

## Intraoperative Oxygen Administration in OPCAB



Maintaining adequate oxygen delivery ( $DO_2$ ) to peripheral tissues during surgery is crucial, as factors like acute blood loss or fluid shifts can threaten oxygen supply. Surgery patients often receive higher fractions of inspired oxygen ( $FiO_2$ ) to ensure sufficient oxygen and perfusion. However, this practice can lead to supraphysiological oxygen levels, resulting in oxidative stress, vasoconstriction, and microcirculatory disturbances. These effects may have unfavourable impacts on postoperative outcomes. Additionally, manipulating  $FiO_2$  above a certain threshold is believed to have limited effects on  $DO_2$ . Consequently, the use of high levels of supplemental oxygen during surgery is controversial, and evidence regarding the optimal perioperative  $FiO_2$  is insufficient and inconsistent.

In patients undergoing off-pump coronary artery bypass grafting (OPCAB), haemodynamic instability is common as the heart is lifted, rotated, and fixated during the procedure. Oxygen therapy with a high  $FiO_2$  benefits oxygenation and perfusion but may come with complications related to oxygen toxicity. However, no previous study has investigated the effects of high  $FiO_2$  on clinical outcomes, specifically in patients undergoing OPCAB.

This study compared the effects of using 30% and 80% oxygen levels during OPCAB. The goal was to evaluate the impact of these oxygen levels on patient outcomes in the context of this specific surgical procedure. The study was conducted in three tertiary hospitals between August 2019 and August 2021. Patients were randomly assigned to receive either 30% or 80% oxygen levels. The primary outcome was the length of hospital stay, and the researchers also compared intraoperative haemodynamic data between the two groups. A total of 414 patients were included in the study.

Findings showed that the length of hospital stay did not differ significantly between the group receiving 30% oxygen and the group receiving 80% oxygen during OPCAB surgery. The incidence of postoperative acute kidney injury was significantly higher in the 30% oxygen group (30.7%) compared to the 80% oxygen group (19.4%). The intraoperative time-weighted average mixed venous oxygen saturation was significantly higher in the 80% oxygen group (74%) compared to the 30% oxygen group (64%). Similarly, the 80% oxygen group had significantly higher intraoperative time-weighted average cerebral regional oxygen saturation (56%) than the 30% oxygen group (52%).

Overall, these findings show that in patients undergoing OPCAB, administering 80% oxygen during the procedure did not result in a shorter hospital stay than 30% oxygen. However, using 80% oxygen intraoperatively may reduce the incidence of postoperative acute kidney injury. Additionally, the administration of 80% oxygen during OPCAB surgery improved oxygen delivery to patients compared to 30% oxygen.

Source: [Critical Care](#)

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