Silicone airway stenting for tracheobronchial stenosis

Hojoong Kim

Division of Pulmonary & Critical Care Medicine, Department of Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Tracheobronchial stenosis is classified as intraluminal obstruction, extrinsic compression, and malacia by the anatomical site of the lesion. Stenting therapy is indicated for symptomatic relief of life-threatening dyspnea caused by the last two types. Among many kinds of airway stent, silicone stent is mostly widely used for benign and malignant airway stenoses, but general anesthesia and rigid bronchoscopy are needed for insertion. It can be removed when the stenosing airway disease subsides completely.

Among benign tracheobronchial stenosis, post–tuberculous tracheobronchial stenosis (PTTS) is the leading indication for airway stenting in Korea, followed by post–intubation stenosis (PITS). PTTS has been treated by surgical resection and reconstruction after the eradication of Mycobacterium tuberculosis. However, most of PTTS occurs in young female patients, who usually refuse surgery. Bronchoscopic intervention has been developed to deal with airway stenosis and to avoid the potential morbidities of surgery. We had experienced repeated ballooning in PTTS patients. However, the overall success rate was less than 10%, needing new modality of intervention.

Multiple techniques, including ballooning, laser resection and bougienation were applied before stenting under rigid bronchoscopy. Almost all patients experienced immediate relief of dyspnea. Silicone stenting had a key role for intervention, and stents could be removed successfully in about 2/3 of patients at a median 1.5 years after the insertion. After the stent was removed, patients maintained good airway patency and pulmonary function. Acute complications developed in less than 3% of patients without mortality. Subgroup analysis showed that successful removal of stent was significantly associated with male sex, young age, good baseline lung function and less use of bougienation.

In conclusion, silicone stenting could be primarily selected for benign tracheobronchial stenosis patients with acceptable efficacy and tolerable safety.