***Supplement***

**Supplemental Table 1: Postoperative outcomes**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Low PEEP** | **High PEEP** | **P value** |
|  | **(N = 79)** | **(N = 83)** |  |
| Postoperative pulmonary complications  | 24 | (30.4) | 29 | (34.9) | 0.536 |
| Mild respiratory failure | 18 | (22.8) | 18 | (21.7) | 0.867 |
| Moderate respiratory failure | 4 | (5.1) | 3 | (3.6) | 0.650 |
| Severe respiratory failure | 1 | (1.3) | 2 | (2.4) | 0.589 |
| Continuation of mechanical ventilation | 0 | (0.0) | 2 | (2.4) | 0.165 |
| New requirement of mechanical ventilation | 2 | (2.5) | 1 | (1.2) | 0.531 |
| Airway secretion | 6 | (7.6) | 11 | (13.3) | 0.240 |
| Atelectasis | 9 | (11.4) | 3 | (3.6) | 0.059 |
| Pulmonary infection | 1 | (1.3) | 0 | (0.0) | 0.304 |
| Pleural effusion | 1 | (1.3) | 1 | (1.2) | 0.972 |
| Acute Respiratory Distress Syndrome | 0  | (0) | 0  | (0) | NA |
| Pneumothorax | 0  | (0) | 0  | (0) | NA |
| *Postoperative vital signs on POD1* |  |  |  |  |  |
| Respiratory rate, breaths/minute | 21.2 | ± 8.4 | 19.9 | ± 3.6 | 0.186 |
| Mean blood pressure, mmHg | 98.8 | ± 14.3 | 94.2 | ± 14.1 | 0.040 |
| Heart rate, beats/minute | 84.1 | ± 14.8 | 85.0 | ± 13.0 | 0.696 |
| FiO2, % | 21.7 | ± 2.1 | 22.0 | ± 2.9 | 0.439 |
| SpO2, % | 94.9 | ± 3.6 | 94.7 | ± 2.8 | 0.701 |
| *Respiratory therapy* |  |  |  |  |  |
| Physiotherapy | 34 | (43.0) | 38 | (45.8) | 0.725 |
| Breathing exercise | 76 | (96.2) | 79 | (95.2) | 0.749 |
| Incentive spirometry | 76 | (96.2) | 78 | (94.0) | 0.513 |
| Hospital length of stay, days | 4 | (3-5) | 4 | (3-6) | 0.985 |
| ICU admission | 2 | (2.5) | 2 | (2.4) | 0.960 |
| ICU length of stay, days | 3 | (3-3) | 3 | (1-4) | 1.000 |

Data are presented as mean ± standard deviation or number (percentage). Student’s t tests, Chi squared tests/Fisher exact tests, and Wilcoxon rank sum tests are used for statistical tests as appropriate.

FiO2, inspired fraction of oxygen; ICU, Intensive care unit; PEEP, positive end expiratory pressure; POD1, first postoperative day; SpO2, pulse oximetry.

**Supplemental table 2: Intraoperative fluids, vasopressor medications and adverse cardio-respiratory events**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Low PEEP** | **High PEEP** | **P value** |
|  | **(N = 79)** | **(N = 83)** |  |
| *Intraoperative fluids* |  |  |  |  |  |
| Total Crystalloids, ml  | 2’876.4 | ± 887.0 | 2’987.9 | ± 1214.4 | 0.512 |
| Crystalloids, ml/kg/h | 4.8 | ± 1.4 | 4.6 | ± 1.7 | 0.471 |
| Diuresis, ml | 116.8 | ± 162.2 | 110.3 | ± 168.5 | 0.803 |
| Estimated blood loss, ml | 137.6 | ± 83.3 | 128.7 | ± 82.6 | 0.498 |
| *Vasoactive drugs* |  |  |  |  |  |
| Use of Phenylephrine | 60 | (75.9) | 69 | (83.1) | 0.257 |
| Phenylephrine, mg  | 0.47 | ± 0.35 | 0.43 | ± 0.31 | 0.500 |
| Use of Ephedrine | 8 | (10.1) | 18 | (21.7) | 0.045 |
| Ephedrine, mg  | 12.6 | ± 6.6 | 19.5 | ± 10.6 | 0.104 |
| Use of Norepinephrine | 4 | (5.1) | 11 | (13.3) | 0.072 |
| Norepinephrine, mcg | 360 | [185-835] | 300 | [97-500] | 0.695 |
| *Intraoperative event*  |  |  |  |  |  |
| Intraoperative hypoxemia (SaO2 ≤ 92%, > 1 min | 3 | (3.8) | 1 | (1.2) | 0.288 |
| Intraoperative bradycardia (< 50 beats/min, > 1 min) | 3 | (3.8) | 5 | (6.0) | 0.513 |
| Intraoperative hypotension (systolic arterial pressure < 90 mmHg, > 1 min) | 3 | (3.8) | 8 | (9.6) | 0.140 |

Data are presented as mean ± standard deviation, number (percentage) or median [interquartile range]. Student’s t tests, Chi squared tests/Fisher exact tests, and Wilcoxon rank sum tests are used for statistical tests as appropriate.

PEEP, positive end expiratory pressure

**Supplemental Figure 1: Perioperative physiological measurements**

EIT, electrical impedance tomography; H1, 1h after intubation; H2, 2 hours after intubation; H3, 3 hours after intubation or at the end of surgery; R0, R1, R2 and R3, recruitment manoeuvre after induction, at 1 hour 2 hours and 3 hours after intubation; PEEP, positive end-expiratory pressure; ARM, alveolar recruitment manoeuvre; VT, tidal volume.



**Supplemental Figure 2**: effect of intraoperative PEEP-12 vs l PEEP-4 on the distribution of tidal volume in obese patients. The non-dependent lung is represented by the region of interest (ROI) I and II, the dependent lung is represented by ROI III and IV.

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**Supplemental Figure 3:** effect of recruitment manoeuvres in the PEEP-12 group on distribution of tidal volume in obese patients. The non-dependent lung is represented by the region of interest (ROI) I and II, the dependent lung is represented by ROI III and IV.

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**Figure 4**: Relationship between driving pressure and dependent lung ventilation in obese patients treated with low PEEP versus high PEEP and recruitment manoeuvres.



**Figure 5**: Driving pressure according to the increase in dependent lung ventilation following a recruitment manoeuvre in high PEEP group.

