National Trends in Surgery for Sinonasal Malignancy and the Effect of Hospital Volume on Short Term Outcomes

David Ouyang1, Ivan El-Sayed2, Sue S. Yom12

Institutions: 1. Department of Radiation Oncology, University of California, San Francisco, San Francisco, CA, United States, 2. Department of Otolaryngology-Head and Neck Surgery, University of California, San Francisco, San Francisco, CA, United States

Objective/Hypothesis: Sinonasal carcinomas are rare, highly morbid neoplasms originating in the nasal cavity and paranasal sinuses. The mainstay of treatment over the past two decades is a combination of surgery, radiation, and chemotherapy. We sought to characterize the trends in initial management of sinonasal malignancy and the impact of hospital volume on surgical care and outcomes.

Methods: A retrospective cohort study with time trends of patients admitted for surgical resection of sinonasal malignancy in the National Inpatient Sample (NIS) between 1988 and 2009. Subset analysis of high risk cases is performed on patient cohorts with skull base involvement, orbital or maxillary sinus involvement, or underwent for neck dissection. Patient characteristics as well as hospital attributes are correlated with patient morbidity and mortality.

Results: Over the course of 22 years, we identified 3850 cases of sinonasal surgery patients from 879 hospitals. 14.9% of patients had complications and 0.8% of hospitalizations resulted in mortality. High risk cases with skull base involvement, orbital or maxillary sinus involvement, or underwent for neck dissection were associated with increased morbidity and mortality. 24.4% of these high-risk surgeries were associated with complications, compared to 11.3% of cases without maxillary or extrasinal involvement.

Thirty-two hospitals averaged more than 5 cases per year, accounting for 28% (1097) of all sinonasal surgeries. These high-volume centers were predominantly large (73.3%), urban (96.7%), teaching (90%) institutions and performed more high risk cases – accounting for 32.4% of cases requiring neck dissection, 44.9% of cases with orbital involvement, and 45.7% of cases with skull base involvement. Over the time period studied, a greater proportion of cases were being performed at high-volume centers.

Conclusions: This study reflects current trends in the management of sinonasal cancer, with an increased likelihood of complicated surgeries being performed at higher-volume hospitals which also had a higher complication rate. Complicated cases resulted in higher rates of complications but were not associated with higher mortality.