

The Effects of Laparoscopic Sleeve Gastrectomy on the Parameters of Leptin Resistance in Obesity

Authors: Mazahreh TS, Alfaqih MA, Saadeh R, Al-Zoubi NA, Hatamleh M, Alqudah A, Aleshawi AJ, Alzoubi A

Abstract: Obesity is a growing public health problem worldwide. Bariatric surgical procedures achieve the most sustainable and efficacious outcomes in the treatment of morbid obesity. However, little is known about the underlying molecular pathways modulated by these surgical interventions. Since leptin resistance is implicated in the pathogenesis of obesity, we herein report the effects of laparoscopic sleeve gastrectomy (LSG) on the serum levels of leptin and leptin receptor, in addition to its overall effect on leptin resistance. This was an interventional and follow-up clinical study. In the first part, patients attending the general surgery outpatient clinics at our university hospital were first stratified according to their Body-Mass Index (BMI) into cases (n = 38) with BMI ≥ 35 who were scheduled to undergo LSG, and controls (n = 75) with a normal BMI. Serum leptin and leptin receptor levels were measured by sandwich ELISA technique. A leptin resistance index was estimated by adjusting leptin to BMI ratio to leptin receptor concentration. In the second part of the study, cases who underwent LSG were followed up one year postoperatively to assess their BMI and serum leptin and leptin receptor levels. Leptin to BMI ratio was significantly higher, while serum leptin receptor was significantly lower, in obese patients compared to controls. This translated into a significantly higher leptin resistance index in obese patients. LSG resulted in a significant reduction of BMI, leptin to BMI ratio, and leptin resistance index, as it significantly increased leptin receptor levels. In conclusion, LSG showed significant decrease in leptin resistance in obese patients after one year. Further studies are needed to determine the clinical impact of this finding on LSG outcomes.