The development in thoracic surgery was based upon a parallel advance in the understanding of anesthesiologists for the physiology of ventilation supporting a concurrent progress in the techniques of thoracic anesthesia. Currently, the preoperative assessment of patients scheduled for pulmonary resection is reviewed in the light of evaluating cardiopulmonary reserve. The introduction of video-assisted thoracoscopy added indications for one-lung ventilation and responsibilities on the anesthesiologist. New equipment introduced in clinical practice provides more options for efficient lung separation. However, some controversial issues still exist, concerning the routine use of fiberoptic bronchoscopy and the use of right versus left double-lumen tube. The choices of the mode of lung separation in case of difficult airway as well as the choice of anesthetic during one-lung ventilation and the management of hypoxia in that situation are points that deserve discussion. The methods to provide post-thoracotomy analgesia are a crucial point in performing successful thoracic anesthesia.