

Neurovision: Covert stroke in non-cardiac surgery

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Overt stroke is an uncommon but devastating complication of surgery and anaesthesia. Incidence ranges from 0.3-2% depending on the age, comorbidities and surgery type. Postoperative stroke has much worse disability and mortality than in the non-surgical setting. Covert strokes are smaller strokes that have subtler signs and symptoms that may be masked in the postoperative period. Covert strokes may be more common than overt stroke. The incidence of covert stroke in noncardiac surgery and clinical implications were not known.

The NeuroVision trial aimed to explore this knowledge gap. A total of 1114 patients age over 65 years with an expected hospital stay of 3 days or more having surgery under general or regional anaesthesia were recruited. Baseline cognitive assessment, twice daily delirium assessments, MRI between day 3 and 10 and 1 month and 1 year were performed. The incidence of covert stroke was 7% with a doubling of the risk of delirium from 5% to 10% ($P=0.02$) and an increase of cognitive decline at 1 year from 29% to 42% ($P=0.006$). There was no difference between surgery or anaesthesia type. Most covert strokes were embolic in origin.

The POISE-2 trial has helped delineate our understanding of the risks of aspirin cessation or continuation on cardiac outcomes in the perioperative period. POISE-2 did not look at delirium, cognition or covert stroke as an outcome. We do not have good data to predict those at highest risk beyond traditional medical risk factors and high risk surgery eg carotid or cardiac or data on the relative risk and benefit of aspirin continuation or cessation in this setting. The cogPOISE study and NeuroVISION-2 study may provide further information.

Proposed strategies for advancing pre-operative stroke care and research include advanced risk prediction modelling, cerebrovascular reserve mapping and plaque-stenosis identification. Intra-operative care and research should be targeted at identifying critical cerebral flow thresholds. Postoperative care should include regular delirium and neurological assessment. Covert stroke is common and consequential for delirium, cognitive impairment and subsequent disability. It should be discussed as one of the common, serious complications of surgery when weighing the benefits and risks of proceeding with surgical management. Currently, the optimum management regime for prevention, diagnosis or management in the perioperative setting is unclear.

References

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