

Figure S1. Flow Chart of Study Participant Selection

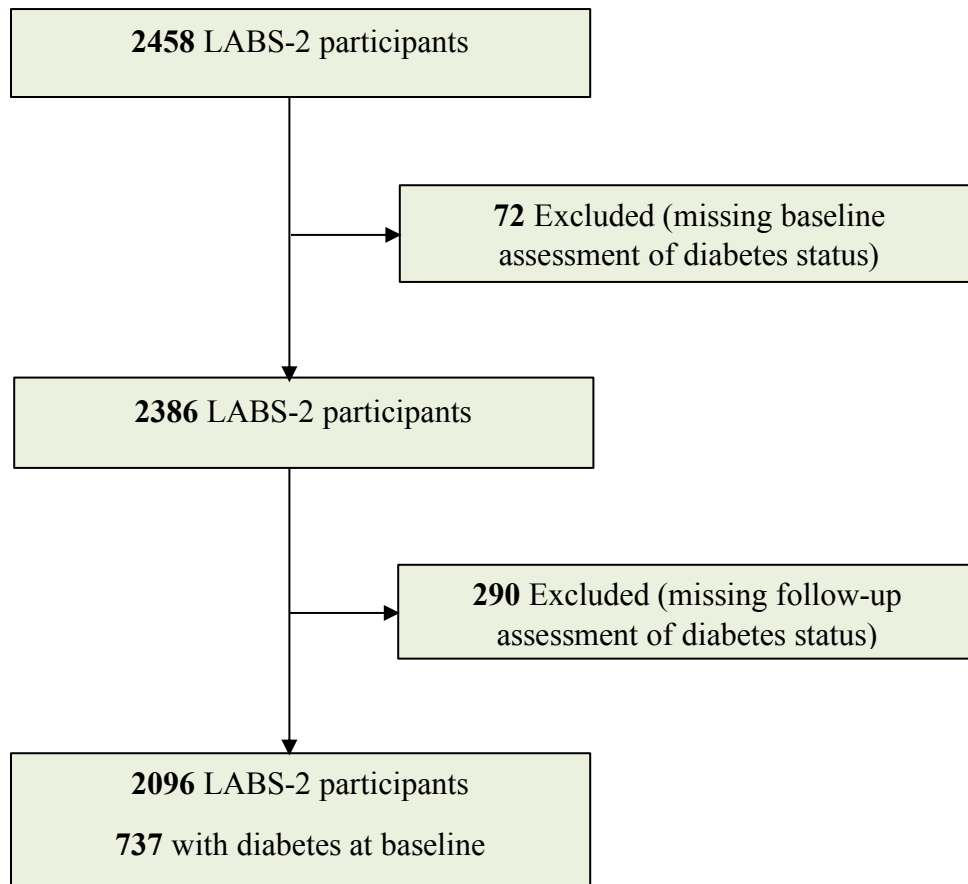
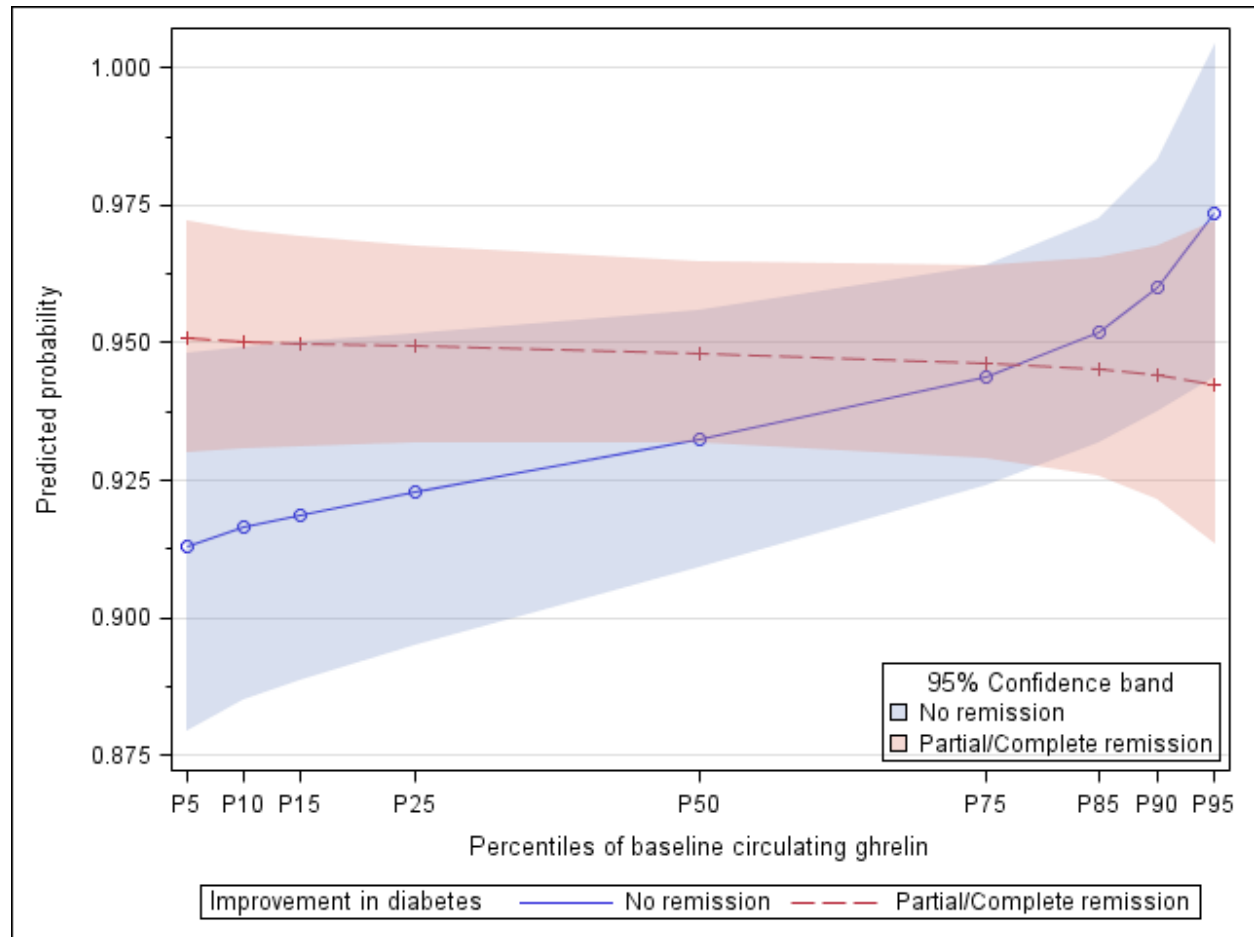
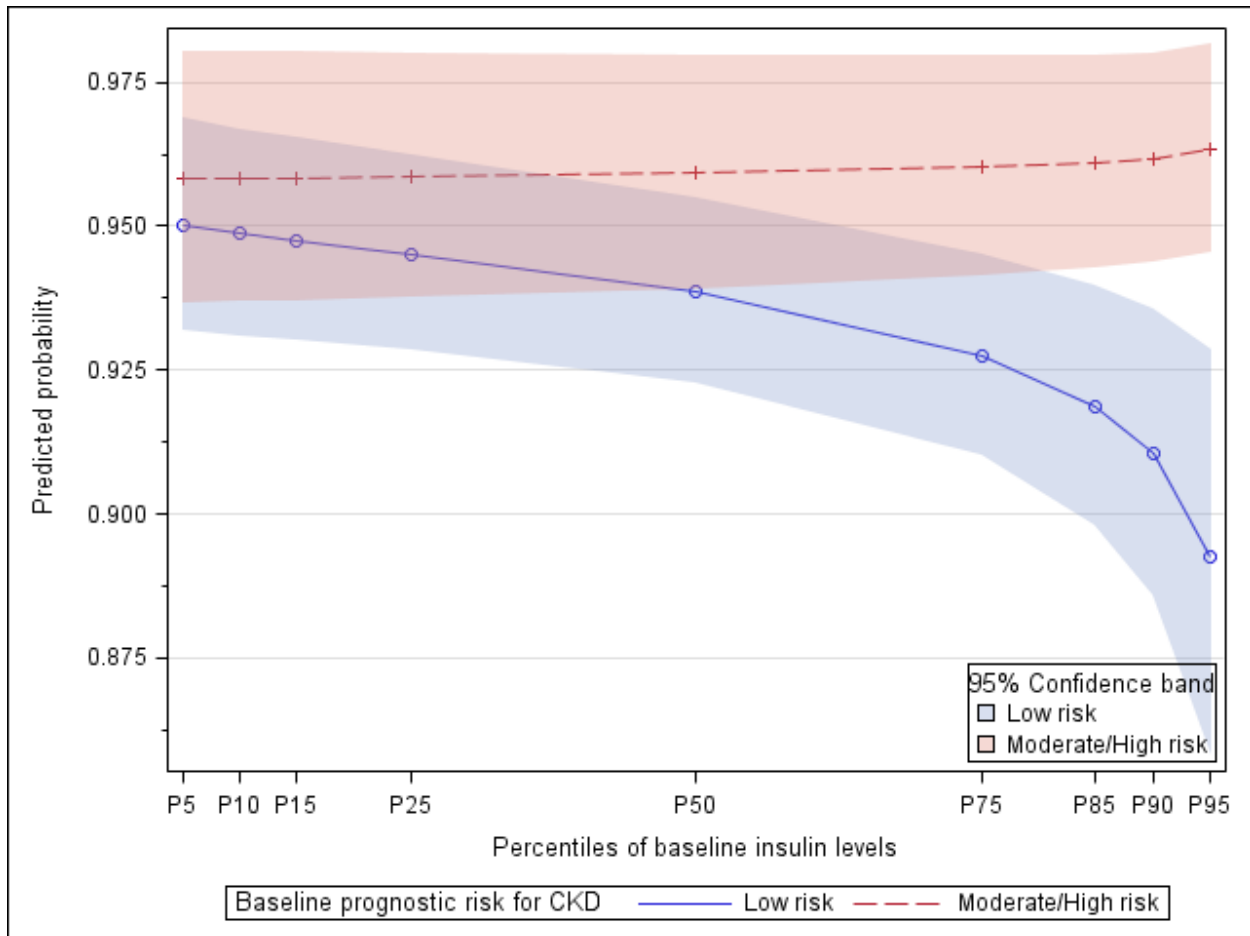


Figure S2: Interaction of Diabetes Remission and Baseline Ghrelin Levels on the Predicted Probability of Stabilization of Prognostic Risk for CKD over 5 Years after Bariatric Surgery*



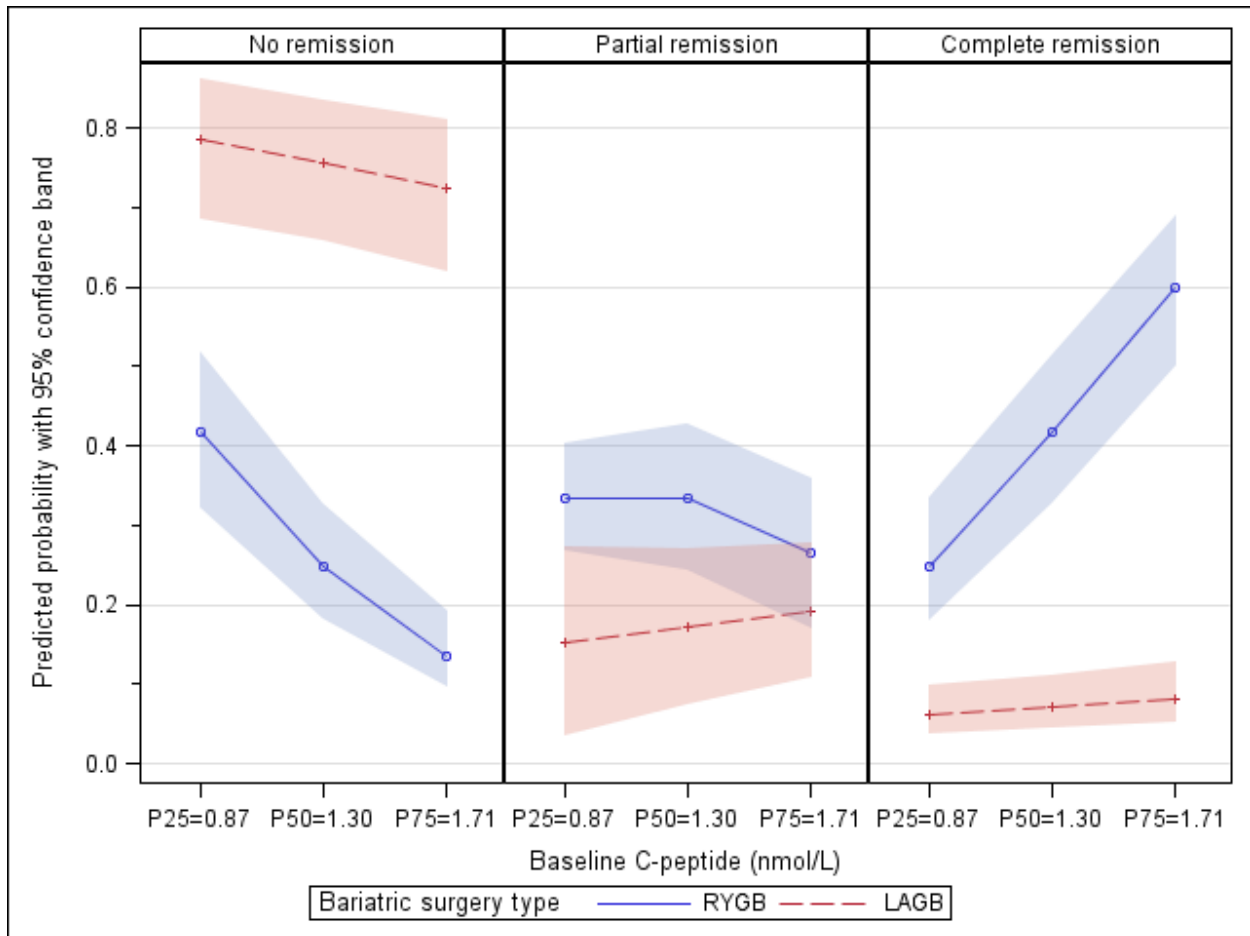
*Predicted probabilities were obtained from GLMM with baseline total ghrelin, improvement in diabetes, their interactions, and missing related baseline covariates including age, race, clinical sites, and baseline ghrelin total level. N=464. P-value =0.03 for interaction.

Figure S3: Interaction between Baseline Prognostic Risk for CKD and Baseline Insulin Levels on Stabilization of Prognostic Risk for CKD over 5 Years after Bariatric Surgery*



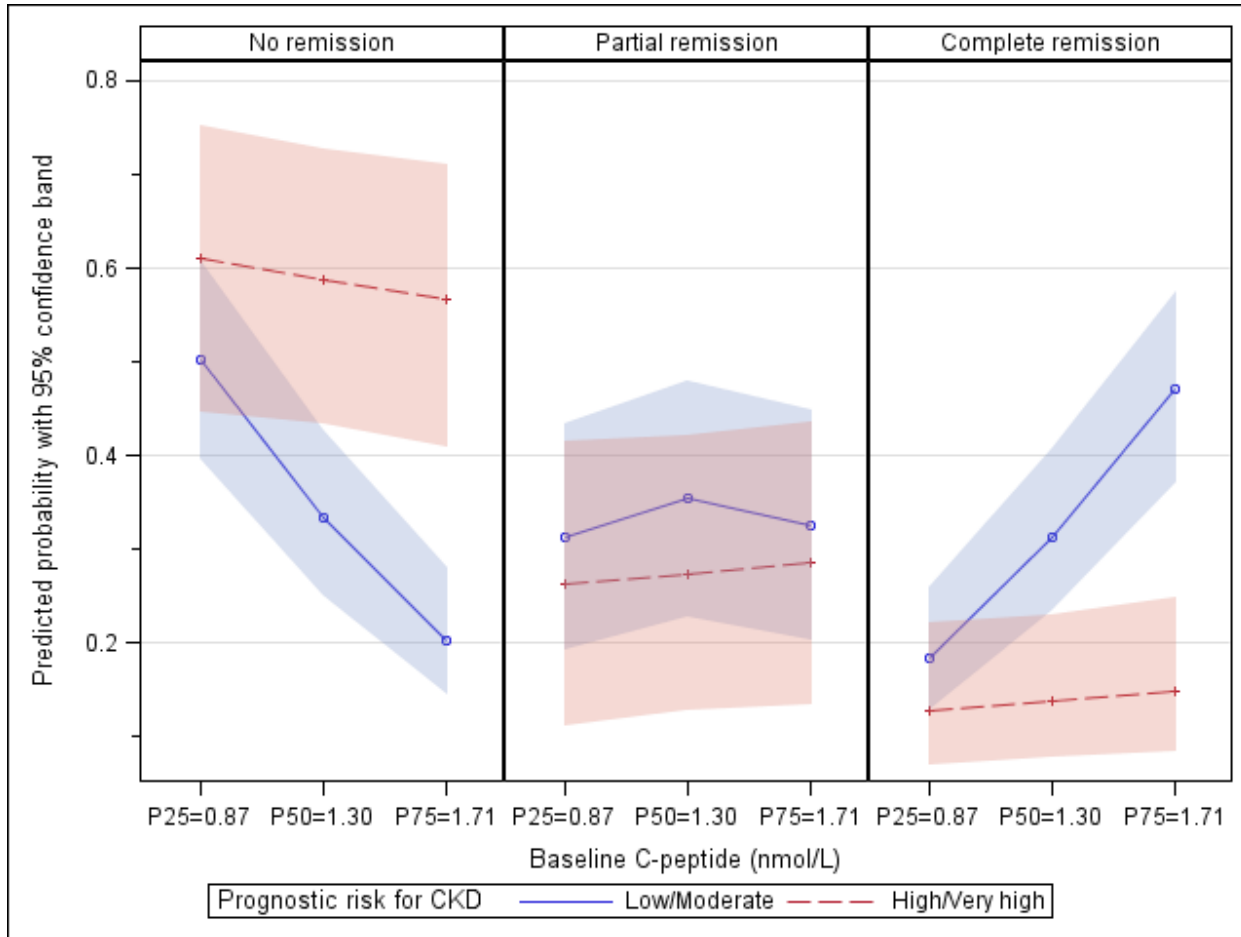
*At mean age. Predicted probabilities were obtained from GLMM with stabilization of prognostic risk for CKD as outcome and with covariates baseline insulin, baseline prognostic risk for CKD, and their interactions, adjusting for missing related baseline covariates age, age by time interaction, race, clinical sites, and circulating ghrelin. N=472. P = 0.01 for interaction.

Figure S4: Interaction between Baseline C-Peptide and Type of Bariatric Surgery on Remission of Diabetes over 5 Years after Bariatric Surgery*



*Predicted probabilities were obtained from GLMM with diabetes remission as an ordinal outcome and with covariates baseline C-peptide, surgery type, and their interactions, adjusting for missing related baseline variables age, gender, and clinic sites. N=567. P-value <0.001 for interaction.

Figure S5: Interaction between Baseline C-Peptide levels and Prognostic Risk for CKD on Remission of Diabetes over 5 Years after Bariatric Surgery



*Predicted probabilities were obtained from GLMM with diabetes remission as an ordinal outcome and with covariates baseline C-peptide, baseline prognostic risk for CKD, and their interactions, adjusting for missing related baseline covariates age, gender, and clinic sites. N=510. P-value <0.001 for interaction.

Table S1: Measures of Weight, CKD Parameters, and Diabetes Remission among LABS-2 Participants with Diabetes by 5 Years Since Surgery

	Time since surgery					
	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5
n (%)	737 (100)	729 (98.9)	727 (98.6)	726 (98.5)	727 (98.6)	729 (98.9)
Weight parameters						
Weight (kg)	n=737	n=717	n=692	n=674	n=678	n=664
Median (IQR)	132 (115, 152)	95 (82, 111)	96 (81, 111)	97 (84, 114)	98 (85, 116)	99 (85, 115)
% weight loss from baseline ¹	-	n=717	n=692	n=674	n=678	n=664
Median (IQR)	-	28.2 (20.4, 34.7)	26.8 (19.1, 36.0)	25.3 (18.1, 33.6)	23.9 (16.0, 31.5)	24.2 (15.5, 31.9)
CKD parameters						
Serum creatinine (mg/dL)	n=706	n=560	n=494	n=473	n=475	n=487
Median (IQR)	0.8 (0.6, 0.9)	0.7 (0.6, 0.9)	0.7 (0.6, 0.9)	0.7 (0.6, 0.9)	0.7 (0.6, 0.9)	0.7 (0.6, 0.9)
Serum cystatin C (mg/L)	n=707	n=559	n=493	n=473	n=477	n=487
Median (IQR)	0.91 (0.77, 1.11)	0.84 (0.72, 0.99)	0.80 (0.69, 0.94)	0.82 (0.71, 0.96)	0.85 (0.74, 1.00)	0.89 (0.76, 1.08)
eGFR (ml/min/1.73 m ²)	n=699	n=553	n=489	n=467	n=470	n=483
Median (IQR)	94 (75, 108)	98 (82, 110)	100 (84, 112)	98 (82, 110)	95 (77, 107)	90 (73, 105)
eGFR change from baseline ² (ml/min/1.73 m ²)	-	n=529	n=470	n=448	n=452	n=463
Median (IQR)	-	5 (-2, 14)	7 (-2, 15)	4 (-5, 14)	2 (-8, 12)	-1 (-11, 9)
ACR ≥30 mg/g	n=650	n=525	n=454	n=463	n=470	n=468
n (%)	141 (21.7)	75 (14.3)	65 (14.3)	82 (17.7)	78 (16.6)	81 (17.3)
Prognostic risk for CKD	n=638	n=517	n=446	n=451	n=454	n=457
Low, n (%)	446 (69.9)	420 (81.2)	366 (82.1)	356 (78.9)	357 (78.6)	339 (74.2)
Moderate, n (%)	120 (18.8)	68 (13.2)	58 (13.0)	64 (14.2)	67 (14.8)	78 (17.1)
High, n (%)	51 (8.0)	19 (3.7)	9 (2.0)	19 (4.2)	13 (2.9)	20 (4.4)
Very high, n (%)	21 (3.3)	10 (1.9)	13 (2.9)	12 (2.7)	17 (3.7)	20 (4.4)
Remission of diabetes	-	n=597	n=516	n=516	n=542	n=553
No remission, n (%)	-	263 (44.1)	223 (43.2)	246 (47.7)	274 (50.6)	296 (53.5)
Partial remission, n (%)	-	80 (13.4)	72 (14.0)	83 (16.1)	88 (16.2)	89 (16.1)
Complete remission, n (%)	-	254 (42.5)	221 (42.8)	187 (36.2)	180 (33.2)	168 (30.4)

¹% weight loss from baseline= (baseline weight – follow-up weight) / baseline weight × 100%.

²eGFR change from baseline= follow-up eGFR – baseline eGFR.

Abbreviations: eGFR = estimated glomerular filtration rate; ACR = urine albumin-to-creatinine ratio.

Table S2. Adjusted Associations between Patient Characteristics and Improvement in Prognostic Risk for CKD over 5 Years after Bariatric Surgery*

Characteristics	Risk ratio (95% CI)	P value
<i>Time since Surgery</i>		0.02
Year 2 versus Year 1	1.17 (1.03, 1.33)	0.02
Year 3 versus Year 1	1.03 (0.87, 1.22)	0.7
Year 4 versus Year 1	1.05 (0.89, 1.25)	0.5
Year 5 versus Year 1	0.96 (0.78, 1.17)	0.7
<i>Baseline Characteristics</i>		
Age (years) (per 5-year increase)	0.96 (0.91, 1.01)	0.1
Race		
White versus Non-white	1.15 (0.76, 1.75)	0.5
Ghrelin total (per 250 pg/mL increase)	1.09 (1.01, 1.19)	0.04
Use of RAAS blocking agents		
No versus Yes	1.35 (1.09, 1.69)	0.01
Prognostic risk for CKD		
High/Very high risk versus Moderate risk	1.09 (0.88, 1.34)	0.4
Bariatric surgery type		
RYGB versus LAGB	1.21 (0.88, 1.66)	0.2
<i>Time Dependent Variables</i>		
Remission of diabetes		0.7
Partial versus No remission	1.07 (0.87, 1.32)	0.5
Complete versus No remission	1.06 (0.89, 1.27)	0.5
% weight loss from baseline (per 10% loss in weight)	1.09 (1.01, 1.18)	0.03

* GLMM were used to model the improvement in prognostic risk for CKD (improvement vs. no improvement). Missing related baseline covariates, including age, race, clinical sites, and baseline ghrelin total level were adjusted for in the models. N=147. Abbreviations: RAAS = renin-angiotensin-aldosterone; RYGB = Roux-n-Y Gastric Bypass; LAGB = Laparoscopic adjustable gastric banding.

Table S3. Adjusted Association between Baseline ACR and Remission of Diabetes over 5 Years after Bariatric Surgery*

Characteristics	Odds ratio (95% CI)	P value
<i>Time since Surgery</i>		0.03
Year 2 vs. Year1	1.06 (0.74, 1.52)	0.8
Year 3 vs. Year1	0.78 (0.54, 1.14)	0.2
Year 4 vs. Year1	0.73 (0.50, 1.05)	0.09
Year 5 vs. Year1	0.61 (0.42, 0.88)	0.01
<i>Baseline Characteristics</i>		
Age (per 5 year decrease)	1.32 (1.20, 1.46)	<0.001
Gender		
Male versus Female	1.71 (1.14, 2.54)	0.01
Bariatric Surgery Type (by baseline C-peptide)		<0.001
At 1 st quartile (0.87 nmol/L)	2.89 (1.61, 5.17)	<0.001
At median (1.30 nmol/L)	4.92 (2.97, 8.15)	<0.001
At 3 rd quartile (1.71 nmol/L)	8.21 (4.91, 13.75)	<0.001
ACR (per 10 mg/g decrease)	1.004 (0.999, 1.01)	0.09
C-peptide (per 0.5 nmol/L increase) (by surgery type)		<0.001
In RYGB	2.05 (1.72, 2.45)	<0.001
In LAGB	1.50 (1.31, 1.72)	<0.001
HbA1c (per 0.5% decrease)	1.36 (1.24, 1.50)	<0.001
Glucose (per 0.5 mmol/L increase)	1.04 (0.999, 1.08)	0.06
Insulin (per 20 pmol/L decrease)	1.02 (0.998, 1.03)	0.08
Insulin use		
No versus Yes	2.87 (1.797, 4.59)	<0.001
Number of non-insulin diabetes medications		
≤2 versus ≥3	2.98 (2.03, 4.36)	<0.001
<i>Time Dependent Variables</i>		
% weight loss from baseline (per 10% loss in weight)	2.27 (1.92, 2.69)	<0.001

* GLMM with ordinal diabetes remission as outcome was used to model the probability of having complete/partial remissions. Missing related baseline covariates, including age, sex, and clinical sites were adjusted for in the model. N=484.

Abbreviation: ACR = urine albumin-to-creatinine ratio; RYGB = Roux-n-Y Gastric Bypass; LAGB = Laparoscopic gastric band.