with double-lumen endotracheal intubation and involves the passage of a rigid scope with a distal lens through a trocar inserted into the pleura. A high-quality image is shown on a monitor screen, allowing the operator to manipulate instruments passed into the pleural space through separate small intercostal incisions. With these instruments the operator can biopsy lesions of the pleura under direct visualization. In addition, this procedure is now used commonly to biopsy peripheral lung tissue or to remove peripheral nodules for both diagnostic and therapeutic purposes. This much less invasive procedure has largely supplanted the traditional "open lung biopsy" performed via thoracotomy. The decision to use a VATS technique versus performing an open thoracotomy is made by the thoracic surgeon and is based on whether a patient can tolerate the single-lung ventilation that is required to allow adequate visualization of the lung. With further advances in instrumentation and experience, VATS can be used to perform procedures previously requiring thoracotomy, including stapled lung biopsy, resection of pulmonary nodules, lobectomy, pneumonectomy, pericardial window, or other standard thoracic surgical procedures, but allows them to be performed in a minimally invasive manner.

THORACOTOMY

Although frequently replaced by VATS, thoracotomy remains an option for the diagnostic sampling of lung tissue. It provides the largest amount of material, and it can be used to biopsy and/or excise lesions that are too deep or too close to vital structures for removal by VATS. The choice between VATS and thoracotomy needs to be made on a case-by-case basis.