

**Effect of High Perioperative Oxygen Fraction on Surgical Site Infection Following Surgery for Acute Sigmoid Diverticulitis. A Prospective, Randomized, Double Blind, Controlled, Monocentric Trial**

Mario Schietroma<sup>1</sup>, Beatrice Pessia<sup>1</sup>, Sara Colozzi<sup>1</sup>, Francesco Carlei<sup>1</sup>, Ina Shehaj<sup>2</sup>  
and Gianfranco Amicucci<sup>1</sup>

<sup>1</sup>Department of Surgery, University of L'Aquila, Italy

<sup>2</sup>University of Tirana, Albania

**Abstract**

*Propose:* The clinical role of hyperoxia to prevent postoperative surgical site infection (SSI) remains uncertain since randomized controlled trials on this topic have reported different results. One of the principal reasons for such mixed results can be that previous trials have entered a heterogeneous population of patients and set of procedures. The aim of our study was to assess the influence of hyperoxygenation on SSI using a homogeneous study population.

*Methods:* We studied, in a prospective randomized study, extended on a time interval January 2009 to May 2015, 85 patients who underwent open intraperitoneal anastomosis for acute sigmoid diverticulitis. Patients were assigned randomly to an oxygen/air mixture with a fraction of inspiration (FiO<sub>2</sub>) of 30% (n=43) or 80% (n=42). Administration was started after induction of anesthesia and maintained for 6 hours after surgery.

*Results:* The overall wound site infection rate was 24.7% (21 out of 85): 14 patients (32.5%) had a wound infection in the 30% FiO<sub>2</sub> group and 7 (16.6%) in the 80% FiO<sub>2</sub> group ( $p < 0.05$ ). The risk of SSI was 43% lower in the 80% FiO<sub>2</sub> group (RR, 0.68; 95% confidence interval, 0.35-0.88) versus 30% FiO<sub>2</sub>.

*Conclusions:* Therefore, supplemental 80% FiO<sub>2</sub> during and 6 hours after open surgery for acute sigmoid diverticulitis, reducing post-operative SSI, should be considered part of ongoing quality improvement activities related to surgical care, accompanied by few risk to the patients and little associated cost.

**Key words:** acute sigmoid diverticulitis, oxygen fraction