

A Rare Case of a Tracheal Bronchus

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ABSTRACT

We are reporting here a case of a right tracheal bronchus who presented with recurrent right upper lobe pneumonia. On the initial visit, the patient presented with a right upper lobe opacity which was anterior to the right main bronchus. Fiber optic bronchoscopy revealed a right tracheal bronchus, 2.5 cm above the carina. 8 months later, the patient presented with a peripheral

type of right upper lobe opacity. Though the lesions simulated tuberculosis/malignancy, cytology and bacteriology were not confirmatory and the patient was treated symptomatically. After being on regular follow up after 4 months, the patient had complete resolution of both the opacities, with residual atelectasis in the upper lobe.

Key Words: Pneumonia, Malignancy, Computerized tomography guided biopsy

INTRODUCTION

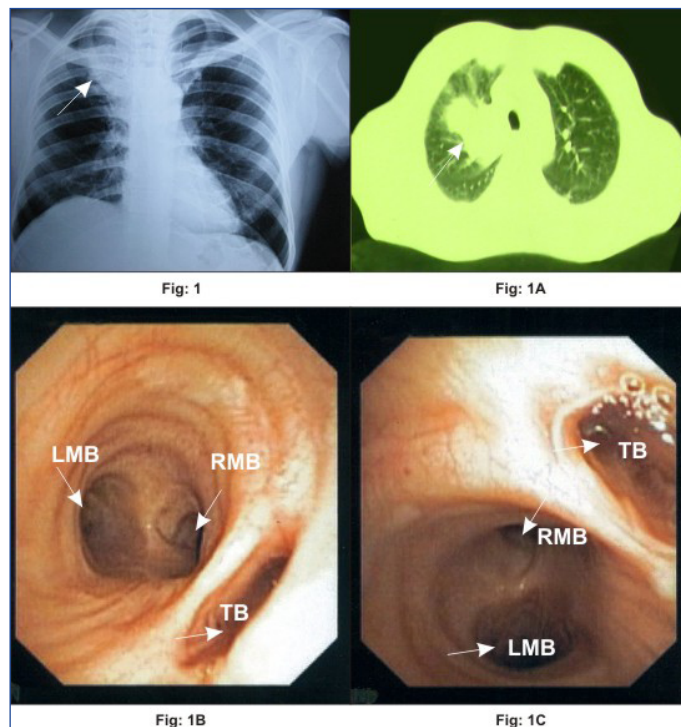
The tracheal bronchus (bronchus suis) is a rare congenital anomaly which occurs as a result of an additional tracheal out growth early in the embryonic life. It originates more commonly from the right wall of the trachea, above the carina. It is usually asymptomatic but some people experience recurrent pneumonia, chronic bronchitis or bronchiectasis, probably due to narrowing at the origin of the tracheal bronchus. The prevalence of the right tracheal bronchus is 0.1%–2% and that of the left tracheal bronchus 0.3%–1%. [1,2] Here, we are presenting a case of tracheal bronchus of the super numerary type, which is uncommon as compared to the displaced type which presents with recurrent right upper lobe pneumonia [3].

CASE REPORT

A 53-year old man, a teetotaler and a known case of Type II NIDDM, who was on regular treatment and control, presented with complaints of recurrent episodes of fever and cough with expectoration for 3-4 months, on and off. He had no similar episodes of respiratory problems in the past. There was no past history of taking anti-tuberculous treatment. The rest of the history was unremarkable.

On examination, his vitals were found to be stable. He was comfortable at rest. The trachea was slightly shifted to the right. The examination of his chest revealed a mild dullness in the right infraclavicular region and the rest of the examination was unremarkable. The routine investigations revealed that haemoglobin was 11.25gms% and that the total laeukocyte count was 14000/mm³ with the differential count being, neutrophils-80%, lymphocytes-18%, eosinophils-01% and monocytes -01%. The blood sugar, serum urea, creatinine and the liver function tests, all showed normal values. The sputum for Ziehl-Neelsen staining was negative on 3 occasions. The chest X-ray revealed a right upper zone opacity and a computerized tomography imaging showed an irregular hypodense (207HU) lesion at the right hilum, which was anterior to the right main bronchus,

which extended upto the anterior segment of the right upper lobe, with an impression which was suggestive of the central type of bronchogenic carcinoma [Table/Fig-1 and 1a] Fiber optic bronchoscopy revealed normal vocal cords and a right tracheal bronchus which arose from 2cm. above the carina [Table/Fig-1b and 1c]. The right bronchial tree was normal and the right upper lobe bronchi had all the three lobar branches, confirming that this was a supernumerary type of tracheal bronchus. The rest of the bronchoscopy was normal.

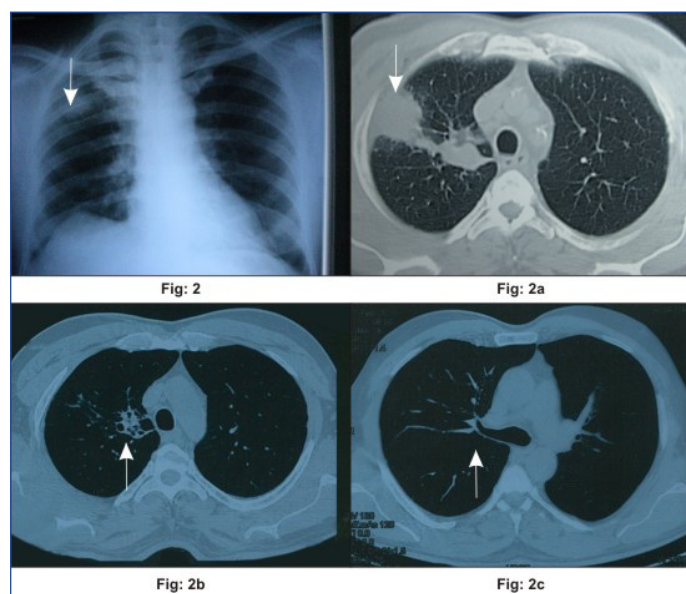


[Table/Fig-1]: Chest X-ray showing a right upper lobe opacity. (Central Type). 1(A): CT chest revealing a hypodense irregular lesion, highly suspicious of central type of bronchogenic carcinoma. 1(B&C): Bronchoscopic view of tracheal bronchus LMB – Left main bronchus, RMB – Right main bronchus, TB- Tracheal bronchus approximately 2cm above the main carina.

A bronchial biopsy and a brushing from the tracheal bronchus were taken and they turned out to be negative for malignant cells and AFB and showed a non-specific inflammation. The patient was treated with a course of antibiotics and he improved symptomatically and radiologically. After 8 months, the patient again had a similar episode of fever and cough with sputum. On evaluation, his chest X-ray and computerized tomography revealed a consolidation in the right upper lobe, which peripherally involved the pleura [Table/Fig-2 and 2A] A computerized tomography guided biopsy was done from the lesion and the pathology was again suggestive of a non-specific inflammation and it was negative for acid fast bacilli and malignant cells. The patient made an uneventful recovery with a course of antibiotics and supportive care. Further, on follow up and repeated computerized tomography of the chest after 4 months, he showed a complete resolution of both the opacities, with residual atelectasis in the upper lobe [Table/Fig-2B and 2C]. A virtual bronchoscopy was also done, as it has been shown in [Table/Fig-3]. The patient is on regular follow up and he has recovered completely.

DISCUSSION

The tracheal bronchus which was first described by Sandisfort in 1785, is an aberrant, accessory or ectopic bronchial branching

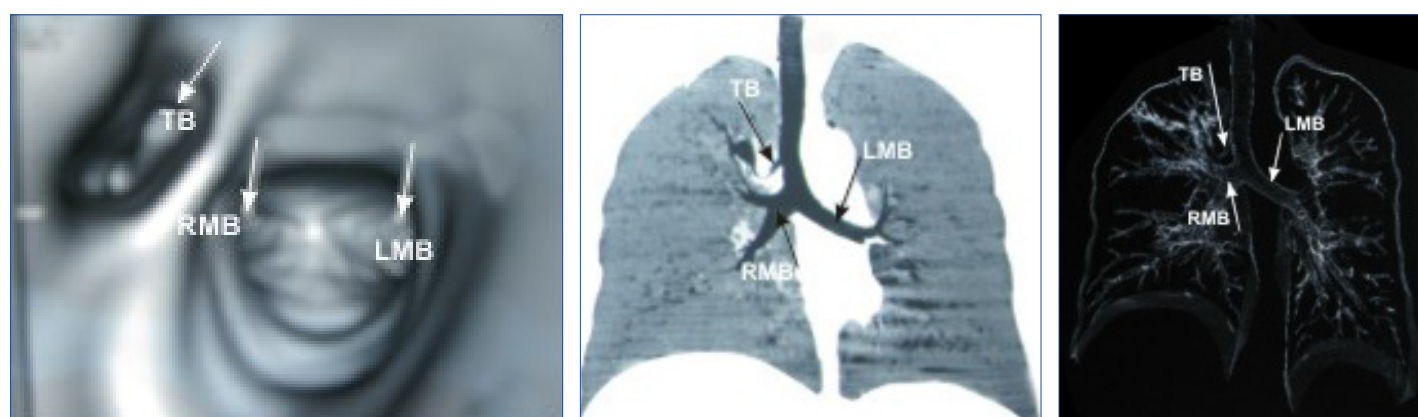


[Table/Fig-2]: Chest X-ray showing a right upper lobe opacity (Peripheral type). 2(A): CT Chest Showing a hypodense, irregular opacity of right upper lobe involving the pleura. 2(B): CT Chest taken after complete resolution of both opacities showing residual linear atelectasis and Bronchiectasis. 2(C): CT Chest. This slice is through the trachea 2.5 cm above the main carina and shows the take off of the tracheal bronchus.

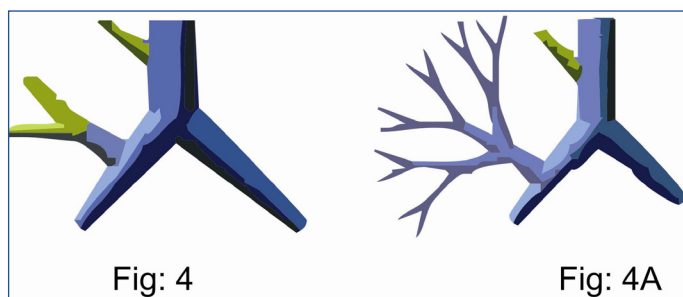
which originates from the right lateral wall of the trachea, which is more common in males. It occurs as a result of an additional tracheal out growth early in embryonic life, with an incidence which ranges from 0.1% to 5%. The term 'tracheal bronchus' is used to designate any bronchus which originates from the trachea above the level of the main carina. The tracheal bronchus which is also called as Pig's bronchus, is a normal finding in sheep, swine, cattle, camels, goats and giraffes, but it is a rare and usually incidental finding in humans. It can develop from any point above the main carina, but it occurs usually within the 2cm range. Its diameter ranges from 0.5 cm to 1.0 cm and its length ranges from 0.6 cm to 2.0 cm. It can be displaced or supernumerary, depending on the number of segmental bronchi of the anatomical right upper lobe bronchus [4]. If the anatomical right upper lobe bronchus bifurcates, the tracheal bronchus is defined as displaced and if it trifurcates, it is defined as supernumerary, as in this patient [Table/Fig-4 and 4a]. Most of the cases of the tracheal bronchus are asymptomatic, and they are detected only incidentally during bronchoscopy or radiologic examinations. The supernumerary bronchus is less common than the displaced bronchus and it can coexist with the normal right upper lobe branching, as in our case. The supernumerary tracheal bronchus aerates either the normal lung parenchyma, a cyst or an accessory segment of the right upper lobe, as in this case. The supernumerary lung tissue can be intra-lobe or extra-lobe, depending on whether it shares the pleura of the upper lobe. It can have its own vascular supply, which can be from the systemic or the pulmonary artery system.

In the recent literature, the term 'tracheal bronchus' was found to encompass a variety of bronchial anomalies which originated from the trachea or the main bronchus and were directed to the upper lobe territory. Therefore, we suggest the use of a modified nomenclature from Boyden [8] and Kubik and Müntener [9] to clarify the classification of the aberrant bronchi which are directed to the upper lobes [Table/Fig-5]. The normal right upper lobe bronchus is described as eparterial, because it arises above the right pulmonary artery. The normal left upper lobe bronchus is described as hyparterial, because it arises below the left pulmonary artery. An anomalous bronchus which arises proximal to the origin of the upper lobe bronchus is called as pre-eparterial on the right side [Table/Fig-5] and as eparterial or pre-hyparterial on the left side [Table/Fig-5]. An anomalous bronchus which arises distal to the origin of the upper lobe bronchus is called as post-eparterial on the right side and as post-hyparterial on the left side.

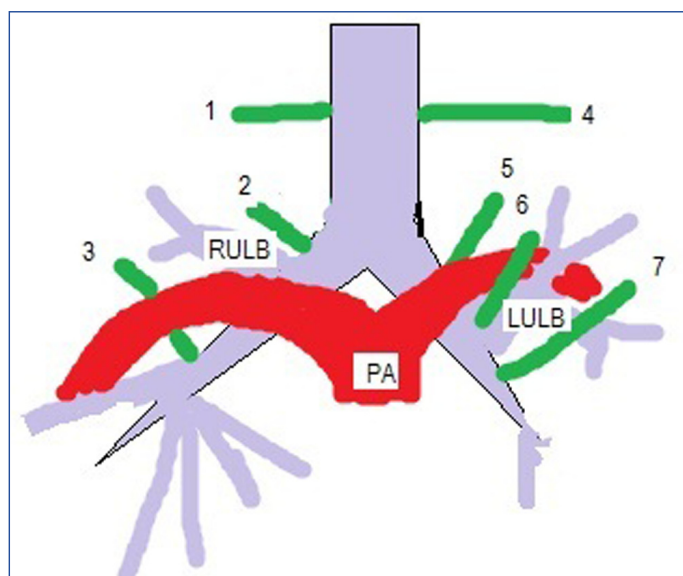
The tracheal bronchus may be asymptomatic or it may be associated with recurrent pneumonia, chronic bronchitis, and bronch-



[Table/Fig-3]: Virtual Bronchoscopic view and frontal view reconstruction of tracheal bronchus [13]
RMB – Right main bronchus and its trifurcation, LMB – Left main bronchus, TB- Tracheal Bronchus.



[Table/Fig-4]: Shows a displaced segmental bronchus and the right upper lobe bronchus bifurcating. 4(A): Shows supernumerary bronchus ventilating normal lung, as the right upper lobe bronchus trifurcates.



[Table/Fig-5]: Aberrant bronchi to the upper lobes. Schematic shows prearterial (true right tracheal) (1), preeparterial (right "tracheal") (2), posteparterial (3), eparterial (true left tracheal) (4), eparterial (left "tracheal") (5), prehyparterial (6), and posthyparterial (7) bronchi. LULB = left upper lobe bronchus, PA = pulmonary artery, RULB = right upper lobe bronchus [5,6].

iectasis. This may be caused by the relatively poor local drainage of the involved bronchi. The other comorbidities includes a troubled intubation, intra-operative hypoxaemia and lung cancer in adults [7]. Other congenital anomalies such as a laryngeal web, rib and vertebral anomalies, tracheal stenosis, and congenital heart disease, are occasionally associated with this condition [10]. A majority of the patients with tracheal bronchi are asymptomatic and they do not require any medical intervention. In the case of recurrent pneumonia which is complicated by bronchiectasis,

surgical resection of the aberrant bronchus as well as the lobe it supplies is the treatment of choice [7].

CONCLUSION

The purpose behind the writing of this case report was to highlight that: The presence of recurrent or chronic lung disease, especially when the right upper lobe is involved, may suggest an ectopic bronchus. There should be no hesitation in resorting to an invasive procedure when radiology and sputum microscopy do not point to a definite diagnosis. The value of bronchoscopy should not be underestimated. The presence of a tracheal bronchus may complicate the endotracheal intubation and it is of immense importance to an anaesthetist [11,12].

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