Temperature Measurement at the Forehead as Acceptable Alternative to Tympanic Measurement

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Introduction: The National Institute for Health and Clinical Excellence in the United Kingdom had published guidelines on the prevention of inadvertent perioperative hypothermia, which did not include pregnant patients1. We compared temperature measurements using a continuous cutaneous device at 3 sites (forehead, shoulder and carotid) against the widely used intermittent tympanic thermometer.

Methods: Research ethics committee approval was sought but deemed not necessary. Intraoperative temperature was measured in 32 obstetric patients for different procedures. Cutaneous temperature was measured using the Crystaline™ Moving line® strip and tympanic temperature was measured using an infrared thermometer. Temperature at the forehead was taken for all patients, 19 patients were also assessed for temperature at the shoulder and 12 for temperature at the carotid to identify the best site for cutaneous measurement. Tympanic and cutaneous temperature was taken 3 times for each patient in 5-minute intervals. The Bland-Altman plot was used to compare measurements in each patient.

Results: There was no statistical difference (p=0.81) between the tympanic measurement and cutaneous measurement at the forehead. The mean difference between the measurements was 0.19°C (CI 0.080 to 0.31). However, measurements at the shoulder and carotid were statistically different (p<0.0001) from the tympanic measurements (mean difference -0.46 and 0.33 respectively).

Discussion: Obstetric patients are prone to inadvertent hypothermia during operative procedures, owing to intravenous fluid administration, exposure of body cavities and blood loss. It is usually quite difficult to measure temperature continuously in an obstetric patient under regional anesthesia. We showed that measuring temperature at the forehead using a cutaneous device is an acceptable alternative to tympanic measurement.

Reference: