**Supplemental Digital Content 5** Factors in association with postoperative MMM (univariable analyses)

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| --- | --- | --- | --- |
| Variables a | Number | OR (95% CI) | *P* value |
| Body mass index |  |  |  |
| 18.5-23.9 kg/m2 | 1141 | Reference |  |
| <18.5 kg/m2 | 162 | 2.931 (1.938 to 4.434) | **<0.001** |
| ≥24 kg/m2 | 922 | 1.323 (1.000 to 1.750) | 0.050 |
| RAI-rev scores | 2225 | 1.053 (1.034 to 1.072) | **<0.001** |
| ASA classification |  |  |  |
| I/II | 1234 | Reference |  |
| III | 890 | 1.905 (1.435 to 2.528) | **<0.001** |
| IV | 101 | 6.464 (4.191 to 9.971) | **<0.001** |
| Current smoker/quit ≤ 7 days | 276 | 1.300 (0.901 to 1.876) | 0.161 |
| Current alcoholism | 101 | 1.133 (0.623 to 2.059) | 0.682 |
| Hypertension | 1122 | 1.169 (0.901 to 1.517) | 0.239 |
| Coronary heart disease | 403 | 1.584 (1.167 to 2.151) | **0.003** |
| Arrhythmia b | 187 | 1.800 (1.210 to 2.676) | **0.004** |
| Peripheral vascular disease | 236 | 1.433 (0.978 to 2.098) | **0.065** |
| Diabetes mellitus | 554 | 1.386 (1.043 to 1.842) | **0.024** |
| Chronic pulmonary diseases c | 188 | 1.187 (0.763 to 1.849) | 0.447 |
| Obstructive sleep apnea d | 85 | 1.673 (0.943 to 2.968) | **0.079** |
| Previous stroke | 375 | 1.249 (0.899 to 1.736) | 0.184 |
| Stroke with deficits e | 92 | 1.779 (1.034 to 3.064) | **0.038** |
| Mental disorders f | 48 | 1.310 (0.581 to 2.952) | 0.515 |
| Visual/hearing impairment | 86 | 1.377 (0.752 to 2.521) | 0.300 |
| Chronic hepatic dysfunction g | 113 | 2.164 (1.352 to 3.466) | **0.001** |
| Connective tissue disease | 37 | 0.632 (0.149 to 2.692) | 0.535 |
| Chronic corticosteroid therapy h | 77 | 1.578 (0.856 to 2.906) | 0.143 |
| Hyper-/hypothyroidism | 43 | 1.766 (0.810 to 3.851) | 0.152 |
| Preoperative infection | 141 | 2.999 (2.010 to 4.475) | **<0.001** |
| Anemia i | 670 | 1.703 (1.304 to 2.224) | **<0.001** |
| Blood coagulation disorder | 44 | 1.209 (0.506 to 2.888) | 0.670 |
| History of DVT or PE | 15 | 1.174 (0.263 to 5.233) | 0.833 |
| Dyslipidemia | 1136 | 1.220 (0.940 to 1.583) | 0.136 |
| Hypoalbuminemia |
| None | 1215 | Reference |  |
| 30.0–39.9 g l-1 | 902 | 1.541 (1.172 to 2.025) | **0.002** |
| <30.0 g l-1 | 108 | 3.154 (1.947 to 5.109) | **<0.001** |
| Na+ <135.0 mmol l-1 | 228 | 1.992 (1.393 to 2.851) | **<0.001** |
| Surgery type by Operative Stress Score j |  |  |  |
| Low stress | 157 | Reference |  |
| Moderate stress | 936 | 4.119 (1.491 to 11.378) | **0.006** |
| High stress | 1065 | 5.980 (2.182 to 16.389) | **0.001** |
| Very high stress | 67 | 15.141 (4.911 to 46.679) | **<0.001** |
| Duration of surgery (hour) | 2225 | 1.214 (1.123 to 1.312) | **<0.001** |
| Type of anesthesia |  |  |  |
| General | 1225 | Reference |  |
| Regional/combined regional-general | 1000 | 0.928 (0.716 to 1.205) | 0.576 |
| Emergency surgery | 153 | 2.160 (1.429 to 3.266) | **<0.001** |
| Estimated blood loss (100 ml) | 2225 | 1.052 (1.019 to1.086) | **0.002** |
| Intra-operative blood transfusion | 149 | 2.444 (1.627 to 3.672) | **<0.001** |

*P* values in bold indicate <0.10.

a The 11 baseline variables included in the RAI-rev were not separately enrolled in univariable analyses.

b Arrhythmia that required medical or interventional therapy.

c Include chronic obstructive pulmonary disease and asthma.

d Diagnosed by previous polysomnography, or history inquiry and physical examination, and/or STOP-Bang/Berlin questionnaire.

e Excludes vascular dementia.

f Include diagnosed depression, anxiety, schizophrenia, phobia, and hallucination.

g Refers to hepatic impairment classified as Child-Pugh class B and C.

h With a duration of >1 month.

i Diagnosed according to the haemoglobin values from the last laboratory test before surgery, male: <120 g l-1, female: <110 g l-1.

j Stratified into five categories of physiologic stress, i.e., very low stress, low stress, moderate stress, high stress, and very high stress.15 Detailed classification of surgery type by Operative Stress Score is provided in Supplemental Digital Content 4.

RAI-rev, revised Risk Analysis Index; ASA, American Society of Anesthesiologists; DVT, deep venous thrombosis; PE, pulmonary embolism; Na+, serum natremia concentration.