

"Results and Conclusions of 'Five-Year Weight Loss Outcomes in Laparoscopic Vertical Sleeve Gastrectomy (LVSG) Versus Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) Procedures: A Systematic Review and Meta-Analysis of Randomized Controlled Trials' Unchanged by Omission of Retracted Ruiz-Tovar et al Article."

To the Editor,

It has come to our attention that the 2019 article "Long-term follow-up after sleeve gastrectomy (LGS) versus Roux-en-Y gastric bypass (LRYGB) versus one-anastomosis gastric bypass: A prospective randomized comparative study of weight loss and remission of comorbidities" by Ruiz-Tovar et al was retracted in March 2021 due to identified errors in their data transcription [1]. This study was one of five randomized controlled trials included in our systematic review and meta-analysis evaluating five-year weight loss outcomes after these procedures, which was published in SLEPT in 2020 [2]. Given that it represents 40.8% of the total number of patients in our analysis (LVSG=200/520; LRYGB=200/508) we felt it prudent to reassess our results and conclusions in view of the retraction.

We reanalysed all relevant data omitting the Ruiz-Tovar et al study [3], using the methods outlined in our published article [2].

BMI from baseline to five years

On exclusion of Ruiz-Tovar et al [3], the overall pattern of BMI change remains unchanged, with significant BMI reduction in the first year and a gradual regain thereafter, though remaining well below baseline at five years. The collated change decreased marginally to -10.28kg/m^2 from baseline to five years in LVSG (range -6.3 kg/m^2 to -14.74 kg/m^2) and -11.9kg/m^2 in LRYGB (range -9.5kg/m^2 to -13.8 kg/m^2).

A statistically significant difference in the weighted mean difference (WMD) of BMI was seen at baseline, in the direction of LVSG (OR -0.87 ; 95% CI $-1.43, -0.31$; $p=0.02$; $Q=0.51$, $p=0.9$; $I^2=0\%$). No difference in BMI was observed between procedures at one year (OR 0.26 ; 95% CI $-1.62, -2.14$; $p=0.7$; $Q=0.5$, $p=0.7$; $I^2=51.5\%$), two years (OR 0.65 ; 95% CI $-2.08, 3.37$; $p=0.4$; $Q=2.6$, $p=0.3$; $I^2=13.1\%$), three years (OR -0.15 ; 95% CI $-4.44, 4.15$; $p=0.1$; $Q=0.27.3$, $p<0.001$; $I^2=90\%$), four years (OR 0.64 ; 95% CI $-4.81, 6.09$; $p=0.6$; $Q=12.5$, $p<0.001$; $I^2=84.2\%$) or five years (OR 0.66 ; 95% CI $-2.72, 4.03$; $p=0.6$; $Q=14.5$, $p<0.001$; $I^2=80.2\%$). This differs from the published analysis where baseline data was not significantly different (although trending in the direction of LVSG), and a statistically significant difference was found in WMDs in the direction of LRYGB at two years.

Greater funnel plot asymmetry from years three to five is noted with the removal of Ruiz-Tovar et al's data. As outlined in our published paper, the low number of included papers limits the interpretation of funnel plot data and the degree which this change is significant is questionable.

Percent excess BMI loss data (%EBMIL)

The removal of the Ruiz-Tovar et al data did not alter the overall pattern of %EBMIL change over five years described in the published paper, which inversely follows the initial weight loss of the first year and the gradual increase thereafter. The remaining studies both identified greater %EBMIL in LRYGB relative to LVSG [4, 5], however this difference was lost in the SM-BOSS study [4] when corrected for multiple comparisons.

Meta-analysis for %EBMIL could not be undertaken due to insufficient data.

The omission of the Ruiz-Tovar et al study from our analysis further reduces its statistical power, which was already acknowledged as a limitation in the published paper. This also increases the concerns about the impact of imputed data introduced by the SM-BOSS and SLEEVEPASS studies through their per protocol methodologies [4, 6].

In conclusion the results and conclusions presented in our published paper [2] remain largely unchanged by our reanalysis omitting of the Ruiz-Tovar et al study. Its absence, however, adds to the limitations outlined in our paper and further highlights the critical need for more long-term studies comparing these two procedures.

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- [1] Ruiz-Tovar J, Carbajo MA, Jimenez JM, Castro MJ, Gonzalez G, Ortiz-de-Solorzano J, et al. Retraction Note to: Long-term follow-up after sleeve gastrectomy versus Roux-en-Y gastric bypass versus one-anastomosis gastric bypass: a prospective randomized comparative study of weight loss and remission of comorbidities. *Surg Endosc.* 2021;35:1492.
- [2] Osland EJ, Yunus RM, Khan S, Memon MA. Five-Year Weight Loss Outcomes in Laparoscopic Vertical Sleeve Gastrectomy (LVSG) Versus Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) Procedures: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Surg Laparosc Endosc Percutan Tech.* 2020;30:542-53.
- [3] Ruiz-Tovar J, Carbajo MA, Jimenez JM, Castro MJ, Gonzalez G, Ortiz-de-Solorzano J, et al. Long-term follow-up after sleeve gastrectomy versus Roux-en-Y gastric bypass versus one-anastomosis gastric bypass: a prospective randomized comparative study of weight loss and remission of comorbidities. *Surg Endosc.* 2019;33:401-10.
- [4] Peterli R, Wolnerhanssen BK, Peters T, Vetter D, Kroll D, Borbely Y, et al. Effect of Laparoscopic Sleeve Gastrectomy vs Laparoscopic Roux-en-Y Gastric Bypass on Weight Loss in Patients With Morbid Obesity: The SM-BOSS Randomized Clinical Trial. *JAMA.* 2018;319:255-65.
- [5] Zhang Y, Zhao H, Cao Z, Sun X, Zhang C, Cai W, et al. A randomized clinical trial of laparoscopic Roux-en-Y gastric bypass and sleeve gastrectomy for the treatment of morbid obesity in China: a 5-year outcome. *Obes Surg.* 2014;24:1617-24.
- [6] Salminen P, Helmio M, Ovaska J, Juuti A, Leivonen M, Peromaa-Haavisto P, et al. Effect of Laparoscopic Sleeve Gastrectomy vs Laparoscopic Roux-en-Y Gastric Bypass on Weight Loss at 5 Years Among Patients With Morbid Obesity: The SLEEVEPASS Randomized Clinical Trial. *JAMA.* 2018;319:241-54.