

La néphrectomie partielle dans la prise en charge des tumeurs du rein en 2022 : quelles limites ?



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Néphrectomie partielle : recommandations AFU 2022-2024

Recommandations	Grade
La néphrectomie partielle est le traitement chirurgical recommandé en première intention pour les tumeurs T1a lorsqu'elle est techniquement faisable avec une morbidité acceptable	Fort
Elle peut être faite par voie ouverte, laparoscopique, ou par assistance robotique	Fort

Recommandations pour le traitement des tumeurs T1b-T2 N0M0	Grade
Si elle est possible, la néphrectomie partielle est recommandée pour les tumeurs cT1b	Fort
La néphrectomie totale est recommandée pour les tumeurs localisées cT1b-T2 pour lesquelles la néphrectomie partielle n'est pas réalisable techniquement ou en cas de rein non fonctionnel	Fort

Néphrectomie partielle : recommandations EAU 2022

Recommendations	Strength rating
Offer surgery to achieve cure in localised RCC.	Strong
Offer partial nephrectomy (PN) to patients with T1 tumours.	Strong
Offer PN to patients with T2 tumours and a solitary kidney or chronic kidney disease, if technically feasible.	Weak
Do not perform Ipsilateral adrenalectomy if there is no clinical evidence of invasion of the adrenal gland.	Strong
Do not offer an extended lymph node dissection to patients with organ-confined disease.	Weak
Offer embolisation to patients unfit for surgery presenting with massive haematuria or flank pain.	Weak



Impératifs de la Néphrectomie Partielle

- Contrôle oncologique
- Préservation de la fonction rénale
- Limitation des complications péri-opératoires

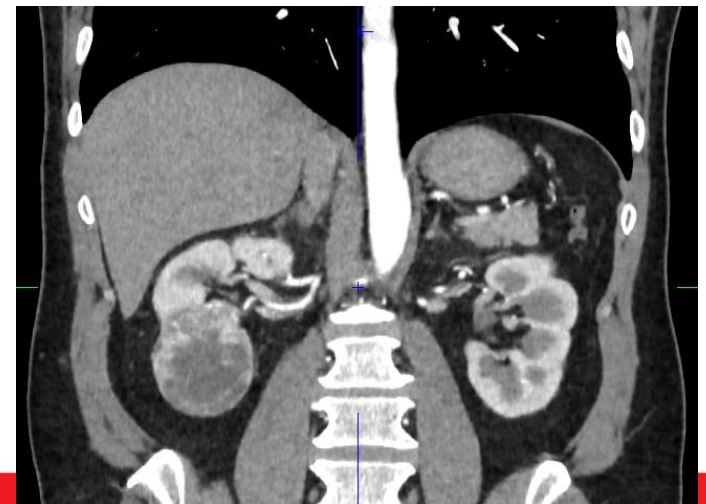
- Indications **Electives** VS **Impératives**



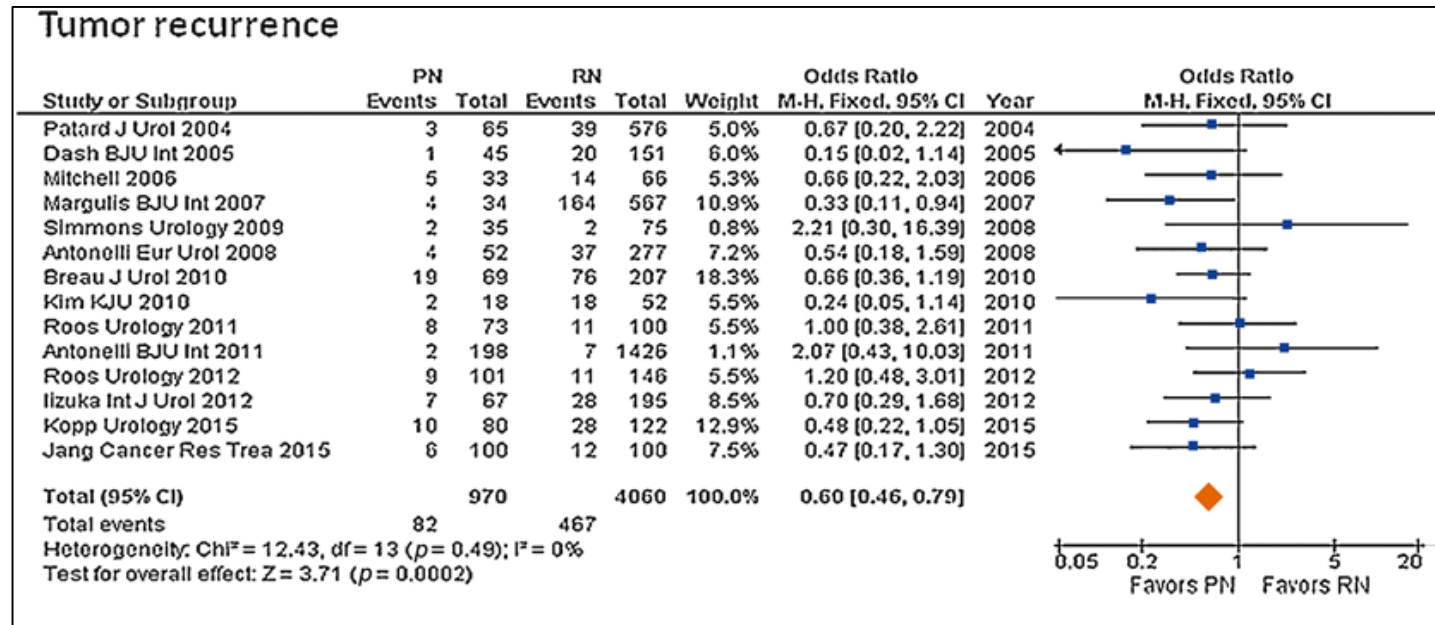
Limites de la Néphrectomie Partielle

- Limites liées à **la tumeur**
- Limites liées **au patient**
- Limites liées **au chirurgien et son environnement**

Limites liées à la tumeur



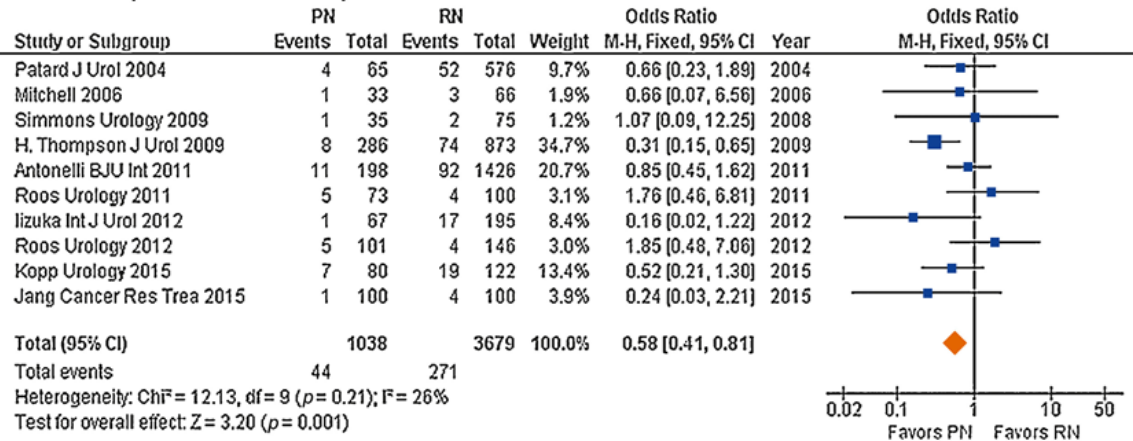
Limites liées à la tumeur : Taille



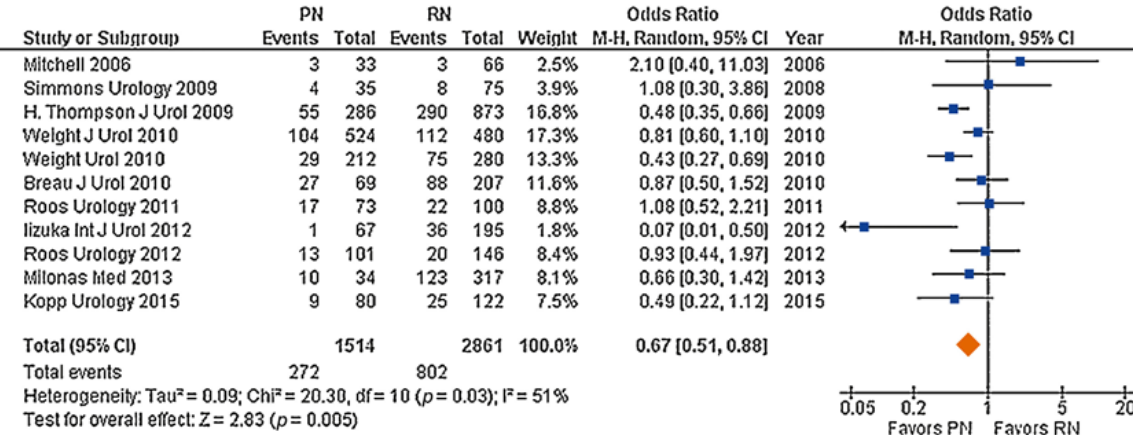
Mir MC et al. Partial Nephrectomy Versus Radical Nephrectomy for Clinical T1b and T2 Renal Tumors: A Systematic Review and Meta- analysis of Comparative Studies. Eur Urol 2017

Limites liées à la tumeur : Taille

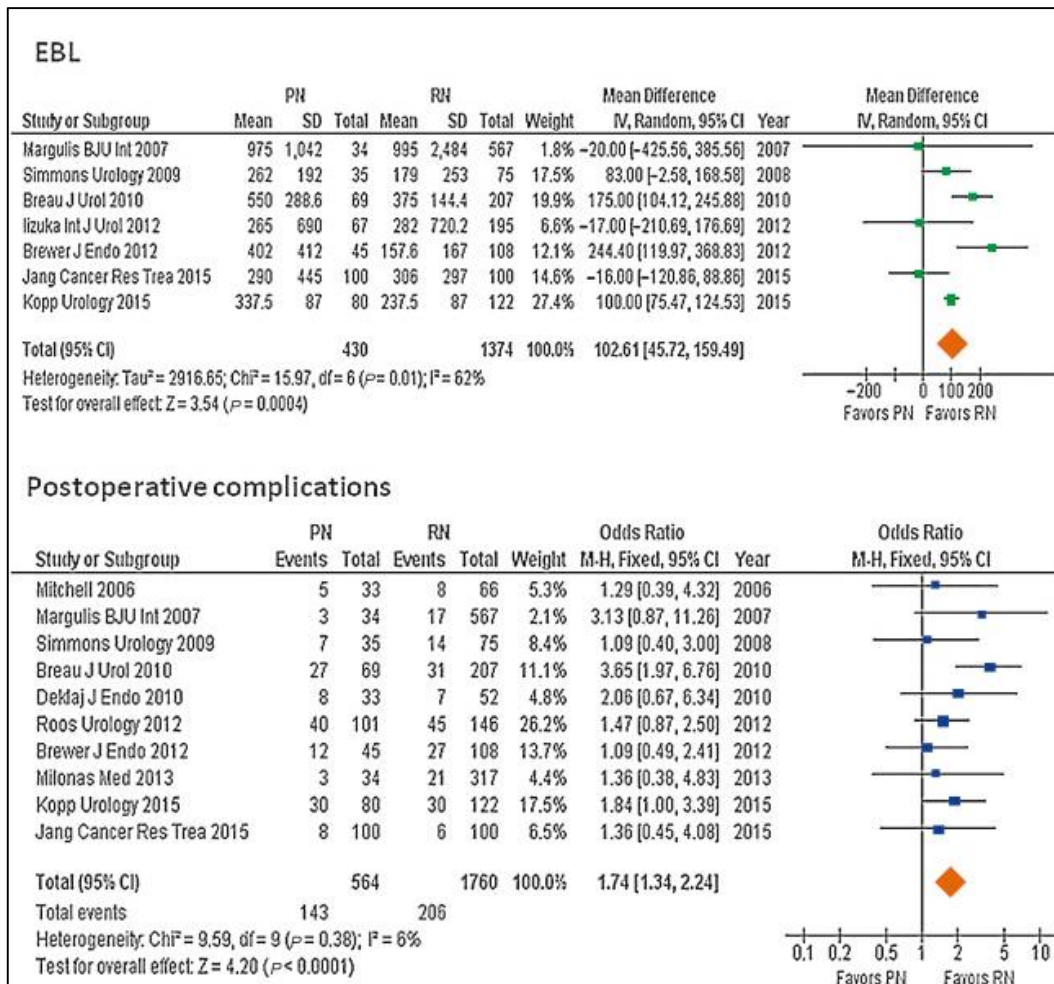
Cancer-specific mortality



All-cause mortality

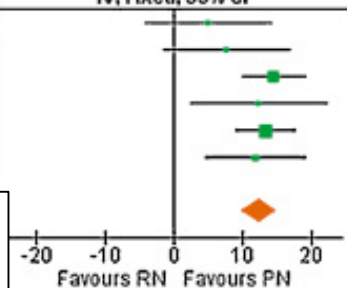


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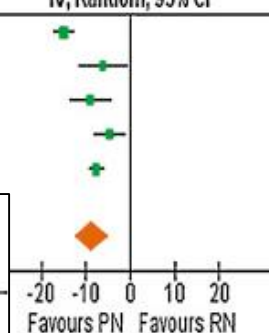


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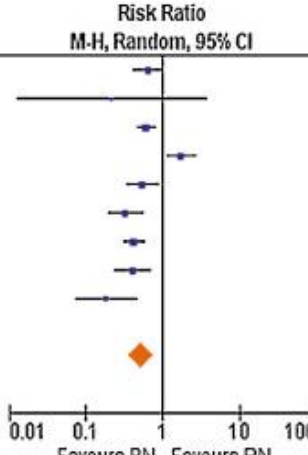
Postoperative eGFR

Study or Subgroup	PN			RN			Weight	Mean Difference IV, Fixed, 95% CI	Year	Mean Difference IV, Fixed, 95% CI
	Mean	SD	Total	Mean	SD	Total				
Simmons Urology 2009	60.9	24	35	55.9	20	75	7.6%	5.00 [-4.15, 14.15]	2008	
Kim KJU 2010	65.4	18.3	18	57.7	12.2	52	7.8%	7.70 [-1.38, 16.78]	2010	
Brewer J Endo 2012	62.9	13.2	45	48.4	12.9	108	30.8%	14.50 [9.94, 19.06]	2012	
Iizuka Int J Urol 2012	59.5	29.1	67	47.1	50.3	195	6.5%	12.40 [2.48, 22.32]	2012	
Pignot Urol Oncol 2014	70.4	20.8	123	57	15.3	185	34.8%	13.40 [9.11, 17.69]	2014	
Jang Cancer Res Trea 2015	71.5	24.4	100	59.6	27.1	100	12.5%	11.90 [4.75, 19.05]	2015	

Decline in eGFR

Study or Subgroup	PN			RN			Weight	Mean Difference IV, Random, 95% CI	Year	Mean Difference IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total				
Weight Urol 2010	12	13	212	27	13	298	22.1%	-15.00 [-17.29, -12.71]	2010	
Kim KJU 2010	12	9.1	18	18.1	12.5	52	16.5%	-6.10 [-11.51, -0.69]	2010	
Brewer J Endo 2012	12	13.2	45	21	12.9	108	18.1%	-9.00 [-13.56, -4.44]	2012	
Pignot Urol Oncol 2014	16.7	13.3	123	21.4	17.5	185	20.2%	-4.70 [-8.15, -1.25]	2014	
Kopp Urology 2015	12.5	3.5	80	20.2	7.3	122	23.1%	-7.70 [-9.21, -6.19]	2015	

Onset of CKD

Study or Subgroup	PN		RN		Weight	Risk Ratio M-H, Random, 95% CI	Year	Risk Ratio M-H, Random, 95% CI
	Events	Total	Events	Total				
Simmons Urology 2009	14	35	46	75	12.7%	0.65 [0.42, 1.02]	2008	
Kim KJU 2010	0	18	6	52	1.6%	0.21 [0.01, 3.63]	2010	
Weight Urol 2010	58	212	135	298	14.5%	0.60 [0.47, 0.78]	2010	
Iizuka Int J Urol 2012	24	67	40	195	13.0%	1.75 [1.14, 2.67]	2012	
Brewer J Endo 2012	14	45	62	108	12.5%	0.54 [0.34, 0.86]	2012	
Roos Urology 2012	14	101	62	146	11.9%	0.33 [0.19, 0.55]	2012	
Pignot Urol Oncol 2014	33	123	118	185	14.0%	0.42 [0.31, 0.57]	2014	
Kopp Urology 2015	13	80	49	122	11.7%	0.40 [0.24, 0.70]	2015	
Jang Cancer Res Trea 2015	5	100	27	100	8.0%	0.19 [0.07, 0.46]	2015	
Total (95% CI)		781		1281	100.0%	0.52 [0.36, 0.76]		

Total events: PN 175, RN 545
Heterogeneity: Tau² = 0.23; Chi² = 44.10, df = 8 (P < 0.00001); I² = 82%
Test for overall effect: Z = 3.44 (P = 0.0006)

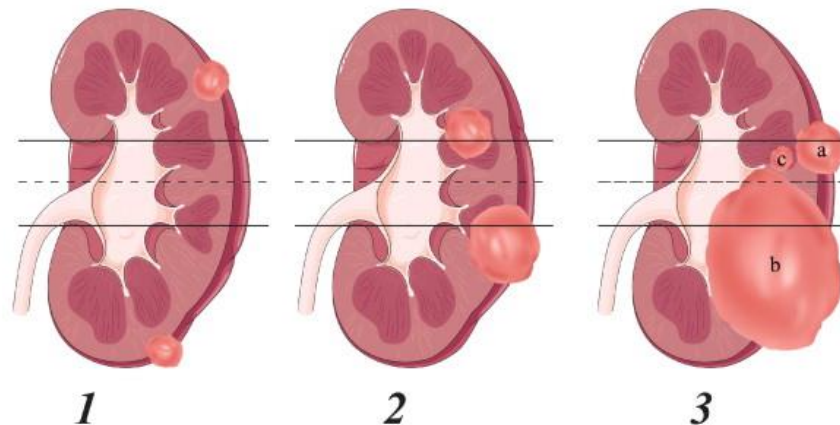
Limites liées à la tumeur : complexité

- Une augmentation de **la taille et de la complexité** tumorale est associée à une augmentation du risque de tumeur pT3a et de récurrence locale
- Scores de complexité tumorale : **RENaL** et **PADUA**

Shah PH et al. Partial Nephrectomy is Associated with Higher Risk of Relapse Compared with Radical Nephrectomy for Clinical Stage T1 Renal Cell Carcinoma Pathologically Up Staged to T3a. *J Urol*.
Kopp RP, Mehrazin R, Palazzi KL, et al. Survival outcomes after radical and partial nephrectomy for clinical T2 renal tumours categorised by R.E.N.A.L. nephrometry score. *BJU Int*. 2014

Complexité tumorale : RENaL Score

	1pt	2pts	3 pts
(R)adius (maximal diameter in cm)	≤ 4	>4 but < 7	≥ 7
(E)xophytic/endophytic properties	$\geq 50\%$	$<50\%$	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*	Entirely above the upper or below the lower polar line	Lesion crosses polar line	$>50\%$ of mass is across polar line (a) <u>or</u> mass crosses the axial renal midline (b) <u>or</u> mass is entirely between the polar lines (c)
* suffix "h" assigned if the tumor touches the main renal artery or vein			



Limites liées au patient

- Augmentation des risques de complication de la NP avec les scores de comorbidités (Charlson)

Predictors	Multivariable analysis	
	OR (95% CI)	p value
Age, yr	1.04 (1.02–1.06)	<0.001
CCI	1.14 (1.09–1.19)	<0.001
Renal medical history		
No AKI or CKD	1.00 (Ref.)	–
Previous episode of AKI	1.91 (1.03–3.54)	0.04
CKD with GFR <60	2.16 (1.34–3.49)	0.002
Tumour size, mm	1.02 (1–1.03)	0.01
Approach		
Open surgery	1.00 (Ref.)	–
Minimally invasive	0.77 (0.61–0.97)	0.03

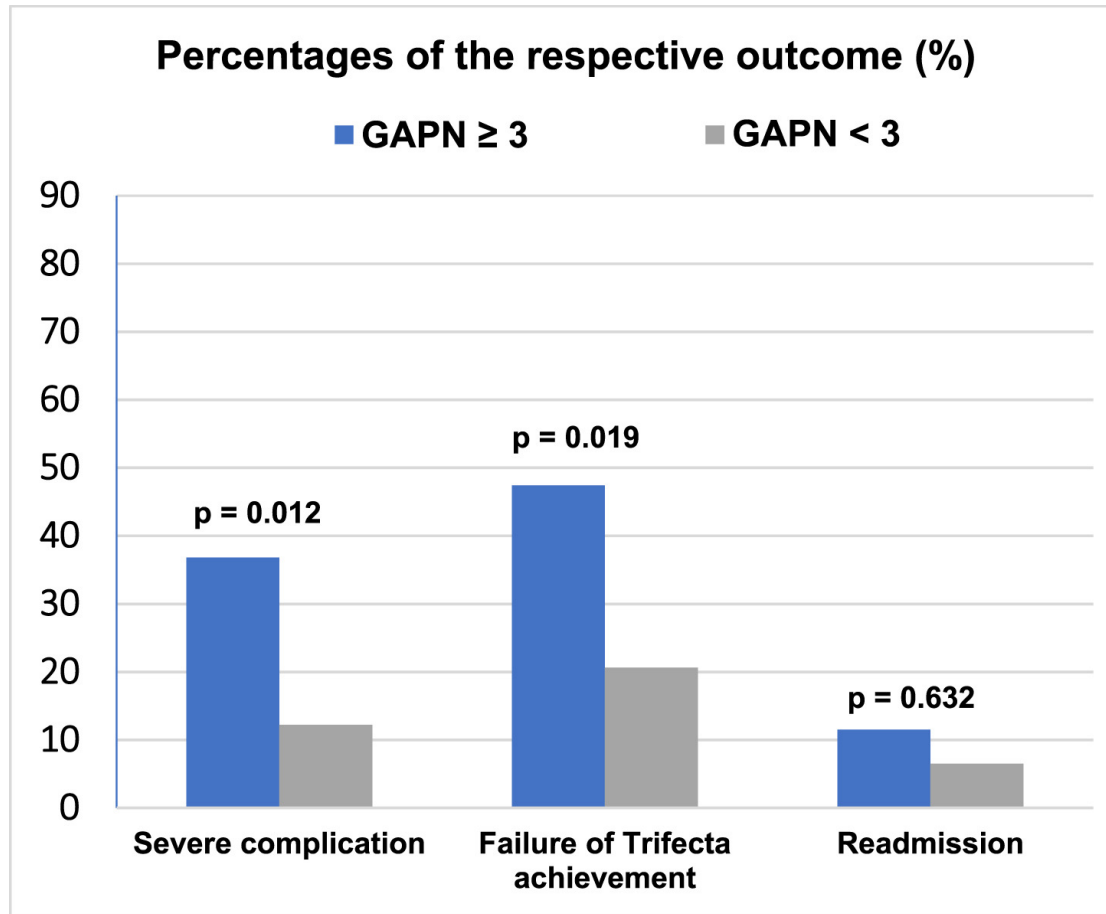
AKI = acute kidney injury; CCI = Charlson comorbidity index; CI = confidence interval; CKD = chronic kidney disease; GFR = glomerular filtration rate; OR = odds ratio; Ref. = reference.

Larcher A, et al. Prediction of Complications Following Partial Nephrectomy: Implications for Ablative Techniques Candidates. *Eur Urol.* 2016

Huynh MJ, et al. Patient factors predict complications after partial nephrectomy: validation and calibration of the Preoperative Risk Evaluation for Partial Nephrectomy (PREP) score. *BJU Int.* 2021

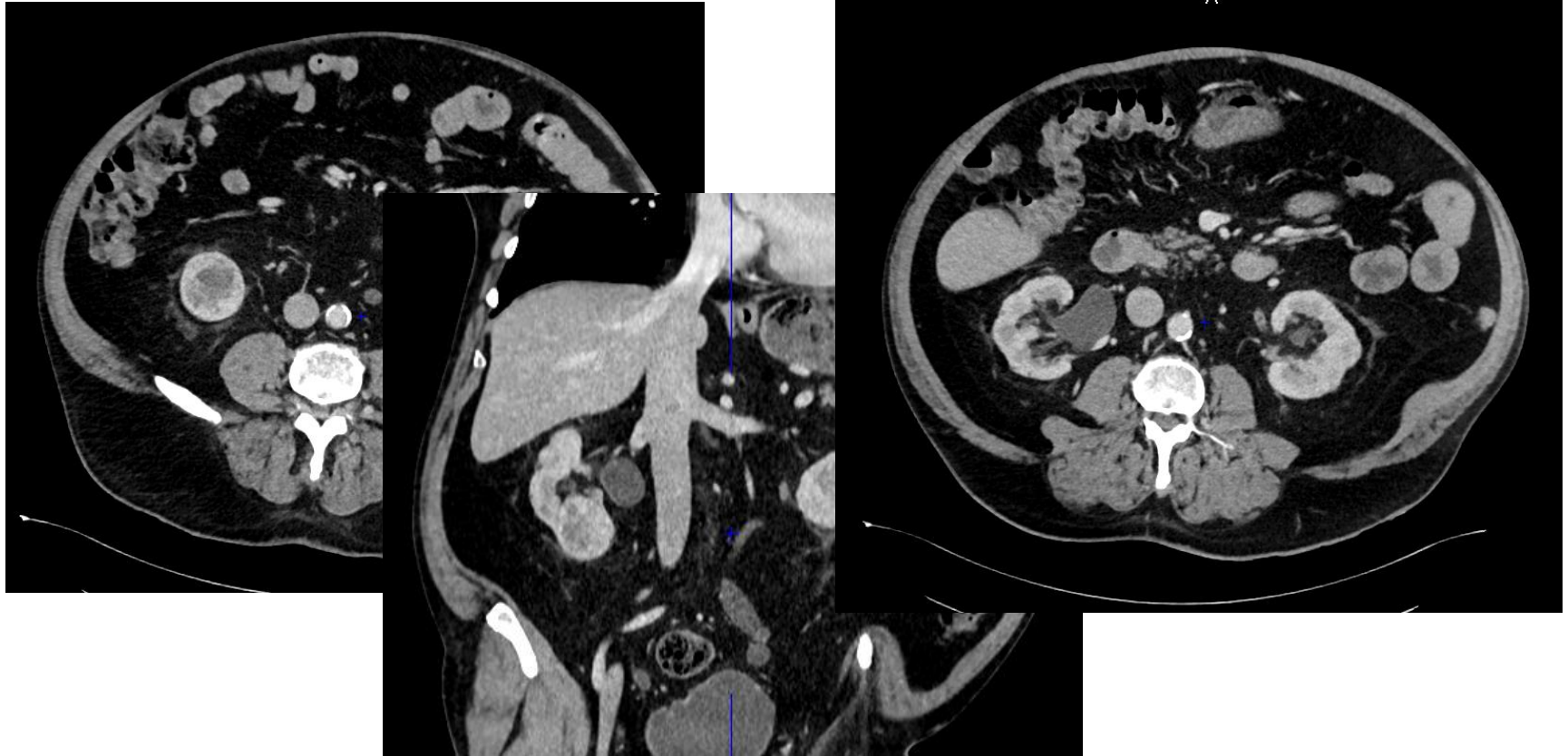
Hennus PM et al ; Impact of comorbidity on complications after nephrectomy: use of the Clavien Classification of Surgical Complications. *BJU Int.* 2012

Limites liées au patient : Age



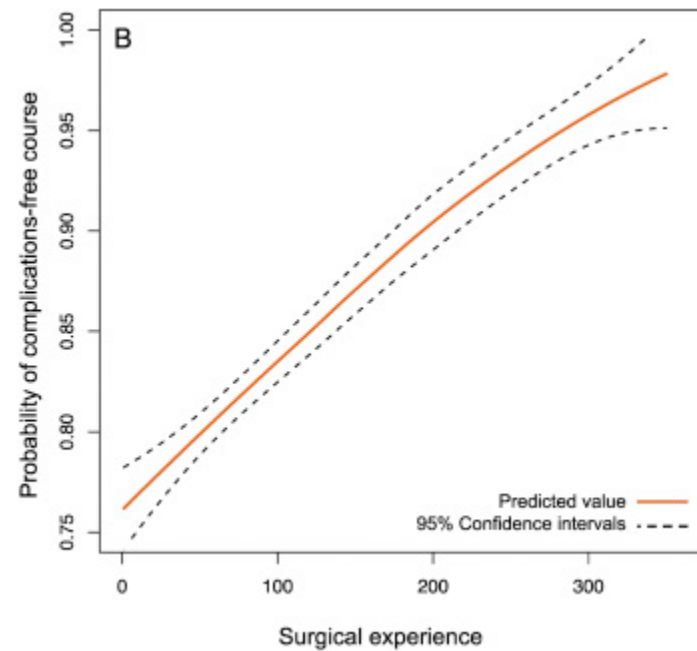
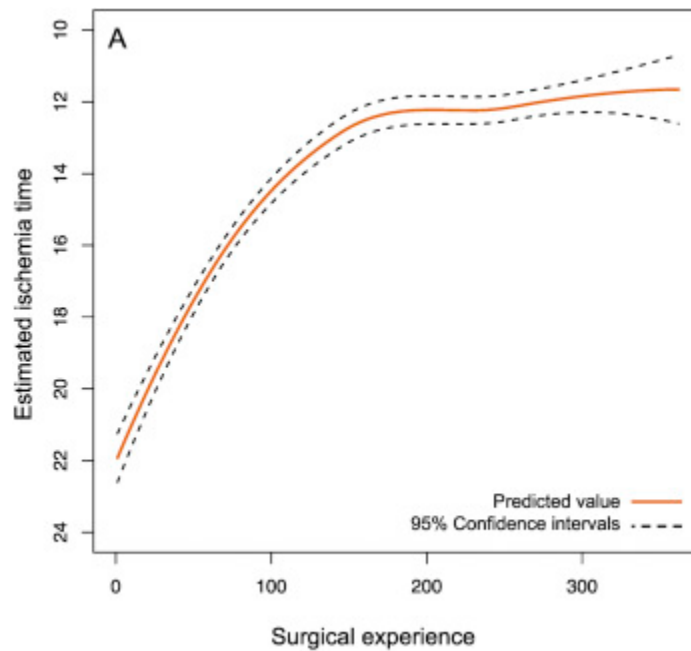
Wunderle MF, et al. Prospective geriatric assessment for perioperative risk stratification in partial nephrectomy. Eur J Surg Oncol. 2021

Limites liées au patient : graisse toxique



Khene ZE et al. Adherent perinephric fat affects perioperative outcomes after partial nephrectomy: a systematic review and meta-analysis. *Int J Clin Oncol.* 2021

Limites liées au chirurgien : Expérience



Larcher A, al. The Learning Curve for Robot-assisted Partial Nephrectomy: Impact of Surgical Experience on Perioperative Outcomes. Eur Urol. 2019

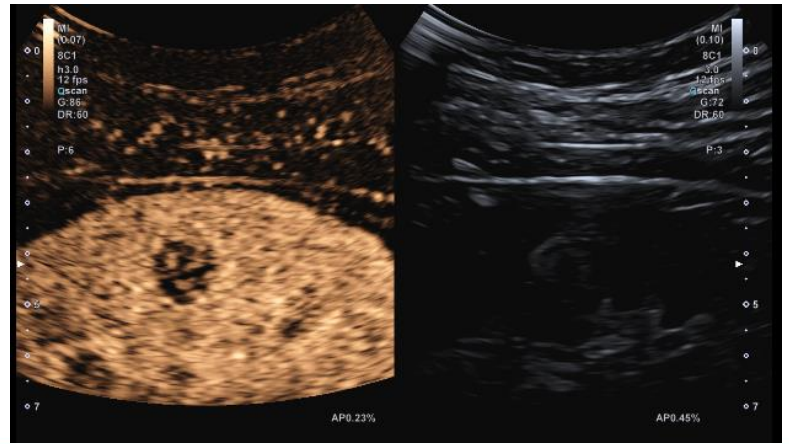
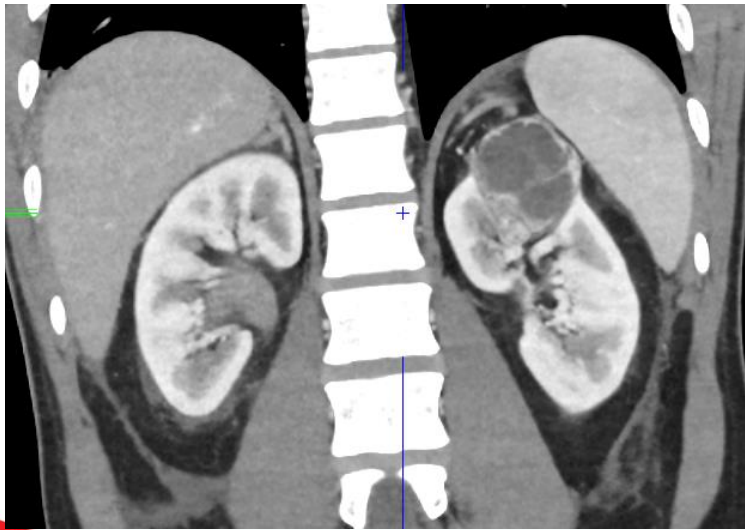
Limites liées au chirurgien : Expérience

Table 5 – Logistic regression models to predict overall complications

Variables	Univariate analysis			Multivariate analysis		
	Odds ratio	95% CI	<i>p</i> value	Odds ratio	95% CI	<i>p</i> value
Surgeon's prediction	4.24	2.67–7.06	0.007	5.42	4.21–6.31	<0.001
Charlson comorbidity index	1.24	1.05–1.49	0.009	1.14	0.91–1.47	0.13
BMI	0.91	0.81–0.99	0.03	0.83	0.72–1.93	0.12
Anticoagulant/antiplatelet treatment	3.73	1.28–11.41	0.01	2.64	0.71–3.30	0.15
Surgeon's experience						
High	Ref					
Medium	0.32	0.07–1.11	0.79	1.24	0.32–4.67	0.74
Low	1.16	0.35–3.64	0.08	3.05	0.77–5.48	0.07

BMI = body mass index; CI = confidence interval; Ref = reference.

Limites liées au chirurgien : Expérience



Limites liées au chirurgien : Plateau Technique

- Radiologie interventionnelle / Anesthésistes
- Chirurgie robot-assistée avantage en terme de :
 - Durée d'ischémie
 - Durée de séjour
 - DFG (VS laparoscopie)
 - Taux de conversion (VS laparoscopie)
 - Complications (VS Voie ouverte)
- Résultats oncologiques équivalents

Choi JE, et al. Comparison of peri-operative outcomes between robotic and laparoscopic partial nephrectomy: a systematic review and meta-analysis. Eur Urol 2015.

Long JA, et al. Robotic versus laparoscopic partial nephrectomy for complex tumors: comparison of perioperative outcomes. Eur Urol 2012

Hemal Ak et al. Laparoscopic versus open radical nephrectomy for large renal tumors: a long-term prospective comparison. J Urol 2007

Ebbing J et al. Evaluation of perioperative complications in open and laparoscopic surgery for renal cell cancer with tumor thrombus involvement using the Clavien-Dindo classification. Eur J Surg Oncol 2015

Limites liées au chirurgien : voie d'abord

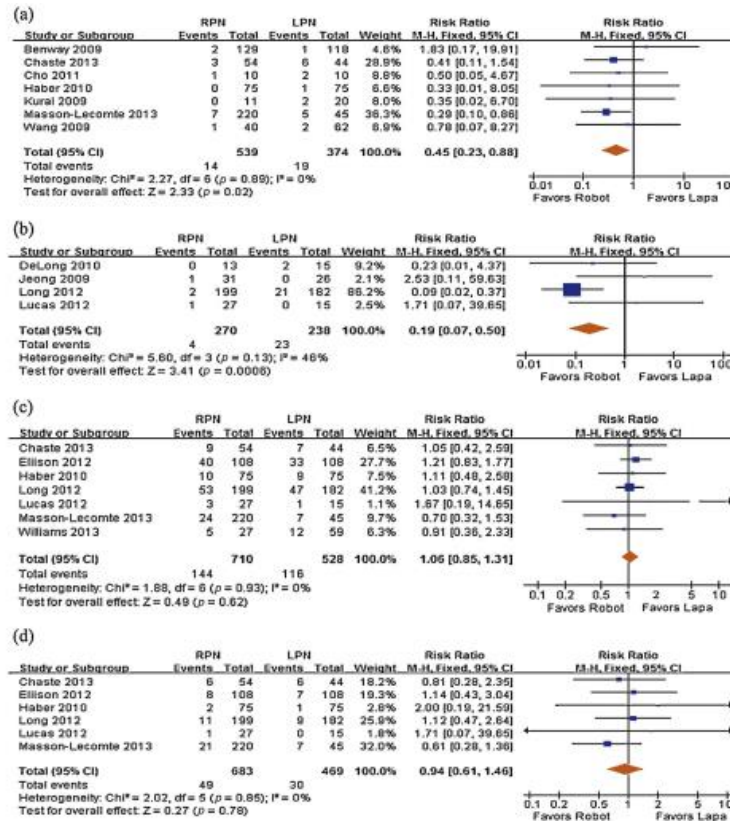


Fig. 2 - Safety outcomes of meta-analysis: (a) convert to open surgery; (b) convert to radical surgery; (c) Clavien-Dindo classification grades 1-2; (d) Clavien-Dindo classification grades 3-5.
CI = confidence interval; IV = inverse variance; LPN = laparoscopic partial nephrectomy; M-H = Mantel-Haenszel; RPN = robot-assisted partial nephrectomy; SD = standard deviation.

Choi JE, et al. Comparison of perioperative outcomes between robotic and laparoscopic partial nephrectomy: a systematic review and meta-analysis. Eur Urol. 2015

Conclusion

- Néphrectomie partielle : Respect du **Trifecta**
- Appréciation **globale** : Patient – Tumeur - Chirurgien
- Savoir demander un avis
- Savoir discuter un traitement alternatif