

DIABETES REMISSION AFTER BARIATRIC SURGERY MAY BE JEOPARDIZED BY REMISSION CRITERIA AND PREVIOUS HYPOGLYCEMIC TREATMENT

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INTRODUCTION

Controversy exists regarding type 2 diabetes (T2D) remission rates after bariatric surgery (BS) due to heterogeneity in its definition and patients' baseline features. The aim of this study is to evaluate T2D

remission using recent consensus criteria, according to preoperative characteristics and insulin use.

PATIENTS AND METHODS

Retrospective study from a cohort of 657 BS performed in a single center, between the years 2006-2011, of which 141 (57.4% women) had pharmacologically-treated T2D.

Evaluation of anthropometric, clinical and glucose metabolism parameters before surgery and at one-year follow-up.

Definition of T2D remission according to Buse et al: HbA1c <6% and fasting glucose (FG) <100 mg/dl in the absence of pharmacologic treatment. Analysis of diabetes remission according to previous treatment and other preoperative characteristics.

RESULTS

Variable	ALL PATIENTS				Oral agents				Insulin			
	Total	Remission	No remission	p	Total	Remission	No remission	p	Total	Remission	No remission	p
Nº patients	141	74 (52.5)	67 (47.5)		85	57 (67.1)	28 (32.9)		56	17 (30.4)	39 (69.6)	
Women	81	34 (42.0)	47 (58.0)	0.004	47	26 (55.3)	21 (44.7)	0.010	34	8 (23.5)	26 (76.5)	0.167
Age (years)	53.0 ± 9.8	51.2 ± 9.9	55.1 ± 9.3	0.017	51.5 ± 9.4	50.3 ± 9.8	53.8 ± 8.1	0.112	55.4 ± 10.0	54.0 ± 9.8	56.0 ± 10.1	0.490
Preop-BMI (kg/m ²)	43.7 ± 5.6	44.6 ± 5.5	42.8 ± 5.5	0.051	44.8 ± 5.5	45.1 ± 5.6	44.2 ± 5.5	0.455	42.1 ± 5.3	42.9 ± 5.0	41.8 ± 5.4	0.470
12m-BMI (kg/m ²)	29.3 ± 5.3	28.8 ± 5.1	29.8 ± 5.5	0.246	30.0 ± 5.3	29.5 ± 5.1	31.2 ± 5.6	0.169	28.1 ± 5.0	26.5 ± 4.3	28.9 ± 5.2	0.109
Preop-FG (mg/dL)	160.0 ± 54.6	148.9 ± 50.1	172.5 ± 57.1	0.003	142.0 ± 33.9	136.6 ± 30.0	153.0 ± 39.0	0.036	187.9 ± 67.7	190.2 ± 77.2	186.8 ± 64.1	0.868
Preop-HbA1c (%)	7.6 ± 1.6	7.2 ± 1.4	8.0 ± 1.8	0.003	7.1 ± 1.3	6.9 ± 1.2	7.5 ± 1.4	0.036	8.3 ± 1.8	8.3 ± 1.3	8.4 ± 2.0	0.812
%WL	33.0 ± 9.2	35.5 ± 8.1	30.2 ± 9.5	0.001	33.0 ± 8.7	34.6 ± 8.3	29.5 ± 8.8	0.010	33.0 ± 9.9	38.2 ± 7.3	30.7 ± 10.1	0.008
%EWL	70.1 ± 20.8	73.6 ± 18.4	66.3 ± 22.8	0.037	68.1 ± 19.5	70.9 ± 17.7	62.3 ± 22.0	0.055	73.2 ± 22.5	82.5 ± 18.8	69.1 ± 23.2	0.040
Duration T2D (years)	7.4 ± 7.6	4.7 ± 3.8	10.3 ± 9.4	<0.001	4.7 ± 4.7	3.8 ± 3.2	6.4 ± 6.7	0.039	11.5 ± 9.1	7.8 ± 4.1	13.0 ± 10.2	0.010

Table 1. Patients' characteristics according to remission or non-remission of T2D (Buse, et al) and previous hypoglycemic treatment. Values show mean ± SD or number of patients and percentages (%). "Preop" = preoperative; "12m" = 12-month; "BMI" = body mass index; "FG" = fasting glucose; "HbA1c" = glycosylated hemoglobin; "%WL" = percentage body weight loss at 12 months; "%EWL" = percentage excess body weight loss at 12 months. p-values are shown for Chi-square test (categorical values) and analysis of variance (continuous variables).

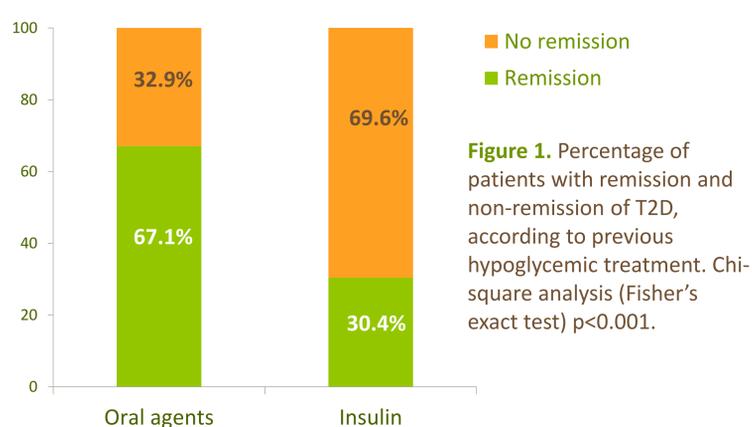


Figure 1. Percentage of patients with remission and non-remission of T2D, according to previous hypoglycemic treatment. Chi-square analysis (Fisher's exact test) p<0.001.

Preoperative characteristics	OR	95% CI	p
Age	0.958	0.924-0.993	0.020
Female sex	0.362	0.181-0.725	0.004
Previous insulin	0.214	0.103-0.443	<0.001
T2D duration	0.869	0.808-0.935	<0.001
Preoperative BMI	1.063	0.999-1.132	0.054
Preoperative FG	0.991	0.984-0.998	0.015
Preoperative HbA1c	0.714	0.556-0.917	0.008

Table 2. Crude odds ratios (OR) and 95% confidence intervals (CI) of preoperative characteristics for prediction of T2D remission.

Preoperative characteristics	OR	95% CI	p
Previous insulin therapy (model 1)	0.326	0.138-0.768	0.010
Previous insulin therapy (model 2)	0.239	0.110-0.522	<0.001
Previous insulin therapy (model 3)	0.296	0.128-0.683	0.004
Previous insulin therapy (model 4)	0.327	0.143-0.748	0.008

Table 3. OR and 95% CI for previous insulin therapy and T2D remission, using different models. Model 1: adjusted for age, sex and duration of diabetes; Model 2: adjusted for age, sex and preoperative BMI; Model 3: adjusted for age, sex and preoperative-FG; Model 4: adjusted for age, sex and preoperative HbA1c.

CONCLUSIONS

Buse criteria reveal lower T2D remission rates after BS than previously reported. Prior insulin use is a main setback for remission. Longer diabetes duration, lower %WL, %EWL and baseline C-peptide, higher age and female sex were associated to non-remission.