

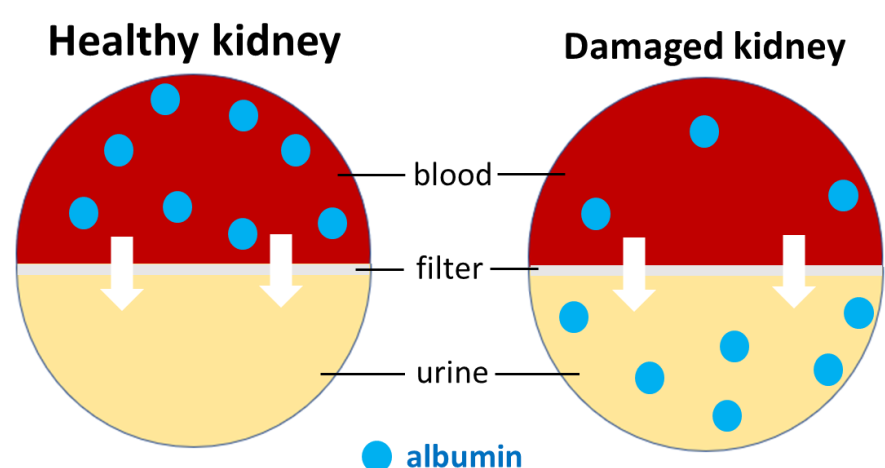
Clinical predictors of improved albuminuria following bariatric surgery: A mean 3 year follow-up analysis

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1. BACKGROUND

Increase of albumin excretion in the urine (albuminuria) is an early sign of chronic kidney disease.



Albuminuria is a major risk factor of cardiovascular events and all-cause mortality.

The benefits of bariatric surgery are known to extend beyond weight loss.

Limited but promising data suggest that bariatric surgery improves renal outcomes.

Aim: To identify the predictors associated with improved albuminuria following bariatric surgery.

3. RESULTS

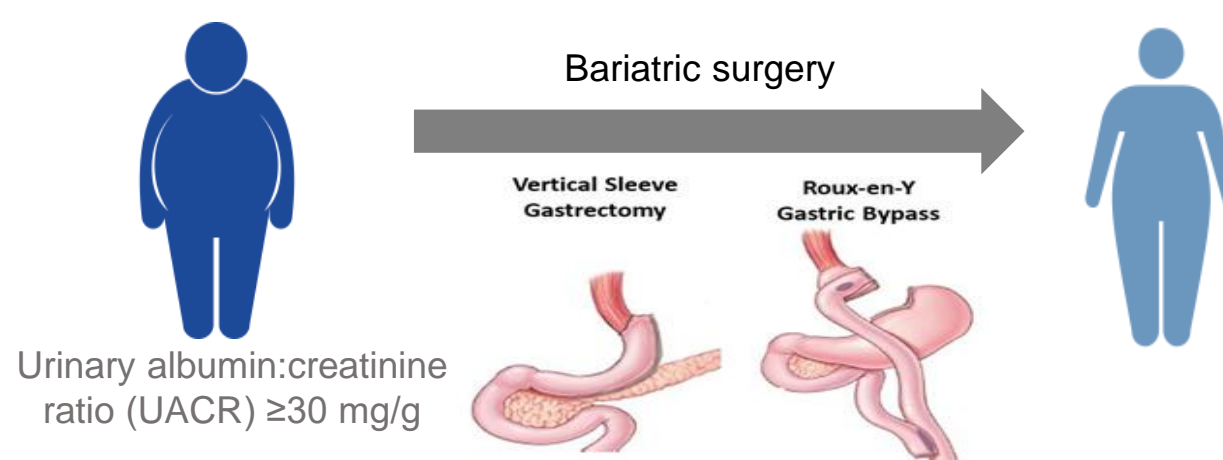
Table 1 Baseline characteristics of participants

Variable	
Age (years)	44 ± 10
Gender, n (%)	
Men	25 (52.1)
Women	23 (47.9)
Ethnicity, n (%)	
Chinese	24 (50.0)
Malay	13 (27.1)
Indian	9 (18.8)
Others	2 (4.2)
Diabetes, n (%)	36 (75.0)
BMI (kg/m ²)	40.0 ± 6.5
FPG (mmol/L)	8.5 ± 3.8
SBP (mmHg)	140 ± 19
DBP (mmHg)	82 ± 12
TC (mmol/L)	4.6 ± 0.9
HDL-C (mmol/L)	1.1 ± 0.3
LDL-C (mmol/L)	2.8 ± 1.0
TG (mmol/L)	2.0 (1.3 – 2.5)
UACR (mg/g)	71 (46 – 298)

BMI: body mass index; FPG: fasting plasma glucose; SBP: systolic blood pressure; DBP: diastolic blood pressure; TC: total cholesterol; HDL-C: high density lipoprotein-cholesterol; LDL-C: low density lipoprotein-cholesterol; TG: triglycerides; UACR: urinary albumin:creatinine ratio

2. METHODS

The analysis involved individuals who had increased albuminuria (≥30 mg/g) before undergoing bariatric surgery at the Khoo Teck Puat Hospital (n=48).



The clinical data before and after bariatric surgery were captured from the medical health records.

Primary outcome: absolute change in ACR calculated as the difference between postoperative and preoperative ACR.

Important clinical variables which were identified by univariable linear regression to be associated with the primary outcome ($P < 0.2$), were simultaneously evaluated in the final multivariable regression model.

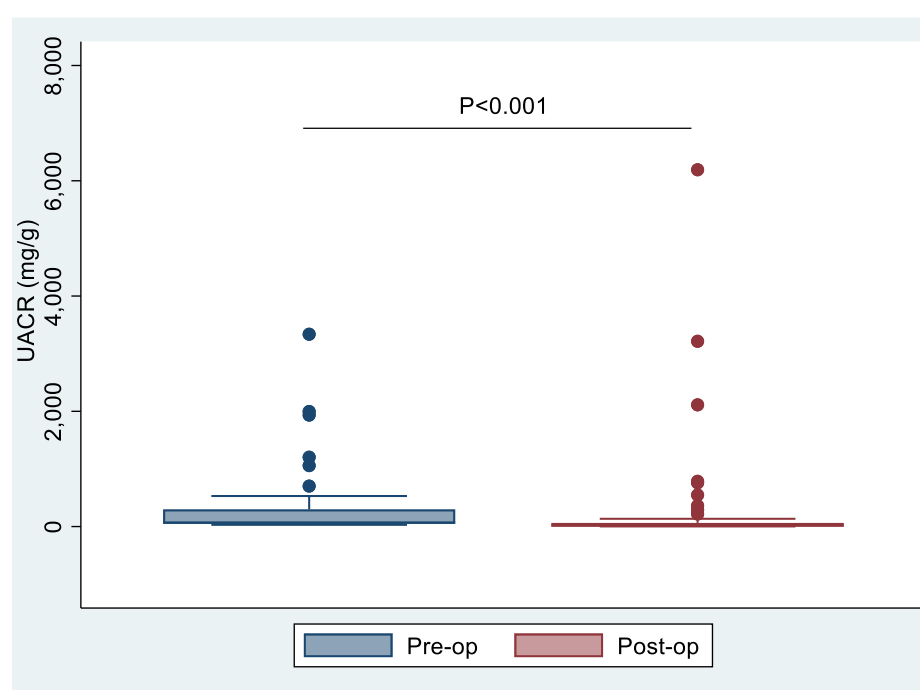


Fig 1. Box plot shows that the pre-op median UACR level was 71 mg/g. After surgery, UACR dropped by 44 (26 – 130) mg/g over a mean follow-up period of 37±17 months, to reach a postoperative UACR of 16 mg/g that fell within normal range.

Table 2 Univariable and multivariable linear regression analysis of factors associated with absolute ACR change

Variable	Univariable B (95% CI), P value	Multivariable* B (95% CI), P value
Age	1.82 (-24.69 to 28.31), 0.891	-
Gender	-303.92 (-819.02 to 211.17), 0.241	-
SBP	7.65 (-6.40 to 21.70), 0.279	-
LDL-C	123.93 (-160.30 to 408.16), 0.384	-
FPG	-49.11 (-124.54 to 26.33), 0.196	-78.58 (-152.45 to -4.71), 0.038
BMI	-39.83 (-78.43 to -1.23), 0.043	-61.35 (-105.25 to -17.45), 0.007

*Model was adjusted for the duration of follow-up

Lower preoperative BMI and FPG levels were independent predictors of improved albuminuria outcome.

4. CONCLUSION

Patients who were less obese and had better glycaemic control before bariatric surgery were associated with greater improvement in albuminuria after surgery.