Effects of Surgeon and Hospital Volume on Five-year Survival following Oral Cancer Resections: The Experience of an Asian Country

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Abstract

Background. Although the relationship between provider volume and treatment outcome has been established for many types of operations, such a relationship has yet to be determined for resection of oral cancers. The purpose of this report is to assess the effects of surgeon and hospital volume on 5-year survival for oral cancer. Methods. A total of 6,666 patients who underwent resections of oral cancer between 1997 and 1999 were identified from the Taiwan National Health Insurance Research Database. These data were linked to the "cause of death" data file from the Department of Health in Taiwan and traced for 5 years to obtain the survival times for individual patients. Survival analysis and proportional hazard regressions were conducted to assess the association between 5-year survival rates and surgeon and hospital volumes after adjusting for patient and provider variables. Volume relationships were based on the following criteria: low-, medium-, and high-volume surgeons were defined by <52, 52 to 142, and >142 resections, respectively, during the 3-year period. Similarly, low-, medium-, and high-volume hospitals were defined by <343, 343 to 531, and >531 resections, respectively, during the 3-year period. Results. With an increase in individual surgeon volume, there were increases in the unadjusted 5-year survival rates (45.5%, 49%, and 51.8% for low-, medium-, and high-volume groups, respectively; P <.001); no such association, however, was observed with hospital volumes (47.5%, 51.3%, and 49% for low-, medium-, and high-volume hospitals, respectively; P =.074). Compared with treatment by low-volume surgeons, operations by high-volume surgeons were associated with an adjusted hazard ratio of 0.810 (95% confidence interval = 0.735-0.893). Conclusions. We conclude that, for patients who underwent oral cancer resections, after adjusting for differences in the case mix, high-volume surgeons had better 5-year survival rates. This association, however, was not discernible for high-volume hospitals.