



The Efficacy of Bariatric Surgery Techniques and Following Effects on CVD Risk Factors

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Introduction

The determination that severe obesity is a disease with multiple adverse effects on health that can be reversed or improved by successful weight loss in patients who have been unable to maintain weight loss through non-surgical means is the fundamental basis for bariatric surgery for the purpose of achieving weight loss. In 1991, an NIH consensus panel defined the criteria for surgical intervention. In people with severe obesity, medical treatment often fails to achieve long-term weight loss. The biological elements that have a role in the difficulties of maintaining weight loss are significant.

Intense lifestyle modification can result in average weight loss of 10% after one year and weight loss of 5.3 percent after eight years. The amount of weight lost is highly diverse, but it is sufficient to enhance medical and comorbidity control. Pharmacotherapy may help with both short- and long-term weight loss. The NIH consensus panel determined that bariatric surgery is appropriate for all patients with a BMI (kg/m²) greater than 40 and for those with a BMI of 35-40 with concomitant diseases.

Bariatric Surgical Procedures

Roux-en-Y gastric bypass: Mason invented Roux-en-Y gastric bypass in the 1970s in reaction to the high complication rates associated with ileojejunal intestinal bypass, a treatment that resulted in malabsorption, reduced food intake, and significant weight loss with its associated benefits but high complication rates. The stomach is transected in this technique, resulting in a gastric pouch with a capacity of about one ounce. A Roux-en-Y gastrojejunostomy is performed to redirect ingested nutrients away from the stomach's body, duodenum, and proximal jejunum. The vagal trunks are not disrupted, but during the division of the stomach, a variable number of branches leading to the stomach body are divided. The endocrine alterations that go along with it are detailed below. While there is little to no loss of energy-containing minerals, there is malabsorption of calcium, iron, vitamin B₁₂, and potentially other micronutrients [1].

Sleeve gastrectomy: Approximately 80% of the stomach's body is removed in this treatment, resulting in a tubular stomach based on the stomach's decreased curvature. There is no need for a stomach to small intestine anastomosis. Although meal intake may be restricted, stomach emptying is accelerated.

Biliopancreatic diversion with duodenal switch: A sleeve gastrectomy is a more complicated procedure that is performed. An anastomosis is formed between the proximal duodenum and the bypassed intestine, resulting in some nutritional loss. Because of the higher risk of short- and long-term problems, this treatment is rarely used [2].

Benefits Expected In Terms of Cvd Risk Factors

Weight loss, whether medical or surgical, has the ultimate goal of lowering co-morbidities, improving quality of life, and lowering all-cause mortality. Despite the significance of identifying these risks and taking steps to adopt effective medical care, surgery has proven to be more effective with varying degrees of effectiveness.

Body fat distribution: In individuals without diabetes, the percentage loss of visceral adipose tissue is similar to or greater than the percentage loss of total or subcutaneous adipose tissue from 3 to 12 months after bariatric surgery, although the visceral depot was variably greater at 24 months. At 2 and 6 months after LABG, there was a preferential mobilisation of visceral fat compared to total and subcutaneous AT; however, this result was reserved only for patients who had excessive amounts of visceral adipose tissue prior to surgery, and this preferential visceral fat reduction occurs only in those. When the effects of malabsorptive biliointestinal bypass (BIBP) and restrictive LAGB on total fat loss and trunk fat were compared after a 4-year follow-up, the effects of BIBP were larger on total fat loss and trunk fat. Changes in glucose homeostasis, lipid levels, and adipokine profile at 90 days after a laparoscopic Roux-en-Y gastric bypass (RYGB) procedure have been documented in a variety of ways [3].

Dyslipidemia: Obesity-related dyslipidemia is mostly due to the insulin-resistant metabolic milieu that comes with extra body fat. Hypertriglyceridemia, decreased HDL-C levels, fluctuating elevations in apolipoprotein B and VLDL-C, and tiny dense LDL and HDL are all examples. Although LDL-C can be elevated in moderately to severely obese persons, it is not nearly as common as the lipid and lipoprotein abnormalities noted above. Baseline and follow-up levels of LDL-C were reported in 48 research in a meta-analysis of 75 publications in which follow-up lipids were evaluated up to 4 years after RYGB, and baseline LDL-C was 123.7 mg/dL. Despite the considerable variability among trials for LDL-C and all other lipids, subgroup analysis demonstrated LDL-C reductions by 1 month intervals up to 4 years [standard mean difference (SMD) 1.31 to 0.52; 95th % confidence intervals (CI), p 0.00001]. In 47 investigations, HDL-C levels were measured. A time-dependent trend was discovered in this study. There was no significant change in HDL-C after 6 months, but after 12 months, there was an increase (SMD+1.10, +0.57 to +1.63 95% CI, p0.0001), which was sustained through all subsequent time periods tested, including at 4 years [4].

Hypertension: The impact of metabolic surgery on the prevalence of hypertension varies, depending on the technique and period. Blood pressure drops during the active weight reduction phase, and antihypertensive medications are frequently stopped. The outcomes are less obvious following weight stabilisation, maybe due to the duration of hypertension prior to surgery. The relative risk of hypertension was lowered by 46.8 percent in a systematic review and meta-analysis of 21 trials employing a range of surgical techniques at intervals between 24 and 50 months, and the risk of hypertension was at its lowest when BMI was reduced by 10 kg/m². LABS-2 data revealed that at 3 and 6 years,

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approximately 40% of the group was still free of hypertension and the Utah-Obesity research found a relative risk of hypertension remission of 8.2 and 2.90 years, respectively, after two and six years. The Swedish Obesity Study, on the other hand, found that after 6-8 years of follow-up, hypertension recurred with no significant differences from baseline. It's uncertain whether this has anything to do with pre-operative hypertension causing irreversible alterations in the artery wall [5].

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