

Clampless; Group 2 Suture/Clamp). Student's T Test for unpaired samples was performed for age, operative time, Dmax at preoperative TC, pre and postoperative hemoglobin (Hb), pre and postoperative serum creatinine, pre and post operative Estimated Glomerular Filtration Rate (eGFR). Logistic regression analysis was used to assess the association between the surgery technique performed and impaired renal function (serum creatinine >1,21 ng/ml). We assumed $p \leq 0.05$ as level of statistical significance.

Results: Student's T test for unpaired samples highlighted the following results: we didn't find a statistical difference for age ($70,68 \pm 10,879$ vs $70,92 \pm 10,110$, $p=0.9$), Dmax of cancer at pre-operative TC ($2,83 \pm 1,20$ vs $2,89 \pm 1,13$, $p=0.77$), preoperative Hb ($13,56 \pm 1,86$ vs $13,20 \pm 1,74$, $p=0.34$), postoperative Hb ($12,00 \pm 1,62$ vs $11,59 \pm 1,67$, $p=0.22$), preoperative serum creatinine ($1,02 \pm 0,44$ vs $1,03 \pm 0,23$, $p=0.93$), postoperative serum creatinine ($1,34 \pm 0,66$ vs $1,07 \pm 0,30$, $p < 0.05$), preoperative eGFR ($72,89 \pm 18,97$ vs $79,31 \pm 20,58$, $p=0.31$), postoperative eGFR ($66,00 \pm 29,35$ vs $78,56 \pm 17,81$, $p=0.14$). However we found statistically difference between the two groups in terms of operative time ($131,40 \pm 25,11$ vs $84,16 \pm 26,09$, $p < 0.05$) and postoperative serum creatinine ($1,34 \pm 0,66$ vs $1,07 \pm 0,30$, $p < 0.05$). At the logistic regression analysis adjusted for age the kind of surgery performed was not positively associated with the risk impaired renal function ($p=0.502$).

Discussion: In our series, the choice of a clampless/sutureless technique, despite a statistically significant difference between the two groups on postoperative serum creatinine, was not a predictor of impaired renal function. Both techniques proved to be safe with regard to postoperative blood loss. The greatest advantage of using the clampless/sutureless technique was in the shorter operative time compared to the clamp/suture technique. The data should be confirmed by prospective multicenter studies with larger samples.

SC52

On-clamp vs off-clamp laparoscopic partial nephrectomy: An intention-to-treat analysis from the Clock II randomized trial

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Aim of the study: To report a comparative analysis of perioperative outcomes of on-clamp vs off-clamp laparoscopic partial nephrectomy (LPN) in the setting of a randomized controlled trial.

Materials and methods: 217 patients with RENAL masses ≤ 10 were randomized to on-clamp (106) vs off-clamp (111) LPN (The CLOCK II trial - ClinicalTrials.gov NCT 02287987). Data were collected at 5 participating institutions. One experienced surgeon per institution performed all the surgeries. Baseline and perioperative outcomes were collected and analyzed. The intention-to-treat analysis is reported herein.

Results: After randomization, treatment groups were comparable at baseline in age, BMI, comorbidities, clinical tumor size, RENAL score, serum creatinine, hemoglobin. Regarding the perioperative outcomes, no significant differences were found in the resection technique, the renorrhaphy technique, the use of hemostatic agents, the complications' and transfusions' rates, the perceived intraoperative bleeding and blood loss, the operative time and the hospital stay. A similar proportion of malignant lesions was found at final pathology, with no significant differences in the positive surgical margins rate.

Discussion: At the intention-to-treat analysis of the randomized controlled trial reported herein, off-clamp and on-clamp LPN resulted in similar perioperative outcomes. No significant difference was found in the positive surgical margins' rate as well.

SC53

Shifting from a planned off-clamp to an on-clamp partial nephrectomy: Comparison of two randomized trials

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Aim of the study: To compare the perioperative outcomes of robotic vs laparoscopic partial nephrectomy (RPN vs LPN) in a specific subgroup of patients.

Materials and methods: Specifically for the purpose of the study, patients who were randomized to off-clamp and who were converted to on-clamp RPN and LPN were extracted from the CLOCK I and II randomized controlled trials (ClinicalTrials.gov NCT 02287987). Analysis of baseline data and perioperative outcomes was performed.

Results: 61 out of 152 (40%) and 36 out of 111 (32%) patients were shifted to on-clamp RPN and LPN and were extracted from the CLOCK I and II trials. Groups were comparable at baseline in age, BMI, comorbidities, RENAL score, serum creatinine, hemoglobin. Tumor size was larger in the LPN group (4.0 ($2.5-4.9$) vs 3.5 ($2.6-4.2$)). Regarding the perioperative outcomes, operative time and blood losses were higher in LPN. No differences were found in the complications rate. Ischemia time averaged 15 min in both groups. No difference in positive surgical margins was found.

Discussion: Results from two randomized showed that it is more likely to shift from off-clamp to on-clamp during RPN. In the subgroup of patients shifted to on-clamp, operative time and blood losses are lower for robotic although tumor size was larger in the pure laparoscopic group. On the other hand, no differences in complications, ischemia time and positive surgical margins were found.

SC54

Safety of off- and on-clamp robotic partial nephrectomy: Final results from a randomized clinical trial (the CLOCK trial)

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Aim of the study: To compare the perioperative outcomes and complications of robotic partial nephrectomy (RAPN) performed with an on-clamp vs off-clamp approach.

Materials and methods: 302 patients with RENAL masses ≤ 10 were randomized to on-clamp (150) vs off-clamp (152) RAPN (CLOCK trial - ClinicalTrials.gov NCT02287987). Data were collected at 7 institutions. One experienced surgeon per institution performed the surgeries. Perioperative outcomes and complications (Clavien-Dindo) were analyzed.

Results: The per-protocol analysis was considered as including the patients who actually completed the treatment. The enrolled patients were allocated to 129 on-clamp vs 91 off-clamp RAPNs were analyzed. A significant difference in clinical tumor size (off-clamp vs on-clamp, median diameter 2.2 vs 3.0 cm, $p < 0.001$) and RENAL score (5 cm vs 6 cm, $p < 0.001$) was noted. Retro-peritoneal approach was preferred for off-clamp procedures (22% vs 8% , $p=0.005$), within a shorter operative time (115 min vs 120 min, $p=0.005$) and less frequently with a single-layer renorrhaphy (59% vs 84% , $p=0.011$). Perception of severe bleeding was more frequent in the off-clamp group ($p=0.011$). No differences regarding intra-operative blood loss, post-operative complications rate, post-operative anemia, acute kidney injury, and positive surgical margins. At multivariable analysis, a significant

difference was noted in the off-clamp group exclusively for blood loss (OR 0.3, 95% CI 0.09–0.52, $p=0.008$). No differences emerged in post-operative complications, Hb drop >2.5 g/dl, need for transfusions, acute kidney injury, positive surgical margins.

Discussion: The present study did not show consistent differences between the on-clamp and off-clamp approaches in terms of complications, occurrence of acute kidney injury and positive surgical margins.

SC55

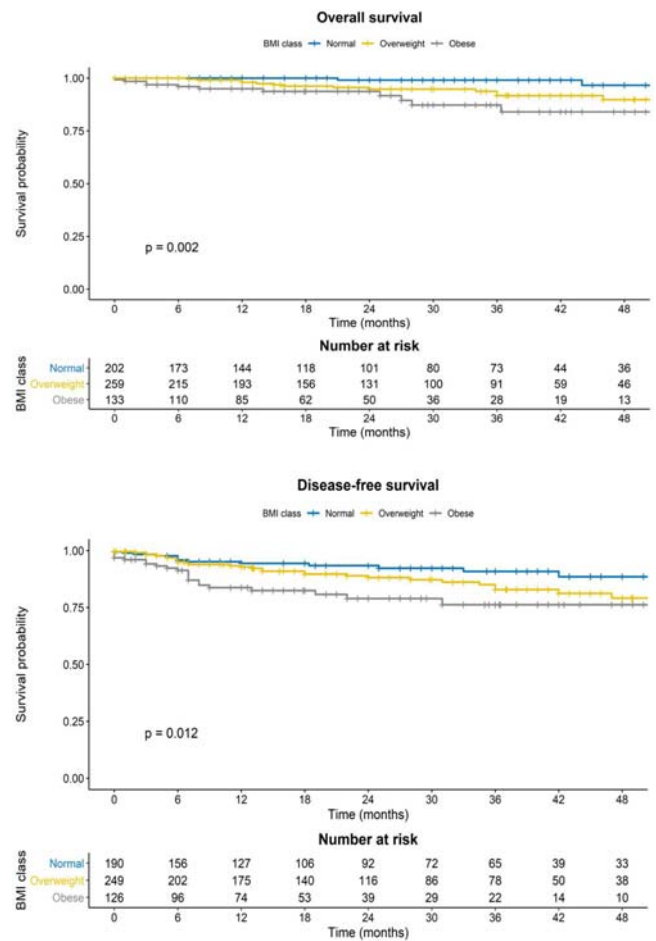
The effect of obesity and overweight status on complications and survival after minimally invasive kidney surgery in patients with clinical T2 renal masses: Evidences from rosula dataset

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Aim of the study: To evaluate the effect of obesity on surgical and survival outcomes in patients with large kidney masses.

Materials and methods: We relied on a multi-institutional (22 centers worldwide) dataset (ROSULA – Robotic Surgery for Large renal masses) to abstract cases of patients diagnosed with $\geq cT2$ renal masses. All patients were treated with laparoscopic radical nephrectomy (LRN) or robotic radical nephrectomy (RRN) or robotic partial nephrectomy (RPN) from the June 2003 and September 2017. Patients were stratified in three strata based on the body mass index (BMI) WHO classification, namely normal-weight (18.5–24.9), overweight (25.0–29.9) and obese (≥ 30.0). Univariable and multivariable logistic regression models tested the effect of BMI on complication rates. Kaplan-Meier curves and Cox regression models tested the effect of BMI on overall mortality (OM) and disease recurrence rates. Covariates were: procedure type, pT stage, pN stage, gender, ASA score, tumor grade and RENAL score. All tests were two-sided and a level of statistical significance was set at $p < 0.05$.

Results: Of 812 patients, the 30.5% were normal-weight, the 42.7% were overweight and 26.8% were obese. LRN, RRN and RPN were performed in 41.5%, 30.0% and 28.5% of cases. Obese patients were younger than normal weight (60.9 vs. 65.0 years, $p=0.015$) and overweight (60.9 vs. 63.0 years, $p=0.041$). Moreover, obese patients were more frequently classified as ASA score 4 (3.2 vs. 1.4 vs. 0.4% respectively obese, overweight and normal patients). Logistic regression models failed to find significant difference in postoperative complication rates ($p > 0.05$). Obese patients required longer operative time compared to normal (184 vs. 130 minutes, $p < 0.001$) and overweight patients (184 vs. 141 minutes, $p < 0.001$). Overall, the 4.1% ($N=33$) and 8.3% ($N=67$) of patients died or experienced local or distant recurrence during the study period. At 5-year overall survival rates were 91.5 (95%CI 81.4–100%), 87.0 (95%CI 79.5–95.3%) and 67.2 (95%CI 42.7–100%) for normal, overweight and obese patients, respectively ($p=0.002$). Similarly at 5-year disease free survival rates were 88.5 (95%CI 82.0–95.6%), 75.2 (95%CI 65.2–86.6%) and 76.2 (95%CI 67.0–86.7%) for normal, overweight and obese patients, respectively ($p=0.012$). Even after multivariable adjustment, obese patients had approximately 9-fold increase of OM risk (HR: 9.00, 95%CI: 1.71–47.37, $p=0.009$) compared to normal weight patients. Similarly, obese patients had more than 2-fold increase of recurrence risk (HR: 2.26, 95%CI: 1.03–4.95, $p=0.042$).



Discussion: Obese patients require longer operation time and more challenging procedure. However, minimally invasive surgery is feasible in these patients with similar results and complication rates across all the three categories. Nonetheless, obese patients have higher mortality and recurrence rates. These differences in mortality rates should be considered to better manage the follow-up of this category of patients

SC56

Which patients with localized renal tumour would achieve the trifecta after partial nephrectomy?

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Aim of the study: To develop a predictive model for the achievement of Trifecta in patients treated with open, laparoscopic and robotic partial nephrectomy (PN) for localized renal masses ($\leq cT2$).

Materials and methods: We retrospectively evaluated 560 consecutive patients who underwent open (OPN: 270), laparoscopic (LPN: 182) and robotic (RAPN: 108) partial nephrectomy (PN) for clinically localized renal cell carcinoma (RCC) at single tertiary center between March 2000 and February 2019. Trifecta was defined as the achievement of warm ischemia time (WIT) ≤ 20 min, absence of positive surgical margins (PSM) and absence of any kind of postoperative complication. First, we compared clinical, pathologic and perioperative outcomes within the three surgical approaches. Second, multivariate logistic regression was performed to identify