

World Congress on

# Nutrition and Obesity Prevention Source

November 16-18, 2017, Barcelona, Spain

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## The Nutritional Study of Laparoscopic Roux-En-Y Gastric Bypass Surgery for Type 2 Diabetes Mellitus Patients with Low BMI

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**Objective:** To evaluate the changes of nutrition in type 2 diabetes mellitus(T2DM)patients with low BMI after laparoscopic Roux-en-Y gastric bypass surgery (LRYGBP).

**Methods:** Thirty-four patients suffering from T2DM with low BMI were selected to undergo LRYGBP and were enrolled at Beijing Shijitan Hospital, Capital Medical University between November 2012 to September 2014. BMI, fasting plasma glucose (FPG), glycosylated hemoglobin (HbA1c), serum total protein (TP), serum albumin (ALB), hemoglobin (HGB), total serum cholesterol (TC), serum triglyceride (TRIG), serum high density lipoprotein (H-LDL), serum low density lipoprotein (L-LDL), serum Iron (Fe), serum calcium (Ca), serum zinc (Zn), serum selenium (Se) and serum vitaminB12 (VitB12 ) of all patients were measured before and at 6, 12, 24 months after surgery.

**Results:** 34 patients suffered from type 2 diabetes underwent LRYGBP surgery successfully (a mean age of 46 years), 14 were male and 20 were female. Among them, 7 patients had hypertriglyceridemia (HTG). The patients were followed up for 24 months. No major complications. The mean BMI was  $26.5 \pm 1.4$  kg/m<sup>2</sup> (range 22.5-27.4 kg/m<sup>2</sup>) before surgery. After 24 months surgery, the mean BMI was  $22.0 \pm 1.1$  kg/m<sup>2</sup>. The mean BMI was decreased ( $P < 0.05$ ) at 24 months after the surgery. The average levels of FPG, HbA1c of 34 patients were  $11.2 \pm 3.0$  mmol/L,  $7.8 \pm 1.6\%$  before surgery and  $6.8 \pm 1.4$  mmol/L,  $6.4 \pm 0.6\%$  at 24 months after surgery. The average levels of FPG, HbA1c of all patients were statistically decreased after surgery respectively compared to those before surgery ( $P < 0.05$ ). Within the following 2 years, the serum TP, ALB, TC, H-LDL, L-LDL, Fe, Ca, Zn, Se and VitB12 as well as HGB were normal. However, the serum TRIG of 7 patients with HTG was significantly decreased compared with preoperative level ( $P < 0.05$ ) and had normalized at 24 months after surgery. No malnutrition was found after surgery. **Conclusions** This study confirms that LRYGBP is safe and effective for the patients who suffered from T2DM with low BMI and can improve complicated hypertriglyceridemia in T2DM patients with low BMI. Further long-term studies with large samples are needed.