

Study finds changes in intestines leads to reversal of diabetes after weight-loss surgery

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A new study helps explain changes in the intestines that may be responsible for the reversal of diabetes in people who undergo a type of bariatric surgery known as Roux-en-Y gastric bypass surgery (RYGB). The research will be presented Sunday, March 18, at ENDO 2018, the Endocrine Society's 100th annual meeting in Chicago, Ill.

"Bariatric [surgery](#) is the most effective option for obesity and its complications, such as type 2 diabetes," said Margaret A. Stefater, M.D, Ph.D., the lead author of the study and a fellow at Boston Children's Hospital, Harvard Medical School in Boston, Mass. In many people who have had RYGB, their diabetes abates even before they start to lose weight. However, "bariatric surgery is not for everyone with obesity, as it is associated with side effects. Our aim is to 'reverse engineer' the surgery, to find how it works and apply the mechanisms to new, less invasive treatments," Stefater said.

Stefater is spearheading a study investigating whether changes in the intestine of human patients who undergo the surgery could lead to weight loss and diabetes improvement. This is an NIH-funded registered clinical trial, which is a collaboration between Dr. Nicholas Stylopoulos of Boston Children's Hospital and Dr. Anita Courcoulas of the University of Pittsburgh. A total of 32 patients will be recruited for this study; the data presented at the meeting is based on the first 19 patients. The researchers obtained intestinal biopsies of the patients in the study at the time of the surgery, and 1, 6 and 12 months afterwards. They performed analysis of the samples to look for changes in the expression of genes

over time.

The study found the surgery led to dramatic changes in gene expression in intestinal tissue, which explains and predicts blood glucose improvement and body [weight loss](#) after RYGB surgery in humans. The changes appear early after the surgery and persist over time. "This study is the first to link changes in intestinal biology to clinical improvement after [bariatric surgery](#)," Stefater said.

"As the lab has previously shown, in rodents undergoing the surgery, the intestine increases use of glucose from the bloodstream, leading to a reversal of diabetes. The intestine after surgery becomes a different organ, growing thicker and longer," Stefater said. The investigators hypothesize that the [intestine](#) uses more glucose in order to support its increased energetic needs.

"The findings point strongly to a mechanism behind RYGB-elicited metabolic improvement and highlight potential for engineering better, perhaps nonsurgical obesity and type 2 [diabetes](#) therapies," Stefater said.

Provided by The Endocrine Society

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