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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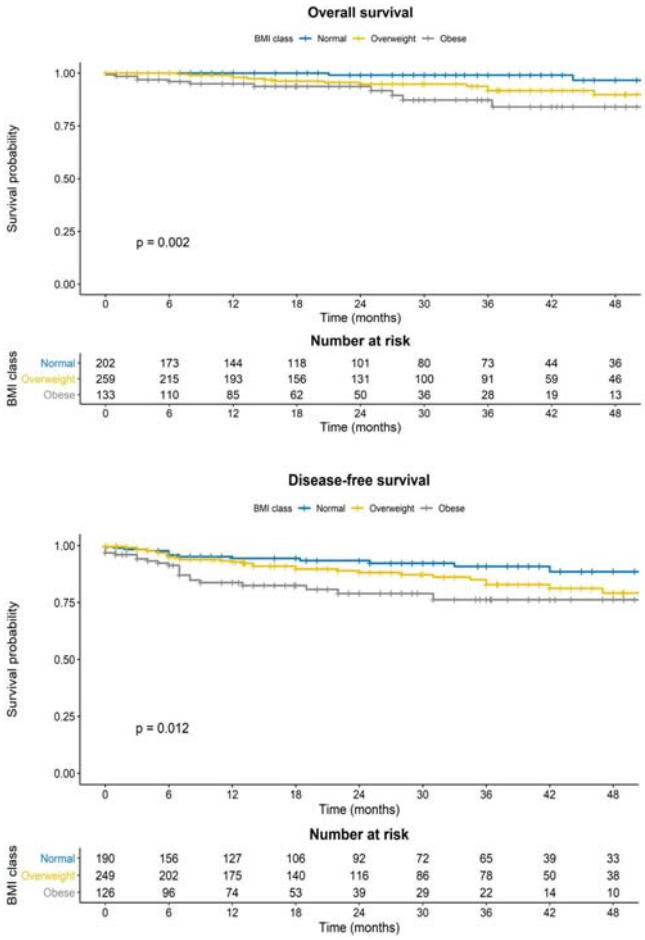
Aim of the study: To evaluate the effect of obesity on surgical and survival outcomes in patients with large kidney masses.
Materials and methods: We relied on a multi-institutional (22 centers worldwide) dataset (ROSULA – Robotic Surgery for Large renal masses) to abstract cases of patients diagnosed with ≥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%CI65.2–86.6%) 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 (≤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

which co-variates (including Age, American Society Anesthesiologist [ASA] score, clinical size of the tumor, urinary collecting system [UCS] involvement and surgical approach) independently predict the Trifecta achievement.

Table 1: Preoperative patients characteristics stratified by surgical technique (OPN: open partial nephrectomy; LPN: laparoscopic partial nephrectomy; RAPN: robot-assisted partial nephrectomy)

Variable	Overall	OPN	LPN	RAPN	*p* value
No. of patients, n (%)	560 (100)	270 (48.2)	182 (32.5)	108 (19.3)	-
Age (years) Median (IQR)	63 (53-71)	62 (52.7-71)	64 (55-72)	63 (54-70)	0.6
BMI (kg/m²) Median (IQR)	26 (24-29)	26 (24-29)	26 (24-30)	26 (23-29)	0.18
ASA score, n (%) ≤2 3-4	359 (64.1) 201 (35.9)	173 (64.1) 97 (35.9)	109 (59.9) 73 (40.1)	77 (71.3) 31 (28.7)	0.14
Preoperative Hb (g/dL) Median (IQR)	14.4 (13.4-15.2)	14.2 (13.3-15)	14.6 (13.5-15.4)	14.5 (13.5-15.5)	0.02
Preoperative Anaemia, n(%) No Yes	504 (90) 56 (10)	237 (87.8) 33 (12.2)	168 (92.3) 14 (7.7)	99 (91.7) 9 (8.3)	0.2
Preoperative Creatine (mg/dl) Median (IQR)	0.91 (0.79-1.1)	0.92 (0.8-1.12)	0.9 (0.77-1.07)	0.91 (0.8-1.09)	0.44
Preoperative eGFR (ml/min/1,73m²) Medians (IQR)	84.5 (66.3-107.4)	84.2 (63.2-107.3)	85.5(67.7-110)	85 (69-107)	0.63
Positive anamnesis for CKD with GFR<60 ml/min No Yes	460 (82.1) 100 (17.9)	213 (78.9) 57 (21.1)	155 (85.2) 27 (14.8)	92 (85.2) 16 (14.8)	0.17
Clinical Stage, n (%) cT1a cT1b cT2	460 (82.2) 97 (17.3) 3 (0.5)	220 (81.5) 48 (17.8) 2 (0.7)	160 (87.9) 21 (11.5) 1 (0.5)	80 (74.1) 28 (25.9) 0 (0)	0.03
Tumor size (cm) Median (IQR)	2.8 (2-3.8)	3 (2.4-4)	2.5 (1.8-3)	2.8 (2-4)	<0.001
PADUA score, n (%) 6-7 8-9 10-14	266 (47.5) 220 (39.3) 74 (13.2)	120 (44.4) 112 (41.5) 38 (14.1)	104 (57.1) 63 (34.6) 15 (8.2)	42 (38.9) 45 (41.7) 21 (19.4)	0.007
R.E.N.A.L. score, n (%) 4-6 7-9 10-12	295 (52.7) 243 (43.4) 22 (3.9)	119 (44.1) 143 (53) 8 (3)	124 (68.1) 52 (28.6) 6 (3.3)	52 (48.1) 48 (44.4) 8 (7.4)	<0.001

OPN: open partial nephrectomy; LPN:laparoscopic partial nephrectomy; RAPN: robot-assisted partial nephrectomy; BMI: body-mass index; Hb: hemoglobin; ASA: American Society of Anaesthesiologists; eGFR: estimated glomerular filtration rate; CKD: Chronic Kidney Disease

Table 2: Intra and postoperative patients characteristics stratified by surgical technique (OPN: open partial nephrectomy; LPN: laparoscopic partial nephrectomy; RAPN: robot-assistited partial nephrectomy)

Variable	Overall	OPN	LPN	RAPN	*p* value
WIT, n (%) 0 1-19 ≥20	194 (34.6) 276 (49.3) 90 (16.1)	73 (27) 157 (58.1) 40(14.8)	100 (54.9) 44 (24.2) 38 (20.9)	21 (19.4) 75 (69.4) 12 (11.1)	<0.001
WIT, min* Median (IQR)	10 (0-16)	12 (0-16)	13 (0-18)	12 (7-16)	0.003
Operative time (min) Median (IQR)	134(102-180)	112(95-137)	140(105-178)	220(180-260)	<0.001
Delta eGFR 24h after surgery (ml/min/1,73m²)	-8.14(-18.3-0)	-10(-20.7-1.09)	-4.7(-15.1-5.5)	-9.2(-17-1.14)	<0.001
Intra-operative complications, n (%) No Yes	520 (92.9) 40 (7.1)	243 (90) 27 (10)	177 (97.3) 5 (2.7)	100 (92.6) 8 (7.4)	0.013
Global post-operative complications, n (%)# No Yes	413 (73.8) 147 (26.3)	176 (65.2) 94 (34.8)	147 (80.8) 35 (19.2)	90 (83.3) 18 (16.7)	<0.001
Post-operative complications grade, n (%) Clavien 1-2 Clavien ≥3	113 (20) 33 (5.9)	73 (27) 20 (7.4)	26 (14.3) 9 (4.9)	14 (13) 4 (3.7)	0.001
Medical post-operative complications, n (%)	106 (18.9)	74 (27.4)	21 (11.5)	11 (10.2)	<0.001
Surgical post-operative complications, n (%)	58 (10.4)	30 (11.1)	20 (11)	8 (7.4)	0.53
Surgical complications grade, n (%) Clavien 1-2 Clavien ≥3	36 (62) 22 (38)	18 (60) 12 (40)	12 (60) 8 (40)	6 (75) 2 (25)	0.79
Positive surgical margins, n (%) No Yes	489 (87.3) 71 (12.7)	239 (88.5) 31 (11.5)	149 (81.9) 33 (18.1)	101 (93.5) 7 (6.5)	0.011
Lenght of stay (days) Median (IQR)	5 (4-6)	5 (5-6)	4 (3-5)	4 (3-5)	<0.001
Trifecta rate, n (%) No Yes	253 (45.2) 307 (54.8)	139 (51.5) 131 (48.5)	85(46.7) 97 (53.3)	29 (26.9) 79 (73.1)	<0.001
Pathological Tumor Size (cm) Median (IQR)	2.8 (2-3.8)	3 (2.5-4)	2.5 (2-3.35)	2.8 (2-4)	<0.001
Histology, n (%) Oncocytoma Angiomyolipoma Clear-cell renal carcinoma Papillary renal carcinoma Chromophobe carcinoma Other malign renal tumors	119 (21.3) 26 (4.6) 258 (46.1) 105 (18.8) 43 (7.7) 9 (1.6)	61 (22.6) 14 (5.2) 125 (46.3) 43 (15.9) 23 (8.5) 4 (1.5)	45 (24.7) 9 (4.9) 74 (40.7) 37 (20.3) 13 (7.1) 4 (2.2)	13 (12) 3 (2.8) 59 (54.6) 25 (23.1) 7 (6.5) 1 (0.9)	0.2
Pathological tumor stage, n (%) pT1a pT1b pT2a pT2b pT3a	346 (61.8) 66 (11.8) 7 (1.3) 1 (0.2) 29 (5.2)	160 (59.3) 35 (13) 3 (1.1) 1 (0.4) 13 (4.8)	120 (65.9) 9 (4.9) 3 (1.6) 0 (0) 7 (3.8)	66 (61.1) 22 (20.4) 1 (0.9) 0 (0) 9 (8.3)	0.003

WIT: Warm Ischemia Time ; OPN: Open partial nephrectomy; LPN: laparoscopic partial nephrectomy; RAPN: robot-assisted partial nephrectomy
*only considering patients whom underwent surgery with warm ischemia; # only considering patients who developed post-operative complications

Table 3: Intra-operative complications stratified by surgical technique (OPN: open; LPN: laparoscopic; RAPN: robot-assistited)

Variable	Overall	OPN	LPN	RAPN	*p* value
Bleeding, n (%)	17 (3.4)	7 (2.6)	5 (2.7)	5 (4.6)	0.55
Pleural injuries, n (%)	23 (4.1)	22 (8.3)	0 (0)	1 (0.9)	<0.001
Splenic injuries, n (%)	3 (0.5)	2 (0.7)	0 (0)	1 (0.9)	0.47
Ureteral injuries, n (%)	1 (0.2)	0 (0)	1 (0.5)	0 (0)	0.35
Bowel injuries, n (%)	5 (0.9)	3 (1.1)	1 (0.5)	1 (0.9)	0.8
Major vascular injuries, n (%)	3 (0.4)	2 (0.7)	0 (0)	1 (0.9)	0.4

OPN: Open partial Nephrectomy; LPN: laparoscopic partial nephrectomy; RAPN: robot-assistited partial nephrectomy.

Table 4: Post-operative complications stratified by surgical technique (OPN: open; LPN: laparoscopic; RAPN: robot-assistited)

Variable	Overall	OPN	LPN	RAPN	*p* value
Paralytic Ileus, n (%)	3 (0.5)	2 (0.7)	0 (0)	1 (0.9)	0.47
DVT-PE, n (%)	3 (0.5)	0 (0)	1 (0.5)	2 (1.9)	0.08
Cardiological, n (%)	8 (1.4)	4 (1.5)	2 (1.1)	1 (0.9)	0.7
Acute renal failure, n (%)	16 (2.9)	9 (3.3)	5 (2.7)	2 (1.9)	0.7
Wound infection, n (%)	43 (7.1)	35 (12.2)	7 (3.8)	1 (0.9)	<0.001
Sepsis, n (%)	15 (2.5)	12 (4.2)	3 (1.5)	0 (0)	0.03
Renal Bleeding, n (%)	39 (6.5)	19 (6.7)	14 (7.6)	6 (5.7)	0.8
Extra-renal bleeding, n (%)	3 (0.5)	2 (0.75)	1(0.5)	0 (0)	0.7
Urinous fistula, n (%)	9 (1.6)	3 (1.1)	6 (3.3)	0 (0)	0.06
Arteriovenous renal fistula, n (%)	2 (0.3)	1 (0.35)	1 (0.5)	0 (0)	0.9
Neurological, n (%)	3 (0.5)	1 (0.4)	1 (0.5)	1 (0.9)	0.8
Respiratory failure, n (%)	7 (1.2)	4 (1.5)	2 (1)	1 (0.9)	0.8
Pneumonia, n (%)	3 (0.5)	2 (0.75)	0 (0)	1 (0.9)	0.5
Pleural effusion, n (%)	18 (3)	12 (4.2)	4 (2)	2 (1.9)	0.4
Pneumothorax, n (%)	7 (1.3)	4 (1.5)	0 (0)	3 (2.8)	0.1

DVT: Deep venous Thrombosis; PE: Pulmonary Embolism.

Table 5: Univariate and multivariate logistic regression to predict the Trifecta success rate (negative surgical margins, absence of post-operative complications and warm ischemia time <20 minutes)

Variables	Univariate Analysis		Multivariate Analysis	
	OR (95% C.I.)	P value	OR (95% C.I.)	P value
Age (years)	1.01 (0.99-1.02)	0.075	1.02 (1.00-1.03)	0.05
ASA score (continuous variable)	0.77 (0.6-1)	0.05	0.72 (0.54-0.97)	0.03
Padua Score (continuous variable)	0.87 (0.78-0.98)	0.02		
R.E.N.A.L. Score (continuous variable)	0.88 (0.8-0.97)	0.014		
Polar localization Superior-inferior pole Parenchima	1.2 (Ref) 0.87 (0.62-1.22)	0.43		
Tumor Location Lateral Medial	1.0 (Ref) 0.78 (0.54-1.08)	0.13		
Renal sinus invasion No Yes	1.0 (Ref) 0.84 (0.63-1.28)	0.4		
Tumor growth pattern ≥50% exophytic <50% exophytic Endophytic	1.0 (Ref) 0.74 (0.53-1.05) 0.81 (0.4-1.62)	0.62 0.55		
Clinical tumor size (cm)	0.84 (0.74-0.95)	0.01	0.95 (0.74-0.98)	0.29
Renal collecting system Not involved Dilated/infiltrated	1.0 (Ref) 0.7 (0.48-1.08)	0.09	1.0 (Ref) 0.79 (0.48-1.18)	0.18
Surgical technique OPN LPN RAPN	1.0 (Ref) 0.35 (0.18-0.58) 0.42 (0.25-0.7)	<0.001 0.001	1.0 (Ref) 0.36 (0.22-0.58) 0.38 (0.22-0.65)	<0.001 <0.001
AUC of multivariate analysis			0.68	

CI: Odds Ratio; CI: Confidence interval; ASA: American Society of Anesthesiologists score; OPN: open partial nephrectomy; LPN: laparoscopic partial nephrectomy; RAPN: robot assisted partial nephrectomy

Results: The three cohorts were comparable in terms of demographics and clinical characteristics (Table 1). Overall, WIT ≤ 20 min was achieved in 230 (85.1%), 144 (79.1%) and 96 (88.8%) patients undergoing OPN, LPN and RAPN, respectively ($p < 0.001$). Positive surgical margins rate was 11.5 %, 18.1% and 6.5% after OPN, LPN and RAPN, respectively ($p = 0.01$). Postoperative complications rate was significantly higher in patients treated with OPN (34.8%) compared to LPN (19.2%) and RAPN (16.7%; $p < 0.001$; Table 2). Trifecta has been achieved in 48.5%, 53.3% and 73.1% of patients undergoing OPN, LPN and RAPN, respectively ($p < 0.001$). At multivariate analysis, ASA score (Odd Ratio [OR]: 0.72), Clinical size of tumor (OR 0.86), and robotic approach (OR 2.88) were independent predictors of Trifecta achievement (all $p \leq 0.04$; Table 3).

Discussion: RAPN allowed to obtain higher rates of Trifecta achievement in patients treated with PN. Clinical size of tumor, ASA score and the surgical technique were independent predictors of Trifecta achievement.