Removal of an inadvertently deployed self-expanding metallic Y stent

Sir,

With the growing expertise in the field of interventional pulmonology, placement of airway stents is being increasingly performed for central airway obstruction. Metallic stents are generally reserved for patients with malignant airway obstruction with a short life expectancy, where removal of the stent is generally not contemplated. However, in certain instances, stent removal may be required. While the removal of straight metallic stents is well known, the retrieval of a metallic Y stent is sparsely reported in literature.[1,2] Herein, we describe a patient suspected of having malignant central airway obstruction managed with a covered metallic Y stent. The patient eventually turned out to have endobronchial tuberculosis, and the stent was successfully removed after 20 days.

A 53-year-old woman presented with productive cough, progressive breathlessness, and noisy breathing of 4 months duration. She also complained of anorexia and weight loss. There was no fever or hemoptysis. On examination, she had tachycardia, tachypnea, stridor, and an oxygen saturation of 92% on room air. Computed tomography of the thorax demonstrated an enhancing mass in the right paratracheal and hilar location, resulting in narrowing of the lower trachea and complete luminal occlusion of the right main bronchus. Flexible bronchoscopy showed an exophytic growth involving the lower trachea, carina, and both the main bronchi [Figure 1a]. In view of central airway obstruction, rigid bronchoscopy under general anesthesia (intravenous propofol and inhaled sevoflurane) was performed. A biopsy was performed from the growth. Due to a suspected malignant etiology, a covered metallic Y stent (diameter of tracheal limb 16 mm, length of tracheal limb 60 mm) was deployed as previously described [Figure 1b].[3] There was complete resolution of dyspnea after the procedure. Histopathological examination of the biopsy specimen revealed ill-formed necrotizing granulomas; Ziehl–Neelsen-stained specimen showed numerous acid-fast bacilli. A diagnosis of endobronchial tuberculosis was made. The patient was administered anti-tuberculosis treatment (rifampicin, isoniazid, pyrazinamide, and ethambutol), pyridoxine, and dexamethasone. After 2 weeks, the patient had gained appetite. Dexamethasone was stopped. As the patient was diagnosed with a benign and curable illness, removal of the metallic stent was planned. Twenty days following stent deployment, rigid bronchoscopy was performed under general anesthesia. A size 12 tracheoscope was inserted and positioned just above the stent. The stent was held at the proximal end using rigid forceps. The forceps were rotated 180° clockwise while pulling them proximally. The bronchial limbs of the stent disengaged from the respective bronchi and were withdrawn into the trachea. The stent was pulled into the lumen of the tracheoscope and the tracheoscope was withdrawn from the trachea while holding the stent with the forceps. The tracheoscope was then reinserted; mild bleeding was observed, which was easily controlled with suctioning. The stent was intact without any fracture. Flexible bronchoscopy performed 2 weeks after the procedure showed minimal mucosal infiltration and granulation in the trachea and both bronchi, which progressively decreased at 2 and 6 months. Anti-tuberculosis treatment was stopped at 6 months. Sixteen months after stent removal, the patient was free of symptoms. Flexible bronchoscopy showed mild narrowing of the right main bronchus and a normal mucosa [Figure 1c].

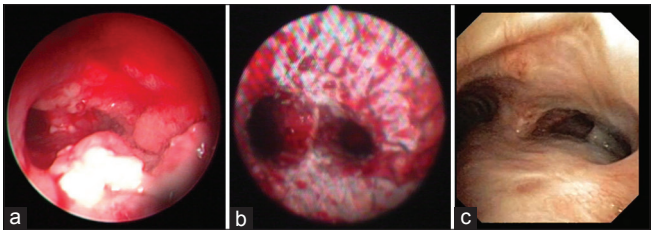

Figure 1: Bronchoscopy images showing: (a) Exophytic growth in the trachea, carina and both the main bronchi, (b) metallic Y stent seen *in situ*, (c) mild narrowing of the right main bronchus and healthy airway mucosa 16 months after stent removal

The index case offers important learning points. First, with the use of rigid bronchoscopy, removal of a metallic Y stent is safe if performed early after deployment. Successful removal of Y stents deployed for malignant and benign central airway obstruction has been described previously by Gompelmann *et al*.[2] However, if the Y stent remains *in situ* for prolonged periods, complications such as disintegration of posterior wall of the stent can occur.[4] Second, although metallic stents are contraindicated in benign airway lesions, they may be deployed inadvertently mistaking a benign lesion for a malignant one or when there is no alternative option in airway obstruction of benign etiology.[5] The US Food and Drug Administration has recommended against the placement of metallic stents for benign diseases due to the complications of metallic

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stents over protracted periods of time and the difficulty in their removal. Therefore, an inadvertently deployed stent should be removed as early as possible as was done in the index case.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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