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Endarterectomy for carotid artery stenosis: Who qualifies?

- What are the indications for carotid endarterectomy (CE) in the symptomatic patient?
- How is symptomatic defined?
- What are the indications for CE in the asymptomatic patient?
- What is the role of aspirin therapy in these patients?

This guideline reviews the efficacy of carotid endarterectomy for stroke prevention in adults with symptomatic or asymptomatic internal carotid artery stenosis.

Symptomatic is defined as a cerebro-

vascular event in the carotid distribution (transient ischemic attack or nondisabling stroke) in the previous 6 months.

Indications for or against CE appear in the Practice Recommendations.

The evidence categories are assessment of therapeutic effectiveness, prevention, and risk assessment. Study outcomes considered are: benefits of carotid endarterectomy for symptomatic patients, benefits for asymptomatic patients, the efficacy within 24 hours in patients with progressing stroke, clinical variables that impact the risk/benefit ratio, the most important radiologic factors impacting the risk/benefit ratio, the ideal dose of aspirin preoperative-

Practice recommendations

GRADE A RECOMMENDATIONS

- Carotid endarterectomy is effective for symptomatic patients with 70% to 99% stenosis. Carotid endarterectomy should not be considered for symptomatic patients with less than 50% stenosis—medical management is preferred. (50%–99% stenosis, Grade B)
- Carotid endarterectomy may be considered for patients between ages 40 to 75 years, with asymptomatic stenosis between 60% to 99%, if there is a 5-year life expectancy and surgical risk is <3%.
- Symptomatic and asymptomatic patients undergoing carotid endarterectomy should receive aspirin (81 or 325 mg) daily prior to surgery and for at least 3 months postoperatively. In the absence of contraindications, it should be continued indefinitely.

GRADE B RECOMMENDATIONS

- Carotid endarterectomy may be considered for symptomatic patients with 50% to 69% stenosis in patients with a 5-year life expectancy and surgical risk <6%.

GRADE C RECOMMENDATION

- Patients with hemispheric transient ischemic attack or cerebrovascular accident had greater benefit from carotid endarterectomy than those with retinal events.
- Patients with severe stenosis and a cerebrovascular event should have carotid endarterectomy within 2 weeks for greatest benefit.
- Contralateral occlusion reduces the benefit of carotid endarterectomy in asymptomatic patients.
- Data are insufficient to recommend other antiplatelet agents perioperatively.

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ly, the evidence/practice gap, the likelihood that trial results can be achieved in practice, the benefit of carotid endarterectomy concurrent with or prior to coronary artery bypass grafting, and the optimal time after stroke to perform the surgery. The evidence rating is updated to comply with the SORT taxonomy.¹

■ Guideline relevance and limitations

Carotid endarterectomy has an important role in the prevention of stroke in patients with internal carotid artery stenosis, since the majority of strokes are ischemic. Strokes can be prevented if a high-grade internal carotid stenosis is corrected. More than 700,000 patients suffer a stroke each year in the US, with 80% related to ischemia (either thrombotic or embolic).² Most strokes occur after the age of 65, and the risk doubles each decade after the age of 55. Stroke is the third leading cause of death, with only heart disease and cancer killing more people. Strokes cause more serious long-term disabilities than any other illness. The guideline was weakened by lack of cost analysis.

■ Guideline development and evidence review

A literature search was performed using Ovid Medline for relevant articles published from 1990 to 2001 using the keywords *carotid endarterectomy*, *carotid stenosis*, *carotid artery diseases*, and *clinical trials*. The Cochrane Library statements on carotid endarterectomy for symptomatic and asymptomatic stenosis from 2004 were reviewed to confirm that additional relevant citations from 2002 to 2004 were identified.

The initial search yielded 1462 citations. This list was reduced by excluding case reports, letters to the editor, review articles without primary data, studies addressing carotid endarterectomy technical issues, case series from a single surgeon, and articles not written in English. Case

series from a single institution were included. This narrowed the pertinent list to 186 articles, which were reviewed independently by 2 committee members. The committee also agreed that if a pooled analysis of the major symptomatic carotid endarterectomy studies or if the results of the Asymptomatic Carotid Surgery Trial were published prior to the completion of the committee's manuscript, these would subsequently be reviewed.

Source for this guideline

Chaturvedi S, Bruno A, Feasby T, Holloway R, Benavente O, Cohen SN, Cote R, Hess D, Saver J, Spence JD, Stern B, Wilterdink J. Carotid endarterectomy—an evidence-based review: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology* 2005; 65:794–801 [27 refs]. Available at: www.neurology.org/cgi/reprint/65/6/794.pdf.

■ Other guidelines on surgical management of carotid stenosis and stroke

Life after stroke: New Zealand guideline for management of stroke

This comprehensive 2003 guideline is written for New Zealand health care delivery system. It summarizes recommendations for the assessment and management of stroke, transient ischemic attacks, and intracerebral hemorrhage in various locales. The utility of carotid endarterectomy for secondary prevention is reviewed. The recommendations are comparable to the American Academy of Neurology.

Source. New Zealand Guidelines Group. Life after stroke. New Zealand guideline for management of stroke. Wellington, NZ: New Zealand Guidelines Group; 2003: 84 pp [164 refs]. Available at: www.nzgg.org.nz/guidelines/0037/Stroke_Summary.pdf.

REFERENCES

1. Ebell M, Siwek J, Weiss BD, et al. Strength of recommendation taxonomy (SORT): A patient-centered approach to grading evidence in the medical literature. *J Fam Pract* 2004; 53:111–120.
2. National Institute of Neurological Disorders and Stroke. Stroke: Hope through research. 2006. Available at: www.ninds.nih.gov/disorders/stroke/detail_stroke.htm#6051105. Accessed on March 21, 2006.

FAST TRACK

Patients should receive aspirin (81 or 325 mg daily) before CE and for at least 3 months afterwards