bepalen van de meest optimale behandeling. Ook de leeftijd, nierfunctie, conditie en comorbiditeiten zoals hart- en vaatziekten, suikerziekte en de voorkeur van de patiënt spelen een rol bij de keuze van behandeling.

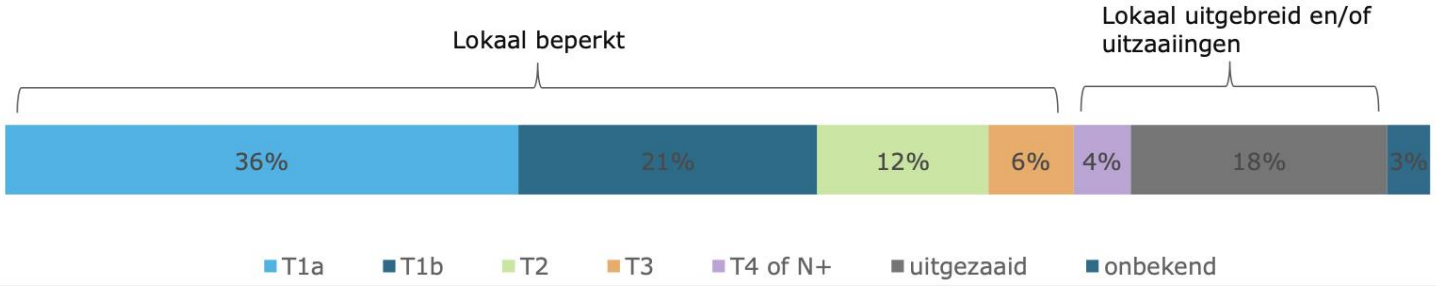


T1a (36%): de tumor is beperkt tot de nier en is <4 cm
T1b (21%): de tumor is beperkt tot de nier en is 4-7 cm

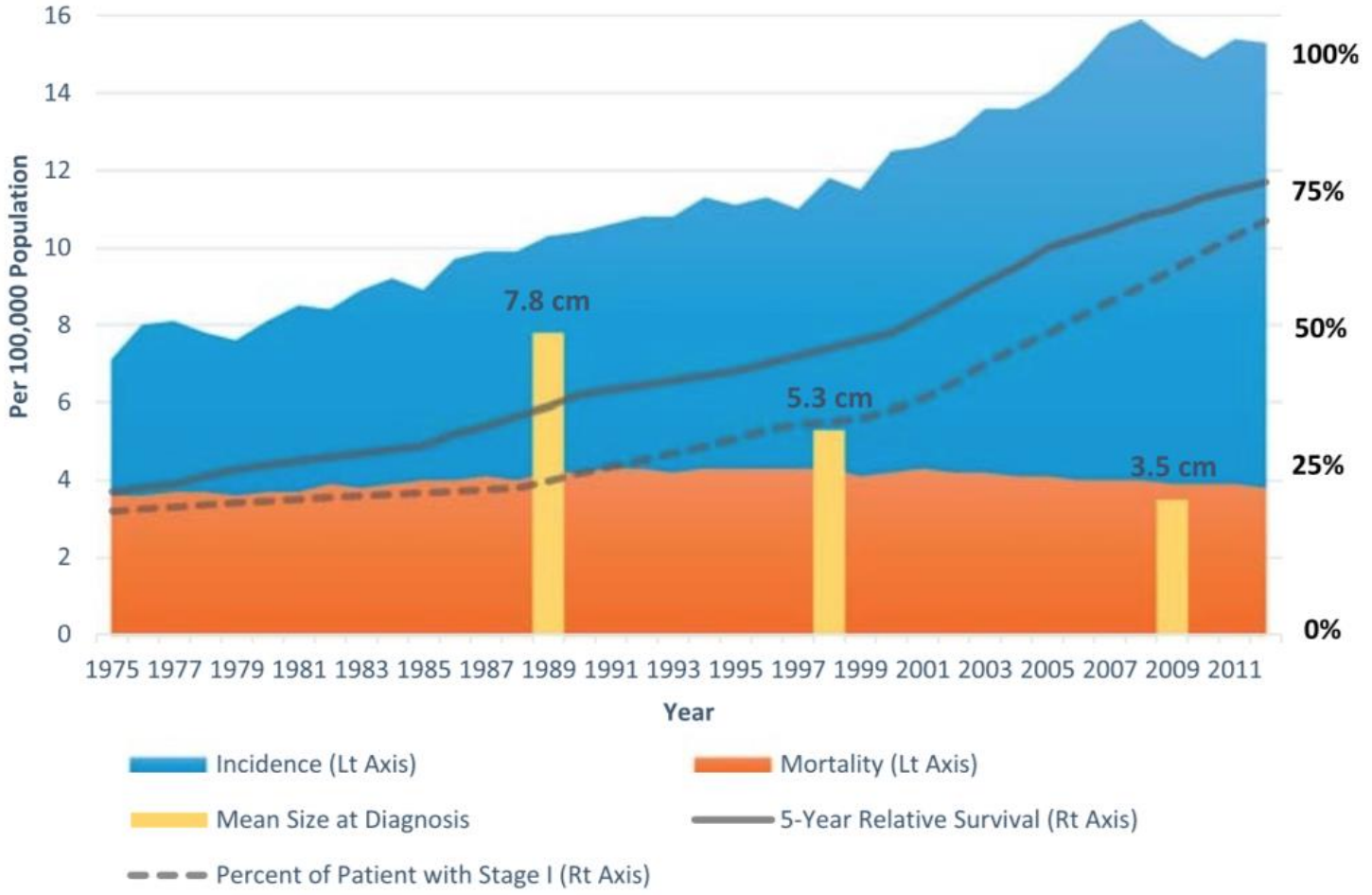
T2 (12%): de tumor is >7 cm maar nog beperkt tot de nier

T3 (6%): de tumor groeit in de naastgelegen grote bloedvaten

T4 of uitgebreider (22%): de tumor groeit voorbij het nierkapsel en/of is uitgezaaid naar regionale lymfeklieren (N+) en/of andere organen (M+)

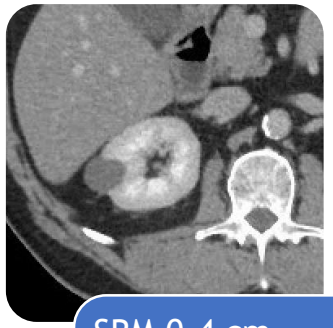


Small Renal Mass toename!!! (0-4cm)



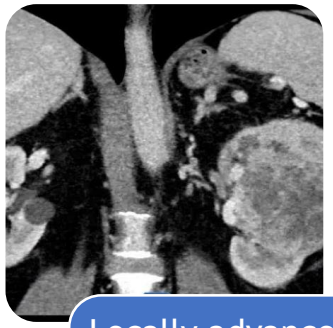
*SEER database

Treatment decisions – key issues



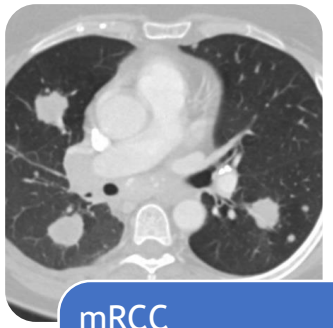
SRM 0-4 cm

- AS
- Focal Therapy
- Partial Nephrectomy
- MRIdian
- Watchfull waiting



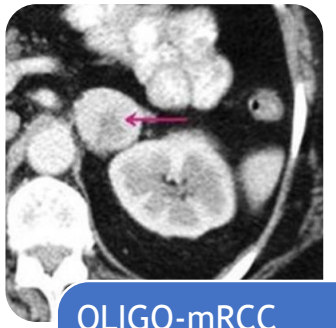
Locally advanced RCC

- Radical Nephrectomy
- LND
- Neoadjuvant ST



mRCC

- Cytoreductive Nephrectomy
- NA SYSTEEMTHERAPIE

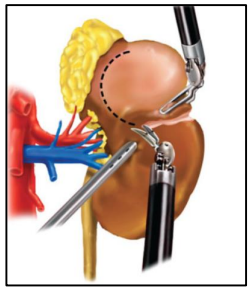


OLIGO-mRCC

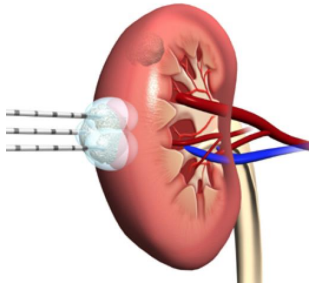
- Cytoreductive Nephrectomy
- Surgical resection
- SABR
- other

Behandeling cT1a - SRM (0-4) cm

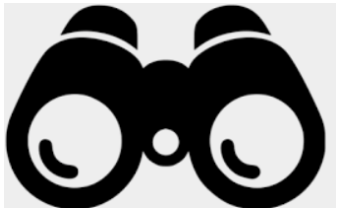
- Partial nephrectomy



- Focal Therapy
  - Cryo-ablation
  - MWA/RFA



- Active Surveillance

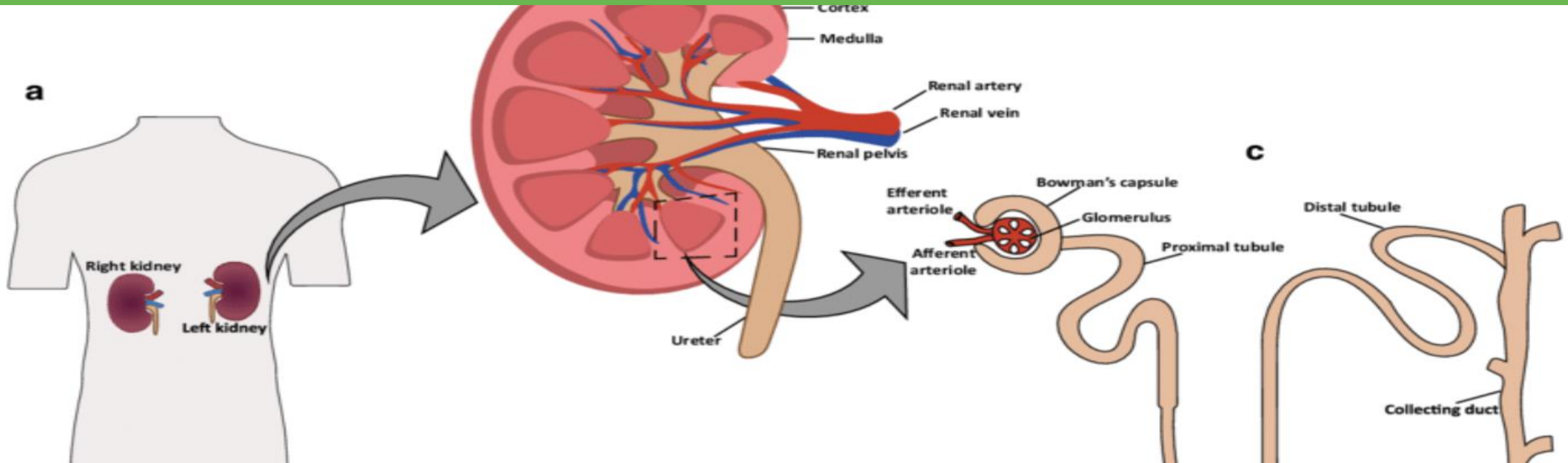


Delayed treatment

- Watchfull waiting
- MRIDIAN

Amsterdam UMC
Universitair Medische Centra

Nier sparend !!



Chronic Kidney Disease (CKD): toename van risico op overlijden, cardiovaculaire events en ziekenhuisopname!

Table 2. Adjusted Hazard Ratio for Death from Any Cause, Cardiovascular Events, and Hospitalization among 1,120,295 Ambulatory Adults, According to the Estimated GFR.*

Estimated GFR	Death from Any Cause	Any Cardiovascular Event	Any Hospitalization
	adjusted hazard ratio (95 percent confidence interval)		
≥60 ml/min/1.73 m²†	1.00	1.00	1.00
45–59 ml/min/1.73 m²	1.2 (1.1–1.2)	1.4 (1.4–1.5)	1.1 (1.1–1.1)
30–44 ml/min/1.73 m²	1.8 (1.7–1.9)	2.0 (1.9–2.1)	1.5 (1.5–1.5)
15–29 ml/min/1.73 m²	3.2 (3.1–3.4)	2.8 (2.6–2.9)	2.1 (2.0–2.2)
<15 ml/min/1.73 m²	5.9 (5.4–6.5)	3.4 (3.1–3.8)	3.1 (3.0–3.3)

(Go, New Engl J med 2004

Radicale nefrectomie is significante risico factor voor nierinsufficientie

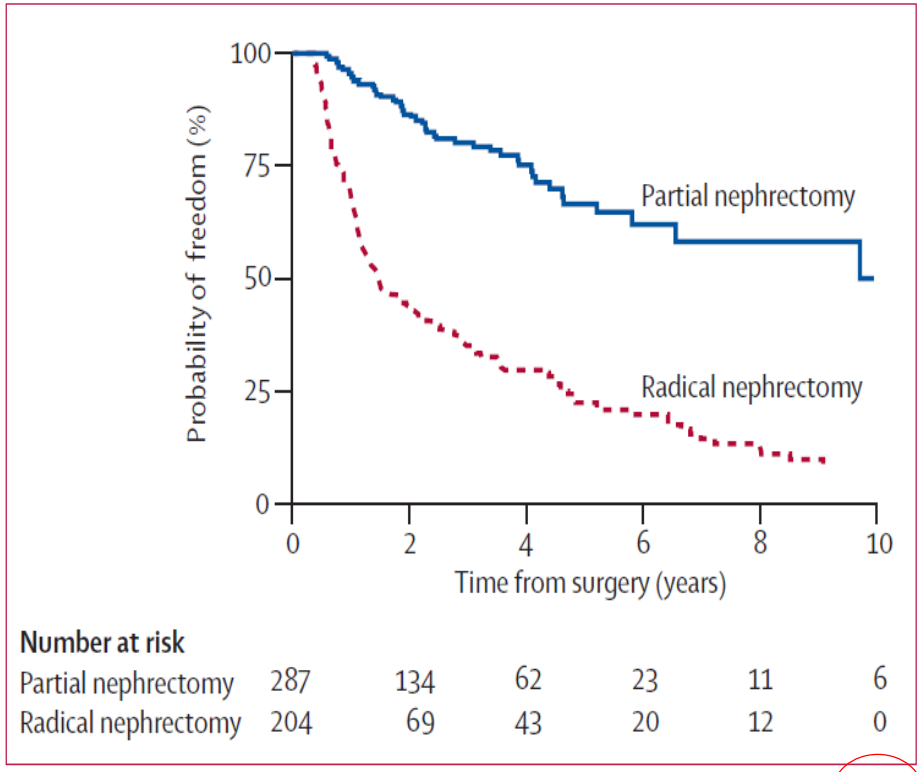


Figure 2: Probability of freedom from new onset of GFR lower than 60 mL/min per 1·72 m², by operation type

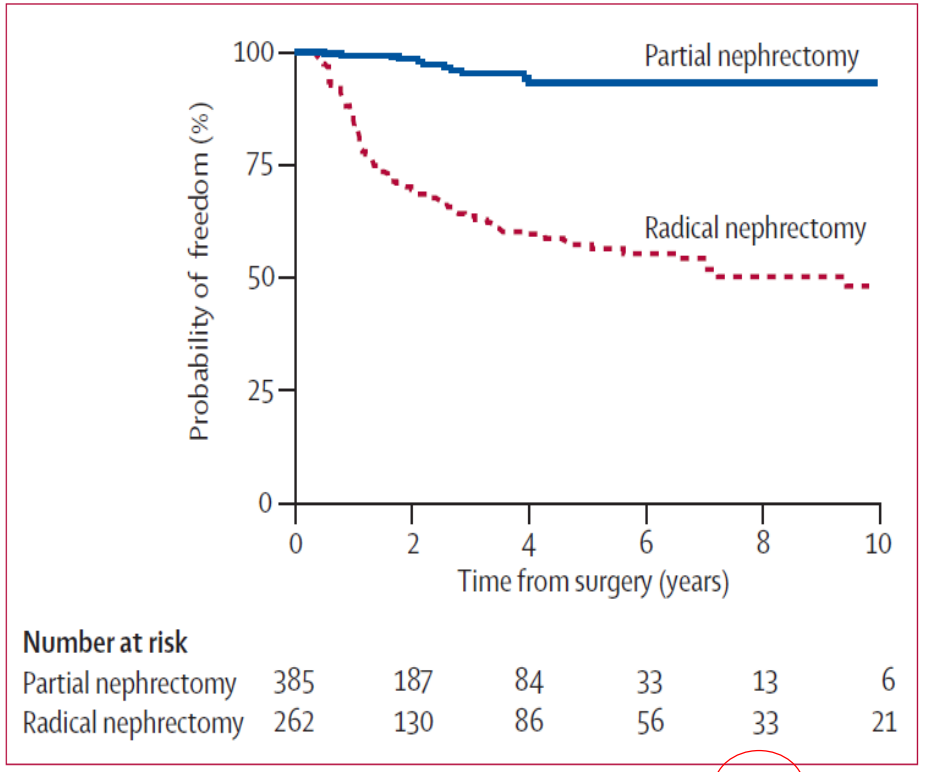
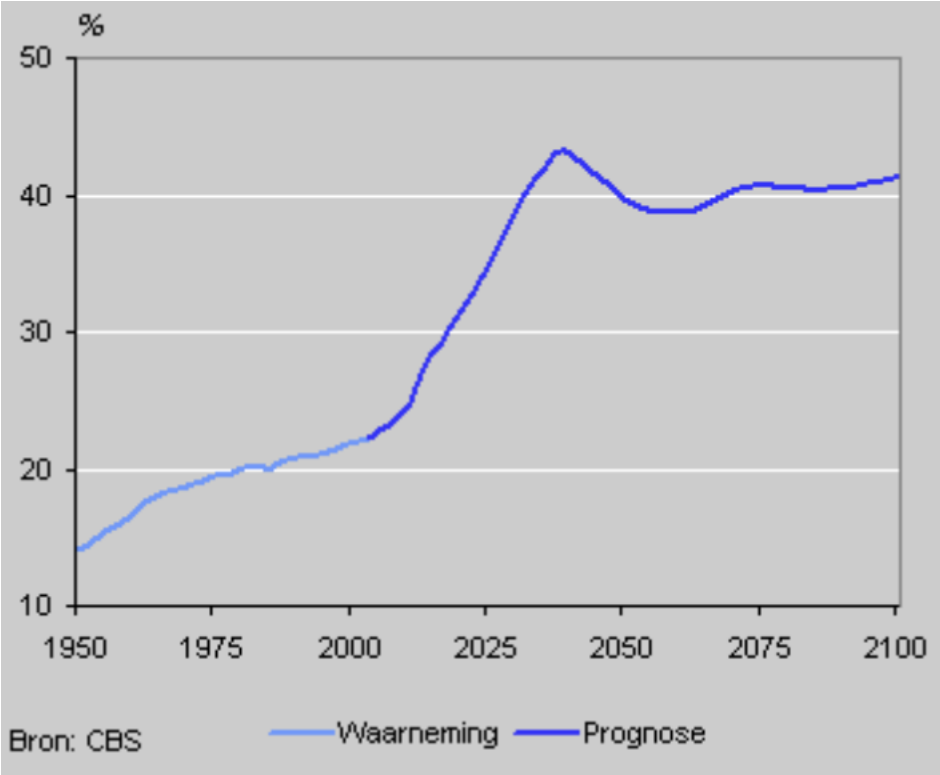


Figure 3: Probability of freedom from new onset of GFR lower than 45 mL/min per 1·72 m², by operation type

Huang et al. *The Lancet Oncology*, *2006*

Active surveillance (ultiem niersparend!)



- Vergrijzing slaat toe!!!

Nierkanker groeit langzaam!!!!

Active Surveillance - uitgestelde behandeling

>75 yrs: Surigcal management is not associated with increased survival

Original Article

Active Treatment of Localized Renal Tumors May Not Impact Overall Survival in Patients Aged 75 Years or Older

Brian R. Lane, MD, PhD[1]; Robert Abouassaly, MD[1]; Tianming Gao, MS[2]; Christopher J. Weight, MD[1]; Adrian V. Hernandez, MD, PhD[2]; Benjamin T. Larson, MD[1]; Jihad H. Kaouk, MD[1]; Inderbir S. Gill, MD[1]; and Steven C. Campbell, MD, PhD[1]

- 537 patients >75 yr with cT1 RCC
- 20% AS, 53% NSS, 27% RN
- 29% cardiovascular deaths, 4% cancer progression deaths

Lane, 2012 Cancer

Active Surveillance: maakt het uit?

EUROPEAN UROLOGY 60 (2011) 39–44

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Platinum Priority – Kidney Cancer

Editorial by David R. Yates and Morgan Rouprêt on pp. 45–47 of this issue

Active Surveillance of Small Renal Masses: Progression Patterns of Early Stage Kidney Cancer

Michael A.S. Jewett[a,], Kamal Mattar[a], Joan Basiuk[a], Christopher G. Morash[b], Stephen E. Pautler[c], D. Robert Siemens[d], Simon Tanguay[e], Ricardo A. Rendon[f], Martin E. Gleave[g], Darrel E. Drachenberg[h], Raymond Chow[i], Hannah Chung[a], Joseph L. Chin[j], Neil E. Fleshner[a], Andrew J. Evans[k], Brenda L. Gallie[l], Masoom A. Haider[m], John R. Kachura[m], Ghada Kurban[a], Kimberly Fernandes[n], Antonio Finelli[a]*

[a] *Division of Urology, Departments of Surgery and of Surgical Oncology, Princess Margaret Hospital and the University Health Network, University of Toronto,*

Multicenter study
209 SRMs
2004-2009
Delayed treatment until progression (4cm)
RMB
12% local progression
1.1% metastasis
0.13cm/yr growrate

Active Surveillance – wanneer wel behandelen?

Choice for AS:
-age
-growth rate

Selecting those who can be agressive

Published in final edited form as:
Cancer. 2012 February 15; 118(4): 997–1006. doi:10.1002/cncr.26369.

Small Renal Masses Progressing to Metastases under Active Surveillance: A Systematic Review and Pooled Analysis

Marc C. Smaldone[1], **Alexander Kutikov**[1], **Brian L. Egleston**[2], **Daniel J. Canter**[1], **Rosalia Viterbo**[1], **David Y.T. Chen**[1], **Michael A. Jewett**[3], **Richard E. Greenberg**[1], and **Robert G. Uzzo**[1]

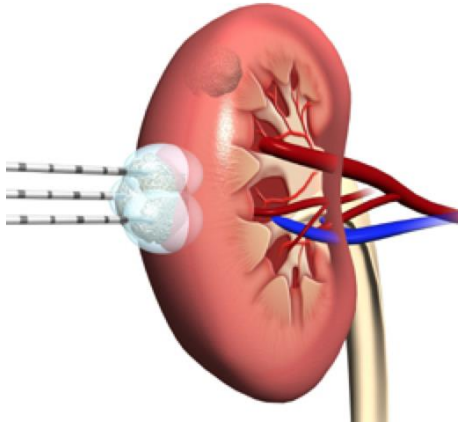
- 30% showed no growth: no metastasis during FU
- 45,5% underwent delayed intervention (57% pt choice, tumor growth 35%)
- Progression to metastases: growth rates more than double (0.8cm/year) compared to non-progressors (0.3cm/year)

Active Surveillance schema

- Biopt doen?
- 3 mnd echo
- 6 mnd CT
- Echo en CT alternerend

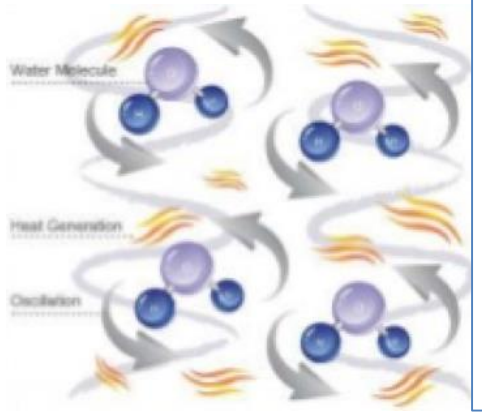
➢Er is geen vast schema….

Focale therapy



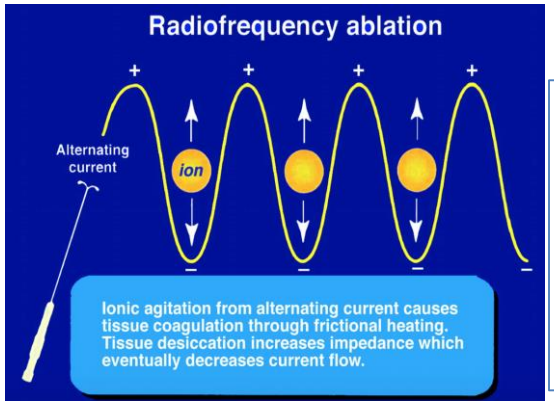
Since 1995
-40°C
Ice ball
Argon/helium
2x freeze-thaw Cycle

Cryoablation



Microwave heath through rapid H+ ions
Higher temp
+100 °C
Faster

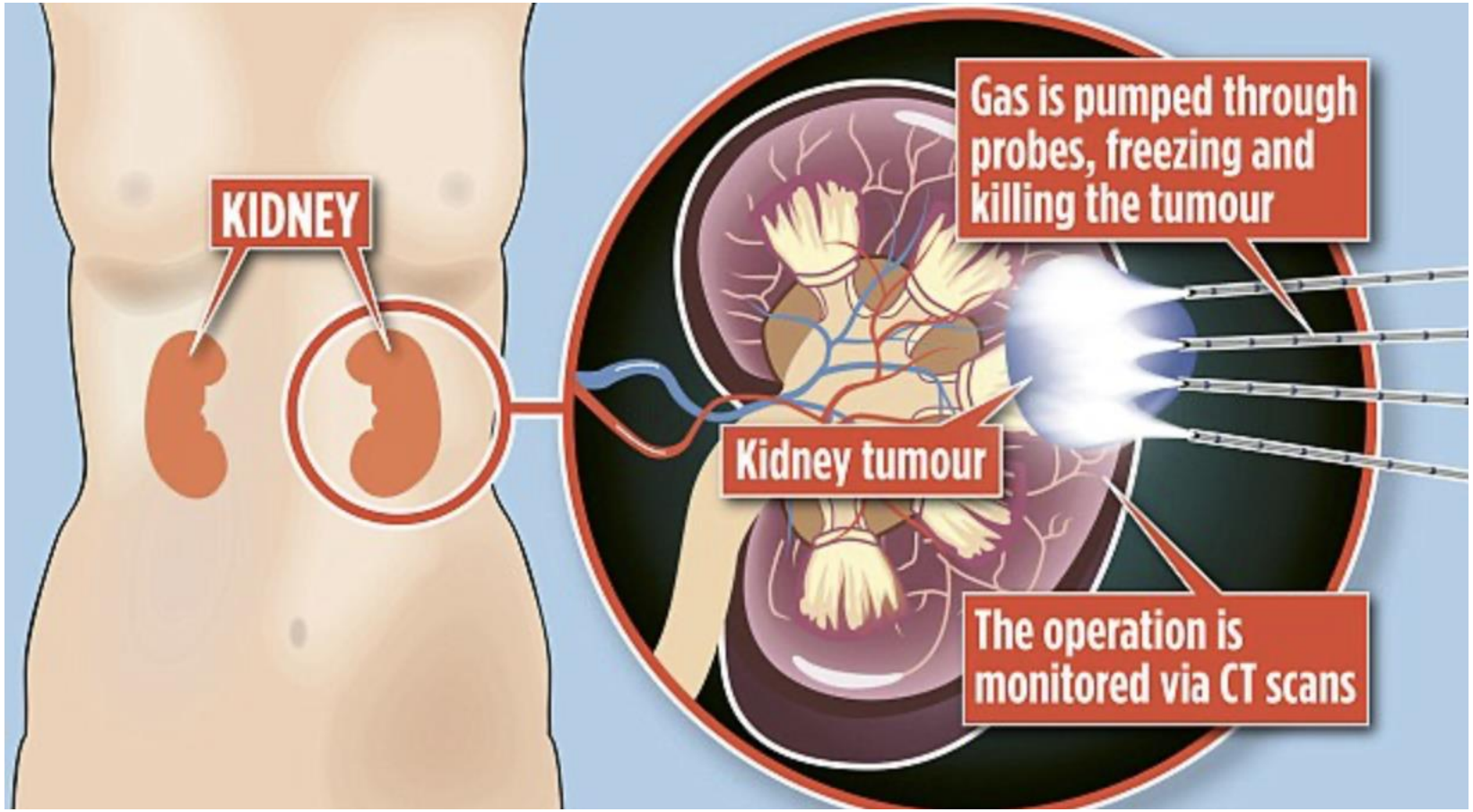
MWA



Since 1997
+70 °C
Fire ball
Energy/high freq current

RFA

Cryoablatie niertumor

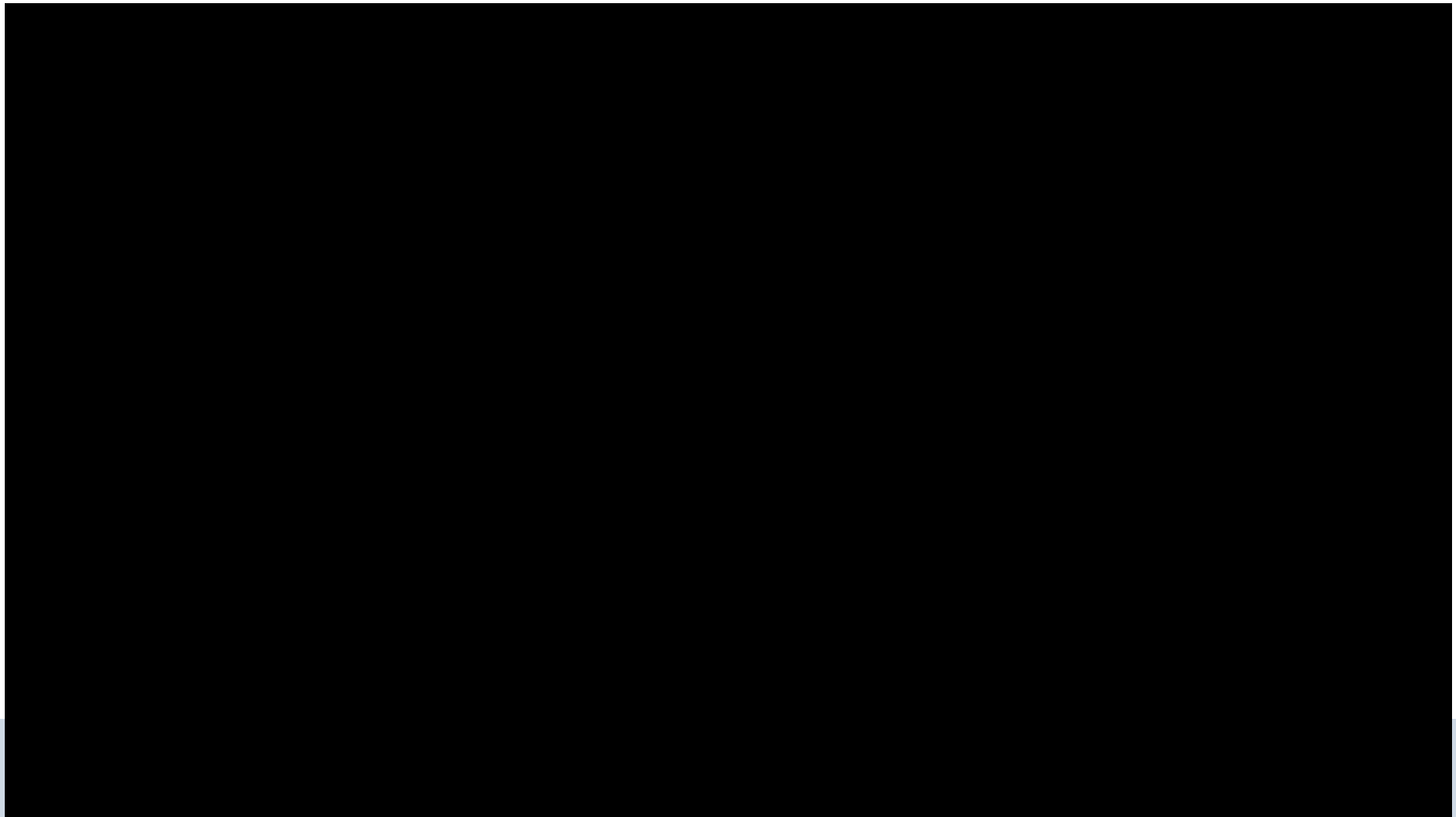


Argon = vriezen

Helium = dooien

10 min vriezen
5 min dooien
10 min vriezen
5 min dooien

Focal therapy CT-guided cryoablation



New in techinques:
MRIdian

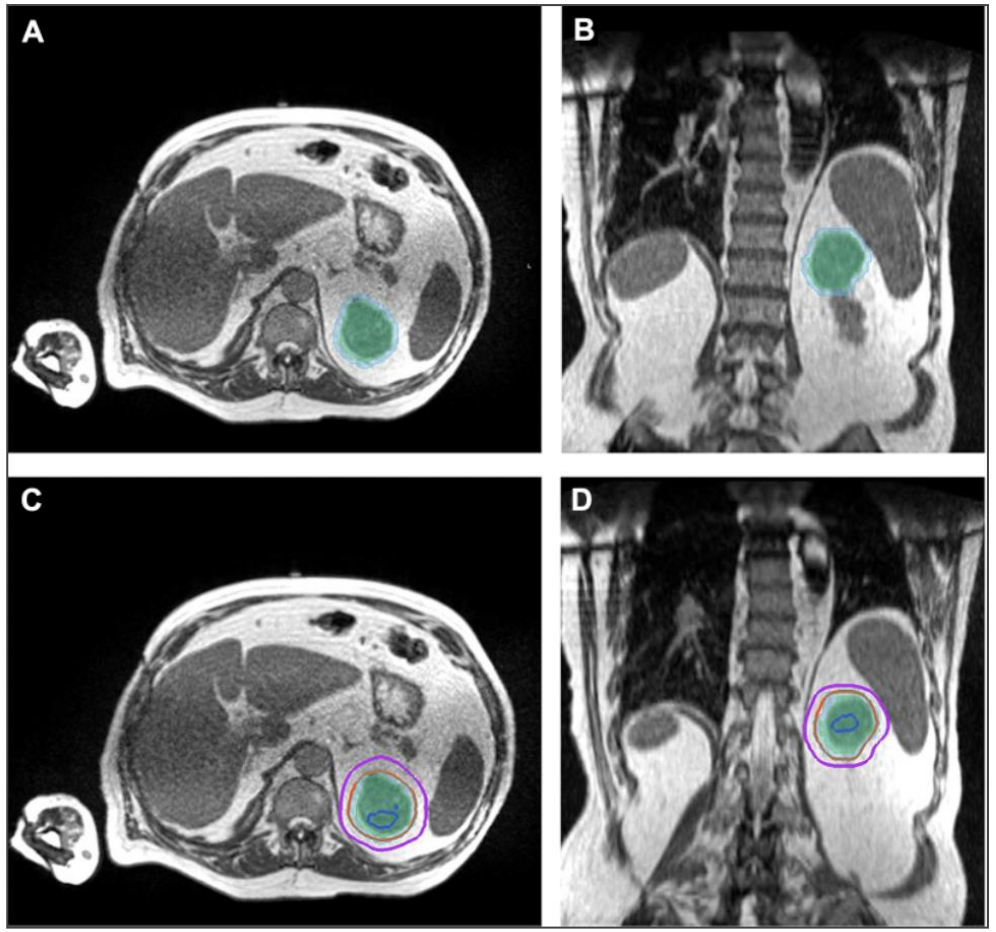
MRIdian

MRI-bestralingsapparaat

Amsterdam UMC heeft het eerste MRI-bestralingsapp

De MRIdian is een nieuw bestralingsapparaat dat MRI combineert met

wordt het apparaat in enkele ziekenhuizen in de wereld gebruikt. Amst



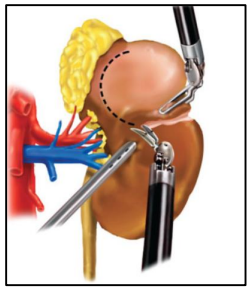
Even een momentje om je te realiseren wat jij zelf zou doen/willen....

Stel….

Jij hebt een tumor van 1,5 cm in je rechter nier

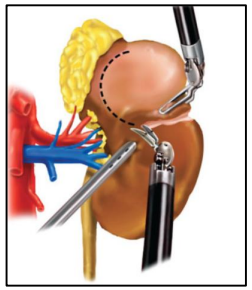
Wat zou jij voor behandeling willen?

- ❑Active Surveillance?
- ❑Partiele Nefrectomie?
- ❑Focale Therapie?



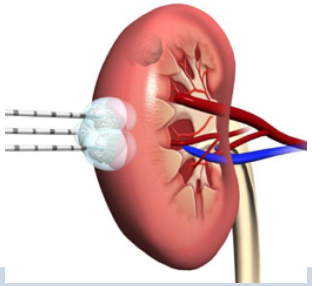
Wat zou jij voor behandeling willen?

A. Partial nephrectomy

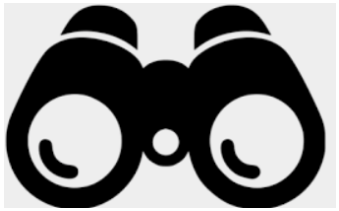


B. Focal Therapy

- Cryo-ablation
- MWA/RFA



C. Active Surveillance

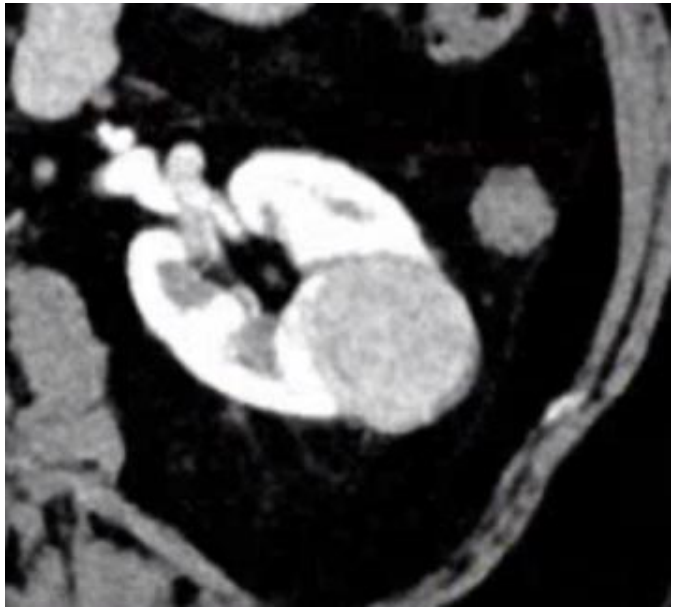


Delayed treatment

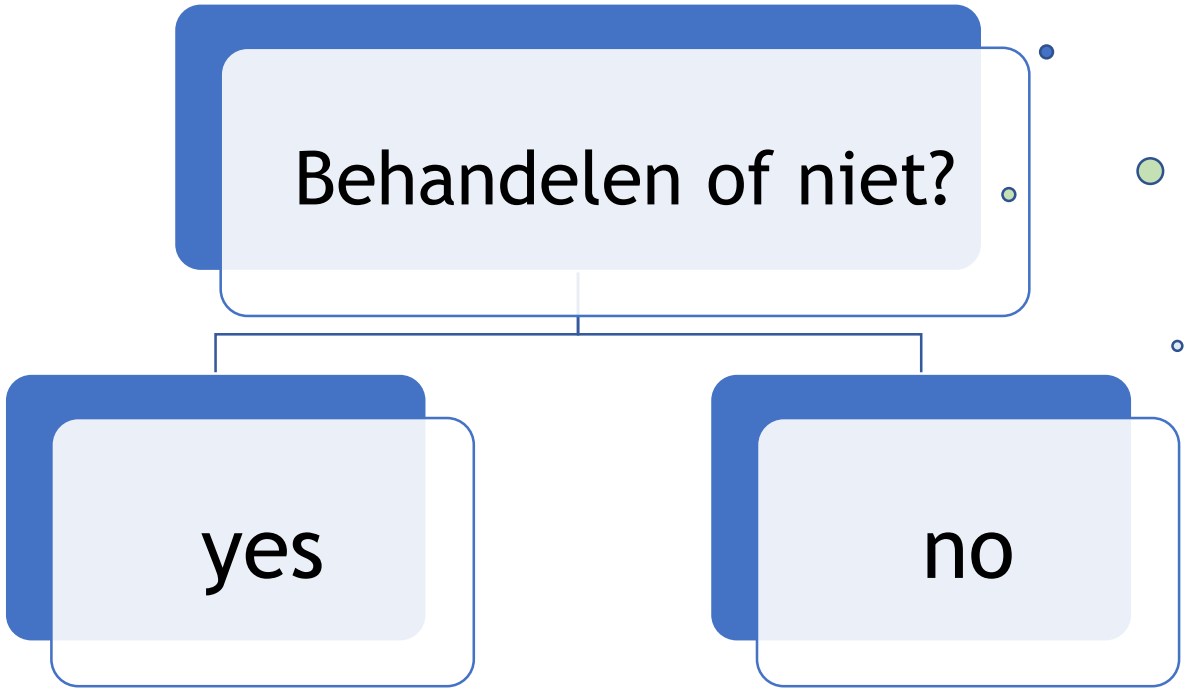
Maar stel ….

Als dit je vader of moeder van 80 jaar betreft?

En wat als deze tumor... 3,5 cm is ??



Small Renal Masses



Omvang niertumor?

leeftijd?

nierfunctie?

Trend: onderverdeling SRM

- xSRM
  - 0-2cm
- SRM
  - 2-4cm

advies AS:
leeftijd>70 jr &
Tumour <2 cm

Hoe benader je de SRM??

Bekijk die patient

-CCI

-ECOG

-ASA

Analyseer tumor

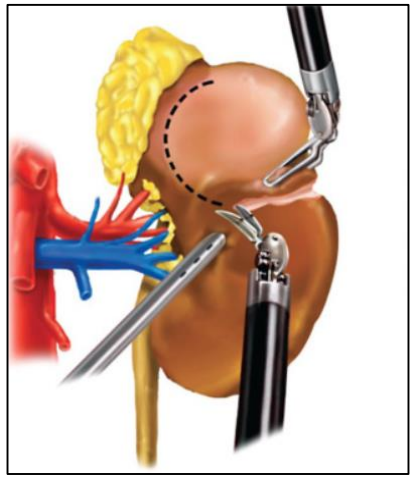
-RENAL/PADUA

-Biopsy grade/histology

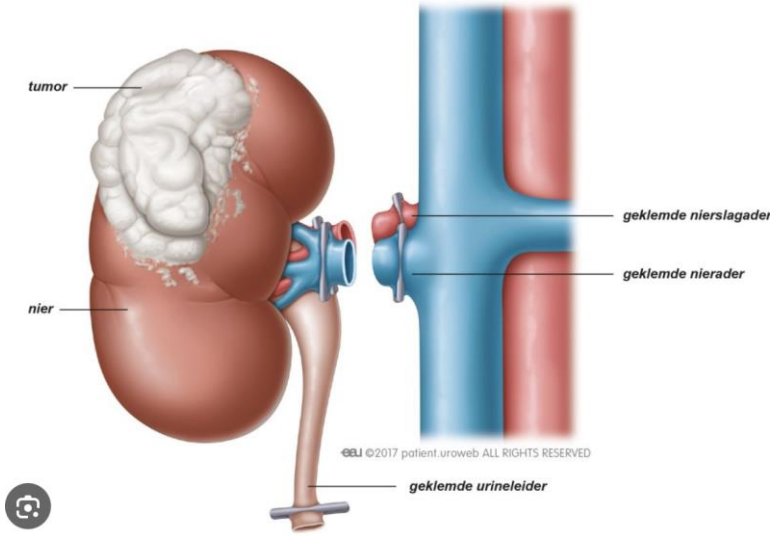
Shared decision making

Behandeling cT1b 4-7 cm

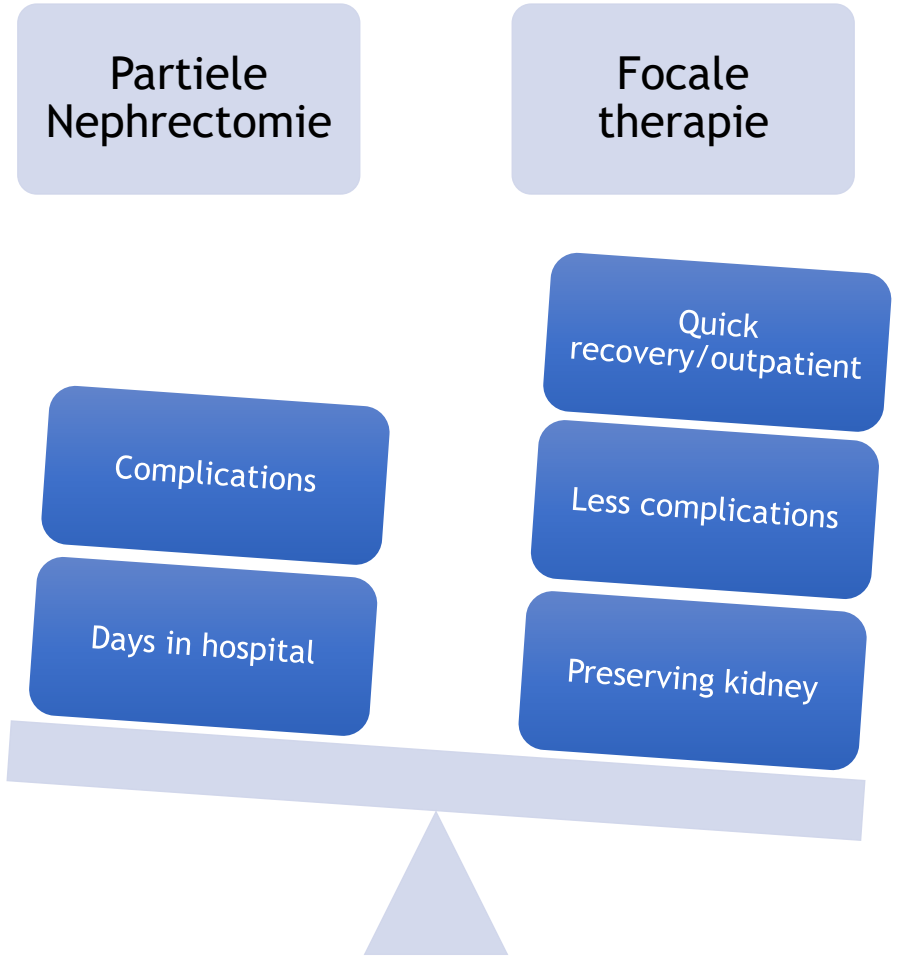
- Partiele nefrectomie



- Radicale Nefrectomie



Making up the balance….



Partiele Nefrectomie of Focale Therapie?

- Cancer Spec Survival favours PN
- Metastase: geen verschil
- Lokaal recidief: geen verschil
- Postop eGFR change: favours FT
- Risk of complications: favours FT

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, Jose De La Cerda, III, MD, MPH, Hanzhang Wang, MD, MPH, Michael A. Liss, MD, Ann M. Farrell, MLS, Ronald Rodriguez, MD, PhD, Rajeev Suri, MD, and Dharam Kaushik, MD

Bewijs voor PN of RN bij T1b?

Oncological & functional outcomes

(5 cm tumours)
10 yrs OS rate
RN 81.1%
PN 75.7%

European Association of Urology

Platinum Priority – Kidney Cancer

Editorial by Carlo Terrone and Alessandro Volpe on pp. 553–555 of this issue

A Prospective, Randomised EORTC Intergroup Phase 3 Study Comparing the Oncologic Outcome of Elective Nephron-Sparing Surgery and Radical Nephrectomy for Low-Stage Renal Cell Carcinoma

Hendrik Van Poppel[a,], Luigi Da Pozzo[b,1], Walter Albrecht[c], Vsevolod Matveev[d], Aldo Bono[e], Andrzej Borkowski[f], Marc Colombel[g], Laurence Klotz[h], Eila Skinner[i], Thomas Keane[j], Sandrine Marreaud[k], Sandra Collette[k], Richard Sylvester[k]*

Oncological: Both RN and PN excellent oncological results (PN not inferior)
Functional: PN reduced drop in eGFR BUT eGFR <30 and <15 not different between the groups, did not immprove OS

EUROPEAN UROLOGY 65 (2014) 372–377

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journal homepage: www.europeanurology.com

European Association of Urology

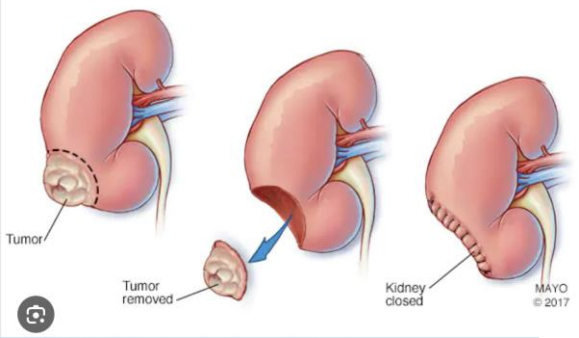
Platinum Priority – Kidney Cancer

Editorial by R. Houston Thompson on pp. 378–379 of this issue

Renal Function After Nephron-sparing Surgery Versus Radical Nephrectomy: Results from EORTC Randomized Trial 30904

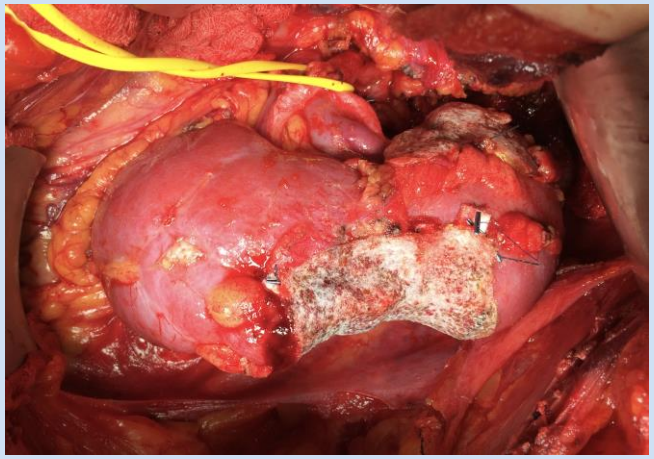
Emil Scosyrev[a], Edward M. Messing[a,], Richard Sylvester[b], Steven Campbell[c], Hendrik Van Poppel[d]*

[a] Department of Urology, University of Rochester Medical Center, Rochester, NY, USA; [b] Department of Biostatistics, EORTC Headquarters, Brussels, Belgium; [c] Department of Urology, Cleveland Clinic, Cleveland, OH, USA; [d] Department of Urology, University Hospital KU Leuven, Leuven, Belgium



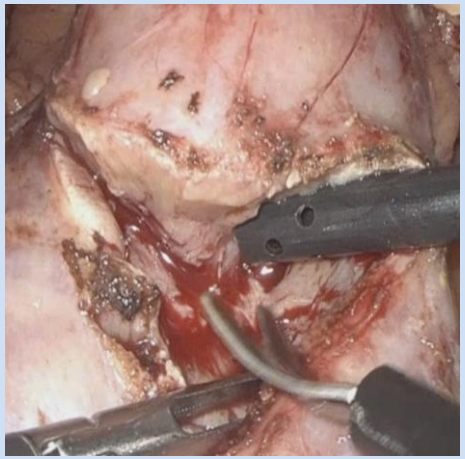
Partiele Nefrectomie & it's evolution

open

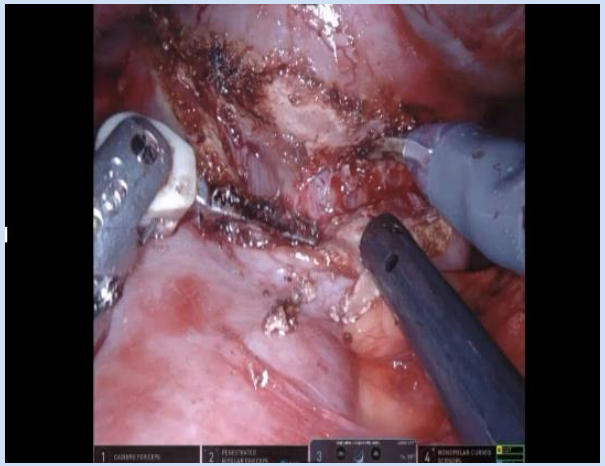


+ Cold ischemia

laparoscopic

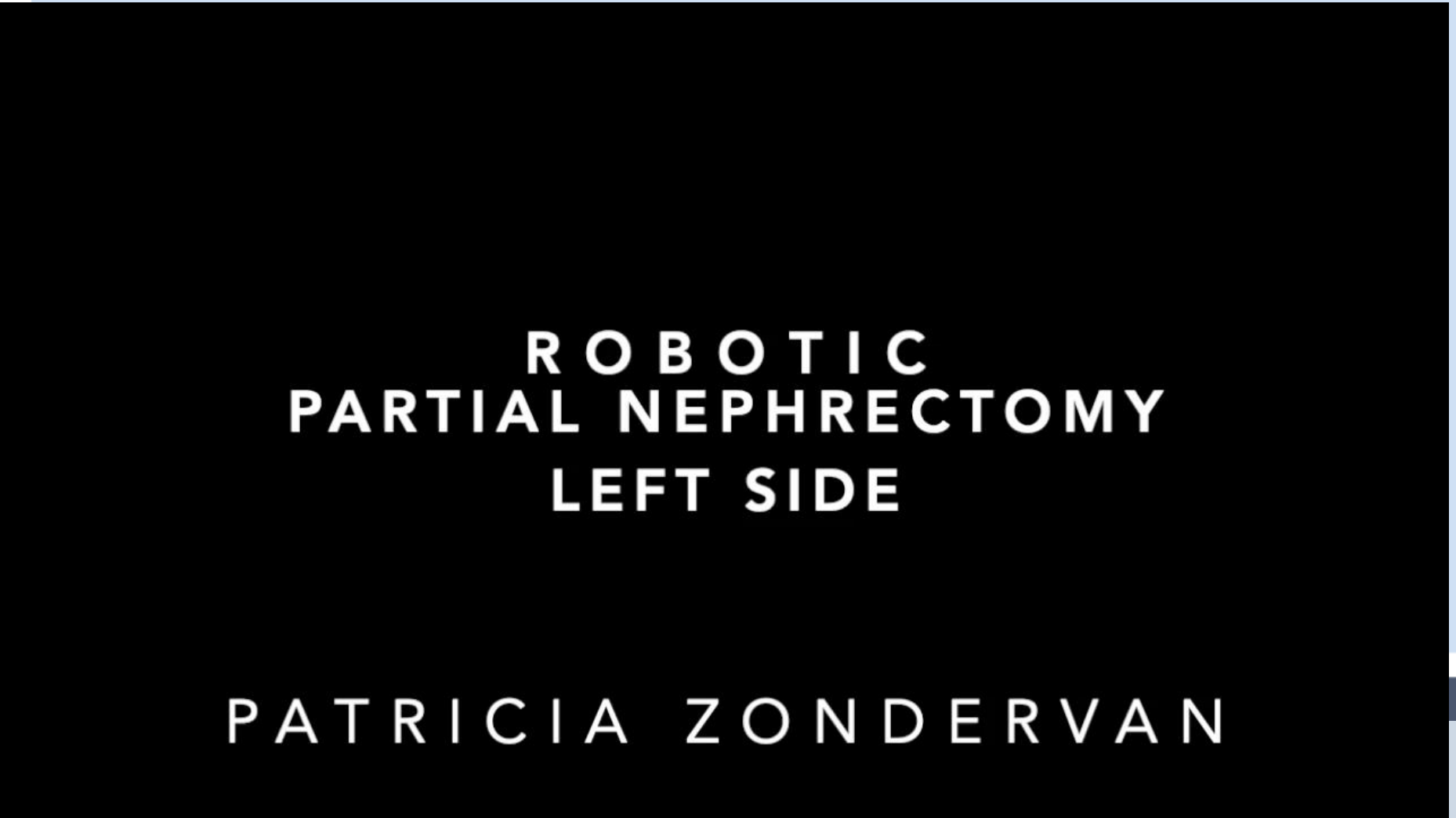


robotic



Amsterdam UMC
Universitair Medische Centra

Robotic Partial Nephrectomy cT1b



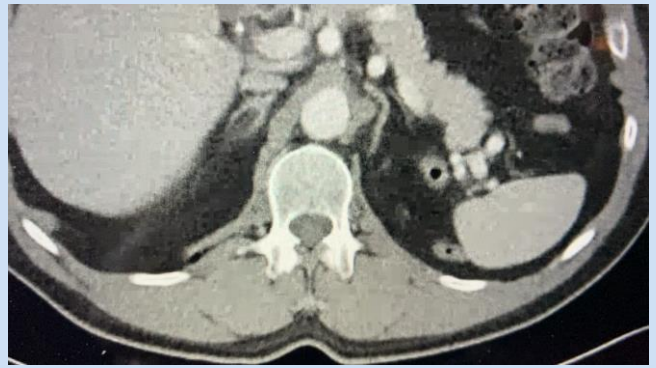
RAPN linker nier
4,5 cm
RENAL 10a

WIT 19 min
PA: pRCC
type 2, R0

RAPN cT1b solitary kidney

Male, 52 yrs:

- Hypertension
- Congenital solitary kidney
- eGFR 40, CKD3b
- cT1b, no mets
- RENAL 11ph



Warm ischemia or zero? Selective clamping?

Zo min mogelijk nierfunctieverlies

ELSEVIER

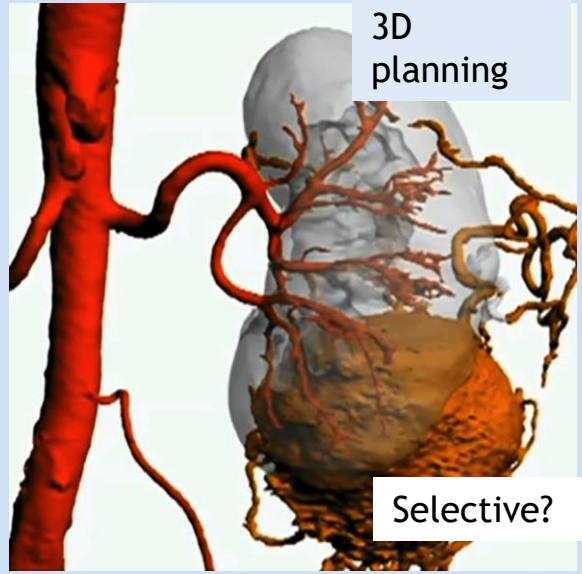
European Urology
Volume 58, Issue 3, September 2010, Pages 340-345

Platinum Priority – Kidney Cancer
Editorial by Antonio Alcaraz on pp. 346–348 of this issue

Every Minute Counts When the Renal Hilum Is Clamped During Partial Nephrectomy EU ACME

R. Houston Thompson [a], Brian R. Lane [b, 1], Christine M. Lohse [a], Bradley C. Leibovich [a], Amr Fergany [b], Igor Frank [a], Inderbir S. Gill [c], Michael L. Blute [a], Steven C. Campbell [b]

25 mn



3D planning

Selective?

The effect of renal artery-only or renal artery–vein clamping during partial nephrectomy on short and long-term functional results: Is clamping technique important?

Cagri Akpinar[1] · Evren Suer[1] · Utku Baklaci[1] · Mehmet Ilk
Sumer Baltaci[1]

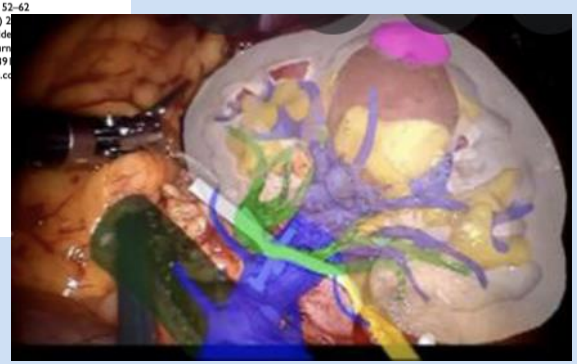
No difference AO vs AV clamping

On-clamp versus off-clamp robotic partial nephrectomy: A systematic review and meta-analysis

2019, Vol. 86(2) 52–62

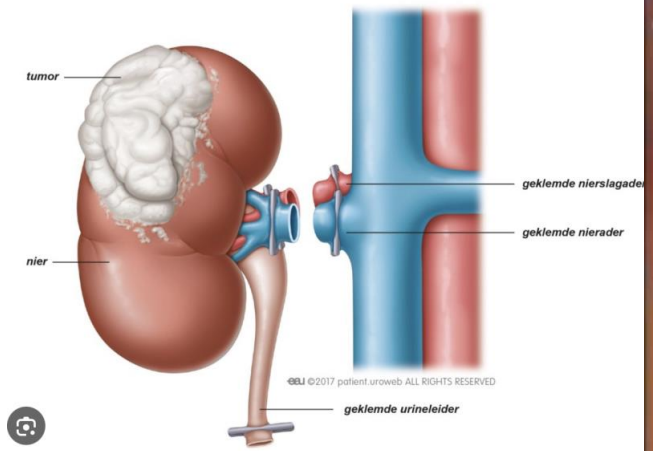
DOI: 10.1177/039
journals.sagepub.co
SAGE

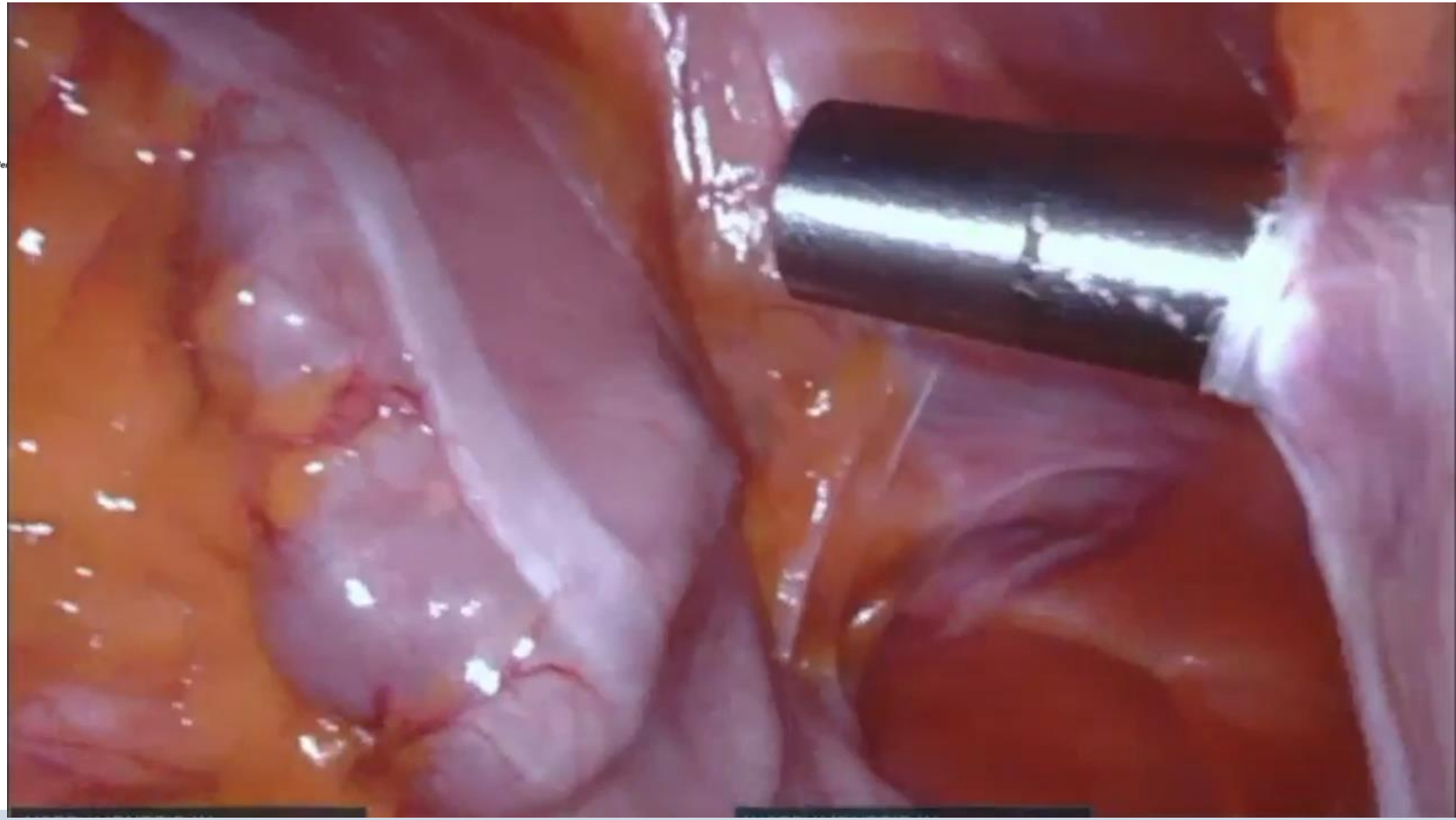
Alessandro Antonelli[1,2], Alessandro Veccia[1,2,3], Simone Francavilla[1,2], Riccardo Bertolo[4], Pierluigi Bove[4], Lance J Hampton[3], Andrea Mari[5], Carlotta Palumbo[1,2], Claudio Simeone[1,2], Andrea Minervini[5] and Riccardo Autorino[3]



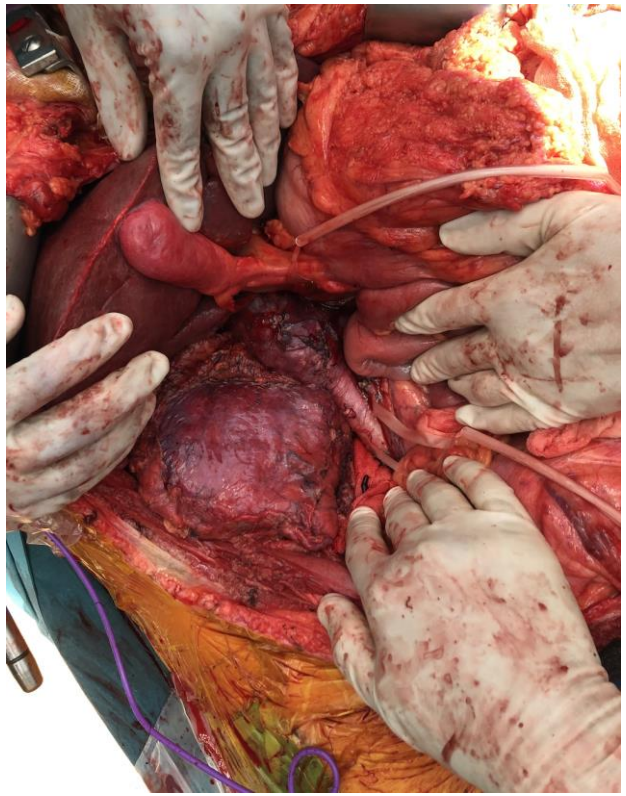
Off-clamp mainly for smaller sizes

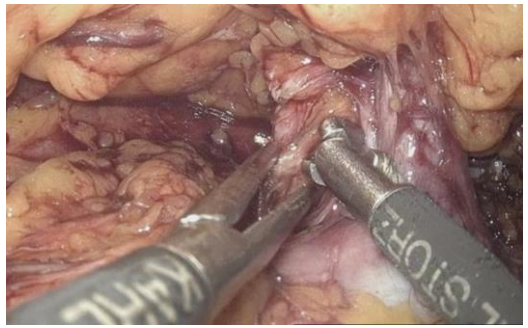
Radicale nefrectomie

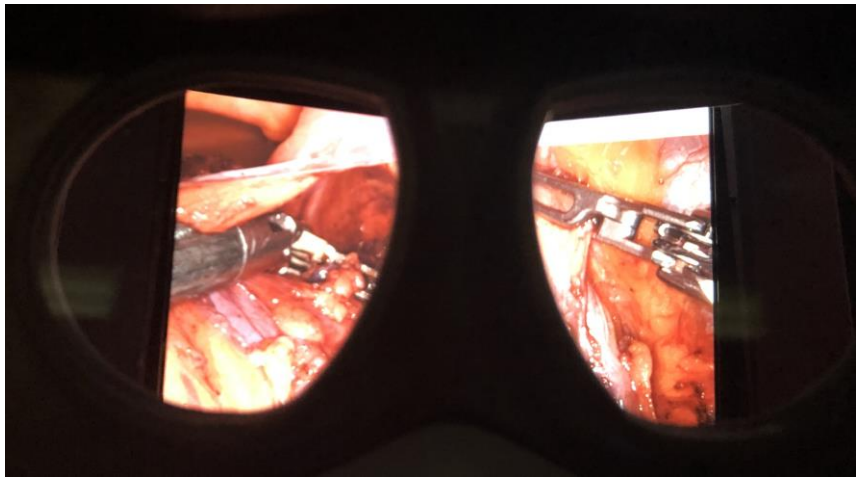




>T2 RCC (>10cm)
Open versus lap/robot….

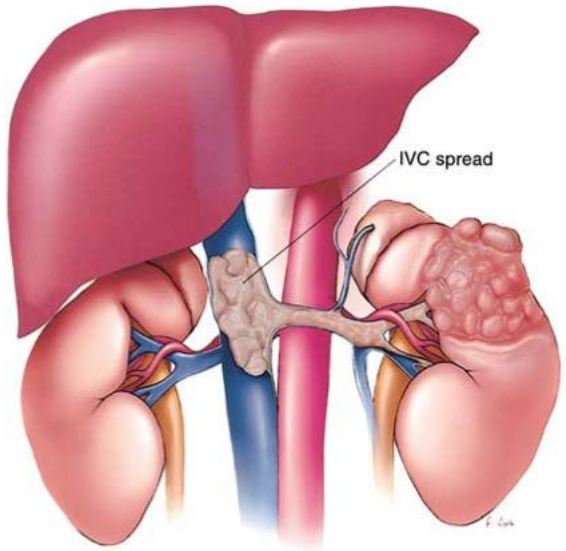


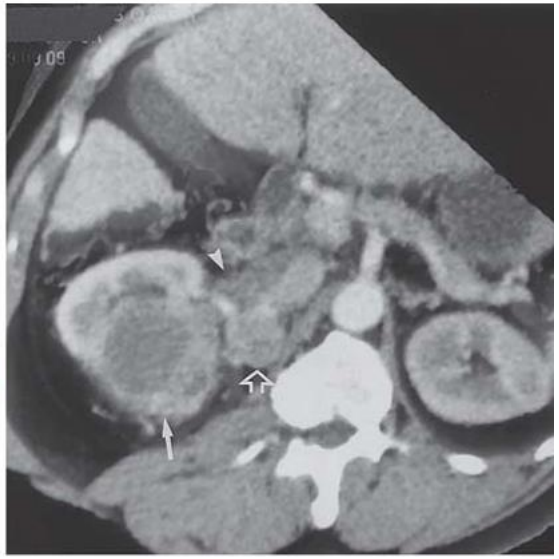




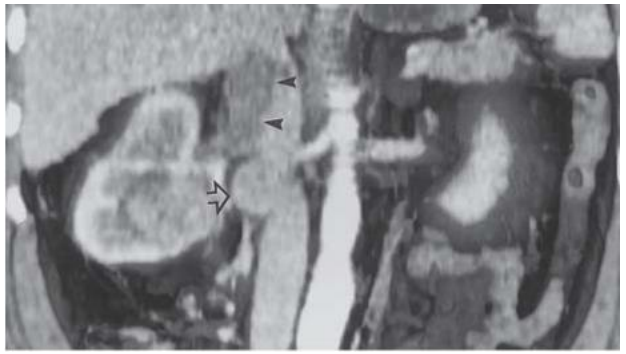
Offer PN to patients with T2 tumours and a solitary kidney or chronic kidney disease, if technically feasible.	Weak

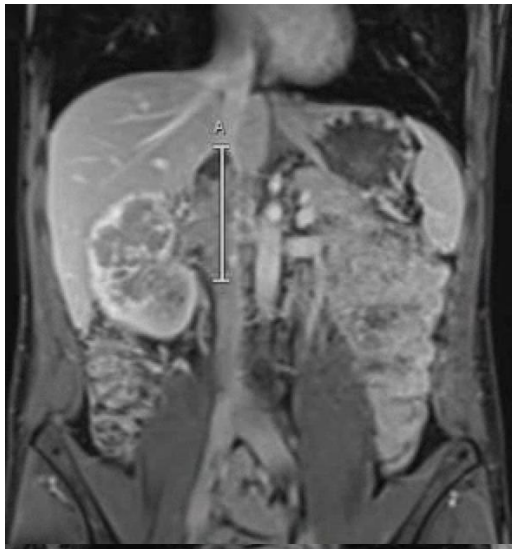
cT3b below diaphragm

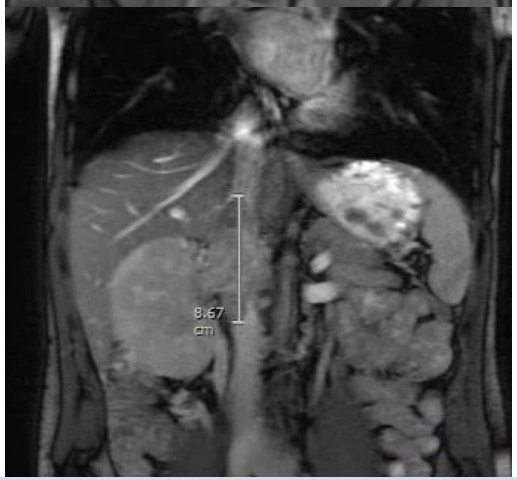




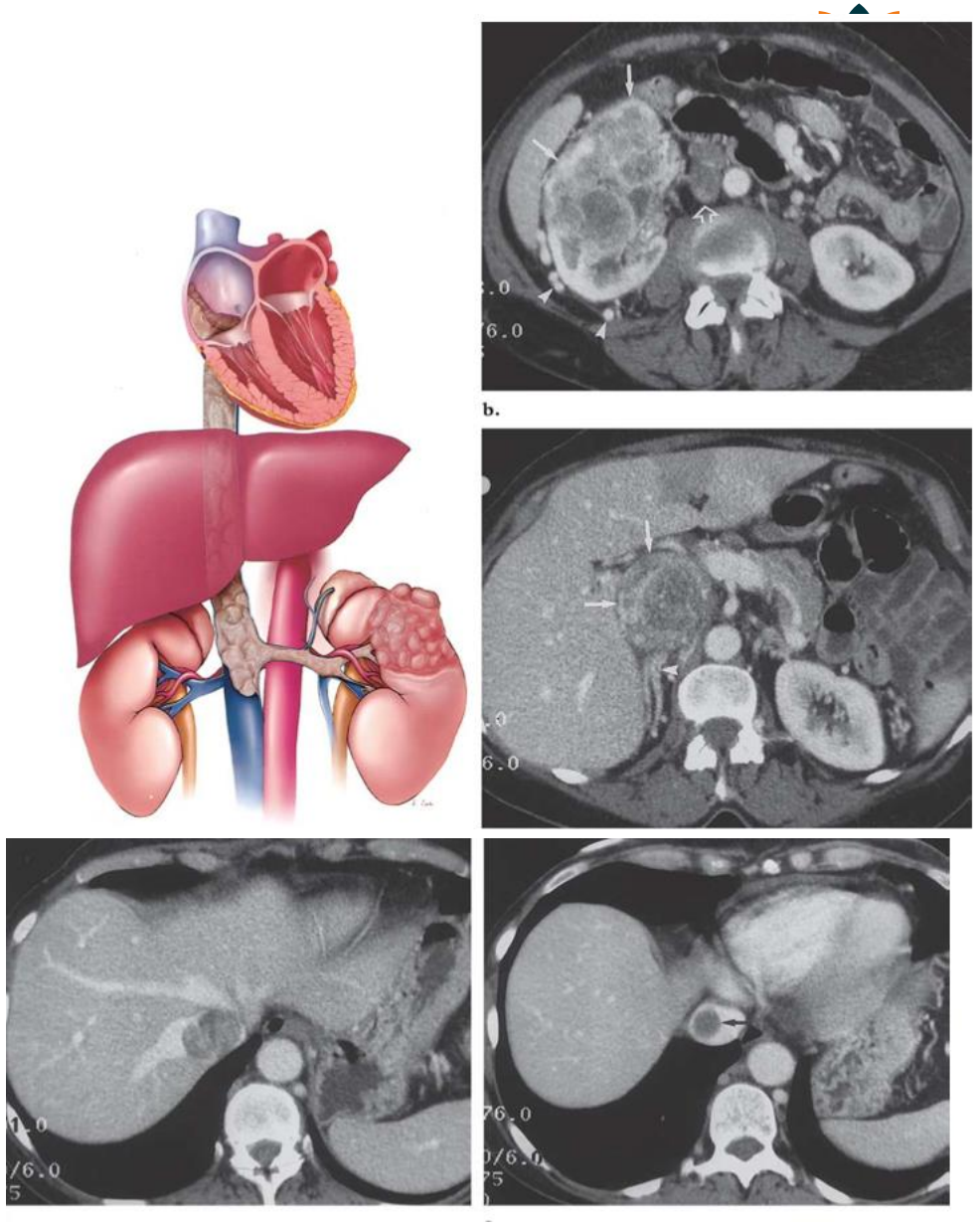
Sheth et al 2001

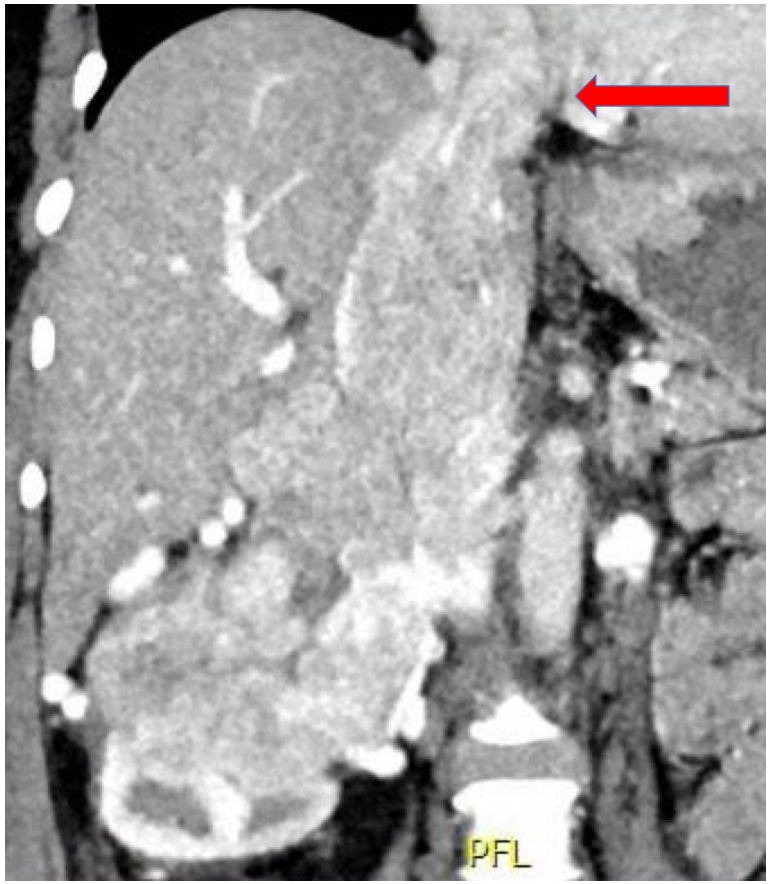




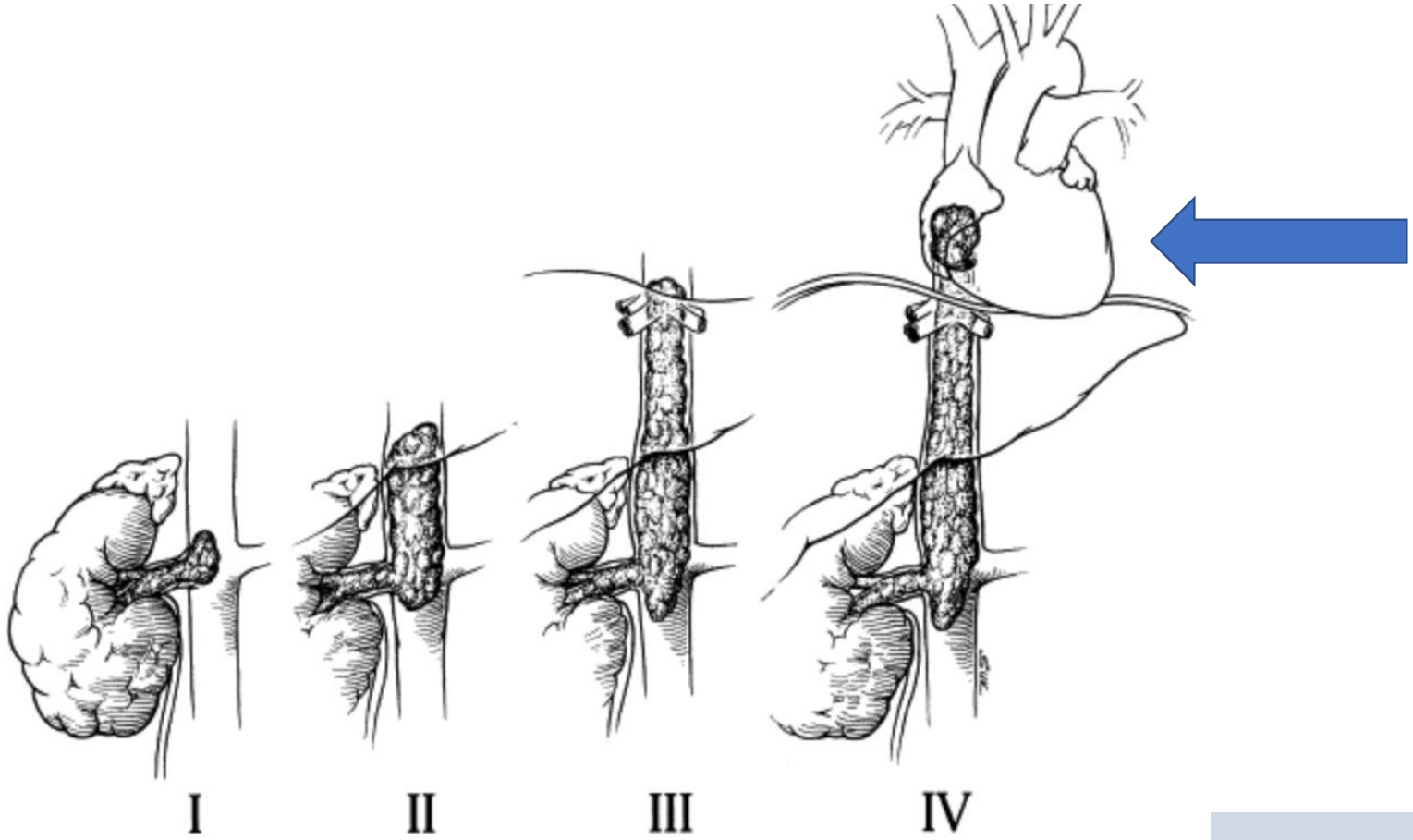


cT3c RCC above diaphragm





Vrouw 76 yr met level IV trombus



Oedeem benen als signaal

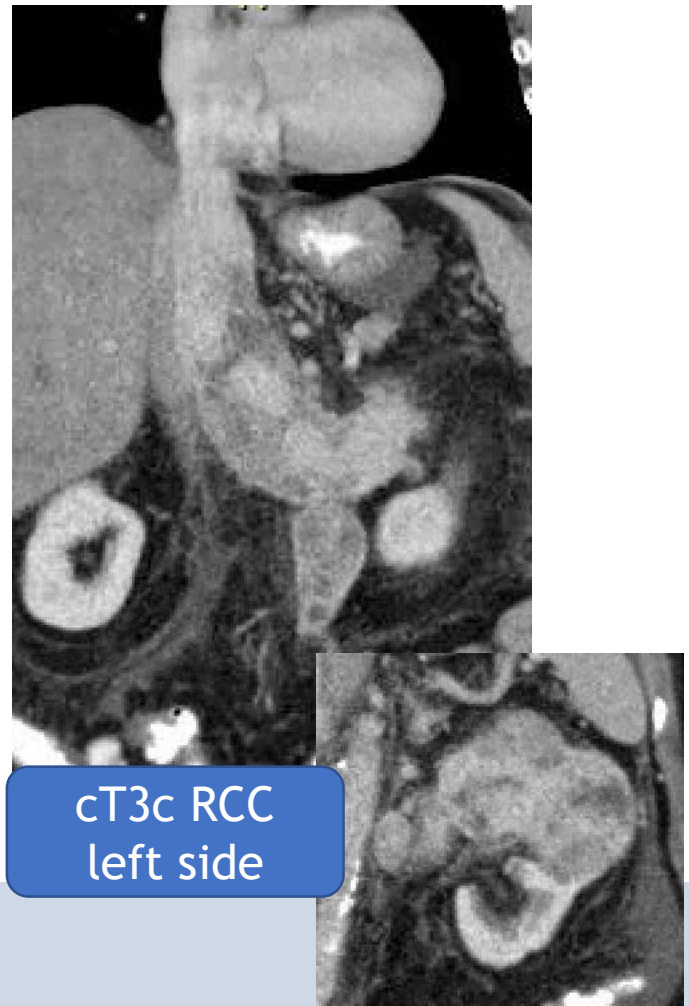
*no metastasis

Algemene Voorgeschiedenis:
1992 hypertensie
hypercholesterolemie
proctociolitis
1994 DM II, sinds 1996 insuline
2005 opname cardiologoie ivm thoracale klachten zonder cardiale oorzaak
2006 EF 58%
2007 beginnende polyneuropathie
2008 cataractwxtractie OS
2010 thoracale klachten met LVH
2012 pancolitis clostridium OLVG
2013 candida oesofagitis
2013 stenose L1-4
2014 herpes zoster

Intoxicaties:
nooit gerookt, geen alcohol

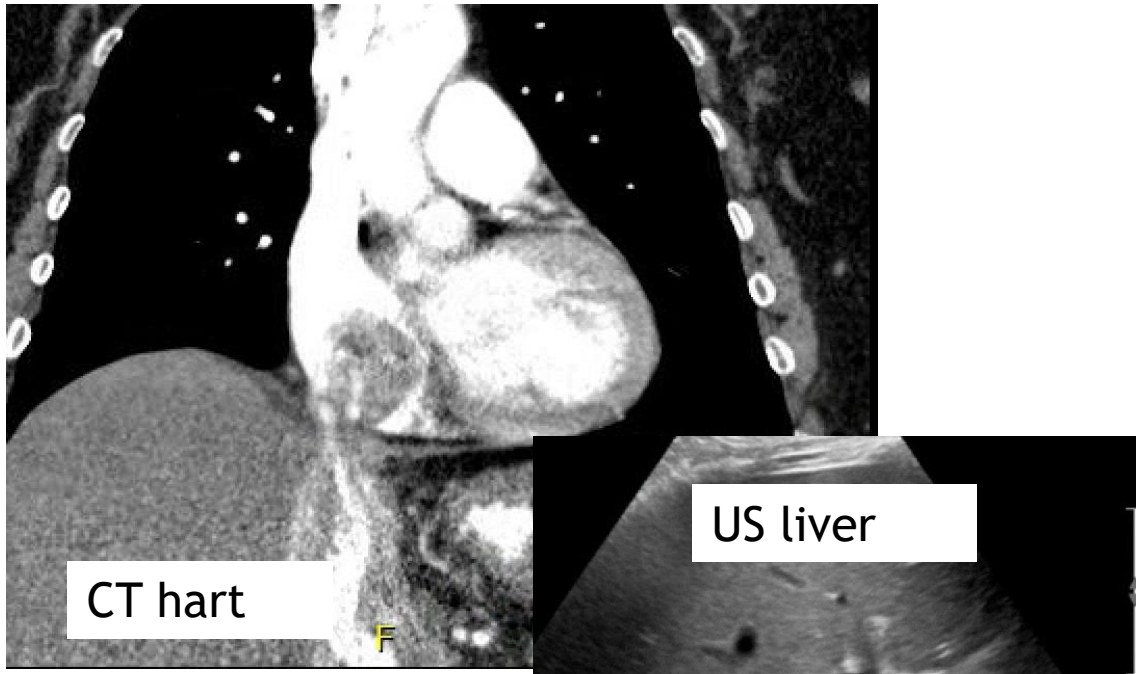
Med: o.a.
verapimil 3 x 80 mg
metformine 3 dd 500 mg
Pantozol.
Insuline novomix

Lab: abnormal:
Hb 7.3
eGFR 57
AF 174
GGT 142
LDH 353



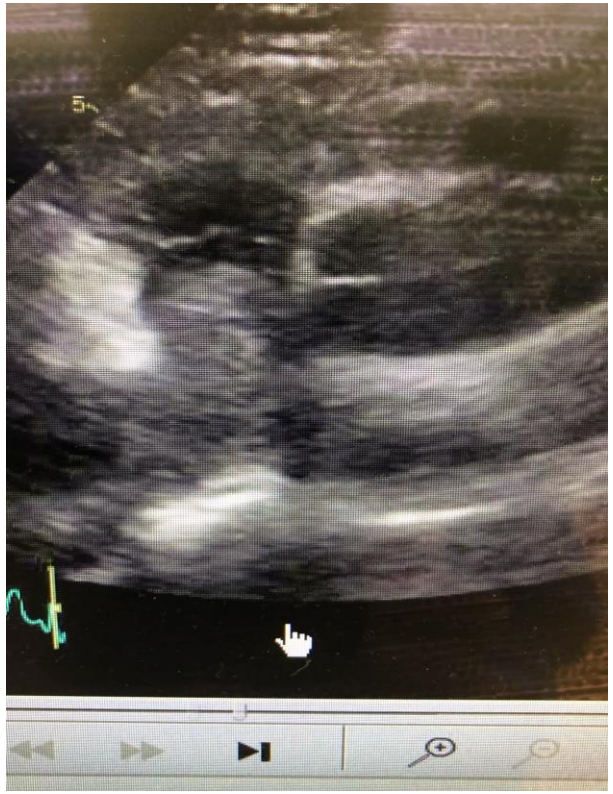
cT3c RCC
left side

Beeldvorming extra!



+ultrasound caval vein & iliaca

US hart



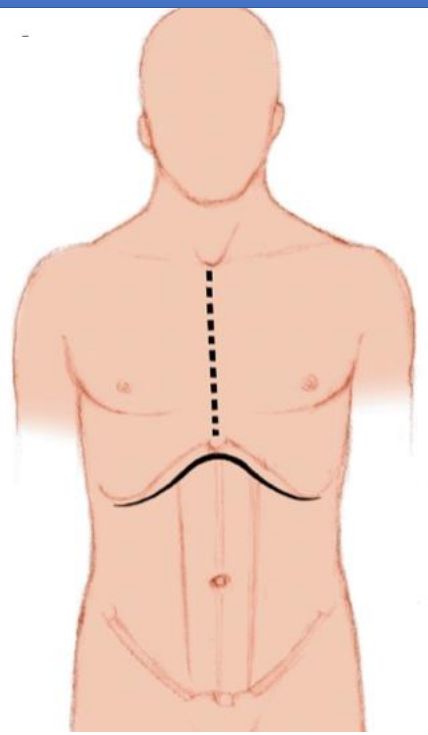
Indication for Surgery

Hoe benader je dit?

TEAM:

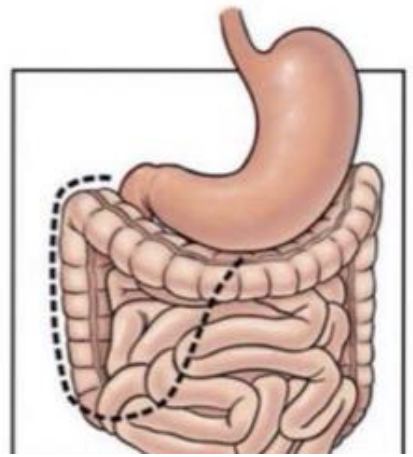
- **Cardiothoracic surgeon** incl heart-lung machine & TEAM
- **Vascular/hepatic surgeon**
- **Urologist**

Chevron & median Sternotomie

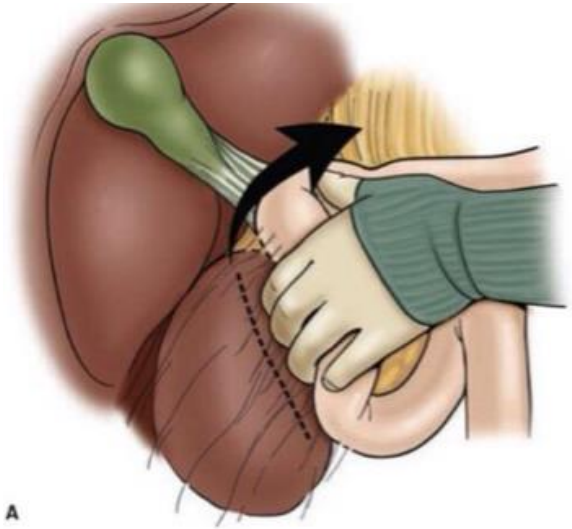


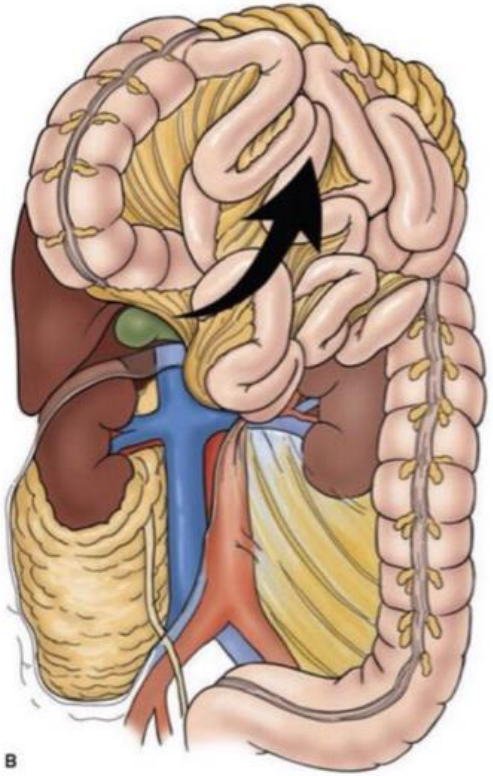
Adv: later space
Disadv: distal extension

Kocher maneuvre/ Cattel-Braasch



After rounding the coecum, incision of parietal peritoneum up to ligament of Treitz

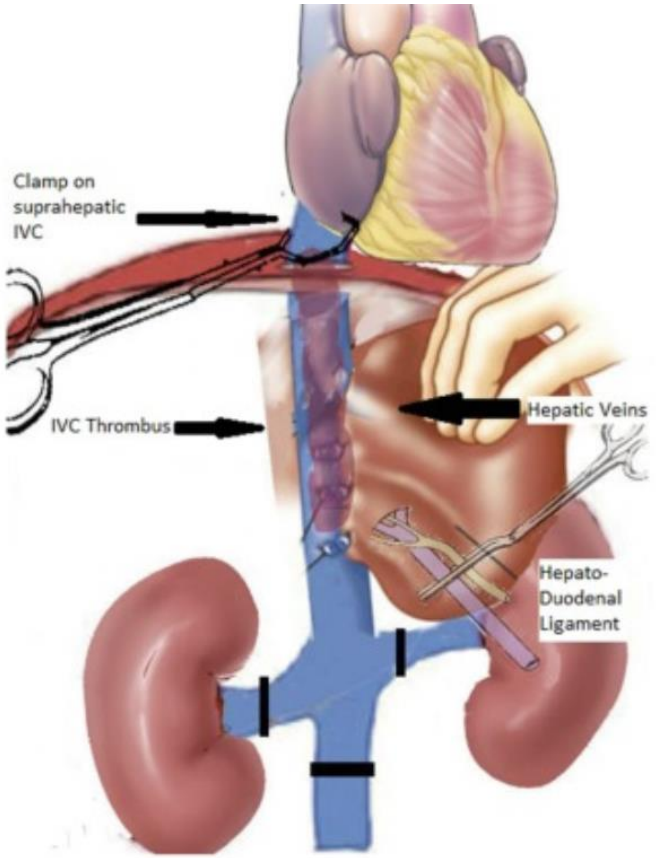




Lift up bowel, in bowel-bag

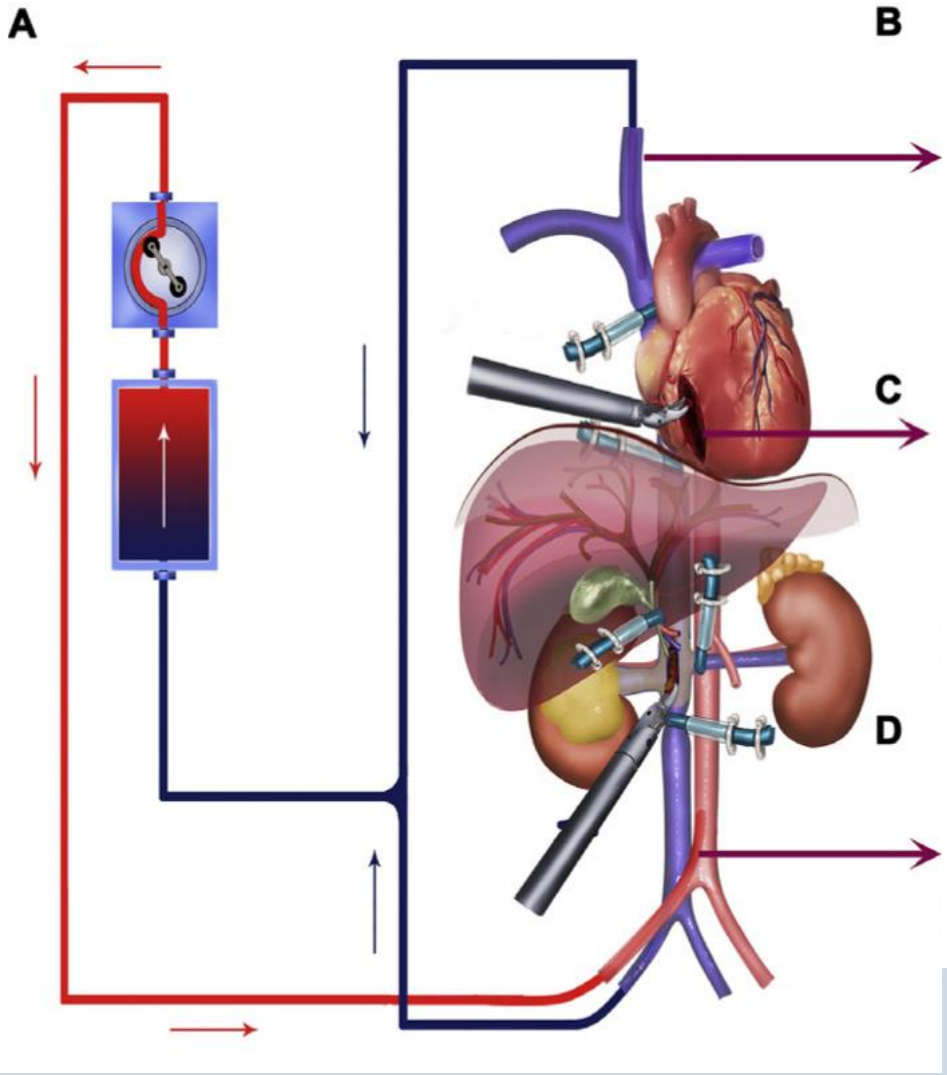
Mobilisatie lever

for exposure of retrohepatic vena cava



Acces through Chevron difficult, midline incision is prefered

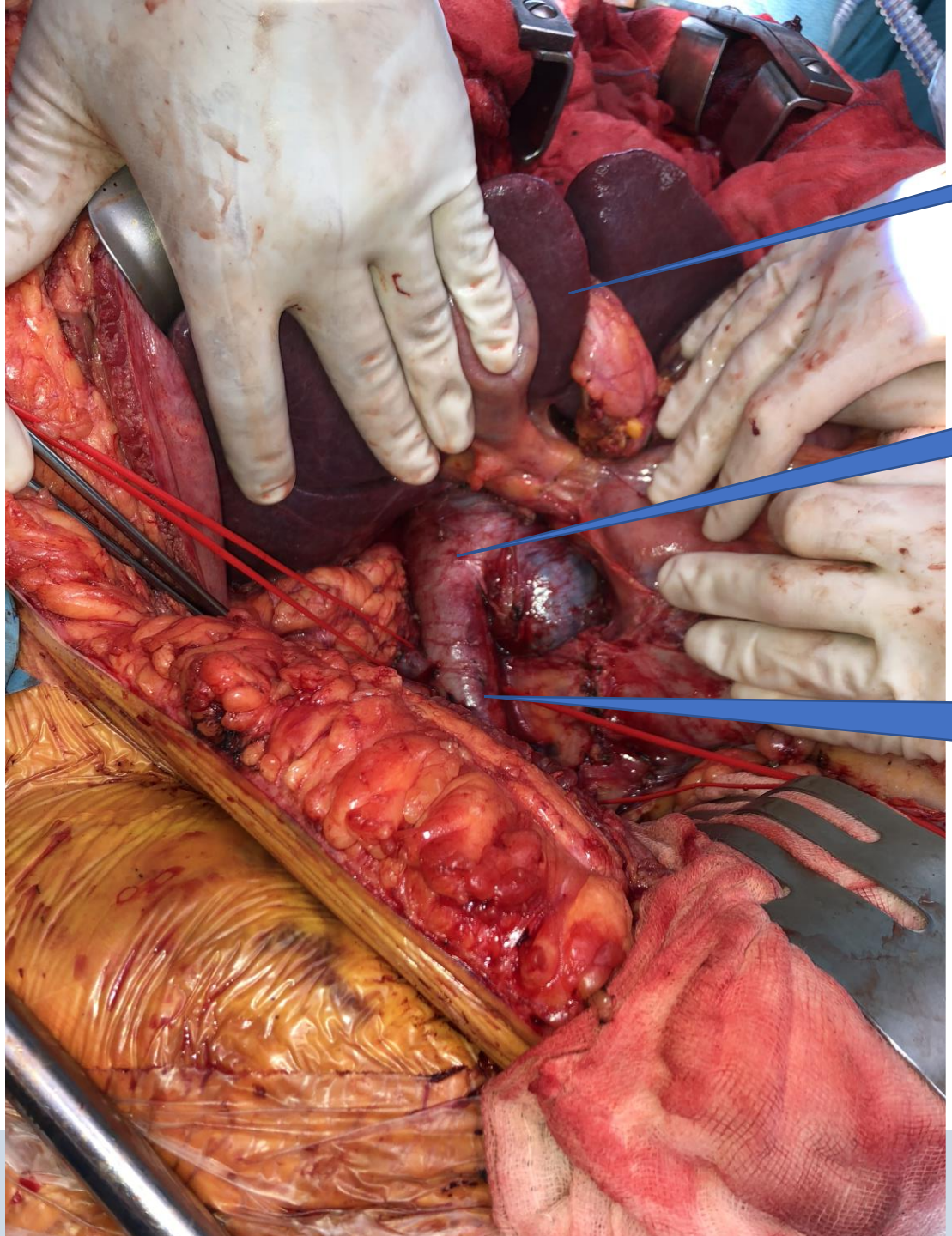
Cardiopulmonary bypass
& deep hypothermic circulatory arrest

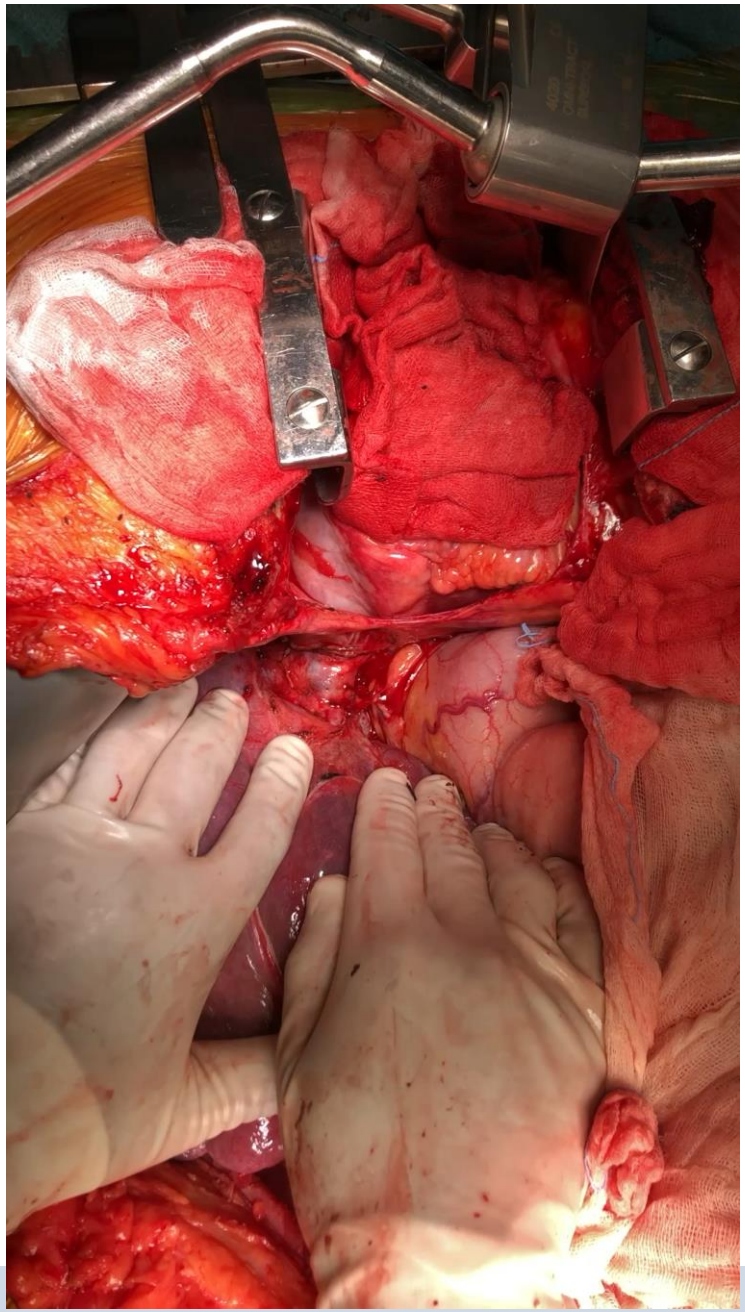


Cannulate heart and the ascending aorta for arterial circulation

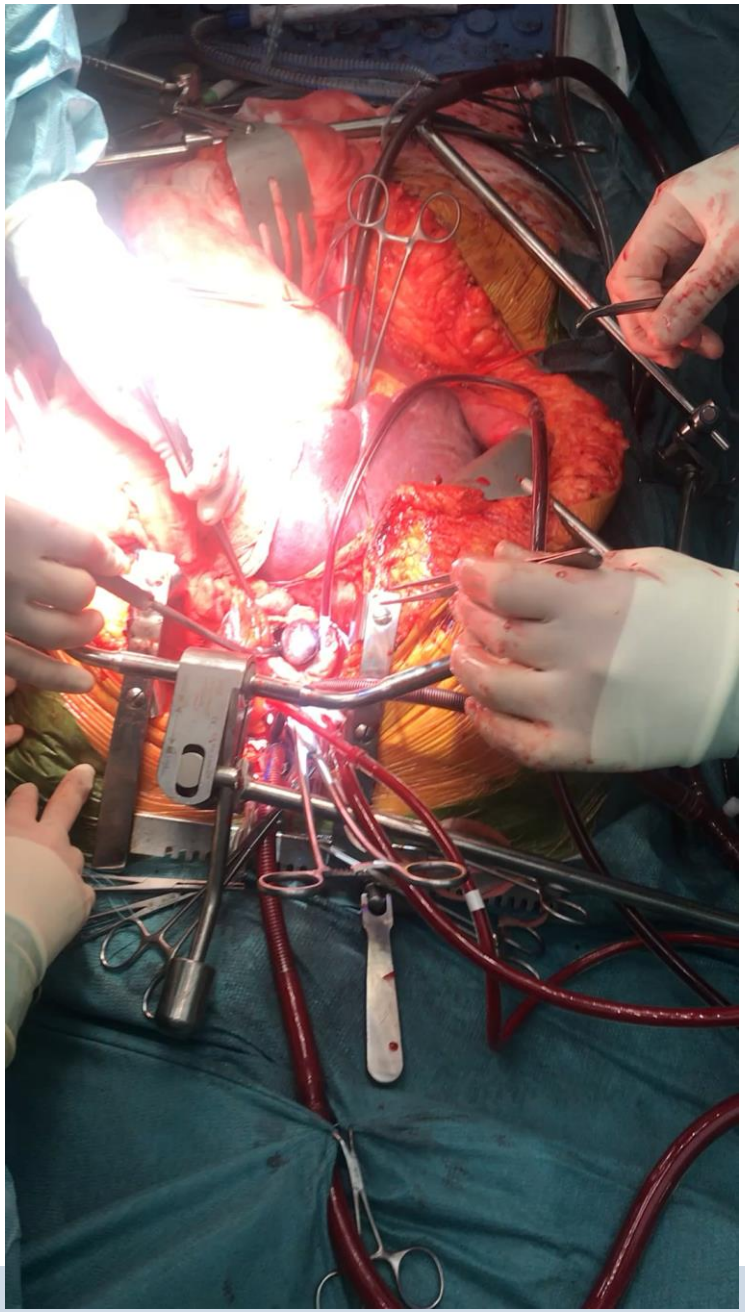
Cannulate the vena cava superior and vena femoralis for venous circulation

*heparinize the patient


Liver
Caval vein with Thombus
Caval vein without thombus



Supra-diafragmatisch



Intra-cardiaal Rechter Atrium

Pathology

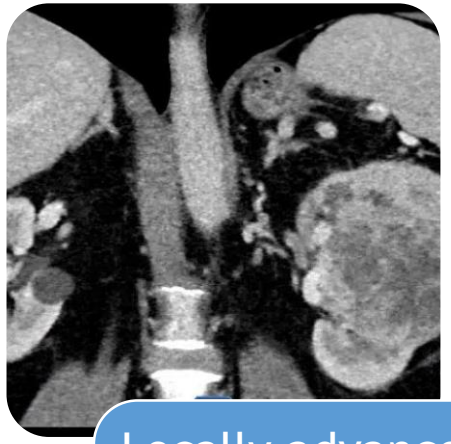
I: nefrectomie links met fragment vena cava inferior: heldercellig niercelcarcinoom, Fuhrman graad 2, maximale diameter 7,5 cm. Geen necrose, geen sarcomatoide differentiatie. Geen kapsel doorbraak. Er is uitbreiding van de tumor tot in vena cava inferior. Ureter en hilus vaatresectievlakken zijn tumorvrij. In het hilaire vetweefsel worden 6 lymfeklieren aangetroffen, tumor negatief. In de hilus van een lymfeklier wordt een fors gedilateerde vaat aangetroffen waarin tumor, niet duidelijk of te beschouwen als lymfekliermetastasen of vaso-invasie.
II: excisie weefsel bij vena cava boven diafragma: lokalisatie heldercellig niercelcarcinoom.

Follow up

- Surgery 8-10-2018
- Sept 2019 suspicion Lymfeklier para-aortal
  - EBRT
- Sept 2020 nodus in abdominal wall
- Resection: metastasis ccRCC
- June 2021 enlargement mesenterial 1,6 cm

Treatment decisions advanced RCC- key issues

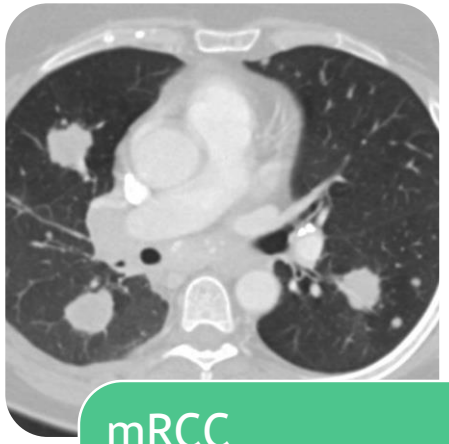
Geen metastase



Locally advanced RCC

- Radical Nephrectomy
- LND
- Neoadjuvant ST

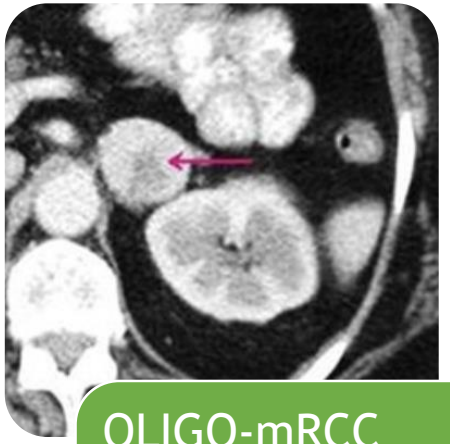
multipele metastasen



mRCC

- Soms Cytoreductive Nephrectomy
- **ONCOLOOG:**
  - Immunotherapie
  - Targeted therapy

Oligo-metastase



OLIGO-mRCC

- Cytoreductive Nephrectomy
- Surgical resection
- SABR
- other

Treatment decisions - key issues
Locally advanced RCC

- Neodjuvant ST
- Adjuvant ST

- Guidelines: chirurgie
- Maar dit veld is in beweging

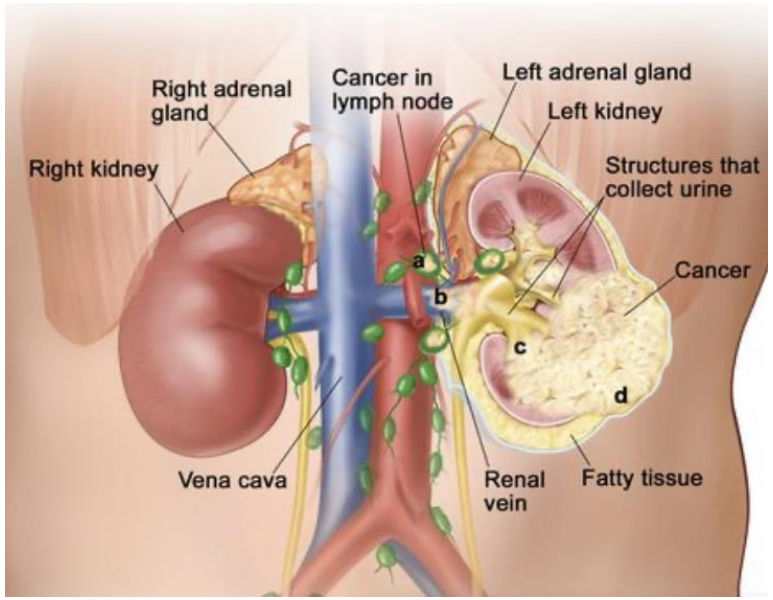
Locally advanced RCC

- Radical Nephrectomy
- Lymfeklierdissectie?
- Neoadjuvant ST

Lymfeklieren verwijderen?

Maar 20% van verdachte LN hebben werkelijk metastasen

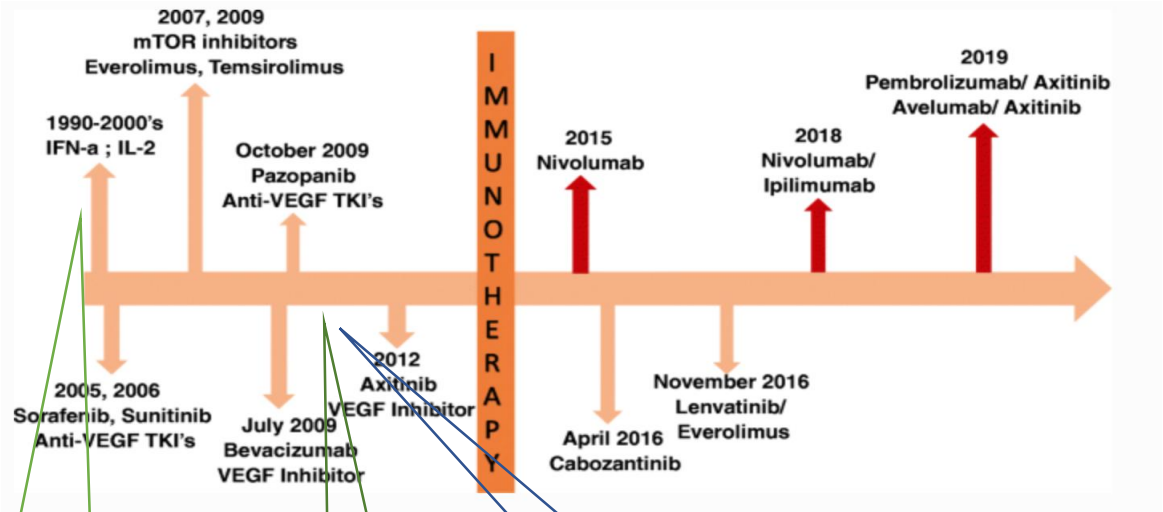
- No hard evidence for extensive LND and improved survival
- SEER database >9000: no effect of pN0 on DSS
  - Pt with pN+ showed 10% increase in DSS if more LN dissected
- Capitanio et al: Pt with pN+ pt eLND significant prolongation of CSS in high risk.

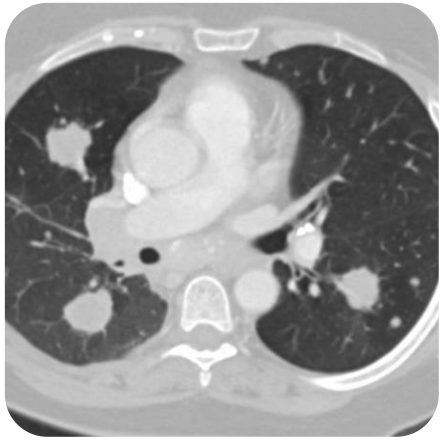


The optimal extent of LND remains controversial

Refs: EAU guidelines

Treatment decisions - key issues
Metastasized RCC & CN





Role CN in cytokine era

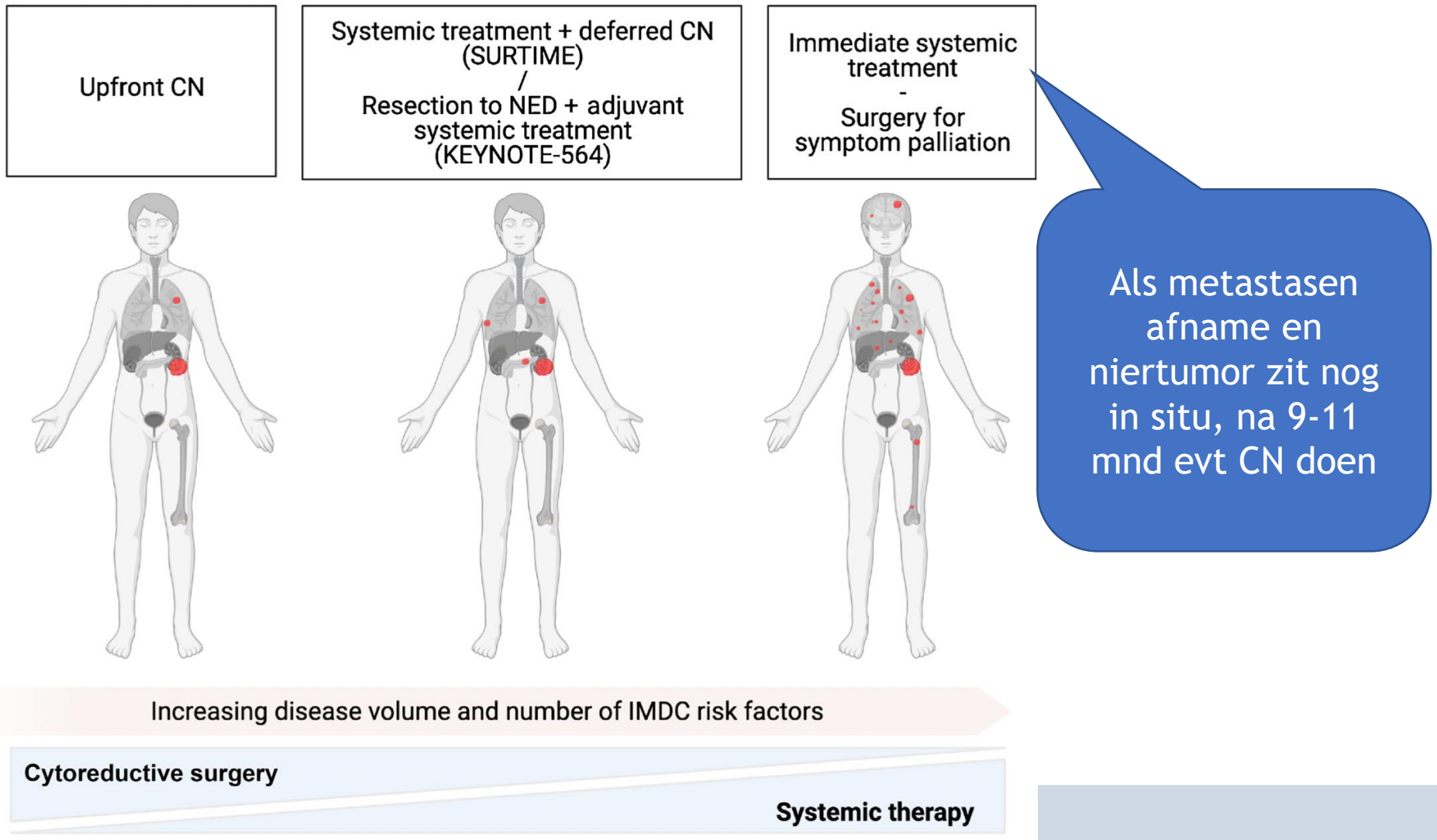
CARMENA 2009-2017

SURTIME 2010-2016

mRCC

- Cytoreductive Nephrectomy?

Bij wie wel en wie niet een CN?



Als metastasen afname en niertumor zit nog in situ, na 9-11 mnd evt CN doen

Treatment decisions - key issues
oligo mets

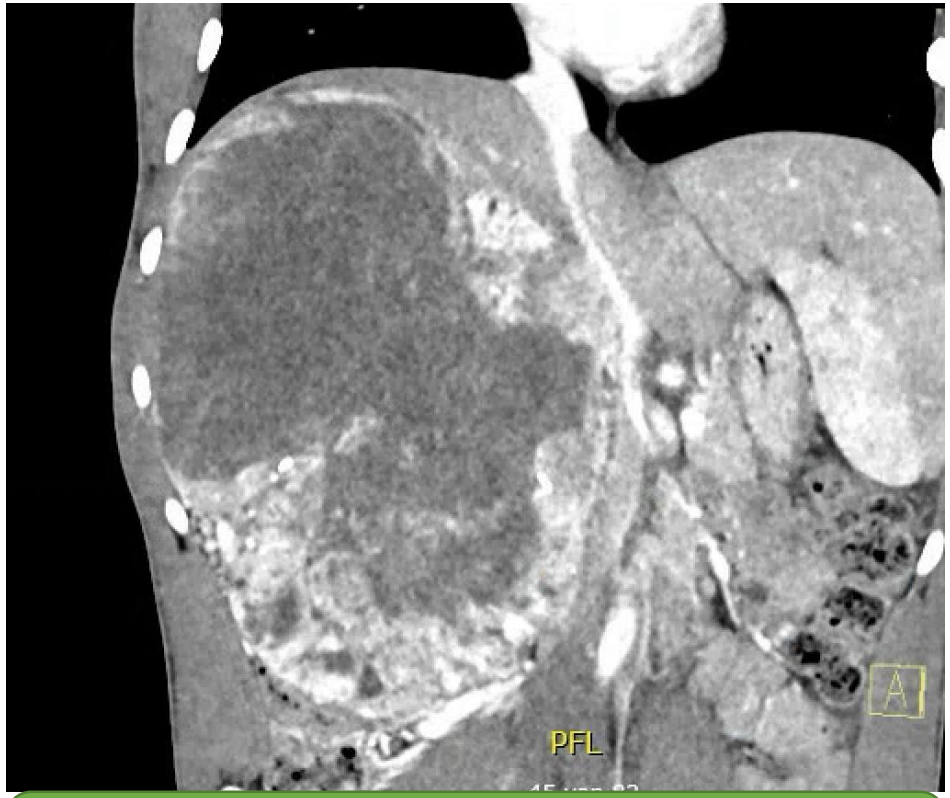
- Multidisciplinary tumour board meeting is where the decision is made!

OLIGO-mRCC

- Cytoreductive Nephrectomy
- Surgical resection
- SABR
- other

Case oligo-mets 18yrs, pijn flank

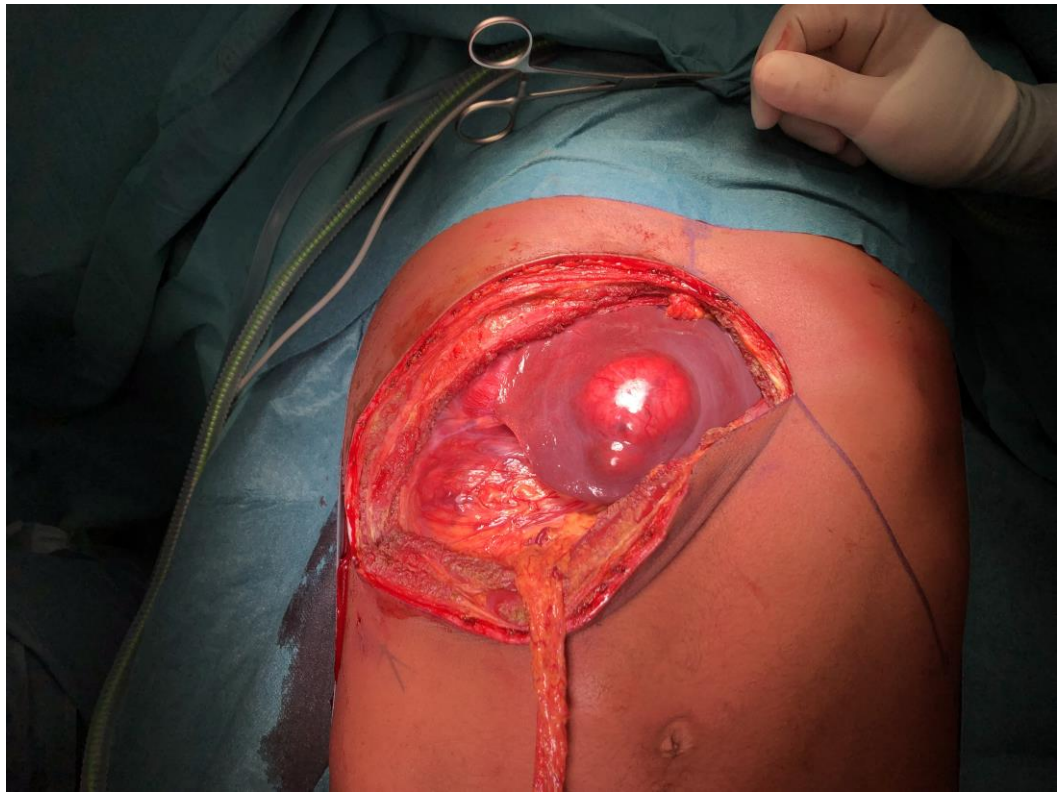
eGFR>90
LDH 852
T 652 = 1 punt
Ca ?
IMDC: interm/poor



cT3aNxM1

Could benefit from CN

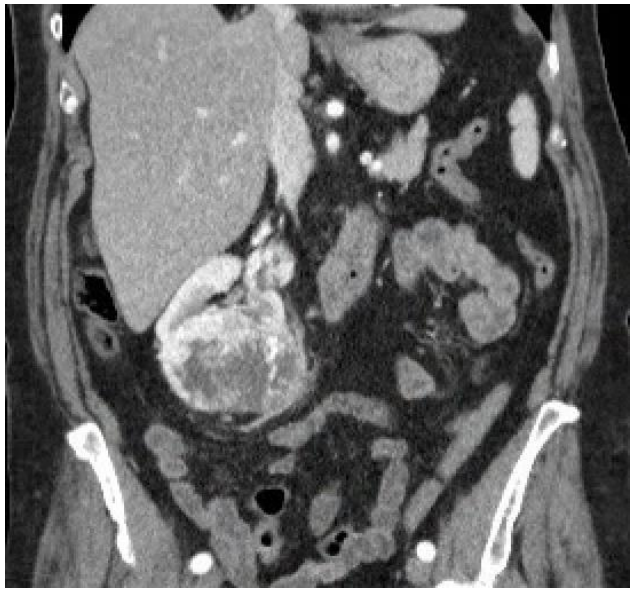
Cytoreductive Nephrectomy & Liver metastasis resection (oligo-mets)

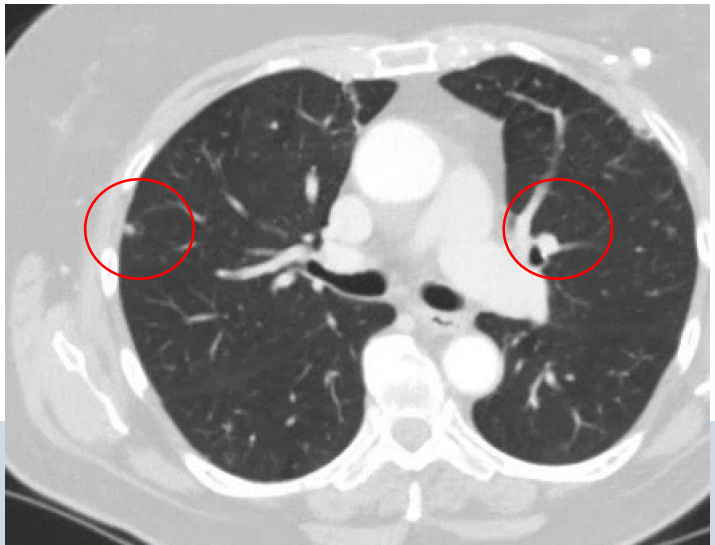


5-9-2019 Surgery RN liverresection and LND

Case oligo-mets

- Mevr 74 jr
- Sinds 3 mnd koorts, alg malaise, 3 kilo afgevallen
- KPS >80%
- cT3a (7 cm) rechter nier
- Multipele kleine longnoduli (10 tot 6 mm)
- Status na EBRT ivm mammaca
- IMDC 3 (anemie, trombocytose, hypercalciemie)

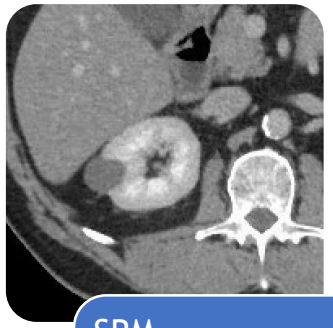




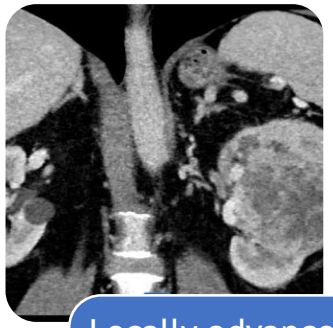
Could benefit from upfront CN

nierkanker netwerk amsterdam

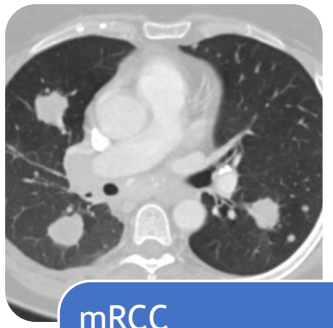
Gedeelde besluitvorming
Multidisciplinairy Tumour Board Meeting



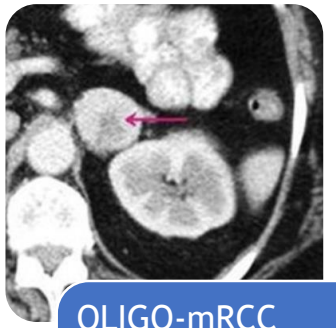
SRM
- AS
- Focal Therapy
- Partial Nephrectomy
- MRIdian
- Watchfull waiting



Locally advanced RCC
- Radical Nephrectomy
- LND
- Neoadjuvant ST

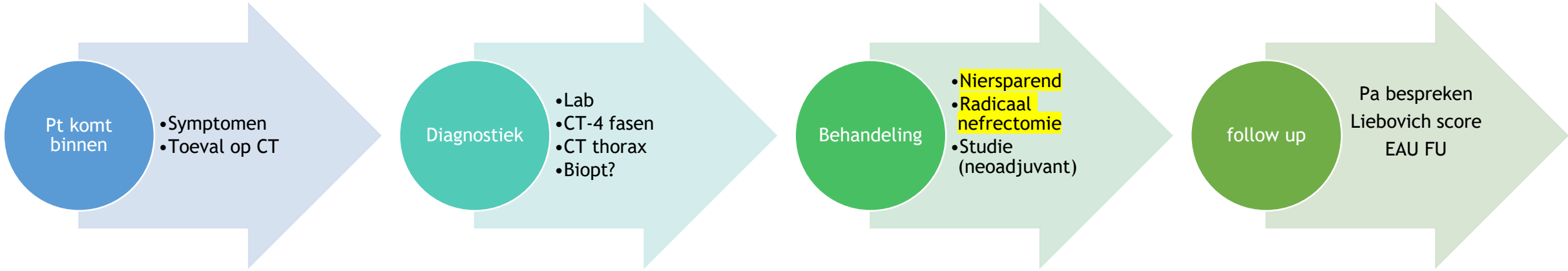


mRCC
- Cytoreductive Nephrectomy



OLIGO-mRCC
- Cytoreductive Nephrectomy
- Surgical resection
- SABR
- other

Patient journey



Leibovich score

Feature	Score
Primary tumor / T-stage	
T1a or pT1a	0
pT1b	2
pT2	3
pT3a-b / pT4	4
Tumor size	
< 10 cm	0
> 10 cm	1
Regional lymph node status	
pNx / pN0	0
pN1 – pN2	2
Nuclear grade (Three tiers grade)	
Grade 1 - 2 1	0
Grade 3 2	1
Grade 4 3	3
Tumor necrosis	
No necrosis	0
Necrosis	1
TOTAL SCORE	

Score	Risk group	Cumulative risk M$^+$ at 5 years	Cumulative risk M$^+$ at 10 years
0 - 2	Low	2.9 %	7.5 %
3 - 5	Intermediate	26.2 %	35.7 %
≥ 6	High	68.8 %	76.4 %

Foolow up vlgs EAU

Table 2: Proposed surveillance schedule following treatment for RCC, taking into account patient risk profile and treatment efficacy (expert opinion [LE: 4])

Risk profile (*)	Oncological follow-up after date of surgery								
	3 mo	6 mo	12 mo	18 mo	24 mo	30 mo	36 mo	> 3 yr	> 5 yr (optional)
Low risk of recurrence	-	CT	-	CT	-	CT	-	CT every two yrs	-
Intermediate risk of recurrence	-	CT	CT	-	CT	-	CT	CT once yr	CT every two yrs
High risk of recurrence	CT	CT	CT	CT	CT	-	CT	CT once yr	CT every two yrs

**Leibovich Score 0-2 / 3-5 / ≥ 6; for non-ccRCC: pT1NX-0, grade 1-2 / pT1b, grade 3-4 / vs. high risk: pT2-4, grade 1-4, or pT any, N1, grade 1-4.*

Amsterdam UMC
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Dank voor de aandacht!

Patricia Zondervan