

## Right-Sided Aortic Arch with Aberrant Origin of the Left Subclavian Artery

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### Abstract

Right-sided aortic arch with aberrant origin of the left subclavian artery is one of the rare aortic congenital abnormalities that result in compression of the tracheobronchial tree and/or esophagus, leading to respiratory and gastrointestinal symptoms.

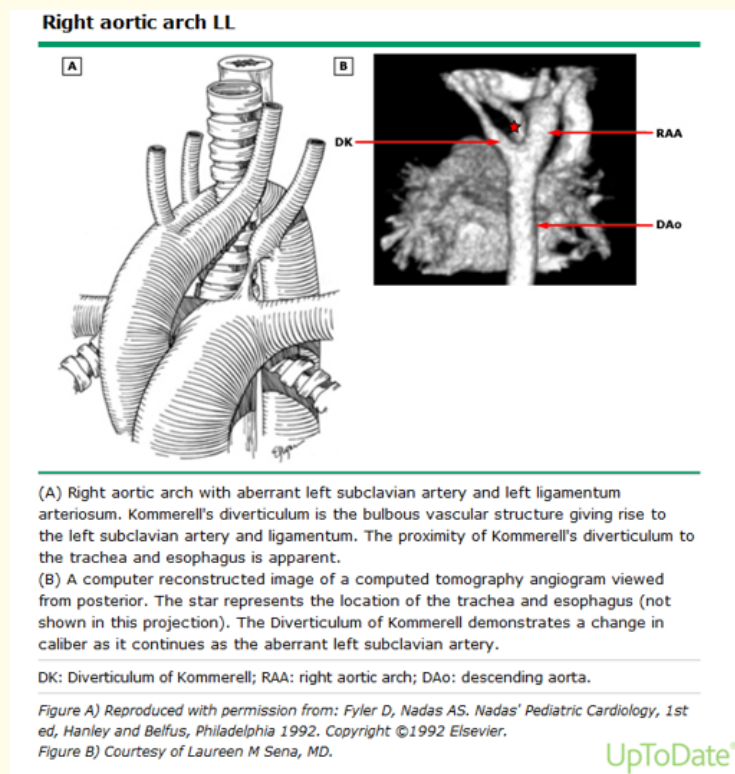
**Keywords:** Right-Sided Aortic Arch; Aberrant Origin; Left Subclavian Artery

### Introduction

In the available case series, the relative frequencies of Right aortic arch and an aberrant left subclavian artery and left-sided ductus arteriosus: 30 to 65 percent of cases [1-3].

**Anatomically:** In a right aortic arch with an aberrant left subclavian artery and left-sided ductus arteriosus or ligamentum, the ductus arteriosus arises posteriorly in the mediastinum at the origin of the aberrant left subclavian artery, courses anteriorly to the left of the trachea and esophagus and connects to the pulmonary artery.

The trachea and esophagus are completely encircled by the right-sided aortic arch (anterior/rightward), the base of the left subclavian artery (posterior), and ductus arteriosus (leftward), resulting in a complete vascular ring [4,5].



**Figure**

In case series of surgically corrected patients with vascular rings, most patients present by one year of age with significant tracheal (stridor, recurrent respiratory infections, respiratory distress, wheezing and cough) and esophageal (dysphagia, feeding difficulty, and vomiting) symptoms [3,6,7].

Symptomatic infants display signs of increased respiratory effort with nasal flaring, intercostal retractions, tachypnea, and intermittent cyanosis. Some infants will lie with their back arched and neck extended to minimize tracheal compression. Wheezing and/or coarse upper airway sounds may be heard during auscultation.

In our center, the diagnostic evaluation typically includes chest radiography, echocardiography, and computed tomography angiography (CTA) using a modern dual-source multidetector scanner. Bronchoscopy is reserved for patients with concerns of airway patency. We do perform barium esophagograms because they do provide additional information to that given by CTA [8].

The surgical approach depends on the specific type of vascular ring. Clinical outcomes are excellent, with resolution of symptoms in the majority of patients and low surgical risks.

### Case Presentation and Discussion

We present a child of three years old with dysphagia, stridor and recurrent upper and lower respiratory infections due to a right aortic arch with aberrant left subclavian artery without left-sided ductus arteriosus.

The posteroanterior chest x ray was unremarkable (Figure 1).



Figure 1: Preoperative Chest x- ray is unremarkable.

The diagnosis of this vascular anomaly was confirmed by enhanced thorax Computed tomography (Figure 2).

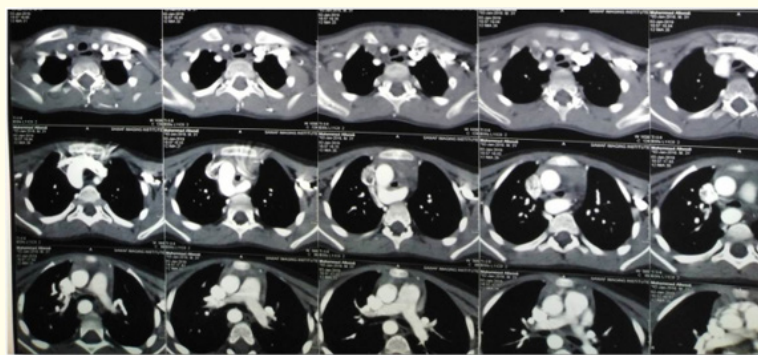
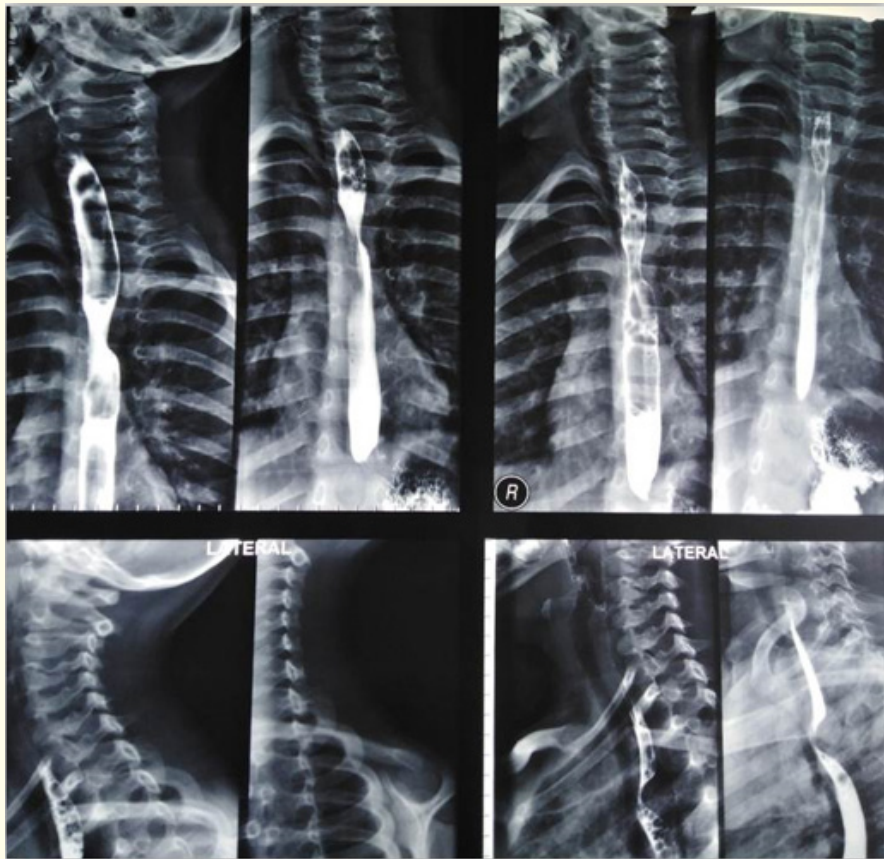


Figure 2: Chest-HRCT shows a right sided arch with aberrant left subclavian artery.

The rigid bronchoscopy showed an exterior compression of the upper third of the trachea.

The Barium contrast esophagogram (barium swallow) demonstrated an impression on the posterior wall of the esophagus at the junction of the upper third and the lower two thirds causes slight tightness with a slight slant in crossing the shady material, often in line with an abnormal origin of the right subclavian artery. There is no sign of Gastroesophageal reflux disease or gastric hernia (Figure 3).



**Figure 3:** The Barium contrast esophagogram (barium swallow) demonstrated an impression on the posterior wall of the esophagus at the junction of the upper third and the lower two thirds causes slight tightness with a slight slant in crossing the shady material, often in line with an abnormal origin of the right subclavian artery. There is no sign of Gastroesophageal reflux disease or gastric hernia.

The surgical repair was performed which released the complete circle formed by the vascular and ligamentous structures around the trachea and oesophagus.

The operation was perfect without any postoperative complication.

### Conclusion

Right-sided aortic arch with aberrant origin of the left subclavian artery is rare cause of childhood respiratory distress which require a surgical repair in symptomatic children, and the diagnosis require multidisciplinary medical team.

### Bibliography

1. Shah RK, et al. "The presentation and management of vascular rings: an otolaryngology perspective". *International Journal of Pediatric Otorhinolaryngology* 71.1 (2007): 57-62.
2. Humphrey C., et al. "Decade of experience with vascular rings at a single institution". *Pediatrics* 117.5 (2006): e903-e908.
3. Woods RK, et al. "Vascular anomalies and tracheoesophageal compression: a single institution's 25-year experience". *Annals of Thoracic Surgery* 72.2 (2001): 434-439.

4. Van Son JA and Igor E Konstantinov. "Burckhard F. Kommerell and Kommerell's diverticulum". *Texas Heart Institute Journal* 29 (2002): 109.
5. Backer CL., *et al.* "Resection of Kommerell's diverticulum and left subclavian artery transfer for recurrent symptoms after vascular ring division". *European Journal of Cardio-Thoracic Surgery* 22.1 (2002): 64-69.
6. Backer CL., *et al.* "Trends in vascular ring surgery". *Journal of Thoracic and Cardiovascular Surgery* 129.6 (2005): 1339-1347.
7. Turner A., *et al.* "Vascular rings--presentation, investigation and outcome". *European Journal of Pediatrics* 164.5 (2005): 266-270.
8. Hernanz-Schulman M. "Vascular rings: a practical approach to imaging diagnosis". *Pediatric Radiology* 35.10 (2005): 961-979.

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