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The Impact of Intraoperative Fluid Therapy and Body Temperature on Surgical Site Infection – Re-Assessment of a Randomized Trial

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Abstract
Background: Use of supplemental oxygen during surgery to reduce the incidence of SSI was investigated in the PROXI trial, which found no reduced frequency of SSI. Subsequently, it has been suggested that a restrictive fluid regimen and hypothermia in some patients could explain why no beneficial effect of supplemental oxygen was found. We evaluated the association between the occurrence of SSI and two perioperative factors, volume of infused fluid and body temperature (BT).
Methods: We used data from the PROXI trial including 1,386 patients undergoing laparotomy randomly assigned to receive 80% or 30% oxygen during surgery. A fluid infusion index (FII) was calculated for each patient as the volume of infused fluids/body weight/duration of surgery.
Results: SSI occurred in 18.9% of the patients in the lower FII tertile group (OR=0.86; P=0.41), in 20.4% in the upper FII tertile group (OR=1.49; P=0.05), in 19.7% of the patients with hypothermia (OR=1.28; P=0.25) and in 25.0% with hyperthermia (OR=1.26; P=0.52). An increased risk of SSI (OR=3.15; P=0.01) was found in patients having both hypothermia and emergency surgery.
Conclusion: A trend towards an increased risk of SSI was seen in patients who received a greater volume of intravenous fluid. No association was found between BT and SSI.
Key words: Surgical site infection, supplemental oxygen, laparotomy, intraoperative fluid therapy, perioperative body temperature, the PROXI trial