Bariatric surgeons and patients lack objective means to determine which operation is best for which patient. Frequently, procedure choice is based on the surgeon’s operative repertoire, the patient’s mass and co-morbidities, and patient preference. A method to predict before surgery what post-operative outcomes will be for individual patients following each of the major bariatric operations does not exist.

To develop from baseline, pre-operative data prognostic models that predicted weight loss and resolution of obesity co-morbidities in individual patients after open (ORYGB) and laparoscopic (LRYGB) Roux-en-Y gastric bypass, adjustable gastric band (AGB), sleeve gastrectomy (SLEEVE), and duodenal switch (DS) and to validate the models prospectively.

From the Surgical Review Corporation’s BOLD database, 166,601 patients who underwent ORYGB (n=5,389), LRYGB (n=83,059), AGB (n=67,514), SLEEVE (n=8,966), and DS (n=1,673) were randomized into a modeling group (n=124,053) and a validation group (n=42,548). From pre-operative data linear regression models that predicted weight and weight loss and logistic regression models that predicted presence/resolution of obesity co-morbidities at 2, 6, 12, 18, and 24 months after surgery were developed. Coefficient of determination (r-squared) and ROC/AUC examined model fit. Pearson correlation coefficient and Sensitivity/Specificity evaluated predicted versus observed results from validation patient data entered into the models.

This study describes a prospectively validated method that predicts, from pre-operative data, weight and weight loss and the resolution of morbid obesity co-morbidities in individual patients up to two years in advance for ORYGB, LRYGB, AGB, SLEEVE or DS.

Validation Predicted versus Observed results include:
1. Weight and weight loss in individual patients (all p<0.0001)
2. Presence and resolution of Diabetes, Cholelithiasis, Obstructive Sleep Apnea, Hypertension, GERD, and Liver Disease
3. Median Sensitivity for co-morbidities up to 2 years post-operatively is 79
4. Median Specificity for co-morbidities up to 2 years post-operatively is 91

This advance knowledge can identify the best weight loss operation for individual morbidly obese patients.

Matching morbidly obese patients with the procedure optimally suited to each can maximize the benefits of bariatric surgery.