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EVALUATION OF FAT-FREE MASS LOSS AFTER BARIATRIC SURGERY.

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The Future of Obesity Management:
From Weight Loss to Health Gain



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DISCLOSURE

The authors declares no conflicts of interests.



BODY COMPOSITION

Normal

% Body fat: 10 to 25%

Lean mass index: 15-25 kg/m²

Fat mass index: 3-6 kg/m²



Sarcopenia:

Muscle mass index:

<5.5 kg/m²



Super obesity:

Fat mass index: 45.8



PREVIOUS EXPERIENCE

First author / year	Location	N	Procedures	Results
Silva / 2019	Portugal	793	RYGB/SG/AGB	Weight loss: RYGB > SG > AGB. Increase in lean mass: RYGB > SG > AGB at 12 months
Abdusalam /2021	United Arab Emirates	105	RYGB/ SG	Greater loss of fat-free mass and muscle mass after SG at 12 months
Kim /2019	Singapore	295	RYGB/SG	No significant differences in fat-free mass loss at 36 months
Pereferrer /2020	Spain	3,376	RYGB/SG	Greater weight loss in women after RYGB at 12 months



OBJECTIVE

To evaluate the effect of weight loss on body composition one year after surgery in patients who underwent sleeve gastrectomy and Roux-en-Y gastric bypass, with special attention to fat-free mass (lean mass).



PATIENTS AND METHODS

- Descriptive, observational, and longitudinal study of patients who underwent surgery at ABC Medical Center, Observatorio Campus, from 2004 to 2021.
- We included patients who underwent primary sleeve gastrectomy or Roux-en-Y gastric bypass, with body composition evaluated by bioimpedance before surgery and one year after surgery.
- For the analysis, we used data from a prospectively collected database and performed descriptive statistics.



DEMOGRAPHICS AND BODY COMPOSITION

Baseline parameters in the overall group

	RYGB n = 528 ♀ 324/♂204	SG n = 58 ♀ 30/♂28	P
Age, years	41.3±12.0	39.4±12.2	0.274
Women	41.2±12.1	38.3±13.7	0.284
Men	41.6±11.9	40.6±10.6	0.664
Weight, kg	120±23.6	110.5±20.6	0.002
Women	108.6±15.5	97±13.1	<0.001
Men	138.08±23.20	125±17.2	0.001
% Excess weight	74.7±19	64.3±16.9	<0.001
Women	74.7±24.2	50±16.9	<0.001
Men	84.4±28.4	69±19.1	<0.001
BMI, kg/m²	42.8±6.3	38.2±4.8	<0.001
Women	41.9±5.8	36.0±4.0	<0.001
Men	44.2±6.8	40.5±4.6	0.001
Fat-free mass, kg	62.1±13.6	60.4±13.4	0.357
Women	54.6±6.3	51.5±4.8	0.002
Men	73.9±13.6	69.9±13.1	0.135
Fat mass, kg	57.8±15.4	50±11.7	<0.001
Women	53.8±10.3	45.4±9.3	<0.001
Men	64.1±19.6	54.9±12.1	<0.001

Baseline parameters in the matched group

	RYGB n= 54	SG n=54	P
Age, years	39.1±11.	39.1±11	1.00
Women	38.3±9.8	38.3±9.8	1.00
Men	39.8±9.8	39.8±9.8	1.00
Weight, kg	127.5±24.2	110.6±20.6	<0.001
Women	112.1±13.5	96.8±13.3	<0.001
Men	142.8±22.9	124.4±17.2	0.002
% Excess weight	79.7±29.4	50.5±17.2	<0.001
Women	79.6±29.4	50.5±17.2	<0.001
Men	85.4±25	67.1±16.6	<0.001
BMI, kg/m²	43.8±6.5	38.1±4.5	<0.001
Women	43.1±7	36.1±4.1	<0.001
Men	44.5±6	40.1±3.9	0.003
Fat-free mass, kg	66.1±13.1	60.9±16.6	0.044
Women	56.3±4	51.4±4.7	<0.001
Men	76±11.6	70.3±13.1	0.102
Fat mass, kg	60.6±17.6	49.5±10.9	<0.001
Women	55.8±10.1	45.2±9.6	<0.001
Men	65.3±21.9	53.8±10.7	0.019



WEIGHT LOSS AND BODY COMPOSITION AT 1 YEAR

One-year postoperative parameters in the overall group

	RYGB n=528	SG n=58	P
% Body weight loss	34.1±7.7	27±7.4	<0.001
Women	34.5±6.5	26.3±8.2	<0.001
Hombre	33.5±9.2	27.8±6.6	<0.001
% Excess weight loss	81.3±22.1	76.2±20.3	0.080
Women	84.7±20	81.4±20	0.309
Men	75.8±24.4	70.7±19.5	0.806
Decrease in BMI, kg/m²	14.8±5.1	10.5±3.7	<0.001
Women	14.5±5.0	9.73±3.7	<0.001
Hombre	15.2±5.1	11.4±3.5	<0.001
Decrease in lean mass, kg	7±6.8	5.4±8.5	0.001
Women	7.8±3.9	5.4±2.8	<0.001
Men	5.7±9.6	5.5±12	0.166
Decrease in fat mass, kg	34.2±13.5	25.8±11.3	<0.001
Women	29.6±8.2	20.7±8.7	<0.001
Men	41.4±16.8	31.2±10.9	<0.001

One-year postoperative parameters in the matched group

	RYGB n=54	SG n=54	P
% Body weight loss	35.3±6.4	27.1±7.29	<0.001
Women	35.2±6.8	26.7±8.1	<0.001
Men	35.5±6.1	27.4±6.4	<0.001
% Excess weight loss	82.1±15.2	76.6±20.9	0.126
Women	85.0±17.8	82.5±20.5	0.638
Men	79.3±11.9	70.7±19.9	0.060
Decrease in BMI, kg/m²	15.7±4.7	10.5±3.5	<0.001
Women	15.8±4.2	9.9±3.8	<0.001
Men	15.6±5.1	11.1±3.1	<0.001
Decrease in lean mass, kg	8.0±6.8	4.5±5.3	0.004
Women	9.0±2.9	5.3±2.9	<0.001
Men	7.0±9.2	3.7±6.9	0.641
Decrease in fat mass, kg	36.9±14.8	25.7±10.6	<0.001
Women	30.9±7.4	21.0±8.8	<0.001
Men	43.0±17.7	30.4±10.2	0.003

31 patients who underwent Roux-en-Y gastric bypass had DXA data, with results similar to those obtained by bioimpedance.



DISCUSSION AND CONCLUSIONS

- Weight loss and fat mass loss were greater after Roux-en-Y gastric bypass than after sleeve gastrectomy (34.2 ± 13.5 vs 25.8 ± 11.3).
- Fat-free mass loss was greater after Roux-en-Y gastric bypass than after sleeve gastrectomy (7 ± 6.8 vs 5.4 ± 8.5), mainly in women (7.8 ± 3.9 vs 5.4 ± 2.8). Therefore, an exercise program is strongly recommended for this group.



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