



# Bronchial Atresia: A Rare Cause of Matched Ventilation and Perfusion Defects

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## Keywords

V/Q scan; Bronchial atresia; Matched defect; Ventilation; Perfusion

## Clinical Image

A 14-year-old male was found to have an abnormal chest CT following a single episode of pneumonia. Contrast-enhanced chest CT demonstrated a region of air trapping in the anterior segment of the right upper lobe which was intersected by a tubular, branching, non-enhancing soft tissue density extending from the hilum to the lung periphery, findings typical for bronchial atresia with mucoid impaction in non-draining bronchi distal to the atretic segment (Figure 1). Subsequent ventilation-perfusion scan revealed matched defects a distribution corresponding to the site of CT abnormality (Figure 2).

This case demonstrates the classic scintigraphic and CT findings in bronchial atresia, an uncommon congenital anomaly.

Multiple CT images demonstrating typical CT features of bronchial atresia with mucoid impaction. A. Sagittal Maximum Intensity Projection (MIP) image in soft tissue window demonstrates branching non-enhancing tubular densities of varying caliber extending from the right hilum to the periphery of the lung (arrows) representing mucoid impaction within bronchi distal to the atretic segment. Note normal enhancing pulmonary vessels (arrowheads) B. Sagittal reformation in lung window again demonstrating mucoid-filled, post-atretic bronchi (arrows) extending within a zone of marked emphysema, a pattern typical of bronchial atresia.

C (coronal) and D (sagittal) Minimal Intensity Projection (MinIP) images in lung window clearly demarcate a large zone of hyperinflation with air-trapping in the anterior segment of the right upper lobe (arrows). Air-trapping in the post-atretic lung parenchyma is due to ventilation via collateral airway drift through interalveolar pores of Kohn [1-8].

Selected images from a nuclear medicine Ventilation/Perfusion scan. Right lateral view images from Ventilation (A) and Perfusion (C) scan demonstrate a matched zone of diminished

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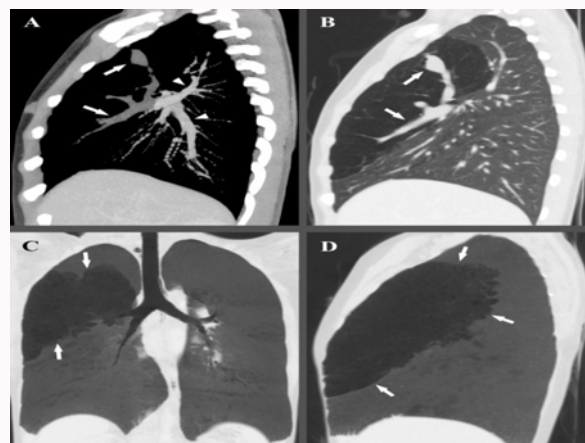
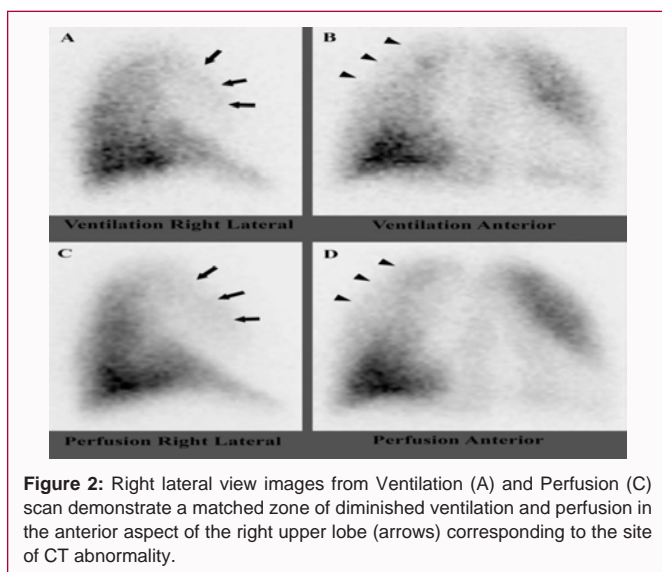


Figure 1: Multiple CT images demonstrating typical CT features of bronchial atresia with mucoid impaction.



**Figure 2:** Right lateral view images from Ventilation (A) and Perfusion (C) scan demonstrate a matched zone of diminished ventilation and perfusion in the anterior aspect of the right upper lobe (arrows) corresponding to the site of CT abnormality.

ventilation and perfusion in the anterior aspect of the right upper lobe (arrows) corresponding to the site of CT abnormality. Anterior view ventilation (B) and perfusion (D) images show similar findings (arrow heads). Despite the segmental/sub segmental nature of the pathology, the typical wedge-shaped configuration is not seen due to marked expansion of the affected post-atretic lung parenchyma by air trapping.

Bronchial atresia is a rare congenital anomaly that results from

failure of embryogenesis and is usually asymptomatic. Unless complicated, conservative management approach is usually adopted based on pathognomonic CT features without a need for tissue diagnosis [1,3-5].

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