**Supplementary Table 1**. Anatomic Features Associated with Difficult Translaryngeal Cannulation

|  |  |  |
| --- | --- | --- |
| Face | Neck | Body Habitus |
| Facial Trauma | Neck Trauma | ↑ Body Mass Index |
| Small Chin | Short Neck |  |
| Protruding Incisors | ↑ Neck Circumference |  |
| Large Tongue |  |  |
| Facial Hair |  |  |

**Supplementary Table 2**. Comparison of cuff leak test results between subjects with supraglottic upper airway obstruction vs. subjects in whom the test produced false negative results for developing post-extubation stridor from peri-laryngeal edema or injury.

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Supraglottic UAO | False Negative | P |
| Expired VT (mL)  cuff inflated | 493 (418-550) | 490 (400-550) | 0.78 |
| VLEAK (mL)  cuff deflated | 225 (150-316) | 200 (152-303) | 0.68 |
| ∆ VT as % of pre-deflation VT | 49 (27-67) | 47 (37-60) | 0.85 |
| Pplat (cmH2O)  cuff deflated | 13 (7-15) | 12 (11-15) | 0.90 |
| ∆Pplat (cmH2O) from cuff inflation to deflation | 6 (2-10) | 5 (4-8) | 0.98 |
| ∆Pplat as % of pre-deflation Pplat | 37 (14-58) | 28 (21-41) | 0.81 |
| ETT Internal Diameter (mm) | 7.0 (7.0-7.0) | 7.0 (7.0-7.0) | 0.53 |
| **Key**: ETT = endotracheal tube, Pplat = end-inspiratory plateau pressure, UAO = upper airway obstruction, VT = tidal volume, VLEAK =VT-expired (cuff inflated)-VT-expired (cuff deflated). | | | |

**Supplementary Table 3.** Comparisons between female and male subjects in 681 cuff leak test results prior to extubation

|  |  |  |  |
| --- | --- | --- | --- |
|  | Females | Males | P |
| N | 277 (41%) | 404 (59%) |  |
| True Negative  Leak (mL)\*  Leak% VT | 200 (72%)  258 (190-348)  55 (41-78) | 374 (93%)  390 (280-500)  67 (49-82) | P<0.001  P<0.001 |
| False Negative  Leak (mL)\*  Leak% VT\* | 23 (8%)  170 (135-220)  44 (31-59) | 11 (3%)  300 (270-380)  55 (46-61) | 0.01  0.29 |
| True Positive  Leak (mL)\*  Leak% VT\* | 25 (9%)  20 (0-60)  6 (0-15) | 6 (2%)  50 (38-79)  12 (5-17) | 0.22  0.54 |
| False Positive  Leak (mL)\*  Leak% VT\* | 29 (10%)  53 (20-94)  11 (5-19) | 13 (3%)  50 (0-85)  9 (0-13) | 0.55  0.28 |
| D-F ETI  F-N Injury/Infection  Inhalation Injury | 39 (14%)  130 (47%)  7 (3%) | 63 (16%)  255 (63%)  13 (3%) |  |
| **Key**. D-F ETI = difficult or traumatic endotracheal intubation, F-N = facial or neck, \*data reported as median (25-75% interquartile range) | | | |