

META-ANALYSIS OF THE EFFECT OF STENT DESIGN ON CLINICAL AND RADIOLOGICAL OUTCOMES OF CAROTID ARTERY STENTING

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Background

Procedural characteristics, including stent design, may influence the outcome of carotid artery stenting (CAS). A thorough comparison of the effect of stent design on outcome of CAS is thus warranted to allow for optimal evidence-based clinical decision making.

Objective

This study sought to evaluate the effect of stent design on clinical and radiological outcomes of CAS.

Methods

A systematic search was conducted in MEDLINE, Embase, and Cochrane databases in January 2017 identifying articles reporting the occurrence of clinical or radiological short- and long-term major adverse events (MAE) in different stent designs used to treat carotid artery stenosis. Random effects models were used to calculate combined overall effect sizes. The lack of specified data precluded the performance of adequate subgroup analyses.

Results

From 2,069 unique identified articles, two randomized controlled trials and 60 cohort studies were eligible for analysis (including 43,703 procedures). Short-term clinical MAE rates were similar for patients treated with open cell versus closed cell or hybrid stents. Long-term clinical MAE rates remained similar for open versus closed cell stents. Use of open cell stents predisposed to a 25% higher chance (relative risk, 1.25; $p=0.03$) of developing postprocedural new ischemic lesions on magnetic resonance diffusion-weighted imaging (MR-DWI). No differences were observed in incidence of restenosis, stent fracture, or intraprocedural hemodynamic depression with respect to different stent designs.

Conclusion

Stent design does not affect short- or long-term clinical MAE rates in patients undergoing CAS. However, open cell stenting resulted in a significantly higher number of MR-DWI-detected subclinical postprocedural new ischemic lesions compared with closed cell stenting.