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Innominate Artery Repair: A Novel Approach to Treating Dysphagia Secondary to Vascular Compression

Background: Innominate artery compression syndrome is a rare congenital anomaly due to an abnormal path of the artery leading to compression of the trachea and/or esophagus. Literature reporting repair focuses occur on symptomatic tracheal compression associated with dyspnea, cough, or recurrent infections. Repair techniques focus on aortopexy or reimplantation of the innominate artery. In this case, esophageal compression dominated the symptoms, marked by dysphasia to solids. Surgical repair was achieved with translocation of the aberrant right subclavian artery to the right common carotid artery.

Case: A 14-year-old male with Trisomy 21 had severe chronic upper airway obstruction after adenotonsillectomy. He subsequently had persistent severe obstructive sleep apnea and underwent tracheostomy. Subsequent otolaryngologic evaluation revealed laryngotracheomalacia. His mother reported a long history of dysphagia to solids prior to intervention and afterwards. Further evaluation with computed-tomographic angiography of the chest revealed a left aortic arch with an aberrant right subclavian artery crossing posterior to the esophagus below the thoracic inlet. Esophagram revealed focal indentation on the in the posterior and left upper esophageal wall just below the level of the thoracic inlet, consistent with the vessel. The vascular anomaly was repaired by the pediatric cardiac surgeon via right thoracotomy, in which he performed a translocation of the aberrant right subclavian artery to right carotid artery. The patient recovered well and had complete resolution of the dysphagia.

Conclusion: While tracheal compression with subsequent airway issues is the major indication for repair of innominate artery syndrome, there is utility in repair for pediatric patients with dysphagia secondary to esophageal compression. This demonstrates the importance of treating dysphagia for both functionality and for improved quality of life.