Bariatric surgery associated with reduction in cardiovascular events and death

January 3 2012

Among obese individuals, having bariatric surgery was associated with a reduced long-term incidence of cardiovascular deaths and events such as heart attack and stroke, according to a study in the January 4 issue of *JAMA*.

Most epidemiological studies have shown that obesity is associated with increased cardiovascular events and death. "Weight loss might protect against cardiovascular events, but solid evidence is lacking," according to background information in the article.

Lars Sjostrom, M.D., Ph.D., of the University of Gothenburg, Sweden, and colleagues conducted a study to test the hypothesis that bariatric surgery is associated with a reduced incidence of cardiovascular events and examined the relationship between weight change and cardiovascular events. The study (Swedish Obese Subjects [SOS]) is an ongoing, nonrandomized, prospective, controlled study conducted at 25 public surgical departments and 480 primary health care centers in Sweden, and includes 2,010 obese participants who underwent bariatric surgery and 2,037 matched obese controls who received usual care.

Patients were recruited between September 1987 and January 2001. Date of analysis was December 31, 2009, with median (midpoint) follow-up of 14.7 years. Inclusion criteria were age 37 to 60 years and a body mass index of at least 34 in men and at least 38 in women. Surgery patients underwent gastric bypass (13.2 percent), banding (18.7 percent), or vertical banded gastroplasty (68.1 percent), and controls received

usual care in the Swedish primary health care system. Physical and biochemical examinations and database cross-checks were undertaken at preplanned intervals. The average changes in body weight after 2, 10,15, and 20 years were -23 percent, -17 percent, -16 percent, and -18 percent in the surgery group and 0 percent, 1 percent, -1 percent, and -1 percent in the control group, respectively.

During follow-up, there were 49 cardiovascular deaths among the patients in the control group and 28 cardiovascular deaths among the patients in the surgery group. In total (fatal and nonfatal), there were 234 cardiovascular events among patients in the control group and 199 cardiovascular events among patients in the surgery group. After adjustment for a number of variables, bariatric surgery was associated with a reduced number of fatal cardiovascular deaths and a lower incidence of total cardiovascular events.

Bariatric surgery was associated with reduced number of fatal heart attack deaths (22 in the surgery group vs. 37 in the control group), with analysis indicating that bariatric surgery was related both to reduced fatal heart attack incidence and total heart attack incidence. Also, bariatric surgery was associated both with reduced number of fatal stroke events and total stroke events.

However, the researchers found no significant relationship between weight change and cardiovascular events in the surgery or control group. The authors suggest that the lack of association between weight loss and reduction of cardiovascular events could be related to inadequate statistical power to detect this relationship. "Alternatively, following relatively modest weight loss induced by bariatric surgery, there is no further risk reduction attributable to greater, subsequent weight loss. Our negative findings also emphasize the need to explore weight loss independent of effects of bariatric surgery."

"In conclusion, this is the first prospective, controlled intervention to our knowledge reporting that bariatric surgery is associated with reduced incidence of cardiovascular deaths and cardiovascular events. These results— together with our previously reported associations between bariatric surgery and favorable outcomes regarding long-term changes of body weight, cardiovascular risk factors, quality of life, diabetes, cancer, and mortality— demonstrate that there are many benefits to bariatric surgery and that some of these benefits are independent of the degree of the surgically induced weight loss."

Edward H. Livingston, M.D., of the University of Texas Southwestern Medical Center, Dallas, and Contributing Editor, *JAMA*, writes in an accompanying editorial that "although weight loss in general is desirable for obese patients, the overweight condition by itself is not informative."

"Physicians need to know an individual patient's risk factor profile before initiating therapy. Weight gain can result from overeating protein that may be associated with lean body mass that is not related to adverse health. If body fat is primarily truncal, being obese may be associated with little excess health risk or little subsequent risk of reduced lifespan. Bariatric surgery does result in weight loss, but the overall benefit of improved longevity resulting from these operations remains to be definitively proven. Because the expected health benefits do not necessarily exceed the risks of weight loss operations, obese patients without other weight-related complications generally should not undergo bariatric surgery."

"In addition, given the advances in the understanding of the pathophysiological mechanisms underlying obesity, increasing evidence on the relationship between obesity and outcomes, and progress and refinements in surgical interventions for obesity, perhaps it is time for the National Institutes of Health to convene another expert panel to rigorously assess the available evidence and provide updated

recommendations for bariatric procedures for the treatment of obesity."

More information: JAMA. 2012;307[1]:56-65.
JAMA. 2012;307[1]:88-88.

Provided by JAMA and Archives Journals