

5th International Conference on **Pediatrics and Neonatal Care**

July 21-22, 2026 | Vienna, Austria



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EndoFLIP Distensibility Index Correlates with Histologic Findings in Children with Eosinophilic Esophagitis

The Eosinophilic Esophagitis Histology Scoring System (EoEHSS) is a vital tool for characterizing eosinophilic esophagitis (EoE), but evaluating lamina propria fibrosis remains a significant challenge due to superficial mucosal sampling limitations during routine biopsy. Since a low distensibility index (DI) measured by endoluminal functional lumen imaging probe (EndoFLIP) is associated with fibrostenotic severity in children with EoE, we investigated the correlation between DI and EoEHSS parameters to determine if EndoFLIP can serve as a complementary tool to evaluate esophageal remodeling. We retrospectively reviewed the medical records of pediatric patients (<21 years old) who underwent an esophagogastroduodenoscopy (EGD) with concurrent mucosal biopsy and EndoFLIP evaluation between October 2017 and July 2023, categorizing histologic diagnoses into normal/reactive, reflux, or EoE groups. Across 126 evaluated EGDs (from 112 unique patients; 80 normal/reactive, 32 reflux, 14 EoE), the DI at 30 mL inflation was significantly lowest in the EoE cohort ($p=0.03$) and demonstrated a statistically significant negative correlation with the overall EoEHSS composite grade score ($p<0.05$). Furthermore, significant negative correlations were observed with individual grade and stage subscores for key remodeling indicators, including eosinophil abscesses, eosinophil surface layering, dilated intercellular spaces, basal zone hyperplasia, and the eosinophilic inflammation stage score (all $p<0.05$). Our team concluded that the negative correlation between the DI value at 30 mL inflation and composite EoEHSS metrics reflect underlying tissue architectural changes, demonstrating that EndoFLIP can effectively complement the EoEHSS in evaluating EoE-associated esophageal remodeling in pediatric patients.

Keywords: eosinophilic esophagitis, EndoFLIP, Endoscopy, Pediatric EGD

Biography

Dr. Kenneth Ng is an Associate Professor of Clinical Pediatrics and the Director of Endoscopy in the Division of Pediatric Gastroenterology, Hepatology, and Nutrition at the Johns Hopkins University School of Medicine. His professional interests include therapeutic endoscopy, endoscopic innovations, pancreatic diseases, biliary diseases, and esophageal disorders.

Dr. Ng received his medical degree from the Rowan University School of Osteopathic Medicine. He completed his pediatric residency at Cohen Children's Medical Center and did his fellowship in pediatric gastroenterology at Baylor College of Medicine. After fellowship, he was an Assistant Professor in the Division of Pediatric Gastroenterology, Hepatology, and Nutrition at Baylor College of Medicine, practicing at Texas Children's Hospital in Houston, Texas. He joined Johns Hopkins Children's Center in 2017.

Dr. Ng has received awards for his research and clinical work, including the American Liver Foundation Postdoctoral Research Fellowship Award and the Dr. George Ferry Outstanding GI Faculty Award from Texas Children's Hospital.