

Interventional bronchoscopy for obstructing benign airway tumors: which modality is ideal?

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In the early 19th century, rigid illuminating tubes were used to visualize the tracheobronchial tree (1). Since that time, bronchoscopic diagnostic and treatment modalities including interventional bronchoscopic techniques now encompass a myriad of indications. Despite the many options, the management of airway obstruction from both malignant or nonmalignant causes is a complex problem that requires thorough evaluation by a multidisciplinary team including interventional bronchologists, thoracic surgeons and chest radiologists (2). In the case of nonmalignant airway obstructing lesions, the choice of therapy, whether surgically curative or minimally-invasive endoscopic-based, very much depends on tumor pathology, size, wall invasion depth, anatomical location, the acuity and degree of symptoms from airway compromise, patient co-morbidities, and also operator experience and expertise (1,3).

Central airway obstruction due to a nonmalignant tumor can often be managed by curative surgical resection, but the decision as to whether or not to undergo surgery must be individualized for each patient. The depth of wall invasion by the tumor as determined by CT scanning or radial endobronchial ultrasound should play a significant part in this decision-making process. In the case of hamartomas, and chondromas especially, surgery often remains the last resort (3,4). In addition, a significant number of patients are not suitable for such surgery due to poor lung function and associated medical co-morbidities. Further, while surgical outcomes have improved over time, some patients may be plagued by recurrence of stenosis or scarring at the surgical site (5-8). Endoscopic resection of the obstructing tumor is less invasive than surgery, and often allows excellent local control with alleviation of respiratory symptoms. Under these circumstances, we now have an excellent selection of techniques for the management of obstructing airway lesions, whether nonmalignant or malignant. Many can be used as alternative or adjuvant therapies in patients who are not candidates for surgery or who fail airway resection. These include mechanical techniques such as balloon bronchoplasty, stent placement, and microdebridement; heating techniques such as neodymium:yttrium-aluminium-garnet (Nd:YAG) laser resection, electrocautery and argon plasma coagulation; cooling techniques such as cryocanalization and cryotherapy; brachytherapy; and photodynamic therapy, amongst others.

The use of rigid bronchoscopy versus flexible bronchoscopy, or a combination of both, also needs to be considered depending on the clinical scenario, along with appropriate sedation or

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general anesthesia modalities (2,9). The risk of complications such as significant hemorrhage, iatrogenic bronchial wall or pulmonary artery perforation, and airway fire to mention a few, should be carefully assessed (2,9). The acuity of the patient's respiratory distress also is essential in helping to determine therapeutic modality. While the absence of large randomized clinical trials is noted, several small series and case reports documenting improved patient outcomes and quality of life, and also the safety, and efficacy of these interventional techniques exist.

In this issue of the *Journal of Thoracic Disease*, Kajiwaru et al. (10) report a retrospective review of a series of four patients with benign endobronchial tumors. They illustrate the therapeutic utility of different bronchoscopic techniques tailored to the management of each lesion's etiology, and also to its size, shape, and anatomical location. The authors specifically address the usefulness of Nd: YAG laser resection, high radio frequency and microwave thermal ablation, argon plasma coagulation, and dehydrated ethanol injection to treat airway exophytic lesions with varying anatomical and histological characteristics.

We agree that the primary objective of bronchoscopic intervention in this setting is to acutely relieve the airway blockage in order to alleviate the symptoms of obstruction. Airway wall integrity has to be preserved, and the incidence of complications minimized. The use of several interventional modalities in combination is frequently used to achieve this, and also to enhance the duration of the treatment effect (2,11). The subjects described by Kajiwaru et al (10) demonstrated complete symptomatic resolution after bronchoscopic intervention utilizing a combination of up to three modalities, and this effect was maintained for a period ranging from 51 to 112 months. While this series includes rare tumor types and is too small to conclude that any particular treatment combination is safe, efficacious, or the ideal modality for that particular reported tumor; it provides useful guidance in deciding whether the specific interventional modality can be successful in the management of tumors with similar characteristics in the described airway anatomical site.

The authors, however, do not address an important and essential issue; that of the medical setting in which such interventional bronchoscopic techniques are conducted. Our opinion and that of many other authors (2,9,11,12) is that these procedures ought to be conducted in interventional centers of excellence by appropriately trained personnel in a setting suitable for managing severe complications. This would usually require an

operating theater or a well-equipped and staffed bronchoscopy suite. We agree that a multimodality multidisciplinary approach to such patients offers the highest chance of successful immediate and long-term outcomes (2,11).

Kajiwaru et al. have added further to the published literature in this area. Are interventional bronchoscopic techniques useful in alleviating the obstruction from nonmalignant central airway obstruction? The answer is an unqualified yes. Large clinical trials to confirm the therapeutic efficacy of interventional therapeutic modalities either singly or in combination would be welcome.

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