Airway Rupture with a Disposable Double-lumen Tube

To The Editor—The recent report by Wagner et al. alerts us to a potentially serious complication of the new, disposable polyvinylchloride (PVC) double-lumen endobronchial tubes. Their observation of tracheal rupture follows another report of rupture of the left main-stem bronchus associated with a PVC double-lumen tube. In the latter case, as in most instances of airway trauma with double-lumen tubes, injury occurred from overdistention of the bronchial cuff.

When a PVC double-lumen tube is in proper position, the bronchial cuff usually requires less than 2 ml of air. If more than 3 ml is necessary to avoid a leak, the cuff is probably herniating above or is entirely in the carina. The low-pressure bronchial cuff of the PVC double-lumen tube assumes the high-pressure characteristics of red-rubber tube cuffs with volumes greater than 5 ml. There have been several reports of airway rupture from double-lumen tube cuffs that were initially inflated with small amounts of air but then became further distended during prolonged nitrous-oxide anesthesia. If nitrous oxide is being used, it is important to deflate these cuffs periodically to avoid excessive pressure buildup on the bronchial mucosa. Nitrous oxide was not used in Wagner’s case, and the intubation was apparentlyatraumatic so the cause of their patient’s airway injury remains a mystery.

It should be reemphasized that even with stiff, low-compliant, red-rubber double-lumen tubes, tracheal-bronchial rupture is a very infrequent occurrence. Guerrini et al. reported only five cases of airway rupture among 2,700 patients intubated with cuffed Carlen’s tubes. This rare complication, now reported with PVC double-lumen tubes, should not discourage anesthesiologists from routinely using these tubes to facilitate surgery during intrathoracic procedures.

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