Tracheal bronchus

A 10-month-old boy presented with fever and shortness of breath. He was born at full term with a birth weight of 2.9 kg, and was found to have tetralogy of Fallot. He had been given frusemide since the age of 2 months. At admission to hospital, he had symptoms of tachypnoea, tachycardia, and bilateral diffuse rhonchi. Chest X-ray showed hyperinflation and bilateral interstitial haziness. He was diagnosed with acute bronchiolitis and a trial of nebulised salbutamol resulted in a partial clinical response. However, he developed high fever, poor circulation, and respiratory distress 3 days after admission and repeated chest X-ray showed left lower lobe air-space consolidation. He was transferred to the intensive care unit for management of septic shock, where he was intubated and treated with intermittent positive pressure ventilation.

Bronchoscopy was performed because of the fulminant pneumonia. The procedure demonstrated mild tracheomalacia and a tracheal bronchus arising from the right lateral wall of the trachea. There was no tracheoesophageal fistula. To elicit the distal connection of the tracheal bronchus, three-dimensional reconstruction virtual bronchoscopy by computed tomography (CT) scan was performed using an Xpress-FX CT scanner (Toshiba, Nasu, Japan). The scan revealed the aberrant airway connecting to the right upper lobe (Figs 1 and 2). The patient's blood culture grew coagulase-negative *Staphylococcus aureus*. He was given a course of intravenous vancomycin. He was extubated after 2 days and has been clinically well since then, without recurrence of pneumonia.

Tracheal bronchus is an aberrant bronchus arising mostly from the right lateral wall of the trachea.[1] It is usually an incidental finding during bronchoscopy. The incidence was found to be 0.5% to 2% among patients who underwent bronchoscopy.[1,2] At the Kwong Wah Hospital, tracheal bronchus was found in 0.4% of paediatric bronchoscopy procedures during a 5-year period. The associated conditions included Down's syndrome, congenital rib abnormality, congenital heart diseases, tracheostenosis, abnormal pulmonary lobulation, anomalous pulmonary arterial supply, and venous drainage.[2] Recurrent lobar pneumonia and bronchiectasis may result from narrowing at the origin of tracheal bronchus.

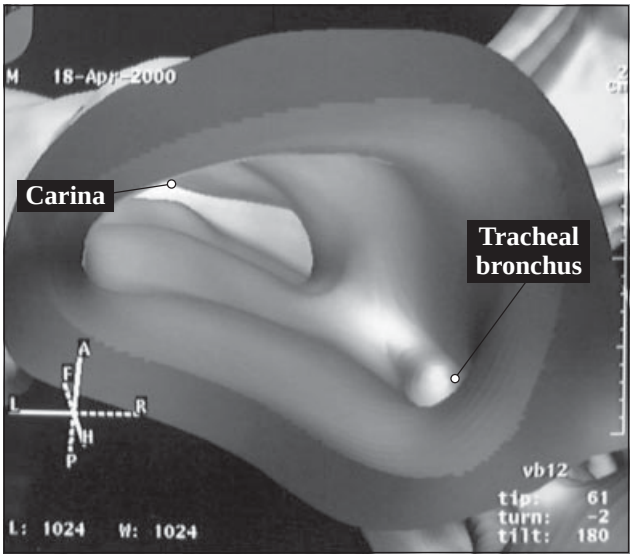

Fig 1. Endobronchial view of tracheal bronchus

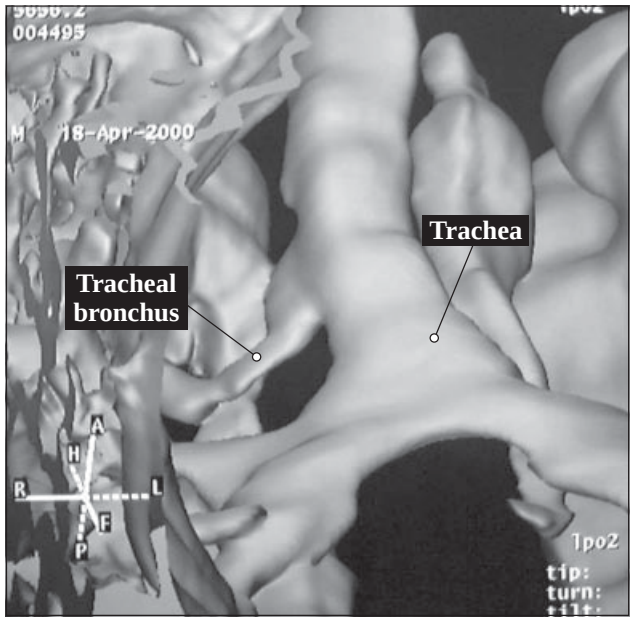

Fig 2. Extramural view of tracheal bronchus

Surgical treatment by lobectomy is recommended for those who have a persistent problem from the tracheal bronchus. The presence of unrecognised tracheal bronchus in patients who are intubated may result in persistent lobar atelectasis and initial diagnostic problems.[3] Other morbidities include troubled intubation, intra-operative hypoxaemia,[4] and lung cancer in adults.[5] This latter association may have important implications for the management of this condition since it is widely accepted that tracheal bronchus does not require surgical treatment as long as there are no complications, notably recurrent right upper lobe pneumonia.

Computed tomography virtual bronchoscopy (CTVB) is a recently developed three-dimensional reconstruction technique in which simulated endobronchial views are generated from volumetric CT data. This system has been shown to be superior to the conventional axial image in the global evaluation of central airway diseases. As volumetric data are routinely acquired during spiral scanning mode, CTVB is feasible, utilising a single-detector spiral CT scanner such as the one employed in this situation. Due to its sensitivity to the partial-volume averaging effect and

motion, CTVB has suffered from artefacts such as discontinuity in the wall of the airway, posing limitations for its clinical applications, in particular in the paediatric population.

With the recent advent of multidetector technology, the benefits of faster scanning time together with the attainment of an almost isotropic spatial resolution results in a great improvement in the image quality of the reconstructed 'bronchoscopic' images. It has been shown to be sensitive in the detection of endobronchial lesions, evaluation of focal stenosis, and their longitudinal extent. This method is highly accurate for grading the severity of tracheobronchial narrowing. Computed tomography virtual bronchoscopy uniquely allows depiction of the airway beyond a stenosis or occlusion that is not possible with bronchoscopy, and provides information on the length of the stenosis or the patency of the distal airways, which are important for endobronchial treatment planning such as dilatation or stent placement. Computed tomography virtual bronchoscopy is thus promising as a non-invasive alternative for newborns and infants.

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I. Use of the low-dose corticotropin stimulation test for the diagnosis of secondary adrenocortical insufficiency

A	1. True	2. False	3. False	4. False	5. True
B	1. False	2. False	3. True	4. True	5. True
C	1. True	2. False	3. False	4. False	5. False

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II. Current perspectives on emergency contraception

A	1. True	2. False	3. False	4. True	5. True
B	1. True	2. False	3. False	4. False	5. True
C	1. False	2. True	3. False	4. False	5. True