Anomalous Origin of the Left Pulmonary Artery from the Right Pulmonary Artery (Pulmonary Artery Sling)

Ahmad Zabad, M.D.*, Mohanad Shukry, M.D.
* Department of Anesthesiology, University of Oklahoma, Oklahoma City, Oklahoma.
ahmadzabad@hotmail.com

The pulmonary artery (PA) sling is created by anomalous origin of the left PA from the posterior aspect of the right PA. The anomalous left PA courses over the right mainstem bronchus and then from right to left, posterior to the trachea or carina and anterior to the esophagus, to reach the hilum of the left lung. This compresses the esophagus and the lower trachea and right mainstem bronchus, producing feeding and respiratory problems, such as recurrent cough and respiratory infection, stridor and wheezing. In addition, associated anomalies of the tracheobronchial tree and/or of the cardiovascular system are present in about 50% of the patients.1,2

In addition, bronchoscopy can show a pulsating stricture in the trachea. Medical care is supportive until the patient can undergo definitive surgical correction. Anesthetic management is the same as with any tracheal obstruction; spontaneous ventilation for bronchoscopy and endotracheal intubation bypassing the tracheal restriction for other surgeries. Hypoxemia and respiratory distress are treated with supplemental oxygen and endotracheal intubation. Surgical repair consists of transection of the left PA at its origin and implantation into the main PA anterior to the trachea. Tracheoplasty utilizing end-to-end anastomosis is often needed if the sling is not repaired early. In this case, cardiopulmonary bypass or extracorporeal membrane oxygenation may be required. The anatomy could be correctly diagnosed by magnetic resonance imaging in 97% and by angiography in 90% of patients3 (angiogram shows pulmonary trunk, right PA, and left PA).

References