

Sleeve gastrectomy vs. gastric bypass: similar weight loss but gastroesophageal reflux disease is still problematic

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Since first publications of Mason (1), bariatric surgery has operated a revolution until nowadays. Many different procedures have been described and performed (2-4). Some are no longer performed since they have been proved to be dangerous (5) or less efficient than others (6). Others, like adjustable gastric banding are less performed since some concerns have been raised with poor quality of life and disappointing results (7). Actually, laparoscopic Roux-Y gastric bypass (LRYGB) is considered as the gold standard for many teams including revisional procedures after failed gastric banding (8,9). However, since its first description (10) as a first step of a biliopancreatic diversion, sleeve gastrectomy (LSG) is challenging the LRYGB and it is actually the first procedure performed in many countries including France with more than 30,000 procedures yearly (11). Many advantages have been described for LSG: easier to perform even in case of super-super obesity (4,12), very few early and late complications (12), promising results, no malabsorption with the theoretical advantage of less vitamins deficiency... Scientific literature is heterogeneous concerning the best procedure regarding weight loss: LRYGB or LSG? Many authors have found LRYGB to be more effective for weight loss (13,14) confirmed by a recent meta-analysis (15).

However, to date, no randomized studies, comparing LRYGB to LSG, have reported mid-term outcomes and have confirmed or unconfirmed superiority of LRYGB to LSG.

In their recent publication (16), Peterli *et al.* provides the 3-year interim outcomes of the *Swiss Multicentre Bypass or Sleeve Study (SM-BOSS)*. The primary end point of the study was weight loss defined by percentage of excessive body mass index (BMI) loss (EBMIL). The first year outcomes of this prospective randomized trial were published in 2013 (17) where 225 patients were randomized to receive either LSG or LRYGB. Hence, at one year, both procedures were found almost equally efficient regarding weight loss, improvement of coexisting conditions [except for gastroesophageal reflux disease (GERD)], and quality of life despite a trend toward for fewer early complications for LSG.

These 3-year interim outcomes (97% of follow-up) provides similar %EBMIL between LSG (70.9±23.8) and LRYGB (73.8±23.3) (P=0.316) and similar outcomes in terms of glycemic control. These results are in accordance with the 3-year results of the surgical treatment and medications potentially eradicate diabetes efficiently (STAMPEDE) trial that focused exclusively on diabetic patients (18). However, LRYGB was found more efficient for GERD or dyslipidemia resolution.

This study has many strengths beyond the randomization: mid-term outcomes, clear protocol and surgeons with at least 10 years of experience in bariatric surgery. At last, the very low rate of lost to follow-up should be acknowledge, since lost to follow-up is one of the main issue after bariatric surgery (19,20).

The Achilles' heel of LSG is undoubtedly *de novo* GERD (21) and, despite the absence of systematic 24-hour pH-metry, this study strongly highlights that LSG has significantly higher rate of *de novo* GERD or worsening pre-existing GERD. Despite lower early complications (17), similar weight loss and improvement in glycemic parameters, high risk of *de novo* GERD after LSG could not be passed over. Hence, a collective reflexion should be led by bariatric surgeon worldwide in the light of long term risks for chronic GERD and pump proton inhibitor use (21-23).

One of the main difficulties in prospective study assessing bariatric surgery procedures is that patients are not likely to accept randomization between two procedures. Hence, from more than 4,000 patients eligible to BS between 2007 and 2011, only 225 patients were randomized and authors did not precise how many patients refuse to be randomized. We can observe that these patients are more likely to have serious coexisting conditions at baseline compared to a national modern cohort of patients undergoing LRYGB or LSG (24). Hence, we can hypothesize that these patients could not be considered as a fully representative sample of patients seeking for bariatric surgery.

As a conclusion, Peterli *et al.* should be congratulated for this trial which should be considered as one of the best evidence based studies comparing LSG and LRYGB. However, mid-term similar weight loss and improvement in glycemic parameters should not eclipsed the high risk of *de novo* GERD after LSG.

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