Pulmonary Artery Rupture Management With a Single Lumen Endotracheal Tube: old tricks that should be revisited.

Primary Author: Thanuja Neerukonda
University of Missouri Kansas City Sch. of Med.

Co-Authors: Andrew Sauer, MD; Brigid Flynn, MD; Travis Abicht, MD; Will Gibson, MD;

Pulmonary artery rupture can be a lethal complication of pulmonary artery catheter (PAC) placement. Different techniques have been used to manage PAC-induced pulmonary artery rupture including double lumen endotracheal tube (DLT), bronchial blockers, pulmonary artery embolization, thoracotomy with hematoma evacuation, and extracorporeal life support for ventilation (ECLS). The technique of main-stemmed single lumen ETT is not frequently reported in literature despite its advantages. With on-going pulmonary bleeding, a single lumen ETT intubation offers advantages to the commonly advocated methods of treating a PAC-induced pulmonary artery rupture.

Firstly, asphyxia, hypoxia and lung injury need to be monitored and managed. A single lumen ETT is likely the fastest way to do this. Thereafter, with due diligence for placement in the main stem bronchus during times of rest and ventilation and withdrawal into the trachea for times of bronchoscopic evaluation and blood evacuation, the single lumen ETT offers several advantages. No other technique allows for frequent bronchoscopic assessment without injuring the healthy lung, and no other technique allows for copious hematoma evacuation due to caliber limitations.

The other previously stated therapies have substantial shortcomings that can be overcome with use of a single lumen ETT. While lung protection is offered, there is not a feasible way to evacuate copious bloody secretions due to the small caliber of the DLT. Bronchial blockers do not allow for frequent bronchoscopic assessment or evacuation and if in place for a long period of time, there are inherent risks. Pulmonary artery embolization may not be capable of finding the site of bleeding and may invoke further bleeding during treatment. Thoracotomy and ECLS may be life saving but fail to protect the healthy lung unless another technique is concomitantly utilized. When the patient is stable, a CAT scan can be obtained to evaluate for pseudoaneurysm.

Knowledge of the fact that most PAC-induced pulmonary artery ruptures will spontaneously resolve due to the low-pressure pulmonary system allows for the least invasive and most effective management: a single lumen ETT.