

# Studies continue to highlight benefits of bariatric surgery in teens

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Severe obesity affects 4.5 million children and adolescents in the United States, according to the American Academy of Pediatrics (AAP). Bariatric surgery can be life-changing for teens with severe obesity who have been unable to lose a significant amount of weight with traditional weight-loss measures. More and more research points to the benefits that teens with severe obesity can reap from bariatric surgery, including two recently published studies led by Thomas H. Inge, director of pediatric surgery and the bariatric center at Children's Hospital Colorado (Children's Colorado), and researchers at Children's Colorado. The different focuses of the two studies also highlight the multidisciplinary approach of the hospital's Bariatric Surgery Center.

## Musculoskeletal Pain, Physical Function and Quality of Life After Bariatric Surgery

In a study published online today by *Pediatrics*, Children's Colorado researchers and their colleagues found that [musculoskeletal pain](#), physical function and quality of life in adolescents significantly improves and is maintained three years after bariatric [surgery](#).

"Obesity in adolescents is associated with lower extremity joint pain, poor physical function and cartilage abnormalities that place them at high risk for developing degenerative joint disease," said Thomas H. Inge, MD, Ph.D., Teen-LABS principal investigator. "Bariatric surgery can lead to large and sustained reductions in joint pain, and

improvements in physical function in these adolescents. These improvements allow teens to move, be more functional, and participate in physical activity, all of which help improve their joint health and maintain their weight loss."

Specifically, researchers looked at three-year surgical outcomes of 242 patients, all of whom were participants in the multi-center Teen-Longitudinal Assessment of Bariatric Surgery (Teen-LABS). They found that:

- Musculoskeletal and lower extremity pain were reduced by 40% within 12 months of surgery, a reduction that persisted over three years.
- The prevalence of poor physical function declined from 40% to less than 20%.
- Physical comfort improved at six months post-surgery and beyond.

## **Iron and Vitamin B12 are Primary Nutritional Risks Years After Bariatric Surgery in Adolescence**

Knowing that bariatric surgery does come with the risk of long-term [nutritional deficiencies](#), particularly involving iron and vitamin B12, Children's Colorado researchers and their colleagues also conducted a [five-year study](#) of nutritional outcomes among Teen-LABS participants. The results of this study were recently published online in the journal *Clinical Gastroenterology and Hepatology*.

In this study, researchers focused on the nutritional impacts of the two most common forms of bariatric surgery: Roux-en-Y gastric bypass (RYGB) and vertical sleeve gastrectomy (VSG). Their findings showed that at five years:

- In both procedures, patients benefitted from weight loss of approximately 23%.
- After RYGB, levels of vitamin B12 declined significantly, but B12 levels did not drop after VSG.
- After RYGB, 71% of patients had low iron stores compared to 2.5% of patients prior to surgery.
- Over twice as many RYGB participants than VSG recipients had multiple nutritional deficiencies (59% vs. 27%).
- No [significant changes](#) were found after either procedure for folate or vitamins A, B1 or D.

"This study highlights the importance of annual nutritional screening following bariatric surgery," said Megan Kelsey, MD, pediatric endocrinologist and medical director of the Bariatric Surgery Center at Children's Colorado. "This study also found that the risk of nutritional deficiency is lowest in patients with the highest intake of recommended vitamin and mineral supplements, emphasizing the importance of providing a robust program with pediatric expertise to ensure that patients have appropriate follow-up."

"Both iron and B12 deficiency can cause anemia, and B12 deficiency can also cause significant neurological dysfunction," said Jaime Moore, MD, a nutrition expert on the bariatric team at Children's Colorado. "If caught early, treatment with additional vitamin and mineral supplements can minimize these risks, which is why annual micronutrient testing is so important. Eating a varied diet may also reduce the risk of deficiencies but can be challenging after bariatric surgery because of changes in intake. Involvement of a registered dietitian in the pre- and post-operative care of these patients is key to help address such challenges."

Because the risks of nutritional deficiency can be minimized with appropriate dietary supplementation, both studies point to a positive message overall for bariatric surgery in adolescents. In light of the

increasing positive evidence in support of this path, the AAP recently called for improved access to [bariatric surgery](#) for severely obese teens.

**More information:** Sharon Bout-Tabaku et al, Musculoskeletal Pain, Physical Function, and Quality of Life After Bariatric Surgery, *Pediatrics* (2019). [DOI: 10.1542/peds.2019-1399](https://doi.org/10.1542/peds.2019-1399)

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