

Perioperative hyperoxemia: friend or foe ?

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Aim: to give an update about potential advantages and complications of administration of supplemental oxygen during surgery

A major clinical study published in 2000 in NEJM indicated, that supplemental perioperative oxygen reduces the risk of postoperative surgical site infection.¹ This finding was confirmed by various minor studies. Subsequently, supplemental (80%) inspired oxygen is recommended by both, the United States Center for Disease Control and the World Health Organization for prevention of surgical site infections.^{2,3} These recommendations are controversially discussed, as recent clinical studies reported little or no benefit.⁴ By far the largest clinical study including about 6.000 patients undergoing colorectal procedures reported, that supplemental perioperative oxygen did not improve rate of postoperative surgical site infections.⁵

A recent meta analyses summarized the current evidence, reporting that intraoperative supplemental oxygen is not beneficial in order to prevent from postoperative surgical site infections.⁶ Since supplemental oxygen does not appear to reduce the risk of surgical site infections, it is therefore reasonable to investigate potential complications of high fraction of inspired oxygen. Three organ (systems) are obviously at risk: lungs and potential respiratory complications, kidneys and potential kidney injury, and heart and potential myocardial injury.

Results of recent studies provide (preliminary) evidence, that intraoperative supplemental oxygen does not harm cardiac and/ or renal complications. Its commonly believed, that supplemental oxygen during surgery causes respiratory complications in the postoperative period, but major clinical trials are currently lacking.

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