

## **Supplementary Material 2. Supplementary data**

The results of conventional meta-analysis comparing the intraoperative core temperature over time between patients with HH/HHBC and patients with other circuit devices are summarized in this supplementary manuscript. The weighted mean difference (WMD) and their 95% confidence interval (CIs) were calculated for each outcome. We used the chi-square and  $I^2$  tests to explore the heterogeneity between the studies [1]. Forest plots for each analysis are shown in the Supplementary Figures below.

### **1. HH vs Control group**

#### **1) Baseline**

At baseline, the difference in the core temperature between the HH and control group was insignificant (WMD = 0.054; 95% CI -0.028–0.135;  $I^2 = 61.09$ ,  $\tau^2 = 0.09$ ,  $p = 0.015$ ).

#### **2) 15 min**

At 15 min after anesthesia induction, the intraoperative core temperature was significantly higher in the HH group than in the control group, but with considerable heterogeneity (WMD = 0.270; 95% CI 0.059–0.482;  $I^2 = 91.20$ ,  $\tau^2 = 0.06$ ,  $p < 0.001$ ).

#### **3) 30 min**

At 30 min after induction, the intraoperative core temperature was observed to be significantly higher in the HH group than in the control group, but with substantial heterogeneity (WMD: 0.305; 95% CI 0.213–0.396;  $I^2 = 71.46$ ,  $\tau^2 = 0.01$ ,  $p < 0.001$ ).

#### **4) 45 min**

At 45 min after induction, the HH group had significantly higher intraoperative core body temperature than the control group (WMD = 0.478; 95% CI 0.207–0.750;  $I^2 = 94.34$ ,  $\tau^2 = 0.11$ ,  $p < 0.001$ ).

#### **5) 60 min**

The intraoperative core temperature at 60 min after anesthesia induction was significantly higher in the HH group than in the control group, but with considerable heterogeneity (WMD: 0.432; 95% CI 0.204–0.660;  $I^2 = 94.73$ ,  $\tau^2 = 0.14$ ,  $p < 0.001$ ).

#### **6) 75 min**

At 75 min after induction, the intraoperative core temperature was significantly higher in the HH group than in the control group, but considerable heterogeneity was observed (WMD

= 0.691; 95% CI 0.275–1.106;  $I^2 = 96.49$ ,  $\tau^2 = 0.22$ ,  $p < 0.001$ ).

#### **7) 90 min**

The intraoperative core temperature at 90 min after induction of anesthesia was 0.504 °C higher in the HH group than in the control group (WMD = 0.504; 95% CI 0.203–0.805). The difference between the two groups was statistically significant, but considerable heterogeneity was also observed ( $I^2 = 95.16$ ,  $\tau^2 = 0.22$ ,  $p < 0.001$ ).

#### **8) 105 min**

At 105 min after induction, the intraoperative core temperature was significantly higher in the HH group than in the control group, but with considerable heterogeneity (WMD = 0.746; 95% CI 0.198–1.294;  $I^2 = 97.51$ ,  $\tau^2 = 0.38$ ,  $p < 0.001$ ).

#### **9) 120 min**

The intraoperative core temperature at 120 min after anesthesia induction was significantly higher in the HH group than that of the control group. However, considerable heterogeneity was also detected (WMD = 0.690; 95% CI 0.320–1.060;  $I^2 = 97.51$ ,  $\tau^2 = 0.312$ ,  $p < 0.001$ ).

#### **10) 135 min**

At 135 min after induction, the intraoperative core temperature was significantly higher in the HH group than in the control group, but with considerable heterogeneity (WMD = 1.102; 95% CI 0.223–1.982;  $I^2 = 98.14$ ,  $\tau^2 = 0.80$ ,  $p < 0.001$ ).

#### **11) 150 min**

At 150 min after induction, the HH group had significantly higher intraoperative core temperature than the control group (WMD = 0.847; 95% CI 0.333–1.360;  $I^2 = 98.36$ ,  $\tau^2 = 0.40$ ,  $p < 0.001$ ).

#### **12) 165 min**

The intraoperative core temperature at 165 min after induction was significantly higher in the HH group than in the control group, but heterogeneity between the studies was considerable (WMD: 1.126; 95% CI 0.251–2.002;  $I^2 = 99.03$ ,  $\tau^2 = 0.79$ ,  $p < 0.001$ ).

#### **13) 180 min**

At 180 min after anesthesia induction, the intraoperative core body temperature was 0.848 °C

higher in the HH group than in the control group (WMD = 0.848; 95% CI 0.382–1.314), but with considerable heterogeneity ( $I^2 = 98.29$ ,  $\tau^2 = 0.44$ ,  $p < 0.001$ ).

## **2. HH vs HME group**

### **1) Baseline**

At baseline, the difference in the core temperature between the HH group and the HME group was insignificant (WMD = 0.066; 95% CI -0.035–0.167;  $I^2 = 36.99$ ,  $\tau^2 = 0.01$ ,  $p = 0.161$ ).

### **2) 30 min**

At 30 min after induction of anesthesia, the core body temperature was significantly higher in the HH group than in the HME group (WMD = 0.213; 95% CI 0.032–0.395;  $I^2 = 0.0$ ,  $\tau^2 = 0.0$ ,  $p = 0.424$ ).

### **3) 60 min**

The intraoperative core temperature at 60 min after induction was 0.263 °C higher in the HH group than that of the HME group, but the difference between the two groups was statistically insignificant (WMD = 0.263; 95% CI -0.026–0.553;  $I^2 = 76.89$ ,  $\tau^2 = 0.07$ ,  $p = 0.005$ ).

### **4) 90 min**

At 90 min after induction, the HH group had a significantly higher intraoperative core temperature than the HME group (WMD = 0.259; 95% CI 0.075–0.442;  $I^2 = 20.61$ ,  $\tau^2 = 0.01$ ,  $p = 0.284$ ).

### **5) 120 min**

At 120 min after induction, the intraoperative core temperature was significantly higher in the HH group than in the HME group, but with substantial heterogeneity (WMD = 0.314; 95% CI 0.035–0.594;  $I^2 = 68.53$ ,  $\tau^2 = 0.04$ ,  $p = 0.042$ ).

### **6) 180 min**

The intraoperative core body temperature at 180 min after induction was significantly higher in the HH group than in the HME group with a WMD of 0.416 °C (95% CI 0.054–0.779). However, heterogeneity between the studies was substantial ( $I^2 = 69.62$ ,  $\tau^2 = 0.05$ ,  $p = 0.070$ ).

## **3. HH vs MAK group**

### **1) Baseline**

At baseline, the core body temperature in the MAK group was 0.111 °C higher than that

of the HH group (95% CI -0.204--0.018;  $I^2 = 0.00$ ,  $\tau^2 = 0.00$ ,  $p = 0.658$ ).

## **2) 15 min**

At 15 min after induction of anesthesia, the MAK group had a significantly higher intraoperative core temperature than the HH group, but substantial heterogeneity was observed (WMD = -0.343; 95% CI -0.656--0.029;  $I^2 = 81.99$ ,  $\tau^2 = 0.04$ ,  $p = 0.010$ ).

## **3) 30 min**

At 30 min after induction, the intraoperative core temperature was 0.421 °C higher in the MAK group than in the HH group, but the difference between the two groups were statistically insignificant (95% CI -0.980-0.137;  $I^2 = 93.87$ ,  $\tau^2 = 0.15$ ,  $p < 0.001$ ).

## **4) 45 min**

At 45 min after induction, the difference in the core body temperature between the HH and MAK groups was statistically insignificant (WMD = -0.470; 95% CI -1.088-0.147;  $I^2 = 95.93$ ,  $\tau^2 = 0.19$ ,  $p < 0.001$ ).

## **5) 60 min**

Although the intraoperative core temperature at 60 min after anesthesia induction was 0.499 °C higher in the MAK group, the difference between the two groups was statistically insignificant (95% CI -1.136-0.138;  $I^2 = 96.46$ ,  $\tau^2 = 0.20$ ,  $p < 0.001$ ).

## **6) 75 min**

The difference in the intraoperative core temperature at 75 min after induction between the HH and MAK groups was statistically insignificant (WMD = -0.553; 95% CI -1.239-0.133;  $I^2 = 97.10$ ,  $\tau^2 = 0.24$ ,  $p < 0.001$ ).

## **7) 90 min**

Despite the higher mean value was observed in the MAK group at 90 min after induction of anesthesia, the difference between the HH group and the MAK group was statistically insignificant (WMD = -0.567; 95% CI -1.302-0.168;  $I^2 = 97.73$ ,  $\tau^2 = 0.28$ ,  $p < 0.001$ ).

## **8) 105 min**

At 105 min after induction, the MAK group had a higher intraoperative core temperature than the HH group, but the difference between the two groups was statistically insignificant (WMD = -0.607; 95% CI -1.342-0.128;  $I^2 = 97.64$ ,  $\tau^2 = 0.28$ ,  $p < 0.001$ ).

### 9) 120 min

At 120 min after anesthesia induction, a statistically insignificant difference in the intraoperative core temperature between the HH and MAK groups was observed (WMD = -0.606; 95% CI -1.360–0.149;  $I^2 = 97.83$ ,  $\tau^2 = 0.29$ ,  $p < 0.001$ ).

### 10) 135 min

At 135 min after induction, the difference in the intraoperative core temperature between the two groups was insignificant (WMD = -0.570; 95% CI -1.335–0.194;  $I^2 = 97.96$ ,  $\tau^2 = 0.30$ ,  $p < 0.001$ ).

### 11) 150 min

Although the MAK group had 0.575 °C higher intraoperative core body temperature at 150 min after induction, the difference between the two groups was insignificant (95% CI -1.310–0.160;  $I^2 = 97.97$ ,  $\tau^2 = 0.28$ ,  $p < 0.001$ ).

### 12) 165 min

The intraoperative core temperature at 165 min after induction of the two groups showed the difference of 0.571 °C, but it was statistically insignificant (95% CI -1.315–0.174;  $I^2 = 97.80$ ,  $\tau^2 = 0.28$ ,  $p < 0.001$ ).

### 13) 180 min

At 180 min after anesthesia induction, the intraoperative core body temperature was 0.570 °C higher in the MAK group than in the HH group, but the difference between the two groups was statistically insignificant (95% CI -1.256–0.116;  $I^2 = 97.41$ ,  $\tau^2 = 0.24$ ,  $p < 0.001$ ).

## Reference

1. Higgins JP, Thompson SG. Quantifying heterogeneity in a meta-analysis. *Statistics in medicine* 2002; 21: 1539-58.