RECANALIZATION OF POST TUBERCULOSIS TRACHEOBRONCHIAL STENOSIS ASSISTED BY VIRTUAL BRONCHOSCOPIC NAVIGATION (VBN)

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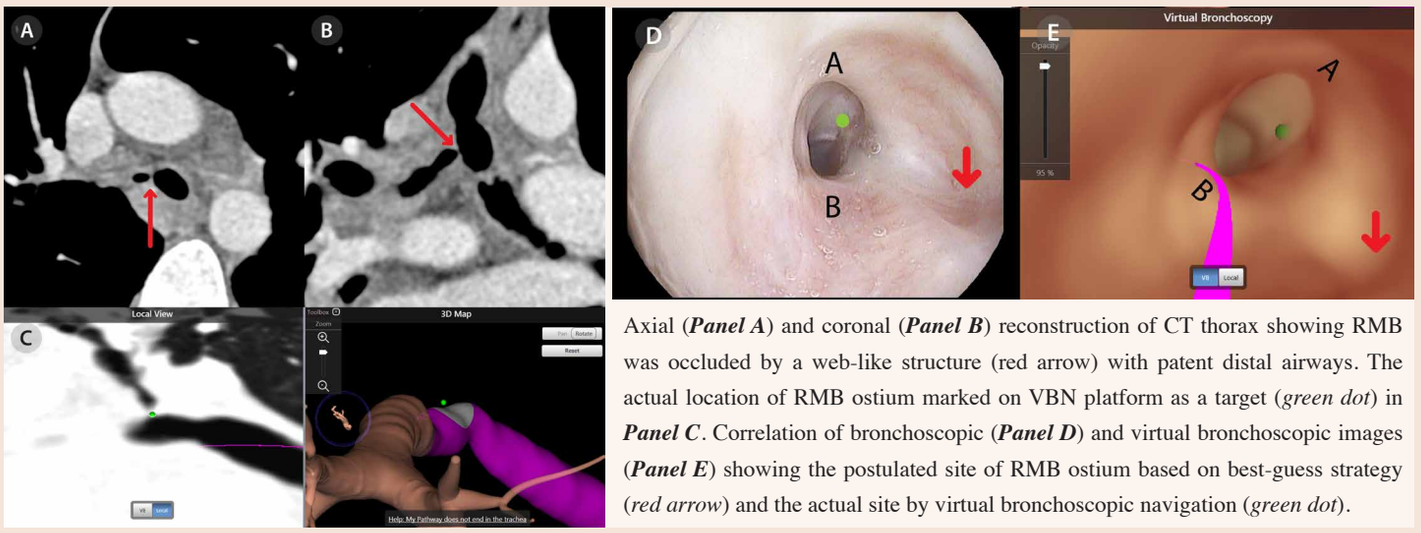
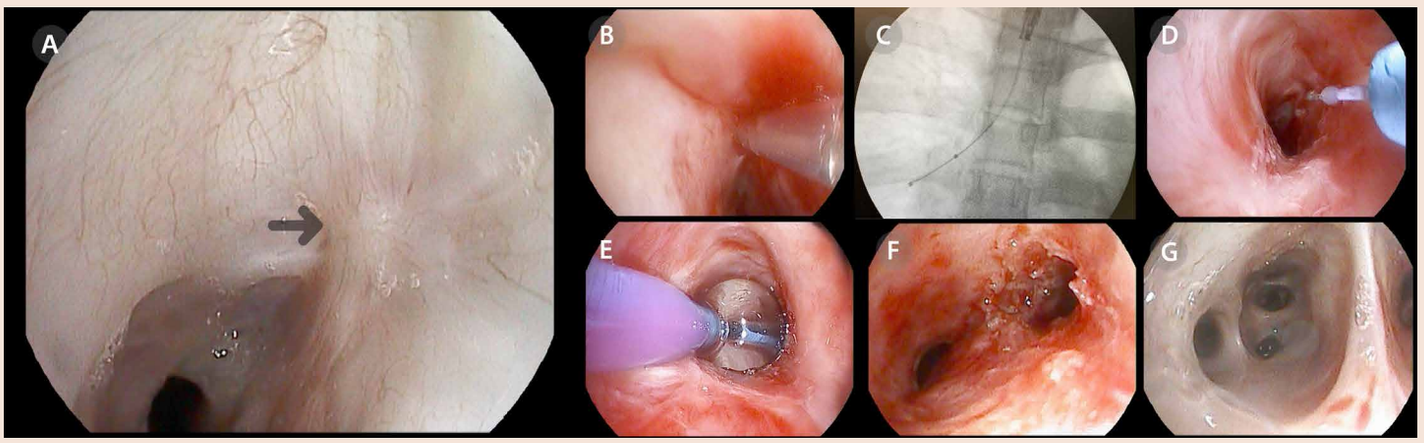
Background Airway involvement in post-tuberculosis tracheobronchial stenosis (PTTS) is frequently complex in nature with multi-level involvement. Airway recanalization attempt is extremely challenging in patients who present late with chronic total occlusion (CTO) of the main bronchi with no visible ostium. Frequently, such patients will be managed conservatively if surgical reconstruction is deemed unsuitable.

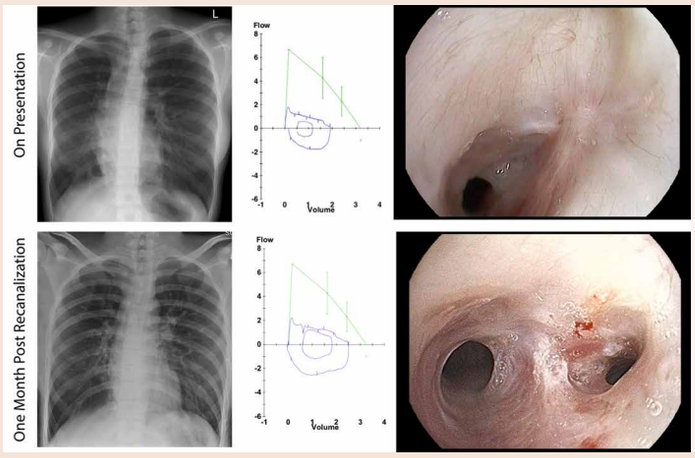
Case Report An 18-year-old lady with a history of pulmonary tuberculosis presented with recurrent pneumonia. Flexible bronchoscopy noted distorted trachea with multi-level tracheobronchial stenosis with no visualisation of RMB ostium. Primary surgical repair was deemed high risk in view of the complexity of stenosis. However, the actual site of RMB cannot be ascertained by *best-guess strategy* through initial scouting bronchoscope as multiple areas of puckering and indentation were present on the right paratracheal wall distally.



Axial (***Panel A***) and coronal (***Panel B***) reconstruction of CT thorax showing RMB was occluded by a web-like structure (red arrow) with patent distal airways. The actual location of RMB ostium marked on VBN platform as a target (*green dot*) in ***Panel C***. Correlation of bronchoscopic (***Panel D***) and virtual bronchoscopic images (***Panel E***) showing the postulated site of RMB ostium based on best-guess strategy (*red arrow*) and the actual site by virtual bronchoscopic navigation (*green dot*).



The area of interest (*arrow*) identified by VBN showed cicatricial mucosa with converging fibrotic band (***Panel A***). 19 gauge TBNA needle (***Panel B***) was first punctured at the area of interest, followed by passing of guidewire under fluoroscopic vision via the mucosal defect into right endobronchial tree (***Panel C***). Mucosal incision and dilatation of the RMB ostium was performed with electrocautery needle knife (***Panel D***) in a radial manner and CRE balloon (***Panel E***). Post procedure, RMB was recanalized successfully (***Panel F***) with visualization of a normal right middle and lower lobe (***Panel G***).



Progress & Outcome Chest radiograph demonstrated marked improvement of right lung volume with significant improvement of dynamic lung volume on spirometry. RMB ostium remain patent on one month surveillance bronchoscopy with minimal granulation tissue

In essence, CTO as a result of PTTS is a complex condition with potential life debilitating consequences. Diligent pre-procedural planning and amalgamation of various interventional pulmonology techniques potentially offer a safe and novel approach into this century-old problem.

Disclosure: the authors declare that they have no competing interests.