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Predictors of resolution of glomerular hyperfiltration in obese patients following bariatric surgery

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Background: Obesity is associated with increased glomerular filtration rates (GFR). Bariatric surgery has been known to improve glomerular hyperfiltration. The aim of this study was to elucidate the predictors of resolution in glomerular hyperfiltration.

Methods: Glomerular hyperfiltration was defined as GFR more than two standard deviations above the mean GFR value of an age, sex-matched cohort selected from the Korean National Health and Nutritional Survey Database. GFR was estimated using a body surface area (BSA)-adjusted Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation (ml/min). Through a review of our bariatric surgery database, we identified 99 patients (age range, 25-39; 17 men; 82 women) with glomerular hyperfiltration who underwent bariatric surgery and had more than one-year of follow-up data.

Results: Of the 99 patients, diabetic (33%) and hypertensive (33%) patients were included. Bariatric surgery decreased CKD-EPI eGFR in the patient group (151.3±18.0 vs. 127.1±16.9ml/min; p<.0001). In of 50% (n=49) of patients, eGFR returned to the normofiltration range. Multivariate analysis identified BMI (p=0.03, OR=0.86; 95% CI= 0.78-0.95) and DM status (p=0.02, OR=5.04; 95% CI=1.27-20.01) at the time of bariatric surgery as independent predictors of resolution of glomerular hyperfiltration.

Conclusion: The predictive factors for resolution of increased GFR following bariatric surgery include BMI and DM at surgery time. Bariatric surgery can be beneficial in obese patients with glomerular hyperfiltration.

Keywords: CKD-EPI, glomerular hyperfiltration, Obesity