

# Late esophagogastric anatomic and functional changes after sleeve gastrectomy and its clinical consequences with regards to gastroesophageal reflux disease

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Gastroesophageal reflux disease (GERD) is described as a complication after sleeve gastrectomy. Most studies have used only clinical symptoms or upper gastrointestinal endoscopy for evaluation of reflux after surgery. Manometry, acid reflux tests, and esophageal barium swallow have not been commonly used. The objective of this study is to evaluate the short- and long-term incidence of clinical gastroesophageal reflux, the lower esophageal sphincter (LES) pressure, acid reflux, and endoscopic and radiological changes after sleeve gastrectomy (SG). A total of 315 patients were studied after SG; 248 (78.3%) completed more than 5 years of follow-up and 67 (21.4%) have more than 8 years (range 8-10 years) of follow-up. The preoperative weight was  $106 \pm 14.1$  kg with a mean body mass index  $38.4 \pm 3.4$  kg/m<sup>2</sup>. Patients with prior GERD were excluded for SG. During the follow-up patients were subjected to clinical, endoscopic, radiological, manometric, and 24-hour pH monitoring and duodenogastric reflux evaluations. Reflux symptoms were observed in 65.1% of patients at late follow-up. Patients without reflux symptoms presented an LES resting pressure of  $13.3 \pm 4.2$  mmHg while patients with reflux symptoms presented an LES resting pressure of  $9.8 \pm 2.1$  mmHg. In patients with reflux symptoms, a positive acid reflux test was observed in 77.5% of patients with a mean DeMeester score of  $41.7 \pm 2.9$  (range 14.1-131.7). During endoscopy, esophagitis was found in 29.4%, hiatal hernia in 5.7%, and Barrett's esophagus was diagnosed in 4.8%. Positive duodenogastric reflux was found in 31.8% of patients and 57.7% of our patients received proton pump inhibitor treatment after SG. Sleeve gastrectomy presents anatomic and functional changes that are associated with increased GERD.