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INTRODUCTION & OBJECTIVES: Detailed reporting of Resection Strategies (RS) and Resection Techniques (RT) for tumor excision during Partial Nephrectomy (PN) is lacking in the current literature. The aim of the study is to evaluate 1) possible correlations between patient's and/or tumours characteristics and RT performed and 2) whether the type of RT does influence perioperative outcomes after PN, harnessing the newly proposed Surface–Intermediate–Base (SIB) Margin score as a standardized reporting system.

MATERIAL & METHODS: After institutional review board approval, data were prospectively collected from a cohort of 507 patients undergoing NSS at 16 high-volume Centres across the USA and Europe over a 6 months enrolment period. RT was classified according to the SIB score. RS was classified as “enucleative”, “enucleoresective” or “resective” according to the most prevalent RT performed in each centre's cohort. Descriptive and comparative analyses were performed in the nine Enucleative RS Centres (EC).

RESULTS: Overall, 507 patients were finally enrolled in the study. The RT was classified as pure or hybrid enucleation (E, SIB 0-2), pure or hybrid enucleoresection (ER, SIB 3-4), and resection (R, SIB 5) in 266 (52.5%), 150 (29.6%) and 91(17.9%) patients, respectively in the overall cohort, while in 207 (74.7%), 56 (20.2%) and 14 (5.1%) patients in the EC. Demographic data, comorbidity scores, surgical indication and approach did not significantly differ between the E, ER and R groups in the EC. Median PADUA score was 8 (IQR 7-9), 9 (7-10) and 9 (8-10) ($p=0.03$), and a PADUA score ≥ 10 was recorded in 19.3%, 37.5% and 28.6% ($p=0.02$) in the E, ER and R group, respectively. A clampless strategy was used in 79/204 (38.7%), 6/55 (10.9%) and 5/14 (35.7%) patients in the E, ER and R group ($p<0.001$). Median WIT was 17 (12-23), 18 (14-22) and 18 (16-20) minutes ($p>0.05$). Surgical postoperative complications were recorded in 6.8%, 12.5% and 14.2% of patients ($p>0.05$). Positive surgical margins rate was 2.4%, 7.1% and 0% of patients, respectively ($p>0.05$). Trifecta outcome was achieved in 74.8%, 65.0% and 80.0% of patients for the E, ER and R groups ($p>0.05$).

CONCLUSIONS: This is the first study evaluating preoperative predictive factors of RTs performed during PN and whether the type of RT significantly impacts on NSS outcomes using a standardized instrument of reporting. Overall, in EC, E represents nearly 75% of all procedures and it is associated with a significantly higher rate of clampless procedures compared to ER. However, ER and R are preferred in highly complex cases. As about surgical outcomes, E was associated with lower rate of postoperative surgical complication compared to ER and R and lower positive margin rate and higher Trifecta achievement compared to ER although these differences were not statistically significant.