

Haga Teaching Hospital

Unilateral versus bilateral cerebral oximetry in stroke prevention during coronary artery bypass grafting and valve surgery

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BACKGROUND

Stroke and delirium are ischemic complications of cardiac surgery. Our objective was to evaluate the difference in applying a single cerebral oximetry sensor versus a dual sensor in preventing stroke and delirium in coronary artery bypass grafting and valve surgery.

METHODS

A single center retrospective study of all patients undergoing coronary artery bypass grafting and valve surgery between January 2016 and December 2017.

Before surgery, we identified cerebral low flow state by transcranial Doppler ultrasound. In case of low flow state we either restored cerebral flow prior to surgery or – if that was not possible – we waived surgery.

In 2016 patients we monitored during cardiac surgery with bilateral oximetry sensors and a single sensor was used in 2017.

Table bilateral sensors versus unilateral sensors

Data	Bilateral sensors	Unilateral sensor
Year	2016	2017
Number	508	498
Cumulative stroke & delirium rate	7.4%	5.8%
Stroke rate	1.2%	0.4%
Delirium rate	6.4%	5.4%

RESULTS

Bilateral sensors were used in 508 patients and a single oximetry sensor was used in 498 patients. The stroke rate among all patients was 0.8%, the delirium rate was 5.9%, and the combined stroke and delirium rate was 6.6%. The use of an unilateral sensor did not influence the stroke and delirium rate.

CONCLUSIONS

Applying a single cerebral oximetry sensor instead of bilateral sensors did not influence the stroke and delirium rate in this patient cohort.

This observation may reduce the cost of monitoring and the threshold for applying cerebral oximetry during cardiac surgery.

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