

# Effects of Obesity Surgery on the Metabolic Syndrome

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摘要

## Abstract

Hypothesis: Individuals with the metabolic syndrome (MS), a clustering of risk factors (high levels of triglycerides and serum glucose, low level of high-density-lipoprotein cholesterol, high blood pressure, abdominal obesity) defined by the Third Report of the National Cholesterol Education Program Expert Panel of Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) (ATPIII), are at high risk of developing coronary heart disease and type 2 diabetes mellitus and may benefit from surgically induced weight loss. Design: Prospectively controlled clinical study. Setting: A tertiary referral center. Patients: From December 1, 1999, to March 31, 2002, 645 consecutive morbidly obese patients were enrolled in a surgically supervised weight loss program, and the efficacy of weight loss 1 year after surgery was examined. Intervention: Laparoscopic weight reduction surgery. Main Outcome Measures: Prevalence of the MS as defined by the ATPIII (>3 of the following): waist circumference greater than 102 cm in men and 88 cm in women; serum triglyceride level of at least 150 mg/dL (1.70 mmol/L); high-density lipoprotein cholesterol level less than 40 mg/dL (1.04 mmol/L) in men and 50 mg/dL (1.30 mmol/L) in women; blood pressure of at least 130/85 mm Hg; and serum glucose level of at least 110 mg/dL (6.11 mmol/L). Results: Of 645 individuals, 337 (52.2%) met the ATPIII definition of the MS. Individuals with the MS had significant differences in age (31.5 years vs 28.1 years), sex (127 [37.7%] of 337 men vs 81 [26.3%] of 308 women), and many metabolic abnormalities compared with patients without the MS. Laparoscopic vertical banded gastroplasty was performed in 528 patients (81.9%) and laparoscopic gastric bypass in 117 (18.1%). A significant decrease in weight was found in both groups, but individuals who underwent laparoscopic gastric bypass lost significantly more weight (mean±SD, 38.4±14.4 kg vs 35.1±16.8 kg) and achieved a lower body mass index (29.3±4.8 vs 32.0±5.4) than individuals who underwent laparoscopic vertical banded gastroplasty. Substantial mean weight

reduction (31.9%) of patients with the MS resulted in a substantial reduction of systolic (11.0 mm Hg) and diastolic (11.4 mm Hg) blood pressure and levels of glucose (46.1 mg/dL [2.56 mmol/L]), triglycerides (196.6 mg/dL [2.22 mmol/L]), and total cholesterol (33.7 mg/dL [0.88 mmol/L]) 1 year after surgery. These improvements resulted in a 95.6% resolution of the MS 1 year after surgery. There was no difference between operations (laparoscopic vertical banded gastroplasty or laparoscopic gastric bypass) in the resolution rate of the MS 1 year after surgery (95.0% vs 98.4%, respectively). Conclusion: The MS is prevalent in 52.2% of morbidly obese individuals enrolling in an obesity surgery program. Significant weight reduction 1 year after surgery markedly improved all aspects of the MS and resulted in a cure rate of 95.6%. Obesity surgery performed by laparoscopic surgery is recommended for obese patients with the MS.