# EVALUATING THE EFFICACY OF INCORPORATING RESTECH PROCEDURE WITH BRAVO PH MONITORING AND HIATAL HERNIA GRADING DURING INITIAL ESOPHAGOGASTRODUODENOSCOPY (EGD) FOR ENHANCED DIAGNOSIS AND MANAGEMENT OF LARYNGOPHARYNGEAL REFLUX (LPR)

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## Background

Laryngopharyngeal reflux (LPR) is an extraesophageal manifestation of GERD. Diagnosis and management is challenging due to non-specific symptoms it can manifest as like coughing, throat irritations, and hoarseness. Current diagnostic methods include taking a thorough medical history, laryngoscopy, EGD, and pH monitoring. LPR is currently managed through lifestyle modifications and dietary adjustments. Medications such as proton pump inhibitors (PPIs) and H2-receptor antagonists can help reduce acid, while voice therapy may benefit those with vocal issues. In severe cases, surgical options might be considered.

## Aim

This study aims to assess whether incorporating Restech during initial EGD and Bravo pH testing improves the diagnosis and management of LPR in patients referred to a comprehensive GERD center by analyzing data from Restech studies, pH readings, and Hill grade classifications collected in a single procedure.

## Methods

A prospective analysis of 28 atypical GERD patients assessed Hill grade and mucosal damage via endoscopy, Acid exposure time (AET) through Bravo pH testing, and oropharyngeal pH with a 24-hour Restech probe (Ryan score ≥9.41 indicates pathological). Hill grade >2 suggests hiatal disruption, and AET >6% indicates abnormal esophageal acid exposure. Spearman, Chi-squared, and Fisher's exact tests were used for analysis.

## Results

60.7% (n=16) of patients had positive Ryan score. Of these, 50% (n=8) had Hill grades of 3 or 4, and 56.3% (n=9) had AET >6%. In total, 69% (n=11) had AET >6%, Hill grades >2, or both, while 31.25% (n=5) had AET <6% and Hill grades ≤2. A mean pH drop of 0.34 was observed in 85.7% (n=24), but only 54.2% (n=13) had Ryan scores ≥9.41.

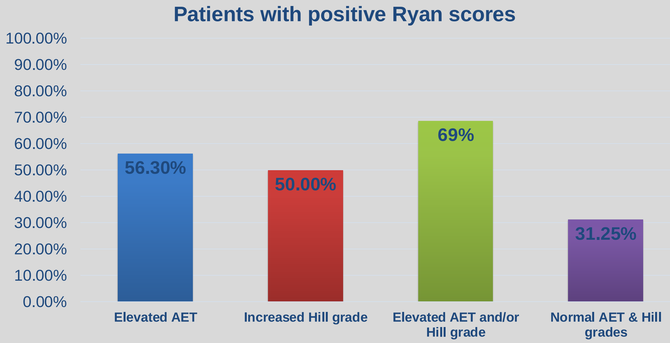



**Figure 1.** Findings in Patients with Positive Ryan Scores (>=9.41)

## Statistical Analysis

No significant correlations were found between Ryan scores and AET (-0.102, p=0.607) or Hill grades (-0.274, p=0.158). AET showed a weak positive trend with Hill grades (0.329, p=0.087). No significant differences in AET >6% were observed between patients with Ryan scores <9.41 and ≥9.41 (58.3% vs. 56.3%, p=0.912). Pathological Hill grades were evenly distributed (50%, p=1.000).

## Conclusion

Our study highlights the limitations of using Restech alone for LPR diagnosis. While it detects aerosolized acid at the upper laryngeal level, the lack of significant correlations between Ryan scores, AET, and Hill grades suggests it shouldn't be used in isolation. 69% of patients had Hill grade abnormalities, suggesting acid in the laryngopharynx may result from lower esophageal anatomical abnormalities, potentially benefiting from aggressive treatments like anti-reflux surgery. In contrast, 31.25% had no lower esophageal abnormalities, suggesting non-GERD causes warranting further testing. Additionally, gastric pH dropped during distention in 85.7% of patients. However, Restech detected acid in 54.2% of them, suggesting gastric distention during EGD may not provoke LPR. In summary, our results emphasize the importance of a multifaceted diagnostic approach that incorporates both upper and lower esophageal assessments to accurately diagnose and manage LPR, as Restech alone doesn’t provide a comprehensive view of the pathophysiology. Combining Restech with Hill grade and Bravo pH testing allows for a more targeted treatment plan, tailored to the patient's specific underlying condition, ultimately improving outcomes.

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