

# HIGH-RESOLUTION MANOMETRY ASSESSMENT OF ESOPHAGITIS ACROSS LOS ANGELES GRADES VALIDATES LYON 2.0 CRITERIA

**BACKGROUND AND AIM:** Gastroesophageal reflux disease (GERD) with erosive esophagitis is driven by anti-reflux barrier (ARB) dysfunction, yet comprehensive high-resolution manometry (HRM) assessments across Los Angeles (LA) grades are lacking. This study evaluates HRM metrics in patients with erosive esophagitis to validate Lyon 2.0 consensus criteria, hypothesizing that LA grade B esophagitis shares manometric features with severe GERD (LA grades C-D) and that HRM can stratify LA grade A patients for objective GERD risk.

**METHODS:** A retrospective multicenter study (July 2022–July 2025) enrolled 254 patients with GERD symptoms and erosive esophagitis (LA grade A: 145, B: 84, C-D: 25) across six centers. Patients underwent off-PPI endoscopy, HRM, and pH monitoring. HRM assessed esophagogastric junction (EGJ) morphology, EGJ-contraction integral (EGJ-CI), ineffective esophageal motility (IEM), straight leg raise (SLR), and Milan Score. Pathologic GERD was defined per Lyon 2.0 criteria.

**RESULTS:** LA grades B and C-D showed higher rate of hiatal hernia, positive SLR and lower EGJ-CI compared to LA grade A ( $p<0.001$ ). **Figure 1a** shows the percentage of patients of disrupted ARB mechanisms across the LA grades, while **Figure 1b** showed that the patients with at least 2 and at least 3 mechanisms disrupted were significantly higher in LA grade B and C-D compared to A.

Milan Score increased with esophagitis severity ( $p<0.001$ ). pH monitoring confirmed pathologic GERD in 96% (B) and 100% (C-D) vs. 50% (A). In LA grade A, patients with  $\geq 2$  disrupted ARB mechanisms (67.5%) had higher GERD rates than those with intact ARB (29.2%) (**Table 1**).

**CONCLUSION:** HRM supports Lyon 2.0 inclusion of LA grade B as definitive GERD, with manometric profiles similar to C-D. In LA grade A, compromised ARB identifies higher GERD risk, guiding therapy escalation.

**TABLE 1:** Pathophysiologic characteristics of the patients with LA grade A and an intact anti-reflux barrier (LA grade A-) compared with those with LA grade A and a compromised anti-reflux barrier (LA grade A+) and with LA grade B-C-D. Continuous values are expressed as median [IQR]. EGJ: esophago-gastric junction; LES: lower esophageal sphincter; EGJ-CI: EGJ-contractile integral; IEM: ineffective esophageal motility; SLR: straight leg raise; AET: acid exposure time; MNBI: mean nocturnal baseline impedance; PSPW: post-reflux swallow-induced peristaltic wave.

	Total (n=223)	LA grade A- (n=57)	LA grade A+ (n=71)	LA grade BCD (n=95)	pvalue	p-value A- vs. A+	p-value A+ vs. B/C/D
<b>HRM findings</b>							
EGJ type					<0.001	<0.001	0.745
1, n (%)	100 (39)	56 (86)	19 (24)	25 (23)			
2, n (%)	98 (39)	7 (11)	43 (54)	48 (44)			
3, n (%)	56 (22)	2 (3.1)	18 (23)	36 (33)			
Hiatal hernia, n (%)	154 (61)	9 (14)	61 (76)	84 (77)	<0.001	<0.001	0.769
Hiatal hernia size, (cm)	0.80 [1.90]	0.00 [0.00]	1.10 [1.50]	1.35 [2.33]	<0.001	<0.001	0.534
LES total length, (cm)	1.90 [0.80]	2.10 [0.73]	1.90 [0.83]	1.80 [0.60]	0.004	0.078	0.947
LES intra-abdominal length, (cm)	0.00 [0.70]	0.80 [1.15]	0.00 [0.30]	0.00 [0.00]	<0.001	<0.001	0.870
EGJ-CI, (mmHg*cm)	27 [28]	53 [48]	23 [17]	22 [24]	<0.001	<0.001	1.000
Patients with IEM, n (%)	77 (30)	3 (4.6)	29 (36)	45 (41)	<0.001	<0.001	0.846
Positive SLR, n (%)	137 (54)	9 (14)	47 (59)	81 (74)	<0.001	<0.001	0.084
Milan Score, (points)	153 [115]	58 [17]	158 [74]	184 [62]	<0.001	<0.001	<0.001
<b>pH-impedance findings</b>							
Definitive GERD, n (%)	179 (70)	19 (29)	54 (68)	106 (97)	<0.001	<0.001	<0.001
Acid exposure time, (%)	7 [10]	3 [5]	7 [10]	10 [9]	<0.001	<0.001	0.005
Total reflux episodes, n	42 [37]	40 [37]	44 [35]	42 [51]	0.678		
MNBI, ( $\Omega$ )	1,580 [1,551]	2,530 [2,157]	1,609 [1,348]	1,012 [1,364]	<0.001	0.001	0.013
MNBI<1500 $\Omega$ , n (%)	90 (47)	9 (20)	30 (46)	51 (62)	<0.001	0.024	0.199
PSPW index	44 [30]	53 [42]	48 [29]	34 [24]	0.001	0.921	0.006
Reflux-symptom association, n (%)	58 (34)	13 (28)	24 (45)	21 (29)	0.109		
Total reflux episodes >80, n (%)	38 (18)	6 (11)	8 (12)	24 (27)	0.016	1.000	0.085

**FIGURE 1:** Histogram showing: the percentage of patients with each anti-reflux mechanism disrupted (A) and the percentage of patients with at least 2 and 3 mechanisms disrupted (B). \*:  $p<0.05$

