

20 Year Data on Clinical and Histologic Features Associated with Malignant Transformation Rate of Oral Cavity Dysplasia From a Single North American Institution

Jessica Tang, MD¹; Grace Amadio, BS²; John A Ridge, MD, PhD, FACS³

¹Department of Otolaryngology, Head and Neck Surgery, Temple University, Philadelphia, PA; ²Lewis Katz School of Medicine at Temple University, Philadelphia, PA; ³Department of Surgical Oncology, Fox Chase Cancer Center, Philadelphia, PA

Abstract

Reports characterizing clinical and histologic features associated with a higher risk for development of malignancy in the background of an oral potentially malignant disorder (OPMD) have largely reflected East Asian populations. Long-term studies among North American population are rare. The aim of this research project is to evaluate the risk of malignant transformation (MT) of oral dysplastic lesions (ODL) by investigating the demographic, social, clinical, and histologic factors that may be associated with an increased rate as well as a decreased time to MT.

Study Design and Methods

This project was conducted as a retrospective cohort study with chart review from January 1, 2000, to December 31, 2019. Follow up data was available for up to 20 years. The patient population was derived from a single institution - the principal investigator's practice. Data was collected from the clinical observation of patients diagnosed with leukoplakia of oral mucosa, unspecified lesions of oral mucosa, or other disturbances of oral epithelium.

Patients were excluded if they were younger than eighteen years of age, the first biopsy diagnosis showed cancer, biopsies were never performed, biopsies were taken from sites outside of the oral cavity, there was no additional follow up after the first visit, or the biopsy specimen was not characterized on the spectrum of dysplasia.

Physical findings describing the oral lesion were characterized in a consistent manner by the principal investigator (JAR) and described based upon the presence or absence of leukoplakia, erythroplakia, friability, nodularity, ulceration, or mass effect.

The main outcome measures of interest included the malignant transformation rate; time to malignant transformation; and the demographic, social, clinical, physical, and histologic features associated with malignant transformation.

Results

The majority of lesions were located within the tongue subsite of the oral cavity (n=157). Other subsites included the floor of mouth (n=34), buccal mucosa (n=31), alveolar ridge (n=29), hard palate (n=10), retromolar trigone (n=2), and mucosal lip (n=1).

Thirty-eight of 264 lesions (14%) in 241 patients underwent MT. 50% underwent transformation by 424 days, 75% by 870 days, and 90% by 1600 days. Nodularity (p<0.001), friability (p=0.008), and mass effect (p<0.001) were more commonly observed in malignant lesions. Having multiple abnormal sites was associated with older age (p=0.008), female sex (p=0.007), and a higher percentage of MT (p<0.001).

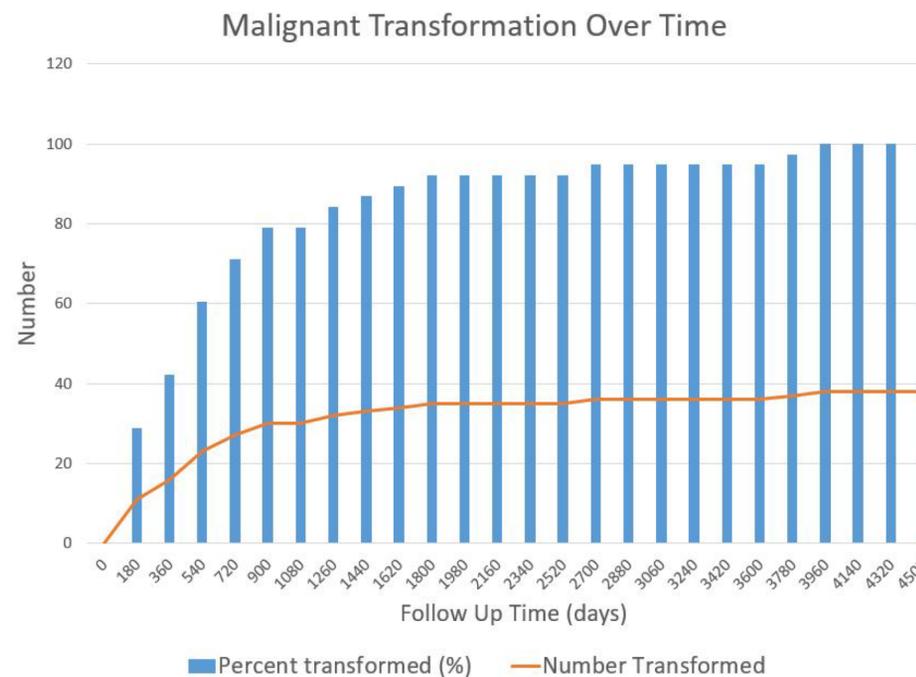


Figure 1: Graphical representation of lesions that have undergone malignant transformation over time displayed as percent of total transformed and number of lesions that transformed.

Physical Finding	Percentage of lesions with MT (%)	Percentage of lesions without MT (%)	P-value	Odds Ratio (95% C.I)
Leukoplakia	60.5	74.6	0.080	0.52 (0.26-1.07)
Erythroplakia	10.5	3.1	0.059	3.65 (1.01-13.1)
Nodularity	39.5	8.9	<0.001	6.65 (3.00-14.8)
Friability	15.8	3.6	0.008	5.06 (1.65-15.5)
Ulceration	18.4	11.2	0.280	1.80 (0.72-4.51)
Mass effect	34.2	4.9	<0.001	10.1 (4.08-24.9)

Table 1: Percentage of oral cavity lesions with specified physical findings that underwent malignant transformation and lesions that did not undergo malignant transformation. Associated odds ratio with 95% confidence intervals (C.I.) are also represented.

Discussion

Despite advances in the understanding of OPMDs, there remains much to be learned regarding risk stratification, appropriate follow up schedules, and management options of these lesions. This study highlights the importance of regular follow-up and identifying risk factors that may predict MT in patients with ODLs. Physical characteristics of each lesion were important in defining clinical features as particularly worrisome. Studies with long-term surveillance of ODLs are rare and give little insight into the virtues of observation beyond a certain time frame. In our study, the overwhelming majority of ODLs (approximately 90%) underwent transformation by the 1,600-day mark; there may be diminishing returns from surveillance beyond five years if patients know reasons to report.

Conclusions

Nodularity and mass effect suggest a lesion that may push, displace, or invade surrounding tissue, and these were more likely to be present in ODLs that ultimately progressed to cancer. 90% of ODLs transformed by 1,600 days suggesting that there may be less utility in continuing surveillance beyond five years.

Contact

Jessica A Tang, MD
Temple University
Department of Otolaryngology, Head and Neck Surgery
3440 N. Broad Street
Kresge West, Suite 300
Philadelphia, PA, 19140
Email: jessica.tang@tuhs.temple.edu