

Tracheal and bronchial surgery is one of the most recent areas of development in surgery, with techniques being refined in parallel with other modern surgical innovations in open heart surgery and solid organ transplantation. Conditions involving the central airways are uncommon, but not rare, and until relatively recently were managed only with palliative techniques - radiation for malignant disease and permanent airway appliances for benign disease. Pioneering work involved several surgeons worldwide, with major advances in technique and indications developed by Dr. Hermes Grillo in Boston and Dr. F. Giffith Pearson in Toronto. Techniques developed and refined by Drs. Grillo and Pearson, along with others, for the first time allowed patients with life limiting central airway pathology undergo definitive surgical management with expectations of a cure combined with a good quality of life.

Primary tracheobronchial pathology includes tumors, benign strictures, inflammatory processes, congenital abnormalities, and rare primary anatomic variations. The techniques of resection allow definitive surgery with curative intent for tumors, and complete correction of many, but not all, benign strictures. Because these conditions are uncommon, most surgeons do not have the benefit of substantial experience or expertise in central airway surgery, and many patients may still not be offered surgery due to lack of training, concern about potential life-threatening complications, or lack of access to a surgeon with airway surgery experience.

The principles of airway surgery have also created substantial advances in the surgical management of thoracic malignancies with secondary airway involvement. By far the most common is lung cancer. Bronchoplastic techniques now allow sleeve lobectomy for central lung cancer, sparing uninvolved lung parenchyma with improved short and long-term outcomes compared to pneumonectomy. The preservation of pulmonary function allows surgery for many patients who would have otherwise been excluded due to poor pulmonary reserve. These techniques have even extended to carinal resection for certain T4 lung cancers that were previously considered inoperable. Thyroid cancer and some mediastinal tumors with airway involvement may now be considered for complete resection.

In spite of these advances, many patients with central airway pathology may not be candidates for curative or corrective surgery due to longitudinal or radial extent of disease. Airway surgeons should also be experts in interventional bronchoscopy which provides initial palliation of obstructive symptoms while preparing a patient for surgery, as well as providing longer term palliation when resection is not possible. Experience with bronchoscopic dilatation, core-out, laser, and stents is also valuable in managing airway complications that may occur after tracheobronchial resection and reconstruction.

The editors of this text have assembled an incredible wealth of surgical principles, lessons learned, and promising techniques from world experts in tracheal and bronchial surgery. The contributors to this text are the surgical leaders from around the world who have further perfected the management of central airway pathology, and have extensive experience in tracheal and bronchial resections. They also provide a window to further advances in the field that include tracheal replacement and 3D printing to improve management of tracheobronchial malacia. We are fortunate to have such a superb collection of expertise and a virtual encyclopedia of airway management collected in a single volume for easy reference to those caring for patients with life-limiting airway pathology.

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