

## Simultaneous Treatment of Gastroesophageal Reflux Disease and Obesity

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### Opinion Article

The gastroesophageal reflux disease has increased since 1995 and currently 30% of the population in the world experiences at least weekly symptoms such as heartburn [1]. One possible reason for the high prevalence of gastroesophageal reflux disease could be globally increasing rate of obesity, as there is evidence that overweight and obese individuals suffer from gastroesophageal reflux disease more often than individuals with normal BMI [2-3].

A combination of Nissen fundoplication with gastric greater curvature plication was suggested for gastroesophageal reflux disease control in obese patients [4]. No studies so far have compared this type of procedure to a Nissen fundoplication alone and thus the aim of the current study was to compare the results of gastroesophageal reflux disease control in obese patients after these two procedures in the prospective trial.

Between June 2010 to September 2014, patients operated for gastroesophageal reflux disease with BMI from 30 to 39.9 kg/m<sup>2</sup> were included into the prospective study. Laparoscopic Nissen fundoplication (n=58) was performed until February 2013 and later laparoscopic Nissen fundoplication was combined with gastric greater curvature plication (fundo-corporo-gastroplication, n=56). The groups were compared according to the control of gastroesophageal reflux disease and weight loss.

In laparoscopic Nissen fundoplication group there were significantly more males, patients had lower BMI and longer duration of gastroesophageal reflux disease symptoms. Duration of surgery was significantly longer in fundo-corporo-gastroplication group, 96.5(17.3) min vs. 59.8(16.1) min (P<0.0001). Postoperative morbidity was similar, 3.6% and 3.4% in fundo-corporo-gastroplication and laparoscopic Nissen fundoplication groups, respectively (P=0.9539). The average percentage of excess BMI loss after 12 months was 45.3(5.8) in fundo-corporo-gastroplication group as compared to 18.4(4.6) in laparoscopic Nissen fundoplication group (P<0.0001). Significantly more patients experienced remission or improvement of type 2 diabetes mellitus (P=0.03) and hypercholesterolemia (P=0.0001) in fundo-corporo-gastroplication group. No significant differences between the groups in postoperative DeMeester score, GERD-HRQL mean score, overall satisfaction and healing of esophagitis were observed.

In this study we compared Nissen fundoplication combined with gastric greater curvature plication to Nissen fundoplication alone. This was a prospective study divided into two periods. Significantly more male patients were operated with Nissen fundoplication alone. Staehelin et al. [5] examined 1650 patients after laparoscopic fundoplication and found that male patients had less dysphagia, better heartburn control and higher overall satisfaction as compared to female patients.

Higher prevalence of male in laparoscopic Nissen fundoplication group may have influenced the results of GERD-HRQL score as it is based on subjective patients' complaints. There is little evidence about gender influence on the results of objective investigations such as 24-h pH-metry. Vega et al. [6] have shown that males without gastroesophageal reflux disease or reflux symptoms had significantly more reflux episodes, total reflux time and % time with pH<4 in the distal esophagus than females. However, in this study endoscopy was not performed to rule out hiatal hernia or silent esophagitis, which could have had direct influence on the obtained results. In our study preoperatively all patients had esophagitis and 95% had hiatal hernia. Moreover, there was no difference in acid exposure between groups measured by 24-h pH-metry. Thus we assumed that groups were comparable regarding gastroesophageal reflux disease status and obesity.

Both procedures achieved good reflux control as proved by normalization of DeMeester score, significant decrease in GERD-HRQL mean scores, increase in overall satisfaction and healing of esophagitis in 90% of cases.

In our study Nissen fundoplication combined with gastric greater curvature plication was a safe procedure with low morbidity. In contrast, Lee et al. [4] reported 8% risk of major perioperative complications after this procedure. Two patients in their series needed revision sleeve gastrectomy for leakage and intraabdominal abscess. Only one patient (1.7%) in the present study had serious complication, which needed re-laparoscopy. The % EBML of 45.3 was in a range of those reported after usual gastric greater curvature plication [7].

All patients with type 2 diabetes mellitus and hypercholesterolemia, and 70% of patients with hypertension experienced remission or improvement of their comorbidities after combined procedure. However, small number of patients with co-morbidities in both groups prompts cautious evaluation of these results. As gastric greater curvature plication is mainly a restrictive procedure the effect on comorbidities should be attributed to weight loss achieved after this procedure. Patients after Nissen fundoplication also lost weight, however, significantly less as compared to combined procedure. Similar weight loss after Nissen fundoplication was previously reported in the literature [8].

In conclusions fundo-corporo-gastroplication took significantly longer time to perform, but resulted in significantly higher weight reduction and remission/improvement of comorbidities. Both procedures show similar anti-reflux results.

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