

# The association of cerebral desaturation during one-lung ventilation and postoperative recovery: A prospective observational cohort study

Roberts et al. J Cardiothorac Vasc Anesth 2020

## From

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## Study design

Prospective observational study

## Objective

To investigate the relationship between intra-operative cerebral oxygenation saturation ( $rSO_2$ ) and postoperative outcome in patients undergoing thoracic surgery requiring one lung ventilation.

## Methods

- 117 patients who had a thoracic surgery requiring one lung ventilation between September 2012 and March 2014 were enrolled in the study
- All patients were monitored with the ForeSight system
- Cerebral desaturation was defined by a  $rSO_2 < 65\%$  for at least 3 minutes
- Cognitive recovery was assessed using the PQRS and delirium using the Long CAM score

## Results

- 51% of patients desaturated during the procedure
- Patients who desaturated were less likely to have cognitive recovery immediately after surgery (day 0)
- Patients who desaturated were more likely to have delirium from day 1 to day 3 after surgery (table) and a longer median length of stay (5.6 vs 4.1 days)

## Comments

Many studies have shown a relationship between intraoperative cerebral desaturation and postoperative morbidity in cardiac surgical patients. Little is known in patients undergoing thoracic surgery requiring one lung ventilation.

The study lacked inclusion of intra-operative data that are known determinants of  $rSO_2$ , including  $SpO_2$ ,  $PCO_2$ , hemoglobin, blood pressure and cardiac output. Therefore, the reasons for cerebral desaturation in this specific context remain unclear.

Also, interventional studies are desirable to investigate whether  $rSO_2$  optimization may improve postoperative outcome in this patient population.

## Conclusion

Cerebral desaturation is frequent during thoracic surgery requiring one lung ventilation. Cerebral desaturation is associated with postoperative delirium and prolonged length of stay.



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## Table

Postoperative delirium incidence by cerebral oximetry profile.

	No Desaturation (%)	Desaturation (%)	Total Delirious %
POD 1	5 (11)	10 (20)	16
POD 2	2 (6)	7 (15)	11
POD 3	1 (4)	6 (18)	12

Abbreviations: POD, postoperative day.

Adapted from Roberts et al. J Cardiothorac Vasc Anesth 2020

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