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Does an unexpected final pathology of pT3a renal tumour undermine cancer control in clinically T1N0M0 patients who were initially treated with nephron sparing surgery?

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INTRODUCTION & OBJECTIVES: Patients with clinical cT1abN0M0 renal cancers treated with Radical Nephrectomy (RN) or Nephron Sparing Surgery (NSS) occasionally have unexpected microscopic invasion of renal vein and/or perirenal/sinus fat (pT3a) on final pathological assessment. There is no data available, in this setting, to judge if NSS might have undermined the cancer control relative to RN.

MATERIAL & METHODS: As part of an international multi-institutional collaboration, clinical cT1abN0M0 RCC cases that harboured pT3a disease at final pathology were identified. Patients with multifocal, bilateral or metastatic disease were excluded. Univariable and multivariable Cox regression analyses were used to test the effect of treatment type (NSS vs. RN) on metastases-free survival and cancer-specific survival rates. Bootstrapping was used to decrease the degree of model overfitting.

RESULTS: Overall, 273 RCC patients with a clinically-defined diagnosis of cT1abN0M0 [cT1aN0M0 (n=107, 39.2%), cT1bN0M0 (n=166, 60.8%)] harboured pT3a disease at final pathology. pT3a was defined for the presence of microscopic perirenal and/or sinus fat invasion (79.2%), microscopic renal vein invasion (12.7%) or both entities (8.1%). Patients were treated with either NSS (n=71, 26%) or RN (n=202, 74%). Median age was 67y (IQR 58-74). Median clinical tumor size resulted 5cm (IQR 3.1-6.0). Fuhrman grade was 1-2 vs. 3-4 in 159 (58.2%) vs. 114 (41.8%) cases, respectively. Necrosis and sarcomatoid features were recorded in 33% and 2% of patients, respectively. After a mean follow-up of 53 months, metastases-free survival resulted 90.5 vs. 86.5 vs. 77.8% at 1 vs. 2 vs. 5 years after surgery. Cancer-specific survival was 96.5 vs. 90.1 vs. 82.5%, respectively. At multivariable analyses, clinical tumor size (HR 1.6, 95%CI 1.2-2.1, p=0.002), high Fuhrman grade (HR 2.3, 95%CI 1.2-4.5, p=0.01) and presence of sarcomatoid features (HR 4.3 95%CI 1.3-15.2, p=0.02) resulted independent predictors of metastatic progression. Type of surgery (NSS vs. RN) was not an independent predictor status of either metastasis-free survival (p=0.4) or cancer-specific mortality (p=0.3).

CONCLUSIONS: Utilising a large multi-institutional cohort of RCC patients, the current study represents the first attempt to define whether NSS might undermine cancer control when an unanticipated pT3a disease is finally found at final pathology. In this specific scenario, despite the presence of unexpected non-organ confined disease, NSS does not seem to jeopardize cancer control.