

Table S1 Sensitivity analysis for multivariable multilevel logistic regression analyses for body composition parameters in relation to major postoperative complications (Clavien Grade ≥ 3 vs. no) and length of hospital stay (≥ 7 vs. <7 days) in patients with RCC

Factors modelled	Major complication [†] odds ratio (95% CI)	Length of hospital stay [†] odds ratio (95% CI)
Patients with stage I-III RCC only (N=671)		
BMI per 1 unit	1.08 (1.00–1.18)	1.05 (1.00–1.10)
BMI 25.0–29.9 vs. <25	2.82 (1.11–7.18)*	1.48 (0.91–2.40)
BMI >30 vs. <25	3.33 (1.03–10.83)*	1.56 (0.83–2.94)
VATI per 10 units	1.06 (0.93–1.21)	1.10 (1.02–1.19)*
VATI High vs. Low	0.80 (0.37–1.74)	1.35 (0.85–2.17)
SATI per 10 units	1.02 (0.88–1.19)	0.93 (0.85–1.02)
SATI High vs. Low	1.34 (0.61–2.92)	0.89 (0.56–1.41)
SMI per 10 units	0.95 (0.55–1.65)	1.08 (0.79–1.48)
SMI High vs. Low	1.13 (0.52–2.46)	0.92 (0.59–1.46)
SMD per 10 units	0.75 (0.44–1.28)	0.72 (0.52–0.99)*
SMD High vs. Low	0.51 (0.21–1.20)	0.78 (0.48–1.28)
High SMD/high SMI vs. low SMD/low SMI [§]	0.49 (0.14–1.74)	0.65 (0.30–1.38)
Patients treated with radical nephrectomy only (N=630)		
BMI per 1 unit	1.06 (0.97–1.15)	1.04 (0.99–1.10)
BMI 25.0–29.9 vs. <25	1.95 (0.86–4.40)	1.32 (0.83–2.09)
BMI >30 vs. <25	2.37 (0.83–6.71)	1.60 (0.86–2.96)
VATI per 10 units	1.01 (0.89–1.15)	1.11 (1.02–1.21)*
VATI High vs. Low	1.07 (0.50–2.31)	1.64 (1.01–2.64)*
SATI per 10 units	0.94 (0.80–1.10)	0.87 (0.79–0.97)*
SATI High vs. Low	0.84 (0.40–1.79)	0.79 (0.50–1.26)
SMI per 10 units	1.00 (0.58–1.71)	1.09 (0.80–1.50)
SMI High vs. Low	0.96 (0.46–2.02)	0.76 (0.49–1.17)
SMD per 10 units	0.55 (0.32–0.93)*	0.59 (0.43–0.82)*
SMD High vs. Low	0.46 (0.20–1.07)	0.71 (0.44–1.16)
High SMD/high SMI vs. low SMD/low SMI [§]	0.49 (0.16–1.51)	0.54 (0.27–1.10)
Patients treated with partial nephrectomy only (N=171)		
BMI per 1 unit	1.21 (0.96–1.52)	1.00 (0.89–1.12)
BMI 25.0–29.9 vs. <25	2.61 (0.15–46.50)	1.07 (0.36–3.18)
BMI >30 vs. <25	24.15 (0.64–912.43)	0.77 (0.18–3.41)
VATI per 10 units	1.41 (0.88–2.28)	0.98 (0.82–1.19)
VATI High vs. Low	0.75 (0.09–6.44)	0.73 (0.25–2.13)
SATI per 10 units	1.14 (0.80–1.62)	1.01 (0.85–1.22)
SATI High vs. Low	6.43 (0.39–107.42)	1.28 (0.42–3.96)
SMI per 10 units	0.51 (0.10–2.66)	0.91 (0.41–2.00)
SMI High vs. Low	1.75 (0.24–12.71)	1.14 (0.40–3.27)
SMD per 10 units	1.60 (0.30–8.48)	0.51 (0.24–1.08)
SMD High vs. Low	0.36 (0.02–6.82)	0.37 (0.12–1.13)
High SMD/high SMI vs. low SMD/low SMI [§]	– [¶]	0.28 (0.24–2.00)

*significant at $P < 0.05$. [†]Adjusted for sex, age at diagnosis, stage, American Society of Anesthesiologists score, smoking, mutually adjusted for the other body composition parameters (except for BMI) and fixed effects for hospital of diagnosis. [‡]Adjusted for sex, age at diagnosis, stage, American Society of Anesthesiologists score, smoking, mutually adjusted for the other body composition parameters (except for BMI) and random effects for hospital of diagnosis. [§]Based on a subset of patients with both high SMD and high SMI and patients with both low SMD and low SMI. Patients with either high/low combination were excluded. [¶]Model could not converge and no estimates could be given. RCC, renal cell cancer; CI, confidence interval; BMI, body mass index; VATI, visceral adipose tissue index; SATI, subcutaneous adipose index; SMI, skeletal muscle index; SMD, skeletal muscle density.

Table S2 Sensitivity analysis for multivariable multilevel logistic regression analyses for body composition parameters in relation to length of hospital stay (≥ 7 vs. < 7 days) in patients with RCC stratified by nephrectomy procedure

Factors modelled	Major complication [†] odds ratio (95% CI)	Length of hospital stay [†] odds ratio (95% CI)
Patients treated with open nephrectomy only (N=234)		
BMI per 1 unit	1.05 (0.93–1.20)	1.00 (0.93–1.08)
BMI 25.0–29.9 vs. <25	1.89 (0.61–5.91)	1.30 (0.69–2.47)
BMI >30 vs. <25	2.80 (0.59–13.44)	0.83 (0.34–2.04)
VATI per 10 units	0.94 (0.75–1.18)	1.09 (0.96–1.23)
VATI High vs. Low	0.68 (0.22–2.10)	1.31 (0.68–2.52)
SATI per 10 units	1.07 (0.87–1.33)	0.89 (0.78–1.02)
SATI High vs. Low	2.21 (0.67–7.22)	0.95 (0.49–1.86)
SMI per 10 units	0.97 (0.45–2.11)	0.96 (0.62–1.50)
SMI High vs. Low	0.78 (0.26–2.37)	0.66 (0.36–1.19)
SMD per 10 units	0.45 (0.20–1.01)	0.49 (0.31–0.77)*
SMD High vs. Low	0.42 (0.13–1.37)	0.51 (0.27–0.99)*
High SMD/high SMI vs. low SMD/low SMI [§]	0.49 (0.08–2.89)	0.30 (0.09–0.98)*
Patients treated with laparoscopic (n=487) or robot-assisted nephrectomy (n=70) only (N = 557)		
BMI per 1 unit	1.12 (1.02–1.24)*	1.04 (0.98–1.11)
BMI 25.0–29.9 vs. <25	4.03 (1.05–15.46)*	1.42 (0.75–2.69)
BMI >30 vs. <25	5.94 (1.35–26.22)*	1.99 (0.92–4.43)
VATI per 10 units	1.12 (0.96–1.31)	1.12 (1.01–1.25)*
VATI High vs. Low	1.82 (0.63–5.29)	1.55 (0.82–2.93)
SATI per 10 units	0.95 (0.78–1.16)	0.93 (0.82–1.05)
SATI High vs. Low	0.80 (0.30–2.10)	0.82 (0.45–1.50)
SMI per 10 units	0.95 (0.47–1.91)	0.91 (0.58–1.42)
SMI High vs. Low	1.57 (0.61–4.05)	0.95 (0.53–1.72)
SMD per 10 units	0.65 (0.35–1.23)	0.63 (0.42–0.97)*
SMD High vs. Low	0.25 (0.07–0.88)*	0.56 (0.28–1.12)
High SMD/high SMI vs. low SMD/low SMI [§]	0.47 (0.11–1.95)	0.58 (0.25–1.37)

*significant at $P < 0.05$. [†]Adjusted for sex, age at diagnosis, stage, American Society of Anesthesiologists score, smoking, mutually adjusted for the other body composition parameters (except for BMI) and fixed effects for hospital of diagnosis. [‡]Adjusted for sex, age at diagnosis, stage, American Society of Anesthesiologists score, smoking, mutually adjusted for the other body composition parameters (except for BMI) and random effects for hospital of diagnosis. [§]Based on a subset of patients with both high SMD and high SMI and patients with both low SMD and low SMI. Patients with either high/low combination were excluded. RCC, renal cell cancer; CI, confidence interval; BMI, body mass index; VATI, visceral adipose tissue index; SATI, subcutaneous adipose index; SMI, skeletal muscle index; SMD, skeletal muscle density.