

Porpiglia F.¹, Minervini A.², Bertolo R.¹, Bhayani S.³, Mari A.², Fiori C.¹, Guazzoni G.⁴, Longo N.⁵, Mirone V.⁵, Morgia G.⁶, Mottrie A.⁷, Porter J.⁸, Serni S.², Ficarra V.⁹, Carini M.²

¹A.O.U. San Luigi Gonzaga, Dept. of Urology, Orbassano, Italy, ²Careggi Hospital, University of Florence, Dept. of Urology, I Clinic, Florence, Italy, ³Washington University School of Medicine, Dept. of Urology, Saint Louis, United States of America, ⁴Vita-Salute University, San Raffaele-Turro Hospital, Dept. of Urology, Milan, Italy, ⁵Federico II Hospital - University of Naples, Dept. of Urology, Naples, Italy, ⁶Luna Foundation, SIU, Italy, ⁷OLV Robotic Surgery Institute, Dept. of Urology, Aalst, Belgium, ⁸Swedish Urology Group, , Seattle, United States of America, ⁹University of Udine, Dept. of Urology, Udine, Italy

INTRODUCTION & OBJECTIVES: This study reports a multicentric international prospective dataset of NSS performed in cT1b renal tumors. The aim of this study is to analyse the predictive factors of surgical complications, longer ischemia time and trifecta outcome for renal masses greater than 4 cm.

MATERIAL & METHODS: 248 cases of NSS in cT1b renal tumors performed in 23 centres were prospectively analysed. Patients were treated in low and high volume centres (defined as < or ≥ 50 per year NSS). Trifecta was defined as simultaneous ischemia < 25 min, no surgical complication and negative surgical margin. A descriptive analysis was carried out. A univariate analysis and multivariate logistic regression were performed for surgical postoperative complications, Clavien 3 surgical complications, ischemia time > 25 min and Trifecta.

RESULTS: A median clinical tumor diameter of 5 (4.5-5.5) cm was reported. 37.5% lesions presented a <50% exophytic growth pattern and 37.5% lesions were in mid kidney. 17.7% cases were performed in low volume centres. Overall, 60.1% cases were performed using a minimally invasive approach. A clampless technique was used in 18.5% of cases. Ischemia time presented a median of 20 (16-25) minutes and 26.6% cases had a > 25 min ischemia time. Surgical complications were 18.1%, Clavien 2 were 9.3% and Clavien 3 were 4.8% of cases. Positive surgical margin were registered 7.3% of patients. Trifecta was achieved 56% patients.

At uni and multivariate analysis mid kidney location (OR 1.96, p 0,05) and estimated blood loss (EBL) (OR 1.0, p 0.001) were predictive factors of surgical complication. Mid kidney location (OR 4.2 p 0,03) and low volume centre (OR 5.1, p 0.02) were predictive of Clavien 3 surgical complications. At univariate analysis minimally invasive approach had significant > 25 min ischemia rate compared to open standard approach (31.5% vs 19.2%, p 0.03), but it did not raise significance at multivariate analysis (OR 1.6 p 0.19). Also endophytic growth pattern (OR 3.1, p<0.001) and EBL (OR 1.0, p<0.001) were predictive factors of > 25 min ischemia rate. Endophytic growth pattern represents the only significant predictive factor of Trifecta (OR 1.29, p 0.004).

CONCLUSIONS: NSS seems a feasible technique for cT1b renal masses, but it still presents a high rate of surgical complications. Major complications could be reduced by operating in highly experienced-centres. Surgical complications are mostly influenced by lesion site. Endophytic growth pattern is the only predictive factor of Trifecta and higher ischemia time, which is also influenced by intraoperative bleeding.