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LETTER TO THE EDITOR

Gastroesophageal Reflux Disease After Sleeve Gastrectomy: the Need to Predict its Onset and Prevent its Consequences

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Dear Editor,

Despite the increasing popularity of sleeve gastrectomy (SG) owing to its excellent outcome in regards excess weight loss and improvement in comorbidities, the procedure can still be associated with some serious consequences including staple line leak, bleeding, and gastroesophageal reflux disease (GERD) [1].

Recently, a meta-analysis [2] attempted to answer the critical question whether sleeve gastrectomy (SG) exposes the distal esophagus to severe reflux. The authors concluded that 19% of patients experienced worsening of GERD symptoms and 23% developed new-onset GERD with an alarming incidence of Barrett's esophagus reaching 8%. This goes in agreement with a recent multicenter study that employed systematic endoscopy for 5 years after SG and found the prevalence of Barrett's esophagus to be 18.8% with an increase in the prevalence of GERD symptoms from 22 to 76% after SG [3].

Although this meta-analysis adds to the existing evidence on the relationship between SG and GERD, some methodological issues regarding this analysis should be highlighted. Firstly, one important element of reporting systematic reviews and meta-analyses was missing, that is, the clear definition of the outcomes of the study. It is unclear how GERD was diagnosed in the studies included to the meta-analysis and whether the diagnosis of GERD relied on clinical symptoms only, or with the aid of more specific tools such as pH metry, esophageal manometry, and endoscopy.

Furthermore, as the title implies, the meta-analysis aimed to assess the incidence of severe reflux after GERD, nonetheless, no definition of the severity of reflux and how it was assessed in the studies were provided. Interestingly, only eight studies fulfilled borderline or conclusive diagnostic GERD criteria as per the Lyon Consensus 2018, which indicates that less than 20% of the 46 studies reviewed used specific diagnostic criteria for GERD and raises a question on how was GERD objectively assessed in the remaining studies.

On another hand, it was notable that the value of Higgins I^2 statistics for all the pooled analyses performed was exceeding 90%, implying strong heterogeneity of the studies analyzed. It has been suggested that when the heterogeneity is very high, it is better not to perform meta-analysis as its outcome may not be quite accurate and truly representative. If meta-analysis is still to be undertaken, a plausible explanation of the high level of heterogeneity should be provided with an attempt to do sub-group meta-analysis, sensitivity analysis, and meta-regression analysis to further explore the inter-study heterogeneity [4].

Nevertheless, even with the methodological issues aforementioned, the risk of developing new-onset GERD or worsening of pre-existing reflux remains of paramount importance. I believe this meta-analysis should stimulate two important areas of research on SG that are the predictors for developing GERD after SG and the possible solutions to prevent or correct this problem.

Predicting which patient is more liable to develop new-onset GERD or worsening of already existing GERD after SG may help better select patients for the procedure and can be of key importance in patient counseling preoperatively. As reported by Althuwaini et al. [5], higher preoperative body mass index and higher heartburn scores were identified as independent predictors for developing GERD after SG. However, other factors that may also factor in the development of GERD after SG such as patient's demographics, length and condition of the esophagus before surgery, lower esophageal sphincter pressure, and technical aspects of SG are yet to be investigated.

Treatment of post-SG GERD can be challenging. As reported in the meta-analysis, 4% of patients required conversion to Roux en-Y-gastric bypass (RYGB) which may be

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deemed the best option to resolve post-SG reflux. Other viable options that may help mitigate the problem include supporting the lower esophageal sphincter with magnetic sphincter or using radiofrequency ablation. In the case of more severe reflux associated with considerable sleeve dilatation, reoperation may be necessary. In addition to RYGB, other possible procedures include anti-reflux gastroplasty and limited fundoplication [6]. Another technique that can be promising in managing GERD associated with SG is the Strachan technique which involves suturing the proximal 3 to 4 cm of the gastric sleeve to the right side of the esophageal hiatus with complementary hiatoplasty in patients with esophagitis and hiatal hernia [7].

In conclusion, the results of this meta-analysis call for more thorough assessment and careful selection of patients for SG and emphasize the importance of regular postoperative evaluation, not only by clinical symptom questionnaire but also using endoscopy and pH metry to determine the real incidence of post-SG GERD and Barrett's esophagus.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Does not apply.

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