**Effect of preoperative warming on intraoperative hypothermia and postoperative functional recovery in total hip arthroplasty: a randomized clinical trial**

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**Learning Track:** Perioperative medicine

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**Background and Goal of Study:** Intraoperative hypothermia (IH) increases postoperative morbidity and impairs postoperative recovery.1 Anterior-approached total hip arthroplasty (ATHA) can be associated with significant IH, partly due to the exposed body surface area in the operative field.2,3 This trial was conducted to assess the interest of preparative air-forced warming on IH and postoperative functional recovery.

**Materials and Methods:** Between February 5th, 2022, and October 23rd, 2022, 40 patients scheduled for ATHA were enrolled for this randomized, prospective, controlled trial. Patients were randomly divided into two groups of 20 patients each and received general anaesthesia. Group W received 30 minutes 43°C air-forced warming prior to anaesthesia induction. Group C did not receive any pre-induction warming. A blind observer noted the evolution of body temperature, measured by an oesophageal probe at the induction time and at fixed time points, i.e., every 5 minutes during the first hour. Impact on patient perceived thermal comfort and functional recovery (QoR-15) were assessed in the post-anaesthesia care unit (PACU), and 24, 48 and 72 hours after surgery. Intraoperative bleeding was also noted. Data were analyzed using Mann-Whitney or generalized linear mixed model tests as appropriate.

**Results and Discussion:** Intraoperative body temperature loss (Figure 1A) was faster and greater in group C than in group W, with a significant main effect for group (p = 0.022) and interaction between group and time (p < 0.001). The postoperative QoR-15 (Figure 1B) and TC (Figure 1C) evolutions were significantly better in the group W than in the group C, with a significant main effect for interaction between group and time (p < 0.001 and p < 0.001 for QoR-15 and TC, respectively) and less intraoperative bleeding [mL; median (IQR): Group W 445 (425 - 470) and Group C 615 (517.5 - 695) mL, p < 0.001].

**Conclusion**: In ATHA, 30-minutes preoperative warming reduces intraoperative body temperature drop during the first hour of surgery, and enhances postoperative recovery and patients’ comfort during the first postoperative 3 days, with less intraoperative bleeding.

**References:**

1. Sessler DI. « Perioperative thermoregulation and heat balance ». Lancet 2016; 387: 2655–64
2. Simpson JB et al. « Hypothermia in Total Joint Arthroplasty: A Wake-Up Call. » The Journal of Arthroplasty 2018 ; 33(4)1012-1018
3. Sessler DI. « Thermal management and blood loss during hip arthroplasty » Minerva Anestesiologica 2002; 68(4):182-5