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STRUCTURAL AIRWAY ANOMALIES CONTRIBUTE TO DYSPHAGIA IN CHILDREN WITH ESOPHAGEAL ATRESIA AND TRACHEOESOPHAGEAL FISTULA

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Aim of Study: To determine if structural airway anomalies in esophageal atresia and tracheoesophageal fistula (EA/TEF) are associated with dysphagia, independent of esophageal function.

Methods: We conducted a retrospective chart review of all children who underwent EA/TEF repair in our hospital system from 2007-2015. Children with identified structural airway anomalies (oropharyngeal anomalies, laryngeal clefts, laryngomalacia, vocal cord paralysis, and tracheomalacia) were compared to those without airway anomalies. Dysphagia outcomes were determined by the need for tube feeding and the modified pediatric Functional Oral Intake Scale (FOIS) at one year. Univariate statistical tests and multivariate logistic regression were used to compare outcomes between groups.

Main Results: A structural airway anomaly was diagnosed in 55/145 (37.9%) patients with EA/TEF. Children with structural airway anomalies had lower gestational age (35.39 vs. 37.23 weeks, p<0.001) and were more likely to be associated with long gap EA (31.4% vs. 12.0%, p=0.028). Children with airway anomalies had similar rates of associated VACTERL anomalies (34.5% vs. 26.7%, p=0.314) and esophageal stricture (38.2% vs. 41.1%, p=0.727). Oropharyngeal aspiration was more common in children with structural airway anomalies (58.3% vs. 36.4%, p=0.028). Children with structural airway anomalies were more likely to require tube feeding both at discharge (79.6% vs. 48.3%, p<0.001) and at one year (52.7% vs. 13.6%, p<0.001) and had lower mean FOIS (4.18 vs. 6.21, p<0.001). In the logistic regression model adjusting for gestational age, long gap EA, and esophageal stricture, the presence of a structural airway anomaly remained a significant risk factor for dysphagia (Table).

Conclusion: Structural airway anomalies are common in children with EA/TEF and are associated with dysphagia, even after accounting for gestational age, esophageal gap and stricture. This study highlights the need for a multidisciplinary approach, including early laryngoscopy and bronchoscopy, in the evaluation of the EA/TEF child with dysphagia.

Table. Logistic regression model predicting need for tube feeding at 1 year of age in children with esophageal atresia and tracheoesophageal fistula

	Odds Ratio	95% CI	p value
Structural airway anomaly	4.174	1.580-11.025	0.004*
Gestational age at birth	0.820	0.699-0.964	0.016*
Long gap EA	10.020	2.800-35.851	<0.001*
Esophageal stricture	0.780	0.249-2.443	0.670

Long gap esophageal atresia (EA) was defined as requiring a staged repair approach. Esophageal stricture was defined as need for dilation. * Significance level <0.05.