Obese Patients with Type 2 Diabetes: Outcomes After Laparoscopic Sleeve Gastrectomy

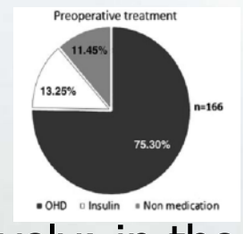
German Viscido, MD; Veronica Gorodner, MD; Franco Jose Signorini, MD; A. Carolina Biasoni, MD; Luciano Navarro, MD; Graciela Rubin, MD; Lucio Obeide, MD and Federico Moser, MD

General Surgery and Diabetology and Nutrition- Hospital Privado Universitario de Córdoba- Argentina

Background: Bariatric surgery is superior to medical treatment for type 2 diabetes mellitus (T2DM) control in obese patients. Reports in the literature have been mainly based on Roux-en-Y gastric bypass (RYGB) or adjustable gastric band. The aim of this study was to analyze mid- and long-term metabolic results after laparoscopic sleeve gastrectomy (LSG).

Methods: Obese patients with T2DM undergoing LSG were included in this study. Selection criteria for T2DM remission were: post-operatory fasting glucose (FG) level ≤100 mg/dL, and hemoglobin A1c (HbA1c) ≤6% without medication.

Results: Between January 2009 and July 2016, 166 T2DM obese patients underwent LSG and completed ≥1 year follow-up. There were 101 women (60.8%; mean age 49.07 ± 12.8 years). Initial body mass index (BMI) was 46.44 ± 7.68 kg/m2. Mean time since T2DM diagnosis was 5.95 years (1–28). Preoperative HbA1c was 7.53% ± 0.97%.



Before LSG, 75.3% (n = 125) were receiving oral hypoglycemic agents, and 13.25% (n = 22) insulin.

Mean follow-up was 65 ± 10 months.

Complete T2DM remission was achieved in 78.3%, 76.2%, and 71.4% at 1, 3, and >5 years respectively; in the long term, 7.2% attained partial remission, 10% improved, and 11.4% experienced recurrence of the disease.

Remission rate was significantly lower in patients under insulin therapy preoperatively, and in patients with T2DM diagnosed >5 years before consultation (P = .0004 and .0001, respectively).

TABLE 1. EVOLUTION AT 1, 3, AND 5 YEARS IN PATIENTS SHOWING RECURRENCE

Variable	*Patients with recurrence*	*Patients without recurrence*	P
Age (years)	49.75 ± 15.2	48.53 ± 14.4	NS
Disease duration (years)	8.13 ± 4.1	5.75 ± 2.9	*P* = .0001
Preoperative BMI (kg/m^2)	39.6 ± 5.82	43 ± 8.1 kg/m^2	NS
Postoperative BMI at 5 years (kg/m^2)	34.32 ± 4.17	32.55 ± 3.24	NS
%EWL at 5 years	54.83 ± 15.2	56.3 ± 14.98	NS
Fasting glucose before LSG (mg/dL)	170 ± 56.95	139.5 ± 25.4	*P* = .003
HbA1c before LSG (%)	8.56 ± 2.18	7.4 ± 0.85%	NS
Outcomes at 1-year follow-up (*n* = 166)	75% (*n* = 6) complete remission	79.5% (*n* = 124) complete remission	
	25% (*n* = 2) improvement	9% (*n* = 16) partial remission	
		9% (*n* = 14) improvement	
		2.5 (*n* = 4) without changes	
Outcomes at 3-year follow-up (*n* = 98)	25% (*n* = 2) complete remission	80% (*n* = 72) complete remission	
	25% (*n* = 2) partial remission	8% (*n* = 7) partial remission	
	25% (*n* = 2) improvement	8% (*n* = 7) improvement	
	25% (*n* = 2) recurrence	4% (*n* = 4) without changes	
Outcomes at 5-year follow-up (*n* = 70)	100% (*n* = 8) recurrence	81% (*n* = 50) complete remission	
		8% (*n* = 5) partial remission	
		11% (*n* = 7) improvement	

%EWL, percentage excess weight loss; LSG, laparoscopic sleeve gastrectomy.

FIG. 1. BMI evolution at 1, 3, and 5 years. BMI, body mass index.

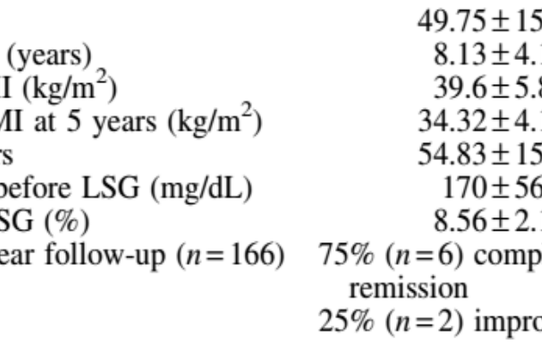


FIG. 2. %EWL evolution at 1, 3, and 5 years. %EWL, percentage excess weight loss.

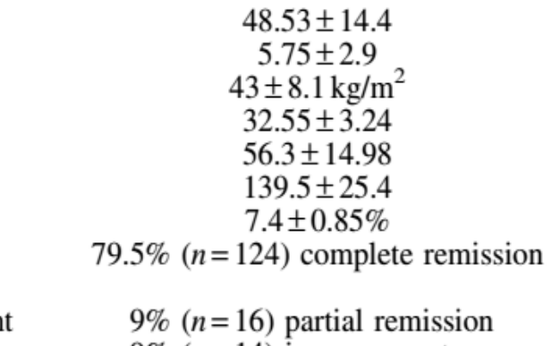


FIG. 5. Evolution of HbA1c after LSG. HbA1C, glycated hemoglobin.

FIG. 6. T2DM complete remission. T2DM, type 2 diabetes mellitus.

Conclusions: At mid- and long-term follow-up, T2DM control was satisfactory after LSG. Preoperative insulin therapy and T2DM duration ≥5 years were predictors of less favorable outcomes. This work reveals the significant role of LSG in the treatment of T2DM in obese patients, since more than 70% support complete remission in the long term.

JOURNAL OF LAPAROENDOSCOPIC & ADVANCED SURGICAL TECHNIQUES

Mary Ann Liebert, Inc. DOI: 10.1089/lap.2018.0652

PROGRAMA DE CIRUGIA DE LA OBESIDAD

HOSPITAL PRIVADO CENTRO MEDICO DE CORDOBA