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## Seven years in the trachea

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Sir,

Postintubation/tracheostomy tracheal stenosis (PITS) is an increasingly recognized complication requiring multidisciplinary management and long-term follow-up. Silicone stent placement is a treatment option which needs surveillance for possible complications and revision to confirm that stenting is still needed. In benign diseases, silicone stents if uncomplicated are usually kept for a period ranging from 18 to 24 months to allow healing

and eventual stabilization of the trachea. If after removal, prosthesis is still necessary, a stent can be replaced.

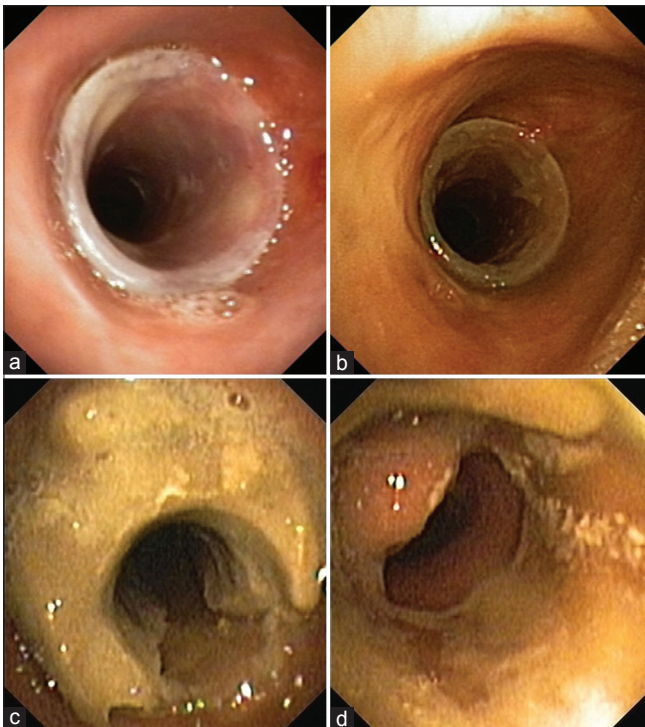
We are reporting on a 67-year-old male, current smoker of 47 pack/years, who sought medical attention at our unit due to halitosis and exertional dyspnea.

His medical history starts 10 years ago after a prolonged hospitalization in Intensive Care Unit (ICU) following a sudden cardiac arrest. He was intubated and subsequently

tracheostomized. Being diagnosed with dilated cardiomyopathy and atrial fibrillation, he was implanted a pacemaker and permanent implantable cardioverter defibrillator (ICD).

After discharge from ICU, he started complaining of exertional dyspnea and stridor and was undertaken by ENT surgeons who diagnosed PITS and treated it with laser ablation and tracheal dilatation. Later during the stenosis relapse, the patient had his tracheostomy re-established. In November 2009, he was referred to the interventional pulmonology unit of our institution, and after interdisciplinary evaluation, he was diagnosed with complex tracheal stenosis and was treated with stent insertion (Dumon® silicone 16 mm × 50 mm). Following tracheal stent insertion, he received instructions regarding tracheal stent care, and he had regular follow-up appointment including bronchoscopic inspection of the stent. However, after the 2<sup>nd</sup> year of his follow-up, he resumed smoking and did not attend his scheduled appointments. He stopped answering phone calls from our team; 7 years after the stent insertion, he came again to our attention.

On admission, bronchoscopic inspection proved that the stent was in place; however, its lumen was plugged with a thick biofilm of mucopurulent secretions. At the distal end of the stent, granulation tissue formation was noted. Passing the scope distally confirmed normal peripheral airways [Figure 1].



**Figure 1:** (a) Tracheal view few months after uncomplicated stent placement, (b) bronchoscopy showing normal tracheal mucosa two years after the stent placement, (c and d) mucopurulent biofilm and granulation tissue formation partially obstructing the distal end of the stent 7-year postplacement

Removal of the stent with possible replacement was scheduled. As eventual use of electrocautery devices during bronchoscopy was deemed probable. After intubating the patient with the rigid scope, folding the stent and retracting it within the shaft proved extremely hard because the stent had lost its elasticity. The lumen of the stent was critically obstructed by purulent and necrotic materials. Stent removal in one piece was finally successful with a prolonged forceful upward pulling of the stent and the scope [Figure 2].

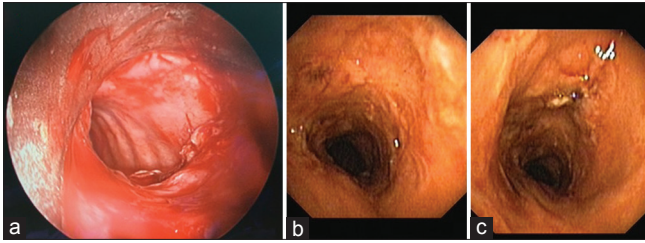
Thereafter, the base of the granulation tissue at the distal end of the prosthesis was cauterized and removed with the forceps and the bevel of the rigid scope; the patient's tracheal lumen was patent with no sign of tracheomalacia or excessive dynamic airway collapse while no immediate postoperative complications occurred [Figure 3].

Stents are foreign bodies which are placed in hollow organs to secure their patency. The commercially available stents for management of tracheal stenosis are manufactured either of silicone, metal, or hybrid materials.<sup>[1]</sup> After the U.S. Food and Drug Administration has issued a black box warning against using metal stents for patients with benign tracheobronchial stenosis, only silicone or hybrid stents are to be used.<sup>[2]</sup> Tumors or granulation tissue cannot grow through silicone stents due to their solid wall; on the other hand, this design interferes with the mucociliary clearance mechanism, and hence, the direct consequence is accumulation of thick mucus secretions. In case of tracheomalacia, the trachea wall where the stent has been deployed may progressively solidify with time, making stent removal possible. Nonetheless, the optimal time of stent removal should be carefully decided by an experienced pulmonologist.

In an early publication by Dumon,<sup>[3]</sup> it was recommended to keep the stent for 6–12 months. Subsequent studies showed that the restenosis rate reached 70% when silicone stents were removed 6 months after placement.<sup>[4]</sup> In study by Galluccio *et al.*,<sup>[5]</sup> all simple stenosis stents were successfully removed at the end of the 2 years. Importantly, removal of the stents is not exclusive for the silicone ones; studies have shown that the self-expandable metallic stents can be effectively and safely removed if necessary without major sequelae.<sup>[6]</sup>



**Figure 2:** Efer-Dumon® silicone stent removed after 7 years of its placement in the trachea of active smoker



**Figure 3:** (a) The trachea immediately after the stent removal. (b and c) Two days later, the previously noted granulation tissue and thick biofilm have been removed

Up to our knowledge, this is the first case of tracheal Dumon® silicone stent which although complicated stayed in place for 7 years and then was safely removed. This case highlights Dumon® silicone stent long durability, feasibility, and safety of removal after so many years.

#### 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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Nil.

#### Conflicts of interest

There are no conflicts of interest.

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