

CEREBROVASCULAR DISEASE

Preoperative evaluation

What is the risk of previous cerebrovascular disease for postoperative complications?

Cardiovascular risk:

A history of cerebrovascular disease is a risk factor in several risk stratification tools: (See "**Cardiovascular Risk Stratification**").

- In the Revised Cardiac Risk Index, it is **1 of 6 risk factors** for major cardiac complications.¹
- In the AHA/ACC guidelines for perioperative risk stratification, a history of stroke is considered a **clinical risk factor**.²

Risk of postoperative stroke:

The data on risk of stroke are limited. One retrospective surgical series of patients with a history of previous stroke found a 2.9% incidence of postoperative stroke.³ A case-control study found that history of previous stroke was the most significant risk factor for postoperative stroke.⁴

Other studies have suggested that postoperative strokes are largely embolic in nature.⁶

Atrial fibrillation is discussed elsewhere. ("**Perioperative Atrial Fibrillation**" and "**Anticoagulation**").

How long should a patient wait to undergo elective surgery following a stroke or TIA?

Recommendations vary between 1 and 3 months to delay truly elective surgery following a stroke. We recommend evaluating each case individually with regard to the type and urgency of the surgery, the patient's comorbidities as a whole, and the extent to which the TIA/CVA symptoms are stable and have been fully evaluated. Discussion with the patient's neurologist is usually indicated.

What is the risk of hearing a carotid bruit on preoperative examination?

A prospective study of 735 patients undergoing elective abdominal, cardiothoracic, breast, and extremity surgery failed to show a significant perioperative risk of finding an asymptomatic carotid bruit on routine preoperative physical examination.⁵ However, this study did not address those patients with active symptoms.

Whether to obtain further workup (e.g. a carotid duplex) should be individualized based on the patient's overall stroke risk, assessment of possible symptoms, and need for surgery.

Postoperative stroke

What is the mortality associated with postoperative stroke?

Estimates vary, but in general are quite high e.g. 26% in one series.⁶

How can a patient's risk of postoperative stroke be reduced?

There is not good data to support specific management strategies, but it makes sense to pay attention to traditional cardiovascular risk factors, including blood pressure control, restarting medications such as aspirin and statins, and restarting anticoagulation if indicated and surgically acceptable. Vigilance in detecting new onset atrial fibrillation may reduce embolic disease.

How should a postoperative stroke be managed?

In general, in the same way a stroke not associated with a procedure should be managed. However, important considerations are the following:

- Identify possible embolic sources.
- Work closely with the surgical team should anticoagulation be indicated.
- Thrombolytics are generally difficult to use—on one hand, identifying a stroke in the hospital may make lytics more likely to be used because of earlier identification and treatment compared with out of hospital strokes; on the other hand, recent surgery is generally a contraindication to lytics.
- Permissive hypertension may be difficult in certain vascular or plastic surgery procedures, and discussion with the surgery and neurology teams is essential.
- Achieving normoglycemia and preventing fever remain important.
- Hyponatremia may be more difficult to avoid in the postoperative setting secondary to third spacing.

References:

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