Pro: Always Use a Left-Sided DLT for Both Right and Left Thoracotomies

The use of a double lumen tube (DLT) is the gold standard of care in providing one lung ventilation. (1-2). Most practitioners refrain from using right-sided DLT simply to avoid potential obstacles, because of the potential occlusion of the right upper lobe orifice. The right DLT endobronchial cuff is eccentric, and permits the right upper lobe ventilation slot to ride over the right upper lobe orifice. (3-5). The mean distance from the carina to the right upper lobe orifice is 2.3 ± 0.7 cm in men and 2.1 ± 0.7 cm in women. With right-sided DLTs, the ventilatory slot in the side of the bronchial catheter must overlie the right upper lobe orifice to permit ventilation of this lobe. However, the margin of safety is extremely small, and varies from 1 to 8 mm. It is therefore difficult to ensure proper ventilation to the right upper lobe and avoid dislocation of the DLT during surgical manipulation. Checking the correct position of the right sided DLT may require advance experience with fiberoptic bronchoscopy. When using a right-sided DLT, the right upper lobe bronchial orifice must be identified while the bronchoscope is passed through the right upper lobe ventilating slot. This is somewhat complex to accomplish and requires a relatively skilled endoscopist. (6-7)

The margin of safety in positioning a double-lumen was studied by Beneumof et al. (8) They measured the margin of safety in positioning three modern double-lumen tubes (Mallinkrodt, Rusch and Sheridan). The average margin of safety in positioning left-sided double-lumen tubes ranged 16-19 mm for the different manufacturers. The average margin of safety in positioning Mallinkrodt right-sided double-lumen tubes was 8 mm, while the Rusch right-sided double-lumen tubes ranged 1-4 mm, depending on French size. The authors concluded that “left-sided double-lumen tubes are much preferable to right-sided double-lumen tubes because they have a much greater positioning margin of safety, and that proper confirmation of proper position of either a left- or right-sided double-lumen tube should be aided by fiberoptic bronchoscopy, because the absolute distances that constitute the margin of safety are extremely small.”

There are some cases in which a right sided DLT should be used, such as tumor occupying the left main bronchus or a thoracic aneurysm compressing the left main bronchus. The presence of a thoracic mass could compromise the left-sided double-lumen endotracheal tube placement and function. Some surgeons may prefer right sided DLT for all left side procedures and vice versa. It does take experience with the fiberoptic bronchoscope to place the right upper lobe ventilation slot in precisely the correct position and to be able to adjust the position. Only frequent use of a right DLT can provide the necessary experience with its placement. Unfortunately, with the widespread of the use of left sided DLT, the training for the use of the right sided DLT is quite limited. (9-11)

Finally, the issue of the safety of the use of right sided DLT was addressed in a retrospective analysis by Ehrenfeld et al, which evaluated 241 patients using a right sided DLT and 450 patient using a left sided DLT exclusively used on the side contralateral to surgery. There were no differences in the incidence or duration of hypoxemia, hypercarbia, or high airway pressures. There was a small but significant increase in Etco2 for patients having left lung ventilation.
References