TITLE: Increased esophagogastric junction distensibility in GERD patients assessed with the endoscopically placed functional luminal imaging probe (EndoFLIP®)

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ABSTRACT BODY: Esophagogastric junction (EGJ) incompetence contributes to gastroesophageal reflux disease (GERD) both with respect to the opening frequency and dimensions. The role of EGJ distensibility, a key determinant of opening dimensions, is mostly overlooked in current clinical assessment. **AIM:** To measure EGJ distensibility with endoscopically placed functional luminal imaging probe (EndoFLIP®, Crospon Medical Devices, Galway, Ireland). **METHODS:** 16 normal controls (3M, 18 - 42 yr) and 7 GERD patients with heartburn but without esophagitis or hiatal hernia (4M, 23 - 61 yr) were evaluated during endoscopy under sedation with the EndoFLIP® probe straddling the EGJ. The probe comprised an infinitely compliant cylindrical bag mounted on a 3 mm catheter with 16 impedance planimetry segments, each 3 mm long, contained within. Stepwise bag distensions of 10, 20 and 30 ml were conducted and the associated intra-bag pressure measured. The EndoFLIP® display allowed real-time imaging of EGJ intraluminal geometry during distention. Intrabag pressure and cross-sectional area (CSA) at the impedance planimetry segment best localized within the EGJ are reported as mean ± SEM. **RESULTS:** With distention, the EndoFLIP® display portrayed an hourglass shape with the EGJ as the neck. Stepwise distension elicited a progressive increase in bag pressure and EGJ opening ($p < 0.001$) in both groups (Figure), but in GERD patients both bag pressure and the rate of pressure increase as a function of bag volume were diminished compared to controls ($p = 0.01$ and $p = 0.002$, respectively). Hence, the CSA vs pressure curve for the GERD patients was shifted to the left with greater CSA but similar slope. EGJ distensibility (the ratio between CSA and bag pressure) was substantially greater in GERD patients ($p = 0.006$), especially at 20 ml (90 ± 44 vs 5 ± 1 mm^2/mmHg, $p = 0.005$) and 30 ml (56 ± 27 vs 8 ± 2 mm^2/mmHg, $p = 0.02$) distention volumes. **CONCLUSION:** Symptomatic GERD patients exhibit a more distensible EGJ compared to controls. This increased distensibility may be an important mechanism by which greater refluxate volume enters the esophagus. The EndoFLIP® device allows dynamic quantitative measure of EGJ distensibility while fitting in a practical clinical algorithm.