Supplementary Material 2

For example, the ratios of insufflating times of 0.94 (2-mm ID TTC) and 0.94 (14 G) or 0.93 (2-mm ID TTC) and 0.91 (14 G) were noted at 12 or 15 L/min (50 ml/cmH_2O/30 ml/cmH_2O). The ratios of insufflating times were 0.93 (2-mm ID TTC) and 0.91 (14 G) or 0.91 (2-mm ID TTC) and 0.91 (14 G) were obtained at 12 or 15 L/min (100 ml/cmH_2O/30 ml/cmH_2O). These ratios were multiplied by the insufflating times measured at 25 ml/cmH_2O in our trachea-lung model using the modified Rapid-O2 and Rapid-O2.

To estimate the expiratory times using the modified Rapid-O2 at lung compliances of 50 and 100 ml/cmH_2O, we calculated the ratios based on the expiratory times that were obtained by augmenting the expiratory flow during expiration using Ventrain® at different lung compliances [5]. For example, the ratios of 1.0 (2-mm ID TTC) and 1.0 (14 G) or 1.0 (2-mm ID TTC) and 0.98 (14 G) were noted at 12 or 15 L/min (50 ml/cmH_2O/30 ml/cmH_2O). The ratios of 1.0 (2-mm ID TTC) and 1.0 (14 G) or 0.98(2-mm ID TTC) and 0.96 (14 G) were obtained at 12 or 15 L/min (100 ml/cmH_2O/30 ml/cmH_2O). These ratios were multiplied by the expiratory time measured at 25 ml/cmH_2O in the trachea-lung model.

While expiration was enhanced through a small-bore catheter via the Venturi effect in the modified Rapid-O2, expiration was passive in Rapid-O2. Therefore, the above ratios obtained during expiration using the modified Rapid-O2 were not applicable. To estimate the expiratory times at lung compliances of 50 and 100 ml/cmH_2O in Rapid-O2, we calculated the ratios based on the measured passive expiratory times at different lung compliances [5]. For example, the ratio of 1.27 (2-mm ID TTC) (50 ml/cmH_2O/30 ml/cmH_2O) or 1.72 (2-mm ID TTC) (100 ml/cmH_2O/30 ml/cmH_2O) at 15 L/min was multiplied by the passive expiratory time measured at 25 ml/cmH_2O in the trachea-lung model.