

# Study finds possible alternative to bariatric weight loss surgery

April 30 2013

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An experimental procedure successfully tested in obese laboratory rats may provide a less-invasive alternative to bariatric weight-loss surgery, researchers report online in *Endocrinology*.

Scientists at Cincinnati Children's Hospital Medical Center used a catheter to re-direct the flow of bile from the bile duct into the [small intestine](#), producing the same metabolic and weight-loss benefits as bariatric surgeries such as gastric by-pass. They named the procedure bile diversion, or BD.

"This may lead to novel ways to treat obesity related conditions," said lead investigator, Rohit Kohli, MBBS, MS, a physician and researcher in the Division of Gastroenterology at Cincinnati Children's. "Our results provide compelling evidence that manipulation of [bile acids](#) is sufficient to recreate the key effects of bariatric procedures, including gastric bypass, and may be especially beneficial to people with obesity related [liver dysfunction](#)."

Bariatric surgery has become an important therapeutic option for [morbid obesity](#) and nonalcoholic [fatty liver disease](#). Gastric bypass surgery is associated with sustained weight loss and reduced overall mortality in patients. Still, the invasive procedure – which involves altering the gastrointestinal anatomy of patients – also comes with [medical risks](#).

Physicians also do not fully understand the [biological mechanisms](#) that produce the post-surgical benefits of procedures like gastric bypass. It is

theorized that elevated levels of bile acids detected in the blood of patients trigger molecular processes that may help improve metabolism and energy expenditure.

In the current study, Kohli and his collaborators – which included researchers at the University of Cincinnati College of Medicine – worked from the hypothesis that diverting bile acid in obese rats would recreate the benefits of bariatric surgery.

Male rats with diet-induced obesity received either the bile diversion procedure or a sham surgery in which the bile duct was dissected. A third group of animals did not undergo surgery and were also used as an experimental control group. Researchers then compared the metabolic effects of bile diversion, sham surgery and no surgery for five weeks as rats in all three groups were fed high-fat diets.

Rats undergoing bile diversion had elevated levels of bile acids in their blood and exhibited increased weight loss, reduced fat mass, improved glucose tolerance and reduced liver fat. These characteristics were not observed in the sham or "no surgery" groups.

Kohli said the researchers will use their findings to further explore how bile diversion and increased bile acids in the blood drive molecular signaling pathways leading to metabolic improvement and weight loss. While emphasizing that extensive additional research is still required, Kohli added an eventual goal is to develop therapeutic agents that can produce the same benefits as bariatric surgery without patients having to go through surgical procedures that alter intestinal anatomy.

Provided by Cincinnati Children's Hospital Medical Center

Citation: Study finds possible alternative to bariatric weight loss surgery (2013, April 30)

retrieved 2 May 2024 from

<https://medicalxpress.com/news/2013-04-alternative-bariatric-weight-loss-surgery.html>

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