

# Bariatric Surgery Benefits Plateau After 6 Months

Weight loss and cardiovascular risk factors were measured in 44 teens followed 1 year.

BY MITCHEL L. ZOLER

ORLANDO — Bariatric surgery produces rapid, dramatic improvements in obese adolescents, but after the first 6 months post surgery these patients appear to hit a wall and further gains in their clinical status usually do not occur, according to a follow-up study of 44 patients.

"There is generally a plateau [of weight loss] at about 6-12 months, and sometimes a creep-up after 1 year. Even though [these adolescents] are significantly better, they're still not normal, so we should intervene even sooner," Dr. Holly M. Ippisch said at the annual scientific sessions of the American Heart Association.

In a series of 87 adolescents who underwent Roux-en-Y bariatric surgery at Cincinnati Children's Hospital Medical Center, average body mass index dropped from 58 kg/m<sup>2</sup> at baseline to 41 kg/m<sup>2</sup> in the 57 patients followed out to 6 months. After that, average body mass index generally leveled out to an average of 37 kg/m<sup>2</sup> in 44 teens followed for 1 year, and to 38 kg/m<sup>2</sup> in 21 patients followed for 2 years, reported Dr. Ippisch, a pediatric cardiologist at Cincinnati Children's.

Cardiovascular measures showed a similar pattern, with substantial improvements in parameters such as left ventricular mass and diastolic dysfunction during the first 6 months following surgery, followed by a leveling off to val-



ues that remained abnormally high and potentially dangerous.

"Even though it significantly improves [compared with baseline], it is still abnormal. It raises the issue of whether we should intervene [with bariatric surgery] sooner [in very obese adolescents], before they get beyond a certain point," she said.

Diminishing weight loss more than 6 months out from surgery "is very interesting and is being seen at a number of U.S. centers" doing bariatric surgery on adolescents, commented Dr. Stephen R. Daniels, a pediatric cardiologist and professor and chairman of pediatrics at the University of Colorado in Denver.

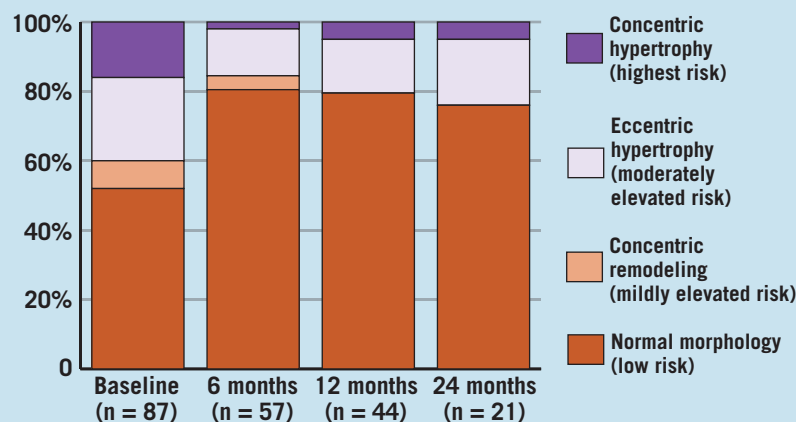
"It's something that we don't understand and need to learn more about. From what we can tell they are in general eating in a healthy way. There probably is some plateauing in adults, too, but many of them get bariatric surgery at a healthier state [a lower body mass index] so they often get down to a body mass index that is closer to normal," Dr. Daniels said in an interview.

At Cincinnati Children's and other centers, adolescents who are candidates for bariatric surgery must have a body mass index of at least 40 kg/m<sup>2</sup> as well as a serious comorbidity such as type 2 diabetes or sleep apnea, Dr. Daniels noted. Without a serious comorbidity, their body mass index has to be at least 50 kg/m<sup>2</sup> to qualify. Adults are typically of-

**The findings raise the issue of whether bariatric surgery should be performed sooner in very obese adolescents.**

DR. IPPISCH

## Left Ventricular Shape Following Bariatric Surgery



Note: Zero patients had concentric remodeling at 12 and 24 months.  
Source: Dr. Ippisch

ferred bariatric surgery at lower body mass index levels.

When bariatric surgery for adolescents began a few years ago, "the thought was to be as conservative as possible, and reserve it for only the most severely affected adolescents," he added.

"We didn't know if it was safe for adolescents, so it was reserved for extreme cases," added Dr. Ippisch.

But the plateauing effect now being widely seen "is starting a thought process on what the criteria should be," Dr. Daniels said.

The 87 adolescents who underwent Roux-en-Y surgery in Cincinnati were aged 13-19 years, and three-quarters were girls. Their average left ventricular mass at baseline was 52 g/m<sup>2.7</sup>, a high-risk level that fell to about 40 g/m<sup>2.7</sup> after 6 months and then stayed roughly at that average level through 2 years of follow-up in the 21 patients who have so far been followed that long.

Another way that Dr. Ippisch assessed left ventricular size and shape was to divide patients into four risk categories:

normal (low risk), concentric remodeling (mildly elevated risk), eccentric ventricular hypertrophy (moderately elevated risk), and concentric ventricular hypertrophy (highest risk). The patients showed a shift from half having normal-shaped hearts at baseline to about 80% with normal shapes at 6, 12, and 24 months follow-up (see chart).

The patients also had an elevated left ventricular end diastolic pressure at baseline, an average mitral E/Ea ratio of about 7.0, indicating diastolic dysfunction, that improved to an average ratio of about 6.0 after 6 months and remained at that level through 2 years of follow-up.

Other improvements included heart rate, which fell from an average of 83 bpm at baseline to 63 bpm at 6 months and 61 bpm at 2 years, and blood pressure, which dropped from an average of 121/69 mm Hg at baseline to an average of 113/65 mm Hg at 6 months and 114/66 mm Hg at 2 years.

Dr. Ippisch had no commercial financial disclosures for this study. ■

## Rise in Ventricular Hypertrophy May Be Tied to Obesity

BY MITCHEL L. ZOLER

ORLANDO — A growing number of American children have increased left ventricular mass, a marker for cardiovascular disease risk.

The finding was noted in a study that included 700 children and "is the first study to look at average left ventricular mass in the whole pediatric population," according to Dr. David I. Crowley, a pediatric cardiologist at Cincinnati Children's Hospital.

In children with an average age of 10 years, mean left ventricular mass rose by a statistically significant 4% from 1986 to 2008. The prevalence of left ventricular hypertrophy in the children more than doubled,

from 7% to 15%, Dr. Crowley said at the annual scientific sessions of the American Heart Association.

The increase appears to be linked to obesity. In the 1986-1988 cohort of 350 children examined at Cincinnati Children's, the prevalence of overweight was 14% and of obesity was 5%.

In a matched cohort of 350 children assessed in 2008, the prevalence of overweight was 15% but the prevalence of obesity soared to 19%. Results from a multivariate analysis showed that body mass index was a major determinant of left ventricular mass, Dr. Crowley said.

The investigation included children aged 2-19 years. The

participants came to Cincinnati Children's in 1986-1988 for an echocardiography examination because of a murmur, palpitations, syncope, or chest pain.



**This 'is the first study to look at average left ventricular mass in the whole pediatric population.'**

DR. CROWLEY

All 350 children included in the analysis had normal cardiac anatomy and function, and none had systemic disease or a body mass index of 40 kg/m<sup>2</sup> or more.

Dr. Crowley and his associates identified 350 children matched by age and gender who underwent echocardiography at their center during 2008 for similar reasons and met similar clinical criteria. Both cohorts were 60% boys, and 82% or 83% were white.

Analysis of the echocardiographic data showed that, in addition to having larger hearts, the more recently evaluated children also had a greater prevalence of high-risk cardiac morphology.

The prevalence of eccentric hypertrophy was 6% in the 1986-1988 group and 12% in

the 2008 cohort. The prevalence of concentric hypertrophy also doubled in the more recent cohort.

Although average left ventricular mass rose by only 4% from the older to more contemporary cohort, this difference is important, commented Dr. Stephen R. Daniels.

"When you look at a population and a value gets worse by even a small amount, it suggests that many more in the population may now be in a high-risk category," said Dr. Daniels, a pediatric cardiologist and professor and chairman of pediatrics at the University of Colorado in Denver.

Dr. Crowley had no financial disclosures for the study. ■