

## **Radiographic Findings:**

### **Thorax:**

Right lateral and ventrodorsal views are provided for interpretation. In the lateral projection, there is ventral deviation of the thoracic trachea. There is gaseous dilatation of the esophagus cranial to the heart. In the ventrodorsal projection, the gas filled esophagus is seen at the thoracic inlet superimposed on the trachea. The mediastinum cranial to the heart is widened and of homogenous soft tissue opacity. The trachea is deviated to the left and narrowed laterally within the cranial mediastinum. The leftward margin of the descending aortic arch is not identified. There is no evidence of pulmonary alveolar disease.

### **Esophagram:**

Fluoroscopic evaluation of the esophagus was performed with the administration of approximately 20 mL of barium liquid 60% w/v. Normal swallowing was seen. There is severe pooling of contrast medium within the cervical and cranial thoracic esophagus. There is segmental dilation of the esophagus with constriction of the lumen cranial to the heart base. There is no evidence of caudal esophageal dilation. Right lateral and ventrodorsal radiographs obtained immediately following the esophagram demonstrate a mild amount of contrast remaining within the cervical and cranial thoracic esophagus. There are multiple circular radiolucent defects within the contrast medium consistent with gas or previous meal. There are normal linear mucosal folds seen involving the cranial to middle cervical esophagus. There is dilation of the caudal cervical and cranial thoracic esophagus in the lateral projection. IN the dorsoventral views, the distended esophagus has an irregular course and contour and is seen just to the left of midline and superimposed on the trachea.

## **Radiographic Impressions:**

1. Radiographic and esophagram changes associated with the esophagus are consistent with the diagnosis of vascular ring anomaly.
2. Negative for evidence of aspiration pneumonia.

## **Case Follow Up:**

The patient went to surgery where a thoracotomy and transaction of the ligamentum arteriosum was performed. It was also noted during surgery that there was a persistent left cranial vena cava and hemizygous vein. The patient recovered from surgery in ICU and was maintained in an upright position for 30 min after each feeding to prevent aspiration pneumonia.

## **Discussion:**

An esophagram is the standard in diagnosing vascular anomalies. In a recent study moderate to exaggerated leftward deviation of the trachea near the cranial border of the heart in a ventrodorsal (VD) or dorsoventral (DV) view was found in 100% of dogs with a persistent right aortic arch<sup>1</sup>. Moderate to marked focal narrowing of the trachea was found in only 74% of PRAA dogs on a VD or DV view. Therefore, tracheal deviation was found to be a diagnostic indicator for PRAA.

## **References**

1. Buchanan, J. W, (2004) Tracheal signs and associated vascular anomalies in dogs with persistent right aortic arch. *Journal of Veterinary Internal Medicine* 18, 510-514.