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# TRACHEAL BRONCHUS; A RARE CONGENITAL ANOMALY OF THE AIRWAY

**Niaz Hussain Soomro[1*], Aneeqa Ahsan Zafar[2], Sakina Abidi[3] and Omer Ehtisham[2]**

[1]Assistant Professor, Dept of Thoracic Surgery, [2]Intern, Dept of Thoracic Surgery, [3]Post Graduate Trainee, Dept of Thoracic Surgery, Ojha Institute of Chest Diseases, Dow university of Health Sciences, Karachi, Pakistan.

Corresponding Author:- **Niaz Hussain Soomro**
**E-mail:** soomroniaz@yahoo.com

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**ABSTRACT**
Congenital airway anomalies are uncommon, occurring in approximately 0.5-2% of the population. A tracheal bronchus is an aberrant bronchus that arises most often from the right tracheal wall above the carina. They are usually asymptomatic and found incidentally but sometimes maybe associated with cough, recurrent pneumonia or bronchiectasis. We report the case of a 30 year old female with right upper lobe bronchiectasis, who was found to have an accessory right upper lobe bronchus (tracheal bronchus) arising directly from the right lateral wall of the trachea.

## INTRODUCTION

Normally, the trachea divides at the carina into right and left main bronchi, but sometimes congenital anomalies of the airways develop – one such anomaly is the tracheal bronchus. Tracheal bronchus, also referred to as suis's bronchus, because it is part of the normal anatomy of pigs, is a rare congenital tracheobronchial anomaly in which an accessory bronchus arises from the lateral wall of the trachea above the carina and supplies the entire upper lobe or segment of the upper lobe [1]. It was first described by Edward Sandifort in 1785 [2]. Tracheal bronchus is present on the right side in 0.1-2% of the population and on the left side in 0.3-1% [3]. In most cases it arises 2-6cm proximal to carina [4]. We present a 30 year old female who presented with bronchiectatic destruction of the right upper lobe of the lung and was incidentally found to have a tracheal bronchus during surgery.

## CASE REPORT

A 30 year old female presented to us complaining of cough for the last one and a half month and hemoptysis for 15 days. On physical examination she was of average height and built with stable vitals. Chest examination revealed crepts in the right upper chest, anteriorly and posteriorly. Chest X-ray demonstrated multiple cavities suggestive of bronchiectasis. CT scan chest confirmed the bronchiectatic changes in the right upper lobe.

After pre-operative work-up, she was scheduled for a thoracotomy and right upper lobectomy. During surgery, it was observed that an accessory bronchus was arising directly from the trachea and entering the posterior segment of the right upper lobe. In addition to the usual 3 segmental branches of the pulmonary artery to right upper lobe, 2 accessory segmental branches were arising from the pulmonary artery which was entering the posterior segment. Normally, the middle lobe vein drains directly into the superior pulmonary vein but in our patient the middle lobe vein was not draining into it. All the vessels were identified, ligated and cut. Lobectomy was performed. The patient's post-operative recovery was uneventful and she is doing well at 2 months follow-up.

## DISCUSSION

Tracheal bronchus is a congenital anomaly in which the right upper lobe bronchus originates from the

lateral tracheal wall. Due to the paucity of available literature on tracheal bronchus, there is no defined age group or gender in which this anomaly is common. S. Veddajalam [1] and Michael [2] reported the cases of two females who presented with tracheal bronchus. Our patient was also female. Since it is most commonly an incidental finding, there is no common age group although more reports have been published on children [1,3,4]. Reis et al reported that tracheal bronchi are due to a defect in embryogenesis due to bronchial mesenchymal transplantation in the tracheal epithelium rather than a genetic abnormality [5]. There are two main types of tracheal bronchus; a supernumerary type in which an accessory bronchus coexists with the normal type of branching of the main stem bronchus. Another is displaced type; in this the branch to the upper lobe bronchus is missing and instead, is replaced by the accessory bronchus [6]. The displaced type is more frequent than the supernumerary type. It is likely that defects involving supernumerary tracheal bronchi occur early in development, at about 29–30 days when the lobar bronchi start to differentiate. Displaced bronchi defects are more likely to occur after 32 days, when the bronchi elongate [6].

Tracheal bronchus is most commonly asymptomatic, and discovered as an incidental finding on CT, bronchography, bronchoscopy, surgery or by regular reading of film images by radiologists with a special interest in this topic. In our case, this anomaly was not identified on pre-operative radiography. After surgery, the case was discussed with the radiologist, who reviewed the CT-scan again but was unable to point out the tracheal bronchus from the available images. Ghaye et al [6] reports that patients may present with cough, hemoptysis, bronchospasm, bronchiectasis or recurrent pneumonias. Our patient presented with a one and half month history of cough and also developed hemoptysis 2 weeks before presenting to the hospital. An interesting point to note is the associated higher occurrence of tracheal bronchus in combination with other vascular anomalies [1,7] and congenital heart diseases [7] with a particularly high incidence in Down's syndrome patients[8]. However, no direct association has been made between the presence of tracheal bronchus and congenital vascular anomalies. Vascular anomalies were identified in our patient as well. 2 accessory segmental branches were seen to arise from the interlobar part of the pulmonary artery and enter the posterior segment of the right upper lobe. Normally, the middle lobe vein drains directly into the superior pulmonary vein but in our patient the middle lobe vein was not draining into it.

In the absence of clinical symptoms, a diagnosis of tracheal bronchus does not require any treatment. In patients with recurrent right upper lobe disease and a tracheal bronchus, therapy should include resection of the aberrant bronchus as well as the lobe it supplies [2,8]

**Figure 1. CT Scan Chest (coronal section) showing multiple small cavities in the right upper lobe suggesting bronchiectasis.**

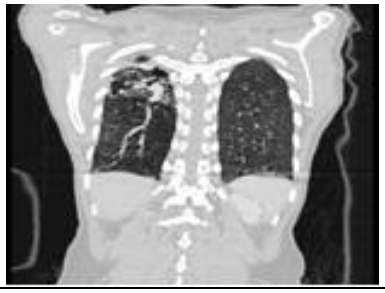


**Figure 2. CT Scan chest(axial section) shows right upper lobe bronchus and bronchiectatic changes in right upper lobe**

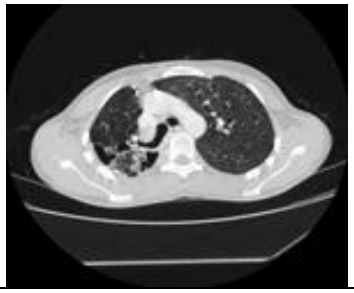
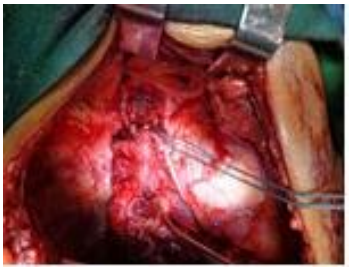


**Figure 3. Intraoperative picture showing tracheal bronchus entering the Right Upper Lobe(arrow)**

**Figure 4. Down arrow showing the repaired Right Upper Lobe bronchus. Right arrow showing the repaired accessory tracheal bronchus.**



## CONCLUSION

Congenital tracheobronchial abnormalities are rare and mostly asymptomatic. Nevertheless, a tracheal bronchus can be associated with bronchiectasis and recurrent pulmonary infections. Surgical resection of the involved lobe along with the accessory bronchus provides complete cure.

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