

Title: Biomarkers Isolated from Extracellular Vesicles Prior to Bariatric Surgery May Be Associated with Postoperative Resolution of Type 2 Diabetes.

Introduction: Bariatric surgery has been shown to lead to resolution of type 2 diabetes mellitus (T2DM) in 78.1% of patients (Buchwald, Am J Med 2009), however, it also confers significant risk for potential complications. It is unclear in the preoperative setting which patients will have resolution of T2DM following bariatric surgery. The objective of this study is to identify if patients who have resolution of T2DM following bariatric surgery express different biomarkers preoperatively from their counterparts who do not have resolution of T2DM.

Methods: Blood samples were obtained from patients who presented to the Center for Surgical Weight Loss with T2DM and either BMI  $\geq$  40 or BMI  $\geq$  35 with weight-related comorbidities. All 20 patients studied then underwent gastric bypass or gastric sleeve surgery. At 6 to 12 months postoperatively the patients were evaluated for resolution of T2DM; defined as a hemoglobin A1c less than 6.5 and off all diabetic medications. Extracellular vesicles were isolated from patient serum and analyzed to identify and quantify microRNA and protein biomarkers. The biomarkers in patients who had resolution of T2DM were compared to the biomarkers in patients who had persistent T2DM.

Results: Out of the 395 microRNA detected, there were 10 that were significantly differentially expressed between patients who had resolution of T2DM after bariatric surgery and those who did not. Out of the 71 proteins detected, there were 5 identified that differed significantly between the two groups.

Conclusion: Preoperatively, patients with T2DM who undergo bariatric surgery with subsequent resolution of T2DM may have a different biomarker profile than patients whose T2DM does not resolve following bariatric surgery. If these biomarkers are validated in a larger population of patients, they could be used to help clinicians select patients in the preoperative setting who would benefit most from bariatric surgery.

Buchwald H, Estok R, Fahrbach K, et al. Weight and type 2 diabetes after bariatric surgery: systematic review and meta-analysis. Am J Med 2009;122:248–256, e5