Adolescent bariatric surgery reverses type 2 diabetes in 95 percent of teens, improves quality of life

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The results of a new study to be published November 6, 2015 in The *New England Journal of Medicine* to coincide with presentation at The Obesity Society Annual meeting in Los Angeles, California show that three years after undergoing bariatric surgery, adolescents experienced major improvements in their weight, metabolic health, and quality of life. Nationwide Children's Hospital is one of only five institutions nationally that are part of the multi-institution clinical research study to understand the benefits and risks of bariatric surgery in adolescents.

Teen-LABS (Longitudinal Assessment of Bariatric Surgery), a multi-center clinical study examining the safety and health effects of surgical weight loss procedures, is the largest and most comprehensive analysis of bariatric outcomes to date in adolescents. The study enrolled 242 adolescents, ages 13 to 19, all of whom were severely obese with an average weight of 325 pounds before surgery. The participants had an average body mass index (BMI) of 53 kg/m2. BMI is a tool to determine if a person's weight may lead to health problems. Three years after surgery, average weight had decreased by over 90 pounds, or 27 percent. Most participants also had reversal of a number of important obesity-related health problems. Reversal of type 2 diabetes was seen in 95 percent and normalization of kidney function was seen in 86 percent. Hypertension corrected in 74 percent and lipid abnormalities reversed in 66 percent.

Previous research has shown that only 2% of severely obese teenagers can lose weight and keep it off without surgery. "This study shows that at three years, almost 90 percent experienced clinically meaningful weight loss, and participants were in better health, with improved quality of life scores," said Thomas Inge, MD, PhD, principal investigator and lead author of the study. He is also surgical director of the Surgical Weight Loss Program for Teens at Cincinnati Children's Hospital Medical Center.

"The remission rates for medical conditions such as diabetes and hypertension are greater than those we see in many studies of adults who had long-standing obesity before bariatric surgery. It is possible that earlier intervention could lead to better outcomes," said Inge. "If sustained, the improvements seen in weight, blood sugar, kidney function, blood pressure, and lipid levels may translate into fewer strokes, heart attacks and other disabilities later in life."

"Collaborating with colleagues around the country in a study of this magnitude is very significant for those of us treating severely obese adolescents with serious health problems," said Marc P. Michalsky, MD, FACS, FAAP, surgical director of the Center for Healthy Weight and Nutrition at Nationwide Children's and one of the study's co-authors. "The current study show significant improvement in many of the obesity-related conditions, including high blood presure, diabetes, impaired kidney function and elevated cholesterol levels to name a few. In addition, remission rates of diabetes and hypertension in particular, appear to be greater than in corresponding studies in adults. Such improvements early in life could translate into significant long-term health benefits if sustained."

Nutritional and other risks associated with surgery were also well documented. The study found that fewer than five percent of study participants had iron deficiency before surgery, but more than half had

low iron stores three years after surgery, supporting the recommendation for monitoring of vitamin and iron supplementation in these patients. In addition, 13 percent of patients required additional abdominal surgery, most commonly gallbladder removal, during the three-year period.

"The latest results from this multi-institution clinical research study further demonstrates the importance of having effective treatment options for our patients," said Ihuoma Eneli, MD, MS, director at the Center for Healthy Weight and Nutrition at Nationwide Children's. "This critical work further emphasizes the importance of combining lifestyle behavior changes with any surgical treatment, which is why at Nationwide Children's, we offer a comprehensive approach focused on lifestyle interventions, prevention and advocacy."

Limitations of the study include the fact that it is observational —not a randomized controlled trial—and that the majority of study participants are Caucasian females. However, this study population represents the patient group seeking surgery at the participating clinical centers. In addition, while participants were followed for three years post-surgery, it is possible that some of the health improvements seen may diminish and other health risks could emerge later. Thus, longer follow-up of adolescents who have bariatric surgery is critical.

More information: Teen-Longitudinal Assessment of Bariatric Surgery (Teen-LABS): www.cincinnatichildrens.org/re … t/teen-labs/default/

Provided by Nationwide Children's Hospital