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Predictive factors of positive surgical margins in nephron sparing surgery: A prospective multicenter comparative study (RECORd1 project)

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INTRODUCTION & OBJECTIVES: Surgical margins (SM) represent an oncological short-term surrogate outcome of nephron sparing surgery (NSS). The aim of this study is to analyse predictive factors of positive SM in a multicenter prospective study of NSS (RECORd Project).

MATERIAL & METHODS: 1075 patients treated with NSS between January 2009 and December 2012 were evaluated. A univariate and a multivariate logistic regression analysis of perioperative variables for positive SM was performed.

RESULTS: Compared to patients with negative SM, positive SM were associated with a higher patients age (65.5 vs 61.8, p 0.02). In positive SM group a significant difference between relative/absolute and elective indication (8.5% vs 3.5%, p 0.002), polar superior tumor location and other locations (8.6% vs 2.9% p<0.0001), minimally invasive (VLP and robot assisted) and open approach(1.2% vs 5.9% p 0.01) was noted. At histopathologic examination, in positive SM group extra capsular lesions (pT3a) and intra capsular lesion were significantly different (11.6% vs 4.2%, p 0.02). At multivariate logistic regression analysis open approach (OR 2.1, CI 1.04-4.27, p 0.04), polar superior tumor location (OR 2.9, CI 1.56-5.35, p 0.01) and pT3a (OR 2.9, CI 1.05-7.90, p 0.04) were confirmed as significant predictive factors of positive SM.

CONCLUSIONS: Renal tumor location represents an important nephrometric preoperative characteristic predictive of positive SM. Both PADUA score and R.E.N.A.L. score does not account for lower versus superior polar location, however this difference seems to be significant for prediction of positive SM risk. Extracapsular lesions are also correlated with a higher risk of PSM. Minimally invasive approach seems to present lower positive SM rate possibly due to the optical magnification, but this result should be further confirmed.

RECORd1 variables		Univariate analysis				P	Multivariate analysis		
		NSM		PSM			OR	CI95%	P
Age, mean (SD)		61,8	12,7	65,5	9,9	0,02	-	-	-
Indication, n. %	Elective	748	96,5%	27	3,5%	0,002	-	-	-
	Rel/Abs	184	91,5%	17	8,5%				
Lesion site, n. %	Other site	676	97,7%	20	2,9%	0,01	2,89	1,56-5,35	0,001
	Polar superior	256	91,4%	24	8,6%				
Approach, n. %	Minimally inv.	407	98,8%	5	1,2%	0,01	2,11	1,05-4,27	0,04
	Open	525	94,1%	33	5,9%				

Pathologic T, n. %	Intracapsular	894	95,8%	39	4,2%	0,02	2,89	1,05-7,90	0,04
	Extracapsular	38	88,4%	5	11,6%				