

Usefulness of endobronchial stenting for nonmalignant right middle lobe syndrome

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ABSTRACT

We report herein a case of nonmalignant middle lobe atelectasis of the right lung resulting in significant stenosis of the airway. The new short self-expandable metallic stents (SEMS) were used to perform temporary stenting and expansion of the right middle lobe airway. SEMS have been used to treat airway obstructions in the trachea, as well as the right and left carina, but few studies have looked at placing SEMS at the level of the bronchi, especially right middle lobe bronchus.

KEYWORDS Bronchial stenosis; right middle lobe atelectasis; self-expandable metallic stents

Right middle lobe obstruction can be caused by endobronchial tumor or extrinsic compression by malignant and nonmalignant processes, including infectious and inflammatory conditions. The benign causes of right middle lobe syndrome are either observed if not severe, managed medically with systemic antimicrobial and/or anti-inflammatory therapy, or require surgical lobectomy. Endobronchial stenting of the right middle lobe is rarely performed due to the technical challenges associated with a short and narrow lobar bronchus and its anteromedial angulation off of the bronchus intermedius. We report a case of successful endobronchial stenting for nonmalignant right middle lobe syndrome.

CASE DESCRIPTION

An 83-year-old woman was referred for recurrent severe right middle lobe pneumonia. She had been hospitalized twice in the previous year for pneumonia requiring intravenous antibiotics, including an admission to the intensive care unit with severe sepsis. Computed tomography (CT) was significant for atelectasis of the right middle lobe, worse in the medial than the lateral segment (*Figure 1*). Bronchoscopy demonstrated a stenotic bronchial orifice (*Figure 2*). CT and subsequent positron emission tomography did not

demonstrate any mass or hypermetabolism. Cytological analysis of bronchoalveolar lavage fluid was negative for malignant cells.

Bronchoscopy was performed and the stenotic airway was dilated to 8 mm using pneumatic balloons (MeritMedical, South Jordan, UT). An Amplatz 0.035-in super stiff guide-wire (Cook Medical, Bloomington, IN) was placed under bronchoscopic vision, and using surface fiducial markers and real-time fluoroscopy, an 8 × 15 mm AEROMini bronchial stent (MeritMedical) was deployed (*Figure 2*). The patient was awakened from anesthesia and discharged home.

Subsequent CT demonstrated excellent stent position (*Figure 1c*) and improving lobar aeration. After 3 weeks, repeat bronchoscopy was performed and the stent was removed with an excellent bronchoscopic result. At 6 weeks postoperatively, the bronchus remained widely patent (*Figure 2d*). At 6 months postoperatively, symptoms of pneumonia or hospital admissions had not occurred.

DISCUSSION

Endobronchial stenting of the right middle lobe is rarely performed because of the uncommon indication and the anatomic challenges of a short and narrow lobar bronchus.^{1,2} Silicone stents have been utilized but with limited radial force compared to self-expanding metallic stents.³ Until

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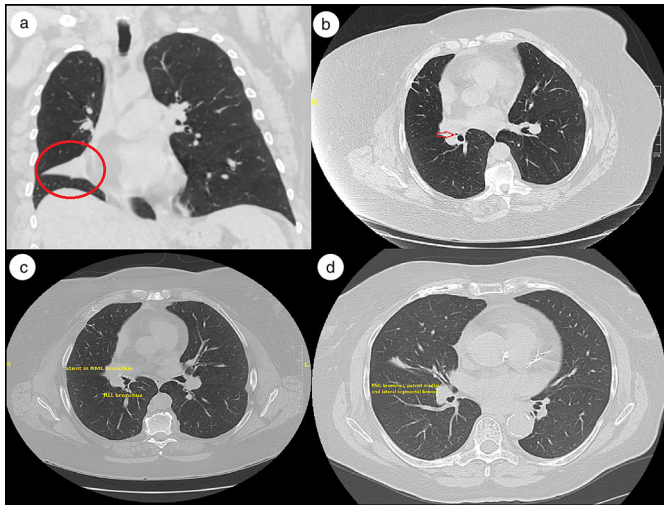


Figure 1. CT images. (a) Preoperative CT demonstrating right middle lobe atelectasis. (b) Preoperative CT demonstrating right middle lobe bronchial stenosis. (c) Postoperative CT demonstrating endobronchial stent in the right middle lobe orifice. (d) CT after stent removal demonstrating patent lobar and segmental bronchi.

recently, appropriately sized covered metallic stents were not commercially available, although repurposing of vascular stents and postimplantation modification of longer metallic stents have been reported.^{4,5} With the introduction of new, short, self-expanding metallic stents, endobronchial stenting of the right middle lobe for nonmalignant etiologies is now feasible and safe.

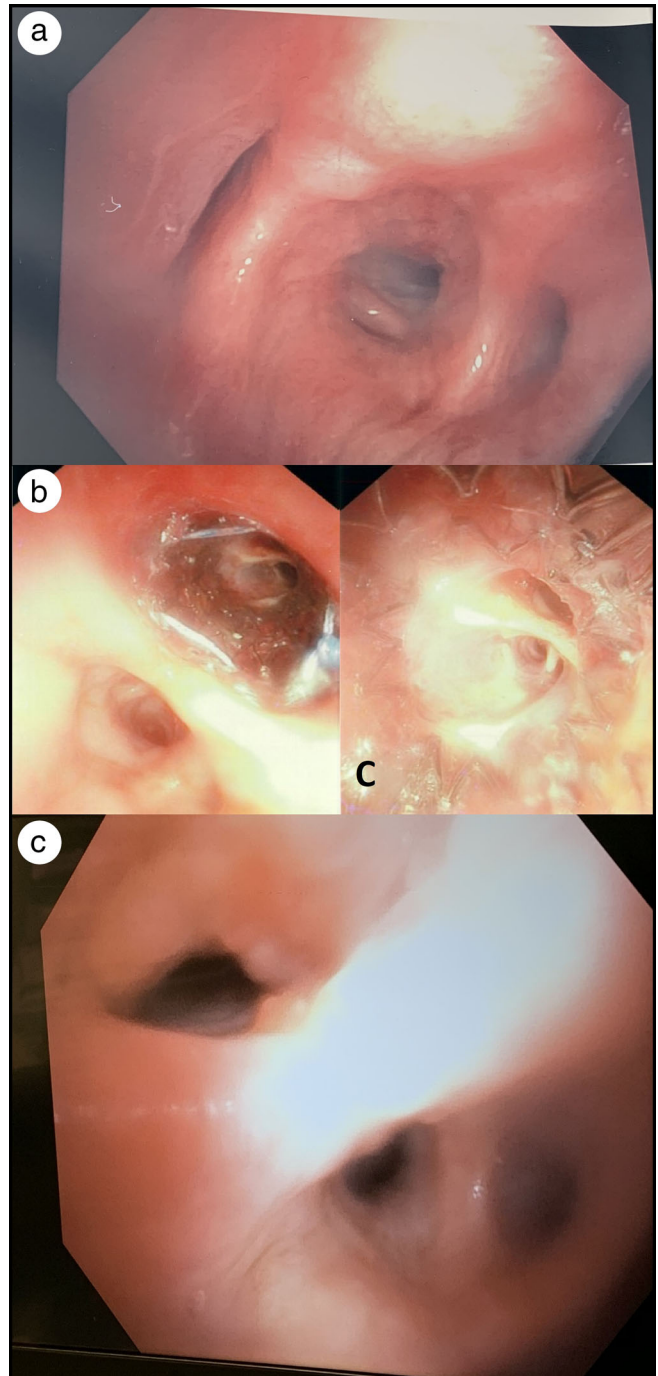


Figure 2. Bronchoscopy images. (a) Preoperative image demonstrating right middle lobe stenosis. (b) Intraoperative view of the proximal fully covered metallic endobronchial stent. (c) Intraoperative view of the distal fully covered metallic endobronchial stent. (d) Bronchial patency following stent removal.

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