Discussion: The evidences found thanks to the 3DVMs evaluation demonstrate that, in more than 50% of the cases, the upper pole arterial supply is warranted by a double arterial system. This information should be considered before NSS when a polar tumor has to be treated, because the upper pole seems to be anatomically advantaged to save functional units than the lower.

SC49 The impact of hyperaccuracy 3D reconstruction and urologists™ perception for robotic partial nephrectomy indication in highly complex renal tumor

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Aim of the study: With the introduction of robotic technology, the indications to partial nephrectomy (PN) for complex renal masses have been expanded for both novice and expert surgeons. The indication to PN has been traditionally based on the standard bidimensional cross-sectional computed tomography (CT). A detailed case-specific understanding of the surgical anatomy represents a key point in the treatment planning of an higly complex renal mass. In this setting, the use of novel tools based on 3D reconstruction of kidney and its lesion could enlarge the indications to nephron sparing surgery. In this study, our aim was to assess 3D reconstruction role in aiding the surgeon in preoperatory planning for highly complex renal tumors amenable to robotic partial nephrectomy (RPN).
Materials and methods: During the 6th Techno-Urology Meeting (www.technourologymeeting.com) 20 highly complex renal tumors, already undergone robotic partial nephrectomy (RAPN) performed by an expert single surgeon, were made available for display to the attendees/urologists. Partecipants were asked to watch the videos of the CT scans first, and then the respective 3D reconstructions of 5 of the 20 cases who were randomly selected. After they watched the videos, physicians were asked to fill a purpose-built questionnaire with indication to radical vs partial nephrectomy on the basis of their own experience.
Results: 108 participants (20 expert urologists, 27 young urologists, and 61 residents) agreed to participate in the study, and a total of 542 views of the cases were obtained. On the basis of CT scan images alone, RPN was indicated in 256 cases (47.2%). After viewing 3D reconstruction, in 148 cases surgeons changed their indications raising RPN to 404 cases (74.5%) ($p < 0.001$). Univariable regression analysis did not found the responder's experience as significantly impacting in changing the surgical indication for the displayed cases ($P > 050$).
Discussion: This study represents a significant step towards the validation of the use of 3D reconstruction for surgical planning in patients undergoing robotic kidney surgery. The use of this technology might translate into a larger adoption of nephron-sparing approach even in case of highly complex renal masses.Further investigations in this area are needed to confirm these results.

SC50 Renal artery embolization before radical nephrectomy for complex renal tumor: Which are the true advantages?

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Aim of the study: Renal artery embolization is performed before RN for renal mass in order to induce preoperative infarction and to facilitate surgical intervention through decrease of intraoperative bleeding. Moreover, in metastatic renal cancer it seems to stimulate tumor-specific antibodies, even if no established benefits in clinical response or survival have been reported. The role of Preoperative Renal Artery Embolization (PRAE) in management of renal masses have been often debated and its real benefits are still unclear. Nevertheless, in huge and complex renal masses, that are often characterized by a high and anarchic blood supply and rapid local invasion, radical nephrectomy (RN) become challenge even for skilled surgeons. The aim of this prospective randomized study was to evaluate the effectiveness and safety of PRAE in complex masses comparing perioperative outcomes of RN with and without PRAE.
Materials and methods: From December 2015 to May 2018 we enrolled prospectively patients underwent RN for localized (T2a-b) or locally advanced (T3 and T4) or advanced (N+, M+) renal cancers. Patients were randomly assigned to two groups according to a simple randomization by computer-generated random numbers. The first included patients underwent PRAE; in the second group we enrolled patients who did not undergo PRAE. RENAL nephrometry score was used to quantify the tumor's relevant anatomical features as they related to the complexity of the mass, aiding the treatment decision-making. T2 tumors with Nephrometry Scores of 10–12 were considered high complexity and were included in the study. Other inclusion criteria were locally advanced (T3 and T4) or advanced (N+, M+) renal cancers. Exclusion criteria were T1 masses and bilateral or multi-focal tumors. Perioperative outcomes including operative time, blood loss, transfusion rate and length of hospitalization were evaluated. Statistical analysis was performed using GraphPad Prism 6.0 software.
Results: 64 patients were enrolled: 30 were included in Group 1 and 34 in Group 2. Median blood loss was 250 ml (50–500) and 400 ml (50–1000) in the first and second group, respectively, with a statistically significant difference ($p = 0.0066$). Median surgical time was 200 min (90–390) and 240 min (130–390) in PRAE and NoPRAE group ($p = 0.06$), respectively. No major complications occurred after embolization. Overall complication rate in Group 1 and 2 was 46.7% (14/30) and 50% (17/34), respectively ($p = 0.34$). No major complications occurred in both groups. The mean follow up was 21,5 months.
Discussion: Our results proves PRAE to be a safe procedure with low complications rate. To our experience, PRAE seems to be an useful tool in surgical treatment of huge mass and advanced disease because it consents a safer and easier management of renal artery.

SC51 Sutureless/Clampless vs Clamp/Suture technique in nephron sparing surgery for renal cancer. A comparison of safety outcome and postoperative renal function

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Aim of the study: The latest European guidelines recognize the safety of the off-clamp technique for nephrom sparing surgery. However, the debate on the risk of postoperative bleeding in patients who underwent a to a clampless and suturless technique is still open, as the debate on the reduction of postoperative renal function in patients who underwent to a clamp/sutures procedure. Aim of our study is to investigate safety outcomes in terms of blood loss and functional outcome (in terms of renal function) in patients treated with Clampless/Sutureless vs Clamp/Suture nephron sparing surgery.
Materials and methods: We retrospectively evaluated, from January 2013 to August 2017, 140 patients undergoing consecutive nephron sparing surgery. All the procedure has been performed by an expert surgeon (SV). After excluding patients with diagnosis of chronic renal failure, we have selected 119 patients and subdivided them in two groups, on basis of the technique performed (Group 1:Sutureless/

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 found a statistical difference for age (70,68 ± 10,879 vs 70,92 ± 10,110, p = 0.9), Dmax of cancer at pre-operative TC(2,83 ± 1,20 vs 2,89 ± 1,13, p = 0.77), preoperative Hb (13,56 ± 1,86 vs 13,20 ± 1,74, p = 0.34),postoperative Hb (12,00 ± 1,62 vs 11,59 ± 1,67, p = 0.22), preoperative serum creatinine (1,02 ± 0,44 vs 1,03 ± 0,23, p = 0.93), postoperative serum creatinine (1,34 ± 0,66 vs 1,07 ± 0,30, p < 0.05), preoperative eGFR (72,89 ± 18,97 vs79,31 ± 20,58, p = 0.31), postoperative eGFR (66,00 ± 29,35 vs 78,56 ± 17,81, p = 0.14). However we found statistically difference between the two groups in terms of operative time (131,40 ± 25,11 vs 84,16 ± 26,09, p < 0.05) and postoperative serum creatinine (1,34 ± 0,66 vs 1,07 ± 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 choose 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