

The Effect of Residual Gastric Volume on Body Mass Index, Excess Weight Loss Rate and Metabolic Response after Sleeve Gastrectomy

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Abstract

Background/aim: To investigate the metabolic response and body mass index reduction according to the remaining stomach volume between 6-12 months after the operation in patients who underwent sleeve gastrectomy surgery for obesity and to determine the relationship between the remaining stomach volume and metabolic improvement.

Materials and Methods: Patients underwent sleeve gastrectomy in a single center by the same team and with the same standardized method. Residual gastric volumes were calculated from three-dimensional computed tomography images obtained 6-12 months postoperatively. BMI, excess weight loss (EWL), total cholesterol, low density lipoprotein (LDL), high density lipoprotein (HDL), very low density lipoprotein (VLDL), triglyceride, hemoglobin A1c (HbA1c), total protein, albumin values were recorded preoperatively and at the time of residual volume measurement.

Results: There were 49 subjects with a mean SD preoperative BMI of 47.26 ± 6.21 kg/m² and mean age 37.51 ± 10.88 years. Mean residual volume was 155.36 ± 56.71 cc. Residual volume was associated with postoperative mean BMI (28.44 ± 3.23 kg/m²; $p < 0.001$) and postoperative mean EWL% (29.27 ± 7.66 ; $p = 0.001$). Residual gastric volume was also negative correlated with post-operative mean HbA1c ($p = 0.004$). HbA1c ($p = 0.828$), LDL ($p = 0.661$), HDL ($p = 0.848$), triglycerides ($p = 0.641$), VLDL ($p = 0.794$), total protein relation ($p = 0.539$) and albumin ($p = 0.824$) were analyzed before and after surgery and were not correlated with residual gastric volume.

Conclusion: The smaller the residual gastric volume after laparoscopic sleeve gastrectomy, the higher the %EWL and the greater the decrease in HbA1c. This study show that laparoscopic sleeve gastrectomy is an effective surgical procedure in patients with Type 2 diabetes mellitus.

Key words: obesity, sleeve gastrectomy, residual gastric volume