Risk Adjustment for Outcomes After Carotid Endarterectomy

The impact of operative volume on surgical outcomes after carotid endarterectomy (CEA) is an area of much debate. Studies based on administrative databases have found that the rates of adverse outcomes are increased in CEA performed by low-volume surgeons.[1,2] This has led some to argue for selective referral to high-volume surgeons.

As Maas et al[3] correctly pointed out, the risk adjustment used in these national administrative database studies is limited by the variables within the database. Preoperative clinical variables specific to CEA, such as symptomatic status, are known to be difficult to accurately determine using administrative data.[4] Furthermore, administrative databases lack the detail of hospital-based data. Thus, the authors set out to determine whether risk adjustment for case mix was superior to that for surgeon volume.

Maas and colleagues[3] should be commended for critically evaluating the outcomes after CEA at their institution. They have shown that higher American Society of Anesthesiologists (ASA) Physical Status Classification eliminates the effect of surgeon volume in predicting both complications and stroke/death.

Just as caution must be used when interpreting administrative database studies of CEA outcomes, so must caution be used when interpreting outcomes presented in this study. American Society of Anesthesiologists category was the only significant predictor after multivariable analysis of either complications or stroke/death. However, ASA category is subjective, with variation and inconsistencies in grading among anesthesiologists.[5] Recommendations based solely on ASA class would be precarious.

Ultimately, every study is limited by the variables included in the analysis and the definitions of the outcomes evaluated. Bias exists based on multiple factors, including the database used or population studied. Outcomes research based on large administrative databases provides a piece of the puzzle that is frequently missing from smaller studies. The large number of patients in a real world setting generates greater power of the statistical analysis and perhaps more widely applicable results. Smaller, clinical studies provide a more in-depth analysis of patient-specific variables lost in the billing coding scheme used to populate administrative databases.

Public policy decisions aimed to improve the quality of care should be based on the most comprehensive data available. At the moment, this would seem to be a combination of both types of studies. Decisions based solely on one or the other are insufficient.

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